DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE — Idm-E NO. 727 — DMEA NO. 3398

Application
- [ ] Denied
- [ ] Withdrawn

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

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

Folder No. 1:

Left Side

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

Right Side

- [✓] Project summary (final)
- [✓] Work Completed analysis (final)

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

- [x] 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

Folders No. _____ : Reports
- [ ] Analysis of Semi-Annual Inspection Reports
- [ ] Project Summary (Interim) by DMEA Engineers

Right Side

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

Folders No. 1 : Maps (Use pocket folder or envelope)

Folders No. _____ : Settlement Sheets

Folders No. _____ : Drill Logs

Folders No. _____ : Royalty material

Inactive all 1960 (2-15-61)

17963

OFFICE OF MINERALS EXPLORATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

REPORT OF ROYALTY REVIEW

I have reviewed the files of the Washington office pertaining to Contract Idm-E727, Docket IMEA-3398 (fluorspar), dated October 13, 1954, with

Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

for the purpose of determining the amount of royalty payable to the U. S. Government on sales of minerals from property referred to as the Iowa Canyon Fluorspar Property located in Lander County, Nevada, during the period January 1, 1959, through February 19, 1963.

A certification of discovery or development was issued on April 15, 1955, and, in accordance with Article 8 of the contract, royalty is payable on all minerals produced from the land described in Article 2 of the contract for a period of 10 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. A Report of Review dated February 8, 1955, indicated accepted costs under the exploration contract amounting to $2,198.78 with the Government's contribution on a 50 percent basis being $1,099.39.

The status of the project, the scope of review, and the reasons therefor are stated on page 2.

This review established no sales subject to the Government's royalty subsequent to the period covered by a prior Report of Royalty Review which also found no sales subject to the Government's royalty through December 31, 1958. The royalty account as of December 31, 1958, was:

Total Royalty Payable	$ -0-
Total Royalty Paid	-0-
Balance of Royalty Due	$ -0-

As of February 19, 1963, the royalty account of this project was found to be:

Total Royalty Payable	$ -0-
Total Royalty Paid	-0-
Balance of Royalty Due	$ -0-

E. D. Talbert

E. D. Talbert, OME Auditor

February 26, 1963

Idm-8727 Kaiser Aluminum & Chemical Corporation DMEA-3398

STATUS OF PROJECT, SCOPE OF REVIEW AND REASONS THEREFOR

This contract provides that the Operator, as principal if the producer or as surety if not the producer, shall pay to the Government a percentage royalty on all mineral production from the unpatented Iowa Fluorspar Nos. 1 to 5 claims in the Iowa Canyon Mining District. At the time the contract was executed the Operator was in possession of the five claims by virtue of (1) a 5-year renewable lease and option to purchase granted on January 25, 1954, by the owners, Joseph G. Keller, Robert L. Keller, and Thomas B. McDowell, and (2) an April 2, 1954, deed executed by Thomas B. McDowell quit-claiming his one-third undivided interest to the Operator. In consideration of the contract, the Kellers of Fallon, Nevada, executed an Owner's Consent to Lien.

The exploration work under the contract was performed during October and November 1954. No minerals were produced during that period and subsequent examinations of the property and inquiries by DMEA and OME regional representatives disclosed no production through December 31, 1958.

In a February 19, 1963, reply to a OME Form 63 inquiry Joseph G. Keller, West Star Route, Fallon, Nevada, advised that the Operator gave up its lease in 1957, no further changes in property status have occurred, and there has been no production since January 1, 1959.

This review was made in lieu of an on-site audit of the Operator's accounts and records for the following reasons:

(1) The files indicate that no minerals have been produced since the date of the contract from the property thereunder; and

(2) The administrative cost to the Government of an on-site royalty audit at this time would be excessive in relation to the amount of possible royalty which might be disclosed.

OFFICE OF MINERALS EXPLORATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

MAY 21 1959
O.M.E.

REPORT OF ROYALTY REVIEW

I have reviewed the files and records of the OME Field Team, Region II, pertaining to Contract No. Idm-E727, Docket No. DMEA-3398 (Fluorspar), dated October 13, 1954, with

Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

for the purpose of determining the amount of royalties due the U. S. Government on sales of fluorspar ore, from property known as the Iowa Canyon Fluorspar Property, located in Landor County, Nevada, during the period October 13, 1954 to December 31,1958.

A certification of discovery or development was issued on April 15, 1955 and accordingly royalty is payable on all production from the land described in Article 2 and Annex I of the contract, for a maximum period of 10 years from the date of contract. A Report of Review in lieu of final cost audit dated February 8, 1955, indicated acceptable costs under the exploration contract amounted to $2,198.78 with the Government's contribution on a 50 percent basis, being $1,099.39.

No royalties have been paid to date in connection with this contract.

This review was made in lieu of an on-site audit of the Operator's accounts and records for the following reasons:

(a) According to the Field Team's Semi-Annual Report of Certified Projects for the period July 1, 1958 to December 31, 1958, there was no production during the period covered by this review.

(b) The administrative cost to the Government of an on-site royalty audit at this time would be excessive in relation to the amount of possible royalty which might be disclosed.

George Mavor

May 19, 1959 George Mavor, OME Auditor

FILE COPY
Surname:

Hopkins
Houk
Hotlund
Chamber
Kiilsgaard
Hedges
Lefridge
Johnson

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

600

INTERIOR DEPT.
APR 1 1 1955
SOLICITOR

CERTIFICATION BY THE UNITED STATES OF AMERICA
OF A DISCOVERY OR DEVELOPMENT UNDER
AN EXPLORATION PROJECT CONTRACT

To: Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

Pursuant to the provisions of Exploration Project Contract No. Idm-8727, dated October 13, 1954 (Docket No. DMEA-3398), hereinafter called the "contract" between you and the United States of America, hereinafter called the "Government"; to establish and fix the Government's percentage royalty on production and its lien thereon and on the land described in the contract, the Government considers and therefore certifies that discovery or development from which production may be made has resulted from the exploration work.

The nature of said discovery or development is described broadly or indicated as follows:

Two deposits of fluorspar ore were found to extend along the outcrops of quartz-fluorite fissure veins in Tertiary volcanic rocks. Sufficient data were obtained to calculate indicated and inferred reserves of fluorspar.

THE UNITED STATES OF AMERICA

By [signature]
Administrator, Defense Minerals
Exploration Administration

Dated APR 1 5 1955

JHopkins:ad 4/7/55

Copy to: Mr. Joseph G. Keller
Mr. Robert L. Keller
Mr. Clarence A. Fredell, EPS, GSA
Docket
Admr. R. File
Operating Committee
Mr. Chambers
Mr. Johnson
Finance Office
Field Team, Region II
Mr. Kiilsgaard, 5222
Mr. Arundale, 3516
Mr. Houk

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
10/13	Fisher	800
	Selfridge	120
12/13	Johnson	110
"	"	100
		220

OCT 13 1964

Kaiser Aluminum & Chemical Corporation
Kaiser Center
300 Lakeside Drive
Oakland 12, California

Re: DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract Idm-E727

Gentlemen:

By the terms of the subject Exploration Project Contract and the certification of discovery or development dated April 13, 1955, all minerals mined or produced from October 13, 1954, to October 13, 1964, were subject to the Government's royalty as set forth in said contract.

As the period during which production was subject to royalty has now expired, the Government according to its present records 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 contract. Your attention, however, is called to the provisions of the contract which require the Operator to keep and preserve certain records for the periods indicated.

Sincerely yours,

George Fumich, Jr.
Acting Director

MMerrithew/mm (10/13/64)
cc: Messrs. Robert L. Keller and Joseph G. Keller, Fallon, Nevada
Director's Reading File
CA&A Division
Region II
Docket
Code 120M

23263

[illegible]

[illegible]

[illegible]

FEB 14 1955

I have reviewed the monthly report of:

Kaiser Aluminum & Chemical Corporation
(a Delaware corporation)
1924 Broadway
Oakland 12, California
Mailing address:
1924 Broadway
Oakland, Calif.

all DREA letters sent to this address from out

[illegible] contract [illegible] for the month of November 1954, covering [illegible] for the operation of Hanford, [illegible] and [illegible].

[illegible] and supporting documents attached thereto, [illegible] contract and certain [illegible] project, [illegible] of the [illegible] of the [illegible].

[illegible] review and [illegible] of the contractor's accounts and records [illegible]:

(a) the administrative cost to the government of [illegible] it would be [illegible] the [illegible] amount of [illegible] thereunder;

(b) the monthly report [illegible] cost of the costs incurred under the contract.

The review disclosed the following [illegible] to the amount paid or to be paid the contractor:

Total cost as billed by [illegible]	[illegible]
Deductions	[illegible]
Total [illegible]	[illegible]

[illegible] contract calls for a [illegible] percent partial [illegible] by the [illegible] contract. Therefore, [illegible] the [illegible] in the amount of [illegible] the [illegible] dollars.

[illegible]

is considered valid and proper, [illegible] administrator, or other [illegible] has been [illegible] as having complied with the terms of the contract.

February [illegible], 1955

George Mavor
[illegible]
Auditor

Docket copy

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED

MF-200
(Revised June 1954)

Docket No. DMEA - 3398

Commodity Fluorspar

Contract No. Idm-E - 727

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

EXPLORATION PROJECT CONTRACT[1]

It is agreed this 13th day of October, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] Kaiser Aluminum & Chemical Corporation (a Delaware corporation) 1924 Broadway Oakland 12, California, whose mailing address is 1625 Eye Street, N. W. Washington, D. C., 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

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 Nevada, County of Lander, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the owner of 1/3 and lessee [4] of [5] 2/3 undivided interests in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a [6] deed and lease, [7] recorded in Book, page, 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: mortgage and deed of trust of the Operator to secure bonds in the amount of $104,000,000.

(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: Owner's Consent to Lien of Lessors. Subordination Agreement of mortgagee and trustee waived.

(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 October 29, 1954, shall commence the work, and on or before February 28, 1955 (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."

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 $5,020.00. The Government shall contribute 50 percent of the allowable costs as they are incurred in a total sum not in excess of $2,510.00: *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.

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.

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.

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.*—

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By O. Mitchell Dow
Administrator, Defense Minerals
Exploration Administration
Hoffman Selfridge
Hoch
Chambers
Johnson

KAISER ALUMINUM & CHEMICAL CORPORATION
(Operator)

By T. J. Ready Jr.
T. J. Ready, Jr.
Vice President

I, A. N. Warburton, Jr., certify that I am the assistant secretary of the corporation named as Operator herein; that T. J. Ready, Jr. who signed this contract on behalf of the Operator, was then Vice President 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.

A. N. Warburton, Jr.

[CORPORATE SEAL]

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

EXPLORATION PROJECT CONTRACT
KAISER ALUMINUM & CHEMICAL CORPORATION
DOCKET NO. DMEA-3398

ANNEX I

The land referred to in Article 2 is situated about four miles east of Iowa Canyon Dam, in the Iowa Canyon Mining District, County of Lander, State of Nevada, and consists of the following lode mining claims:

Iowa Fluorspar No. 1

Iowa Fluorspar No. 2

Iowa Fluorspar No. 3

Iowa Fluorspar No. 4

Iowa Fluorspar No. 5

All of said claims appearing as files numbered 28114-28117, at pages 67-69, in Book 18 of Duplicate Mining Notices, in the office of the Recorder of Lander County, Nevada.

EXPLORATION PROJECT CONTRACT
KAISER ALUMINUM & CHEMICAL CORPORATION
DOCKET NO. DMEA-3398

EXHIBIT "A"

Description of the Work

At the Iowa Fluorspar No. 1 and No. 2 Claims as shown on the attached map entitled "Iowa Canyon Fluorspar, Lander County, Nevada," by bulldozing dig approximately 800 feet of trench, and by drilling and blasting clean and sample the exposed vein system.

ESTIMATED COSTS OF THE PROJECT

Category (1) - Independent contracts

Bulldoze trench to bedrock approximately 800 linear feet, dozer blade width at bottom, including labor, materials and supplies, transporting in and out	$1,000.00

Category (2) - Personal Services

(a) Supervision

Supervisor @ $600/mo., 1½ mos.	900.00

(b) Labor

Surface miners, 60 man days @ $18.72/day	1,083.20

Category (3) - Operating Materials and Supplies

Explosives	100.00
Sample sacks and tags	50.00
Compressor oil, gas, and supplies	150.00
Tools	96.80

Category (4) - Operating Equipment

Rental of compressor, jack-hammer, and all necessary incidental accessories to drilling	$ 400.00
Depreciation on Company owned automobile, 5,000 miles @ $.07/mile 1/	350.00

Category (5) - Initial Rehabilitation and Repairs

None

Category (6) - New Buildings, Fixtures, and Installations (Facilities of Mine Workings)

None

Category (7) - Miscellaneous

Analytical work 50 assays for CaF_2 and SiO_2 @ $5.00/ea.	250.00
Transportation of supplies and equipment	500.00
Workmen's compensation and liability insurance	200.00
Total Estimated Cost of Project	$5,000.00
Government participation @ 50%	$2,510.00

1/ Includes repairs, maintenance, supplies, and all other costs.

DEPARTMENT OF THE INTERIOR
Leasing Minerals Administration
RECEIVED
[illegible] 1954

MF-203
(Revised July 1, 1954)

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of [illegible], County of [illegible], described as follows:1/

[illegible]

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ [illegible]

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract or any amendment thereof shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract or any amendment thereof there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

1/ 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.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

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

(OVER)

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

4. Changes and added provisions _____

_____

_____

_____

Dated this _____ day of _____, 195___.

Joseph L. Keller [Seal]

Robert L. Keller [Seal]

_____ [Seal]

KAISER ALUMINUM & CHEMICAL CORPORATION

General Offices: 1924 BROADWAY, OAKLAND 12, CALIFORNIA

Washington Office: SUITE 909, 1625 EYE STREET, N.W., WASHINGTON 6, D. C.

JUN 24 1954

June 24, 1954

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

Gentlemen:

Enclosed is an application in quadruplicate on Form MF-103 with necessary exhibits for aid in an exploration project pursuant to DMEA Order 1 under the Defense Production Act of 1950.

If after reviewing our application additional information is desired, we will be pleased to see that it is furnished upon request.

Very truly yours,

KAISER ALUMINUM & CHEMICAL CORPORATION

G. Richard Ward

G. Richard Ward
Corporation Representative

GRW:dld
Enclosure

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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. 3398
Metal or Mineral Fluorspar
Date Received
Estimated Cost $11,500
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: KAISER ALUMINUM & CHEMICAL CORPORATION, a Delaware corporation.
For List of Officers, see Exhibit 1(c)
Mailing Address: 1625 Eye Street, N. W., Washington, D. C.

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

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

(*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 Five unpatented mining claims, Iowa Fluorspar Nos. 1 through No. 5, appearing as files numbered 28114 - 28117, pages 67 - 69, book 18, Duplicate Mining Notices, Office of Recorder, Lander County, Nevada, situated about 4 miles east of Iowa Canyon Dam.

(*b*) State any mine name by which the property is known. Iowa Canyon Fluorspar

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Lessee and part owner. See Exhibit 3(d)

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

(*e*) If you own the land, describe any liens or encumbrances on it See Exhibit 3(e)

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See 3(a) above.

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 supplemental attachment.

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

(*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 supplemental attachment.

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

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

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 supplemental attachment.

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

(*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 supplemental attachment.

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

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

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

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

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

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

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

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

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

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs. For all subdivisions, see supplemental attachment.

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

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

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

Explain in detail on acompanying paper. See supplemental attachment.

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 June 22, 1954

KAISER ALUMINUM & CHEMICAL CORPORATION
(Applicant)

By [signature]
Vice President
1924 Broadway
Oakland 12, California

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

SUPPLEMENTAL
ATTACHMENT

SUPPLEMENTAL ATTACHMENT TO

APPLICATION FOR AID IN AN EXPLORATION PROJECT

Pursuant to D.M.E.A. Order 1

June 3, 1954

Reference: Form MF-103, Exhibits 4 through 7.

4. Physical description:

a. The fluorspar deposit was discovered in 1952 by one of the lessors. See 1952 report and location map, Exhibits 4(c)I and 4(c) II. The lessors have done all work to date comprising two test pits and one small shaft, through which some stoping was done. The shaft is a 45-foot incline with 40 feet of drifting and 15 feet of crosscutting into the hanging wall from the bottom of the incline. A small open, over-hand stope has been excavated from the drift. Only a small surface pillar remains above this stope. Fluorspar ore was 3 to 5 feet wide. The ore extracted was shipped to the Fallon Mill of Kaiser Aluminum & Chemical Corporation as custom ore for the production of acid grade fluorspar. The prospect is equipped with a small steel headframe. The applicant had no interest in the above work except the purchase of the custom ore, but has subsequently become interested, See Exhibit 3(d). The mine workings are open for inspection.

b. Product shipped entirely to Fallon Mill: tons, 209.23; %CaF_2, 61.48; Indicated ore reserve is virtually nil. The prospect of proving important tonnage by exploration is good.

c. The deposit is a series of silicified fluorspar veins in andesite. Fluorspar float can be traced for a distance of half a mile. Test pits have shown small fluorspar veins at considerable distance from the one shaft and a good chute of ore was opened at the shaft. The ore is cut off by a fault at the bottom of the shaft but may be repeated 90 feet to the east. The hope of finding extensions of this ore warrants the proposed program in line with company policy for developing

additional reserves for the Fallon Mill. The program is outlined in the accompanying report, Exhibit 4(c)III by Ira B. Joralemon, consulting mining engineer, and is illustrated on a sketch map, Drawing No. L-M, LF-1. Exhibit 4(c) IV.

d. The property is accessible by automobile in dry weather and by truck in virtually all weather. The route from Fallon, Nevada, is 112 miles east on U. S. Highway 50, to a junction at the outskirts of Austin, thence 26 miles north on Nevada Highway 8-A and 11 miles east over dirt roads to the property. Austin is the nearest supply and residence point. The property is now idle. See also map, Exhibit 4(c)II.

e. The work at the early stage will require not over four men including an engineer. These men and any necessary supplies and equipment can easily be brought from Fallon, or at any rate from Reno, if not available at Austin. The claims cross Iowa Creek, but this is probably not a reliable year-round source of water. For the scale of exploration anticipated, it would not be a serious problem to bring water from Austin. Water for operations has not been investigated, but the probability of obtaining an adequate supply from a well for mining and domestic purposes is excellent. Power for operation would be generated by Diesel.

5. <u>The exploration project</u>:

a. The mineral to be explored for is fluorspar.

b. It is proposed to carry out an exploration campaign over a period of five years in accordance with the lease agreement dated January 25, 1954, (copy attached with amendments thereto), with the work done each year dependent upon the results obtained in previous years. For the current year, work will be mainly bulldozing and such rock work as is necessary for proper sampling. The initial work will be concentrated relatively close to the shaft as detailed in the report by Ira B. Joralemon, Exhibit 4(c)III, and marked trenches 1, 2, 3, and 4 on Drawing No. L-M, LF-1. Exhibit 4(c)IV. Depending on results obtained, additional cross trenching and strike trenching is anticipated in the areas marked A, B, C, D, and

and perhaps elsewhere. The essence of the program will be to get all possible surface information. If this is favorable, the next step would probably be diamond drilling to be planned in the light of information then available.

c. It is planned to start work the middle of August, 1954, and be finished prior to the middle of October, 1954, for the first year's activities.

d. The applicant has had considerable experience in exploration for mineral deposits. Exploration work in the past has included, among other projects, the following:

(1) determination of reserves and preparation of mining plans for the Natividad Dolomite Quarry, which is now in successful operation;

(2) exploration for bauxite in Jamaica, B. W. I., the determination of reserves totaling many millions of tons, and the preparation of mining plans for our current successful operation;

(3) examination of a large number of fluorspar prospects in the western states and Mexico;

(4) examination and sampling for metallurgical testing of several deposits that shipped custom fluorspar ore to our Fallon plant;

(5) investigation by extensive bulldozer trenching and 600 feet of drifting and crosscutting on an adit level at the Valery fluorspar prospect near Lovelock, Nevada;

(6) examination, rehabilitation, and bringing into production of the Kaiser Mine, (formerly Baxter Mine) near Gabbs, Nevada.

The project will be under the immediate supervision of a member of the Exploration Department (unassigned) of Kaiser Aluminum, who will reside in the area. All members of the Department are either graduate mining engineers or geologists. Ira B. Joralemon will act as consultant for the project.

6. Estimate of costs:

a. Independent contracts:

Item	$ Per Hour	Amount	Group Total
Bulldozer with operator	$ 12.50	$ 2,000	$ 2,000

b. Labor, supervision, and consultants:

Class	Rate	Unit	Amount
Miners (surface)	$ 16.72/day	78 man days	$ 1,304
Supervisor	600.00/mo. + expenses	2 mos.	1,600
Consultant	250.00/day + expenses	4 days	1,150
Total labor, supervisor, and consultants:			$ 4,054

c. Operating materials and supplies:

Item	Quantity	Amount
Explosives	10 cs.	$ 100
Tools		150
Sample sacks and tags		50
Compressor gasoline, oil, and supplies		100
Miscellaneous		50
Total operating materials and supplies		$ 450

d. Operating equipment:

Item		Amount
Rental of compressor, jackhammer, and accessories	$500/mo.	$ 1,000
Company-owned automobile	5,000mi.@7¢	350
Total operating equipment:		$ 1,350

e. Rehabilitation and repairs: nil

f. New buildings, improvements, installations: nil

			Group Total
g.	Miscellaneous:		
	Transportation of supplies and equipment	$ 500	
	Analytical work, 100 samples	500	
	Metallurgical testing	500	
	Accounting	500	
	Workmen's Compensation)		
	Liability insurance) — 10% of payroll for exempt and non-exempt	400	
	Payroll taxes)		
	Total miscellaneous:		$ 2,400
	Total estimated cost less contingency		10,254
h.	Contingency		1,246
	Total estimated cost, 1954		$11,500

7. Applicant's share of the cost:

a. The applicant is prepared to furnish his share of the cost of the proposed project.

b. It is proposed to do this in the form of money, which will be used to pay wages, contracts, rentals, and operating expenses as the work progresses. We will use our own equipment to such extent, if any, as it can be conveniently spared from our operations at the Kaiser Mine, but otherwise, and primarily, equipment and tools will be rented or purchased for the program. Our accounting department will prepare a detailed statement of expenses as the work progresses and submit this for approval by the D.M.E.A. as a basis for payment of its share of the exploration expenses.

EXHIBIT 1 (c)

Exhibit 1 (c)

"Titles, Names and Addresses of Officers"

President	Henry J. Kaiser	1023 Timothy Drive, Lafayette, California
Executive Vice President	E. E. Trefethen, Jr.	5 Sandringham Road, Piedmont, California
Vice President & General Manager	D. A. Rhoades	42 Tusca Lusa Avenue, Atherton, California
Vice President	Chad F. Calhoun	3703 Blackthorn, Chevy Chase 15, Maryland
Vice President & Treasurer	Donald Browne	998 Sunnyhills Road, Oakland, California
Vice President	T. J. Ready, Jr.	1151 Ridge Park Drive, Concord, California
Vice President & Secretary	William Marks	210 LaSalle Avenue, Piedmont, California
Vice President, Research	R. E. Knight	645 Euclid Avenue, Berkeley, California
Comptroller	R. A. Clayton	15 Sharon Avenue, Piedmont, California

EXHIBIT 3(d)

Exhibit 3 (d)

AGREEMENT OF LEASE AND OPTION

THIS AGREEMENT, made this 25 day of January, 1954, by and between JOSEPH G. KELLER, ROBERT L. KELLER and THOMAS B. McDOWELL, all of the county of Churchill, State of Nevada, First parties, hereinafter called the Lessors, and KAISER ALUMINUM & CHEMICAL CORPORATION, a Delaware corporation, Second party, hereinafter called the Lessee,-

W I T N E S S E T H:

RECITALS:

(a) Lessors represent that they are the owners, in possession and entitled to possession, subject only to the paramount title of the United States of America, of certain unpatented mining claims or mineral locations hereinafter described.

(b) It is the desire of the parties hereto that Lessee shall acquire a Lease and Option upon said mining premises under the particular terms and conditions hereinafter set forth.

NOW, THEREFORE, it is agreed between the parties as follows:

1. That in consideration of the sum of Ten Dollars ($10.00), lawful money of the United States, and other good and valuable consideration, receipt whereof is hereby acknowledged by the Lessors, and of the faithful performance by the Lessee of the terms, covenants and conditions hereinafter reserved and by the Lessee be kept and performed, said Lessors have demised and leased, and do hereby demise and lease unto the Lessee, its successors and assigns, all of the following described mining properties and premises situate about four miles east of Iowa Canyon Dam, in the Iowa Canyon Mining District, County of Lander, State of Nevada, namely:

IOWA FLUORSPAR NO. 1, IOWA FLUORSPAR NO. 2, IOWA FLUORSPAR NO. 3, and IOWA FLUORSPAR NO. 4, and IOWA FLUORSPAR NO. 5.

All of said claims appearing as filed numbered 28114-28117, at pages 67-69, in Book 18 of Duplicate Mining Notices, in the office of the Recorder of said Lander County, Nevada;

Together with any and all improvements upon, in or about said premises, and together with any and all waters and water rights thereon or appurtenant thereto, or used in connection therewith:

TO HAVE AND TO HOLD said demised premises unto the Lessee for the term of five (5) years from and after date hereof, with the right and privilege to said Lessee, and for the same consideration herein expressed, of renewing and extending said initial term for two additional and successive Five-year terms from and after the 25th day of January, 1959 and from and after the 25th day of January, 1964, respectively; and together with the sole and exclusive right and option to the Lessee to purchase all of the demised premises, properties, improvements and water rights at any time during the life of said lease, or of any extended term thereof, at and for an agreed option purchase price of One Hundred Thousand Dollars ($100,000.00), payable in the manner hereinafter mentioned. Lessee's right to so successively extend the life of this agreement shall be exercised by written notice thereof mailed to the Lessors at Fallon, Churchill County, Nevada, not less than sixty (60) days prior to expiration dates of the initial and second Five-year term periods hereby granted.

2. Contemporaneously with the execution of this agreement Lessors shall make, execute and acknowledge good and sufficient Quitclaim Deed or Deeds conveying to the Lessee, its successors and assigns, all of the Lessors' right, title, estate and interest in and to the demised premises, which said instrument or instruments of conveyance shall be thereupon deposited in escrow with First National Bank of Nevada, Second and Virginia Streets, Reno, Nevada, and by said Banking House held in escrow under an appropriate letter of instructions in

accordance with the terms hereof, and thereafter delivered to the Lessee upon full payment of said stipulated purchase price at any time prior to the expiration of the lease term herein granted, or surrendered to the Lessors upon failure by the Lessee to pay said stipulated purchase price or to keep and perform the convenants of this agreement. Conjunctively with the execution and deposit in escrow of said conveyance by the Lessors, the Lessee shall likewise execute and place in escrow a Quitclaim Deed releasing and reconveying all of its right, claim, demand and interest in the demised premises to the Lessors, with instructions to said escrow holder to deliver said Quitclaim Deed to the Lessors upon termination of this agreement either by expiration of the term or for default of the Lessee in performance of any of its terms, covenants or conditions. Termination of this agreement due to either surrender by or default of the Lessee shall be evidenced to said escrow holders by a writing signed by both parties, or, in the event of a dispute between the parties hereto, by certified copy of final judgment of a court of competent jurisdiction declaring such default.

3. From and after the date hereof Lessee shall have the right to enter into the sole and exclusive possession and occupancy of all of the demised premises for the purpose of working, developing and mining the same in proper, skillful and miner-like fashion, and in manner necessary to good and economical mining, with due regard to the safety, preservation and development thereof as a workable mine. To that end Lessee may adopt, in its sole discretion, such scale and method or mode of operation as Lessee may deem best for the exploration, development and mining, and for the processing and treatment, of fluorspar ores or other deposits from the demised premises; provided, however, that so long as Lessee remains in possession thereof, Lessee shall expend an average of not less than $5,000.00 per annum (to be computed at said average rate over the entire

period of Lessee's occupancy and without restricting or requiring any minimum annual expenditures for any particular year or years), in the exploration, development, mining and shipment of ores from said premises, or in the prosecution of such engineering, geological, metallurgical or other research in relation to said premises as in Lessee's judgment may tend toward the development of additional shipping-grade ore tonnage thereon. Lessee's expenditures in building access roads to said premises, or in the performance of annual labor requirements thereon, shall be likewise included as component parts of Lessee's average yearly expenditures for exploration, mining and development. For failure by the Lessee to make said aggregate expenditures upon or for the benefit of said premises, at the average minimum rate of $5,000.00 as to the first and each succeeding year of Lessee's possession thereof, and after crediting to any of such succeeding years all expenditures made during any of said years in excess of said average yearly minimum of $5,000.00, Lessors shall have the right to terminate this agreement upon written notice to the Lessee as hereinafter provided.

4. It is expressly understood and agreed that a flat royalty of One Dollar and Fifty Cents ($1.50) per ton is reserved to be paid to the Lessors upon all Fluorspar ores or other deposits mined, extracted and shipped by Lessee from the demised premises; that all royalty payments so made by the Lessee shall be paid to the account of the Lessors ~~at the aforesaid mentioned banking house~~ for distribution to the Lessors as their interests may appear; that all such royalty payments shall apply on and be in part payment of the aforementioned option purchase price of $100,000.00, and that Lessee shall have the right to accelerate payment and conclude the purchase of said premises at any time during the life of this agreement, or of any extension thereof. All royalties so reserved to the Lessors shall be paid promptly following such removal and shipment by the Lessee; provided, however, that Lessee may at its election stockpile on the premises any

and all ores mined and extracted in the course of Lessee's exploration and development work, and any and all ores which are not amenable to economic treatment, and that no royalties on any of such ores shall be payable to the Lessors unless and until Lessee elects to remove and ship such stockpiled or non-amenable ores.

5. Anything herein to the contrary notwithstanding, Lessee shall be excused from performing the conditions of this agreement during such period or periods as they may be prevented from operating by acts of God, war, public enemy, strikes, riots, labor disturbances, extraordinary storms or floods, fires, orders or directives of State or Federal public authority, inability to obtain labor or equipment by reason of refusal of public authorities to grant or issue any necessary permits therefor, and other like causes reasonably beyond the Lessee's power to control; provided, however, that any such suspension of operation shall be excused only during the period of the emergency, and all of the Lessee's obligations hereunder shall be resumed promptly upon the cessation thereof; and provided further, that the above stipulated royalty shall be paid by the Lessee to the Lessors upon all ore mined, removed and shipped from the demised premises by the Lessee during such emergency periods.

6. Lessors warrant that all of the aforedescribed mining properties and premises are free and clear of all liens or other encumbrances, and of any and all conflicts of prior or senior mining locations, and Lessors agree to save the Lessee harmless from any action which may be brought against it at any time in relation to the Lessors' title and ownership of the demised premises. In that behalf, Lessors further agree that if the Lessee shall hereafter direct their attention to any defects in the record title or in the locating and monumenting of said mining premises upon the ground, Lessors shall promptly correct such defects upon demand of the Lessee, or permit Lessee to make such corrections if Lessee

desires so to do, and that all of Lessors' rights pursuant to such corrections or amendments shall inure to the benefit of the Lessee hereunder and be subject to all of the terms and conditions of this agreement.

7. It is the understanding of the parties hereto that the appropriate development and adequate protection of said mining properties and premises may ultimately require that additional mining claims be located adjoining or adjacent thereto, and that in such event Lessee may cause any such additional locations to be made in behalf of the Lessee; provided, however, that in such eventuality, and upon expiration or sooner determination of this agreement, Lessee shall thereupon effectuate the conveyance of such additional mining claims or locations to the Lessors upon demand.

8. At all times during the life of this agreement Lessors shall have access to the demised premises and to Lessee's operations thereon for the purposes of inspection and sampling, conditioned that the exercise of said accessorial right by the Lessors, or by their agents or employees, shall be at the Lessors' risk of any personal injury resulting therefrom. Lessee shall upon request furnish Lessors with true copies of all surface or underground maps prepared by or for the Lessee, and of all pertinent data on ore tonnages mined and shipped by the Lessee.

9. All of the operations of the Lessee shall be conducted in miner-like fashion and in manner necessary to good and economical mining, so as to take out the greatest amount of shipping-grade ore possible, with due regard to the development and preservation thereof as a workable mine. Lessee shall well and sufficiently timber all of the workings on the premises in accordance with good mining practice, shall keep and maintain the same in good, safe, and serviceable condition, and shall keep said workings drained and clear of loose rock and rubbish.

10. During the life of this agreement Lessee shall perform all such annual labor or assessment work on said premises as may be required to hold and protect the same as valid and subsisting mining claims, commencing with the next ensuing assessment year ending July 1, 1954 (unless performance thereof as to any such year or years shall be exempted by Federal law), and shall complete such annual labor requirements and file verified proof thereof with the Recorder of Lander County, Nevada, in manner prescribed by law, on or before the 1st day of June during each of said years. Lessee shall thereupon mail written notice of such filing, together with a true copy of such verified proof, or a true copy of any notice of Intention to hold which may be filed by the Lessee pursuant to Federal law exempting such annual labor, to the Lessors at their Post Office address as hereinafter noted.

11. All of the operations of the Lessee shall be so conducted as to fully comply in all respects with the laws of the State of Nevada, and with all present or future rules, regulations and requirements promulgated by Federal or State authority.

12. Lessee shall carry Nevada Industrial Insurance for any and all persons employed upon, in or about the mining or other operations on said premises, and shall save the Lessors harmless from any and all accidents to any of its employees, agents, or representatives.

13. Lessee shall promptly pay for all labor, materials and supplies used and employed by it in connection with said mining operations. In that connection, Lessee shall immediately post, and thereafter at all times during the life of this agreement keep posted conspicuously upon the demised premises, and file in the office of the Recorder of Lander County, Nevada, as required by the statutes of Nevada, notices to the effect that the Lessors shall not be held responsible for any of the obligations of the Lessee for any such labor, supplies or materials

furnished to the Lessee, and shall take all such steps as may be required by Law to free the Lessors from liability, and to keep the demised premises free and clear from liens, attachments or other encumbrances.

14. Lessee shall pay any and all State or County taxes levied or assessed upon the improvements installed upon said demised premises, and shall pay Lessee's proportion of any and all bullion or severance taxes assessed against the output from said properties during the life of this agreement.

15. Lessee reserves the right to terminate this agreement and to surrender the demised premises at any time during the term, or of any extension thereof, upon ten (10) days' written notice to the Lessors of its intention so to do; provided, however, Lessee shall have a period of sixty (60) days from and after the date of such notice within which to mine, extract and remove any and all flubrspar ores, or other deposits mined or developed, or then mined and extracted, or which may be then lying upon, in or about the demised premises awaiting shipment or treatment; and if not so removed all such ores or other deposits shall be and become the property of the Lessors.

16. If the Lessee shall fail at any time to well and truly perform the terms, covenants and conditions of this agreement in accordance with its true, intent and meaning, Lessee shall be deemed in default, and Lessors may thereupon give written notice thereof to the Lessee, and if such default is not remedied within sixty (60) days from and after the date of personal service thereof upon the Lessee, or from and after the date of forwarding such notice by registered mail to the Lessee, all of the Lessee's rights and privileges arising hereunder shall thereupon terminate, the term of the Lease and Option hereby granted shall thereupon expire and be of no further force or effect; and the Lessors may thereupon, without further notice, enter upon and take possession of said demised premises,

and the Lessee shall deliver peaceable possession thereof to the Lessors; provided, however, that in any of such eventualities, as well also upon termination of this agreement by expiration of the term, or by abandonment or surrender thereof by the Lessee, then Lessee shall have the right, for a period of sixty (60) days following such termination or abandonment within which to remove from the demised premises any and all fluorspar ores or other deposits as mentioned and referred to in the next preceding paragraph, and within which to remove any and all mining or milling machinery, equipment, materials, supplies, tools, buildings and paraphernalia whatsoever, (excepting only mine timbers, mine track and rail, air pipe and like installations beneath the surface), installed, placed or used upon, in or about the premises belonging to the Lessee, it being expressly agreed between the parties that none of said designated improvements, other than those which are hereby expressly excluded, shall be deemed fixed to the realty or become fixtures thereof; and provided further that if not so removed within the time hereinabove limited, all of said designated improvements shall thereupon be and become the property of the Lessors, without purchase or other consideration.

17. In the event that any dispute or controversial question shall arise between the Lessors and the Lessee pertaining to the fulfillment of any of the terms, covenants or conditions of this agreement, or as to the performance or manner of performance of any of the terms, conditions or covenants of this agreement, and which cannot be amicably settled by the parties hereto within thirty (30) days after receipt of written notice from one to the other than any previously proposed settlement is unsatisfactory, such dispute or controversial question shall be settled by submitting the same to arbitration. Thereupon the Lessors and Lessee shall each appoint an arbitrator, and the two arbitrators so appointed shall within twenty (20) days thereafter appoint a third arbitrator. One of the

arbitrators so appointed shall be a qualified and reputable mining engineer, conversant with the mining and processing of fluorspar ores of the type and character herein contemplated. The three arbitrators so appointed shall within thirty (30) days thereafter meet and determine such controversial question or questions, and the majority decision of said arbitrators shall be deemed as and be final and binding upon the parties hereto. Each of the respective parties shall bear the cost and expense of the arbitrator of his own selection, and shall share equally the cost and expense of the third arbitrator.

In the conduct of such arbitration the parties hereto expressly agree that any and all such controversial questions or disputes shall be determined in the manner prescribed by the Nevada Uniform Arbitration Act of February 10, 1925 (Nevada Compiled Laws 1929, Secs. 510 et seq.).

If the selection of arbitrators, or a determination by duly selected arbitrators, cannot be concluded within the above specified periods, and unless said time periods are thereupon extended by written mutual consent of the parties, then and in either of said eventualities recourse may be had by either of the parties hereto to a court of competent jurisdiction. In the event of litigation by court action, it is agreed between the parties that the prevailing party shall be entitled to recover reasonable counsel fees in such amounts as may be adjudged by the court.

18. Any and all notices required hereunder or permitted to be given by either party to the other or others, shall be considered to have been delivered at the expiration of twenty-four (24) hours following deposit in the United States mail, with registered postage thereon duly prepaid and addressed to:

(a) If to the Lessors, to:

Joseph G. Keller, Robert L. Keller and Thomas B. McDowell,
Fallon, Nevada.

(b) For the Lessee, to:

Kaiser Aluminum & Chemical Corporation
P. O. Box 391
Fallon, Nevada;

or to such other address as either party may designate to the other, in writing.

19. This agreement, and each and every clause and covenant thereof shall extend to and be binding upon the heirs, administrators, successors, representatives and assigns of the parties hereto.

IN WITNESS WHEREOF, the Lessors have hereunto signed their names, and the Lessee has caused it corporate name and seal to be hereto affixed, by its executive officer thereunto duly authorized, on the day and year in this agreement first above written.

Joseph G. Keller /s/
Joseph G. Keller

Robert L. Keller /s/
Robert L. Keller

Thomas B. McDowell /s/
Thomas B. McDowell

FIRST PARTIES, LESSORS

KAISER ALUMINUM & CHEMICAL CORPORATION

By T. J. Ready, Jr. /s/
As its Vice President

SECOND PARTY, LESSEE

A M E N D M E N T

(TO AGREEMENT OF LEASE AND OPTION)

For the same consideration expressed in that certain Agreement of Lease and Option dated January 25, 1954, executed by Joseph C. Keller, Robert L. Keller and Thomas B. McDowell, as Lessors, to Kaiser Aluminum & Chemical Corporation, as Lessee, said agreement is hereby amended in the following particulars, namely:

Paragraph 4, page 4: The words "at the aforementioned banking house," as originally written in and thereafter stricken from said agreement, are hereby reinstated, to the end that Lessee's payments of $1.50 per ton on ore production shall be made to and distributed by said banking house to the lessees.

Paragraph 10, page 7 of said agreement is hereby amended to read as follows:

"10. During the life of this agreement Lessee shall perform all such annual labor or assessment work on said premises as may be required to hold and protect the same as valid and subsisting mining claims, commencing with the next ensuing assessment year ending July 1, 1955 (unless performance thereof as to any such year or years shall be exempted by Federal law), and shall complete such annual labor requirements and file verified proof thereof with the Recorder of Lander County, Nevada, in manner prescribed by law, on or before the 30th day of June during each of said years; conditioned, however, that if at any time during the life of this agreement the Lessee shall elect to terminate its rights hereunder, as hereinafter provided in paragraph 15, and at the time of such election Lessee shall not have completed said annual labor requirements for the then current assessment year, Lessee shall give Lessors sixty (60) days' notice in writing of such intention to terminate; and conditioned further, that during said sixty (60) day period of notice Lessee shall have the continuing right to rescind and revoke its election to terminate, and to thereafter

continue in possession of the demised premises in accordance with the terms of said agreement as hereby amended, upon reimbursement to the Lessors for such expenditures, not exceeding $500.00 as to any assessment year, as shall have been necessarily made by them in the performance of annual labor requirements on said premises during such period of notice. Lessee shall mail written notice to the Lessors of the filing with said County Recorder of annual proofs of labor, together with a true copy of such verified proofs, or a true copy of any Notice of Intention to Hold which may be filed by the Lessee pursuant to Federal law exempting such annual labor requirements."

Paragraph 15, page 8 of said agreement is hereby amended to read as follows:

"Excepting only in the contingent event set forth in the within and foregoing paragraph 10 hereof, Lessee reserves the right to terminate this agreement and to surrender the demised premises at any time during the term, or of any extension thereof, upon ten (10) days' written notice to the Lessors of its intention so to do; provided, however, that Lessee shall have a period of sixty (60) days from and after the date of such notice within which to mine, extract and remove any and all fluorspar ores, or other deposits mined or developed, or then mined and extracted, or which may be then lying upon, in or about the demised premises awaiting shipment or treatment; and if not so removed all such ores or other deposits shall be and become the property of the Lessors."

All other terms, covenants and conditions of said Agreement of Lease and Option shall be and remain in full force and effect.

WITNESS, the hands of the Lessors, and the corporate name and seal of the Lessee, this 15 day of February, 1954.

KAISER ALUMINUM & CHEMICAL CORPORATION
By T. J. Ready, Jr., /s/
As its Vice President
LESSEE

Joseph G. Keller /s/
Robert L. Keller /s/
Thomas B. McDowell /s/
LESSORS

THOMAS B. McDOWELL

-to-

KAISER ALUMINUM &
CHEMICAL CORPORATION.

Filed for Record at the Request of

Walter Rowson

April 14, A.D., 1954

at 1:45 p.m. and recorded on

page 168 of Book 65 of

D E E D S

Records of LANDER COUNTY, NEVADA

Bert Acree
County Recorder

File 28973

QUITCLAIM DEED

Dated: April 2nd,1954

QUITCLAIM DEED

THIS INDENTURE, made this 2nd day of April, 1954, between THOMAS B. MC DOWELL, of the County of Churchill, State of Nevada, first party, and KAISER ALUMINUM & CHEMICAL CORPORATION, a Delaware corporation, second party, -

W I T N E S S E T H:

That said first party, for and in consideration of the sum of Ten Dollars ($10.00), lawful money of the United States of America, to him in hand paid by said second party, receipt whereof is hereby acknowledged, and other good and valuable consideration, has remised, released and forever quitclaimed, and by these presents does remise, release and forever quitclaim unto the said second party, and to its successors and assigns forever, all of said first party's right, title, estate, claim and interest whatsoever, comprising an undivided One-third (1/3) interest in and to the following described mining claims and premises, situate about four miles east of Iowa Canyon Dam, in Iowa Canyon Mining District, County of Lander, State of Nevada, to-wit:

> IOWA FLUORSPAR NO. 1, IOWA FLUORSPAR NO. 2, IOWA FLUORSPAR NO. 3, IOWA FLUORSPAR NO. 4, AND IOWA FLUORSPAR NO. 5 lode mining claims.
>
> All of said claims appearing as files numbered 28114-28117, at pages 67-69, in Book 18 of Duplicate Mining Notices, in the office of the Recorder of said Lander County, Nevada; and
>
> Together with a like undivided One-third (1/3) interest in any and all improvements upon, in or about said premises, and in and to all waters and water rights thereon or appurtenant thereto, or used in connection therewith.

TOGETHER WITH the dips, spurs and angles, and also the ores, mineral or non-mineral bearing quartz, rock and earth or other deposits therein or thereon, and the rights, privileges and franchises thereto incident; and also in and to all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and the rents, issues and profits thereof; and also all the estate, right, title, interest, property, possession, claim and demand whatsoever, as well in law as in equity, of the said first party of, in

or to the premises, and every part and parcel thereof, with the appurtenances, and together with the after-acquired title.

TO HAVE AND TO HOLD, all and singular the said undivided interest in and to the said premises, together with the appurtenances and privileges thereto incident, unto the said party of the second part, and to its successors and assigns forever.

IN WITNESS WHEREOF, said party of the first part has hereunto signed his name, on the day and year in this indenture first above written.

Thomas B. McDowell /s/
THOMAS B. McDOWELL

STATE OF NEVADA)

County of Churchill) ss
~~Washoe~~

On this 2nd day of April, 1954, before me, the undersigned personally appeared THOMAS B. McDOWELL, by me known to be the person described in and who executed the within and foregoing instrument, and acknowledged to me that he signed the same freely and voluntarily, and for the uses and purposes therein mentioned.

WITNESS my hand and official seal of office, on the day and year in this certificate first above written.

Richard Fleischmann /s/
Notary Public
Commission Expires Feb. 11, 1957
75 North Maine St.
Fallon, Nevada

DOCUMENTARY STAMPS

$1.00 10¢

EXHIBIT 3 (e)

Exhibit 3(e)

Applicant owns a one-third interest in the claims specified herein, as shown by Exhibit 3(d). This interest, together with all other properties of applicant, is subject to a Mortgage and Deed of Trust issued to secure the payment of bonds issued by the Corporation in the aggregate amount of $104,000,000 together with interest thereon and premiums, if any.

EXHIBIT 4cI

EXHIBIT 4c I

KAISER ALUMINUM & CHEMICAL CORPORATION
1924 BROADWAY
OAKLAND 12, CALIFORNIA

Please use dash where data not available.

File: 1-8-4-1

ENGINEERING REPORT NO. A

Date of Report 10-25-52

Date of Examination 10-18-52

IOWA FLUORSPAR

Name Of Property

Lander County, Nev.

1. Summary & Conclusions: Iowa Fluorspar is the center and most promising of a cluster of 3 properties 24 miles north from Austin. It is newly discovered. The only work done to date has uncovered 5' of high grade fluorspar between well defined walls. Actual outcrop and float indicate an ore possibility over a half-mile of length.

We recommend this property for immediate option.

2. Property (Claims, Status, Surface, Timber & Water Rights): One lode claim in good standing at the date of examination, with 2 additional contiguous claims in the process of being staked by the same owner. No known conflicting surface rights. Walt Whitaker, Fallon stock man, owning earth dam and ranch below prospect, probably has filed on surface water.

3. Ownership (Owner & Address, Agent & Address, Interests Held): Tom McDowell, Stillwater, Nevada. Sole owner

4. Location: Lat. N: 39°-48.3' Long. W: 116°-57.7' Elevation: 6770' State: Nevada

Township: T22N, R45E County: Lander Mining District: Unknown

Timber: Sparse juniper Water: Iowa Creek About 20 gpm on 10-18-52 Power: None

Nearest Town, Climate, Topography: Austin is 4 36 miles from property: 25 miles over paved hwys 50 & 8-A, 5 miles over rocked county road, and 6 miles over unimproved dirt road. Immediate topography is open and rolling, with not over 100' of relief. Distance from Fallon: 112 m. east over U.S. 50, ~~24~~ 26.2 m. north on 8-A, then 11 m. east to property. 147 Mi.

5. Accessibility & Transportation

6. History (Exploration Campaigns, Options, Date): Date Located: 8-5-52 Date Recorded: 8-52 in Austin, Lander Co., Nev. Location work not recorded at time of examination.

Previous Names: None

7. Production: None

8. Exploration & Development (Adits, Shafts, Levels, Elevations)

Drifting	Cross Cutting	Sinking	Raising	Total	D. Drilling	Trenching
0	0	4'	0	4'	0	0

Only one prospect pit, 4'x4'x4', dug to date of examination.

9. **Geology**
Areal.
Local:
Type of Deposit
Strikes & Dips
Shoots
Minerals

The country rock is andesite. There are two vein systems, striking N60° E and N13° W. The vein filling is predominantly porcelain-like quartz. Fluorspar is present in minor quantities in most of the veins. In one vein, Iowa Fluorspar-in one outcropping shoot, it predominates to the almost complete exclusion of quartz.

The Iowa vein strikes N 15° W, and appears to dip steeply to the east. Minerals observed are green fluorite, quartz, and minor calcite. Fluorite float predominently white

10. **Ore**
Lengths
Widths
Tonnage

Vein traceable from actual outcrops and float for 1,900' along the strike. Maximum observed vein width 7'.

Sampling Method

Sample taken with hand pick from 5' width of vein exposed in pit.

Assay

No return. 68% CaF_2 20% SiO_2

Amenability To Treatment

The ore exposed in the pit appears to be of acid grade, or nearly so. Lower grades should be readily amenable to treatment by HMS or flotation.

11. **Prospecting Method & Estimated Cost**
Trenching
Diamond Drilling
Drifting
Sinking

Strip vein across and along strike with bulldozer. Then diamond drill from 5 set-ups at 40° and 60° angles. The first hole should determine the dip well enough to serve as a guide for locating the holes to follow.

Bulldozer stripping - 2000 cu yds			~~$1,500.00~~ $2,000
3,000' 3600	@ $5.00 Est.	$16,000	15,000.00
			~~$16,500.00~~

The above figure does not include our own staff cost or professional services, or assaying

12. **Mining & Milling Methods & Costs**

Mining would have to be by shaft because of the low relief. Mining and milling costs are not discussed.

13. **Equipment & Buildings**
Housing

None.

14. **Financial & Economic Considerations**
Capital, Deals
Markets, Costs, & Profits

Owner has set no price on the property. If this property is optioned and developed into a mine, the nearby Hilltop and Ell See properties, covered by individual reports should be given consideration.

Appendix - References

See Roberts Mountains, USGS Quadrangle

Respectfully J.K. Brooke Lee R. Stoiser

J.K.Brooke & Lee R.Stoiser

EXHIBIT 4cII

EXHIBIT 4cIII

EXHIBIT 4 C III

IRA B. JORALEMON
318 MONTGOMERY STREET
SAN FRANCISCO 4

RECEIVED
FEB 15 1954
K. A. & C. C.
EXPLORATION
DEPT.

NOTES ON
IOWA CANYON FLUORSPAR PROSPECT
LANDER COUNTY, NEVADA

By Ira B. Joralemon February 12, 1954

The following notes are based on a brief examination of the Iowa Canyon fluorspar deposit, with Messrs. Hassan, Fowler, Muller and West on February 10, 1954. Data on the claims, location and topography have been presented in preliminary reports by the Kaiser staff, and are not repeated here. The map made by Messrs. Muller and West was most useful. The undersigned agrees with their conclusion that the prospect is worth further development.

The fluorspar showings at Iowa Canyon occur in a gently sloping area 2000 feet long from north to south by a maximum of at least 250 feet in width. Practically all the surface is covered by soil that is probably seldom more than 10 feet thick. Geology must be approximated from fragments in the soil.

The rock in this area consists of andesitic material. In the central part there has been much silicification, kaolinization and bleaching of the andesite. At both ends this altered material gives place to fresh green andesite. The better fluorspar showings are in the altered rock.

Mineralization is in north-south to northeast veins, generally 1 to 5 ft. wide, dipping from 80 to 40 degrees easterly. The east or hanging wall is often a lean quartz rib with fluorspar ore below it. Fragments of float in the soil and occasional small silicious ribs or crests suggest a series of branching veins, diverging at acute angles to the south and then turning into parallel veins. Up to 3 or 4 veins in a width of 250 feet are indicated. Some of the parallel veins are due to duplication by faulting. Exposures are so scanty that it is impossible to tell how continuous the different strands or branches may be. The amount of fluorspar float suggests, but does not prove, that the better stretches are less than 200 feet long, and that they are separated by much longer barren stretches. The value of the property depends on whether or not this is the case.

The principal development is a 45 foot incline to the southeast on one of the best fluorspar showings, with 40 feet of

drifting and 15 feet of crosscutting into the hanging wall from the bottom of the incline. The 40 degree incline and the drift, with a small stope, are in excellent fluorspar ore 3 to 5 ft. thick. A large fault that strikes northeast and dips 65 degrees northwest cuts off the ore in the bottom of the incline and in the end of the southeast drift. The crosscut shows that the fault zone is at least 15 feet wide, with the southeast block moved upward. A small outcrop of quartz and spar and much fluorspar float 90 feet up the hill southeast of the incline probably represent the faulted continuation of the vein, with a displacement of 80 to 100 feet that brings the vein up to the erosion surface and so duplicates it.

In the southwest drift the vein has pinched to a foot or two in width near the point where it is cut off by the Fault. In the northeast end of the bottom of the incline the vein has split into two 2 foot strands separated by barren andesite. The mineable ore may therefore be only 40 feet long. From these small workings 250 to 300 tons of ore averaging 60% CaF_2 have been shipped to the Kaiser mill at Fallon, and about 100 tons of lean material, much of it from the crosscut, remain on the dump.

The only other development of note consists of two shallow prospect pits, one about 1000 feet north and one a thousand feet south of the main incline. Both of these pits developed narrow, 1 to 2 foot spar and quartz veins in green andesite. The veins are too small to mine at a profit.

Any value the Iowa Canyon fluorspar property may have depends on the continuity of veins under the thin soil cover. This can be tested at small expense by a series of bulldozer trenches along the most promising showings. The best float, as well as the better small outcrops are in the 600 feet north of the main incline. If trenching proves that orebodies here are of commercial size and grade, other parts of the vein system can be developed later, either by bulldozer cut or by diamond drill holes inclined down to the west.

In order to prove as cheaply as possible whether or not orebodies are large enough to be of interest, the following bulldozer trenching is recommended:

1. Trench along the outcrop northeast and then north of the main incline for 150 feet or more, to or beyond Survey Point 2.

2. Develop the probable faulted section of the vein about 90 ft. southeast of the collar of the main incline. If the small siliceous crest at this point is not in place it may be necessary to run a short crosscut trench to locate the vein before trenching along it.

3. Run a short crosscut trench to expose the spar that seems almost in place 320 ft. due north of the main incline, and trench along the vein in both directions. The main vein from this point probably runs South 20 degrees West. A branch may connect with the vein of the main incline.

4. If the above work is promising, run a short crosscut trench to locate the source of the good float at coordinates 10,730 N, 10,000 E, and trench along this vein to the probable intersection 100 ft. south.

The above will include about 600 ft. of trenching, with a probable average depth of less than 5 feet. It should be possible to complete it with a small bulldozer in a week or two. It may be necessary to clean up the bottom of the trenches in places by hand work, to better expose the vein.

If the trenching is encouraging, the next step in development will be to run short inclined diamond drill holes from the east to cut the veins at a depth of 50 to 100 feet, at horizontal intervals of about 100 feet.

If the trenching shows that ore shoots are very short, no further work will be justified.

An expenditure of $5,000 to $10,000 should prove either that the Iowa Fluorspar Prospect is worthless, or that it may yield many tens of thousands of tons of good fluorspar ore.

Ira B Joralemon

San Francisco, California
February 12, 1954

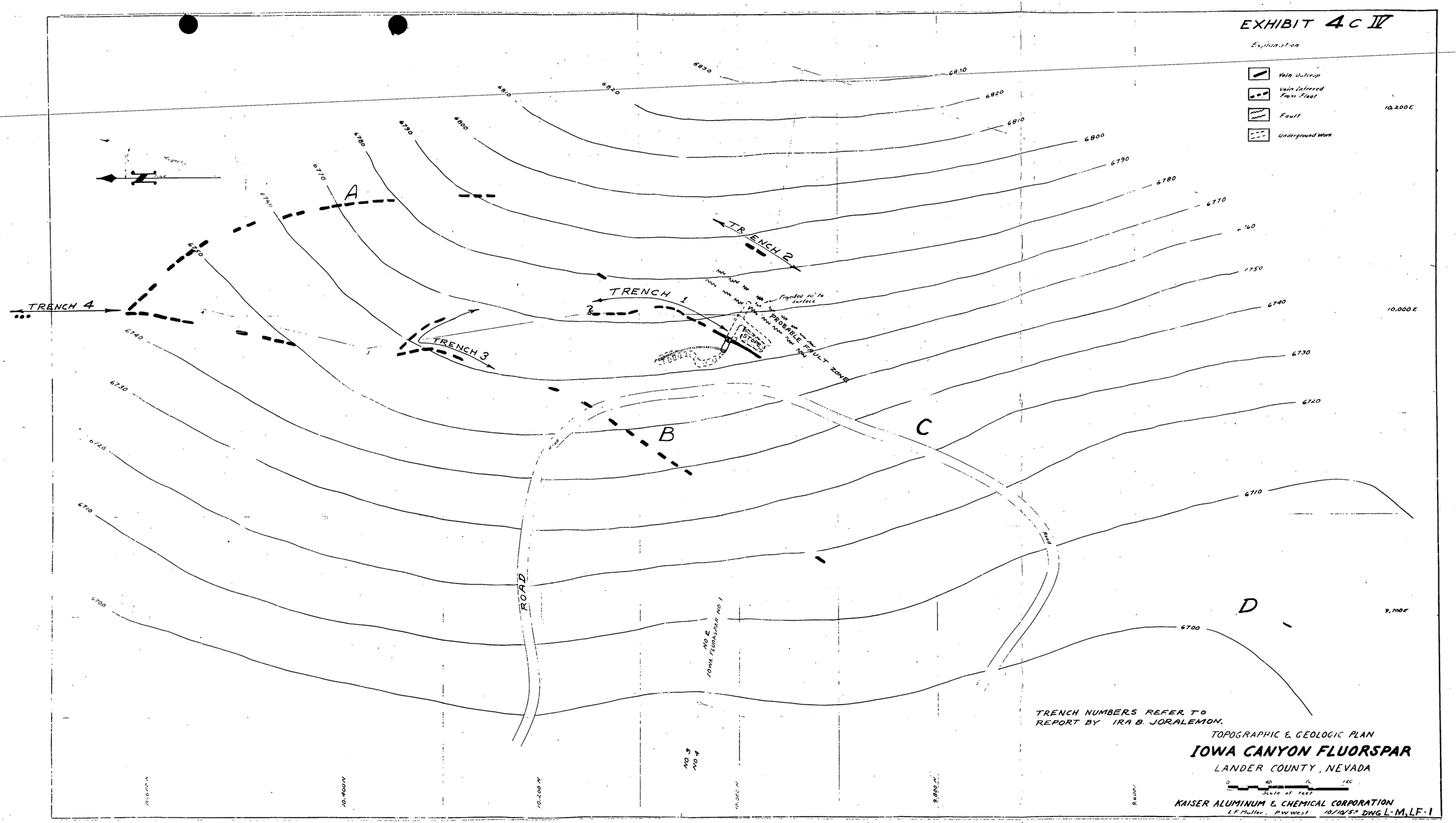
EXHIBIT 4c IV
Explanation
Vein Outcrop
Vein Inferred From Float
Fault
Underground Work
TRENCH 1
TRENCH 2
TRENCH 3
TRENCH 4
A
B
C
D
PROBABLE FAULT ZONE
projected 30' to surface
STORE
ROAD
Road
NO. 2 IOWA FLUORSPAR NO. 1
NO. 3
NO. 4
6830
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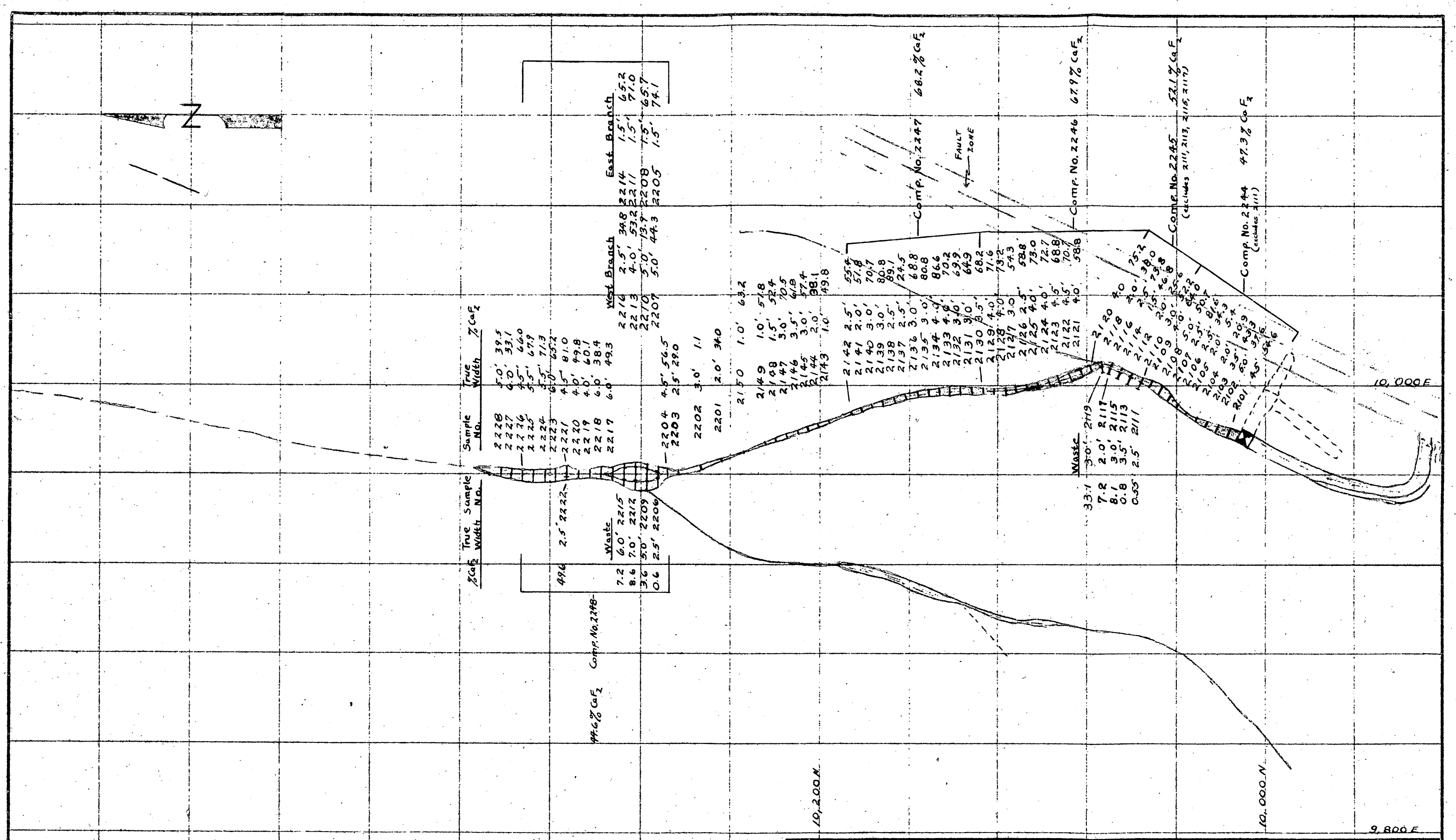
9,600 N
TRENCH NUMBERS REFER TO REPORT BY IRA B. JORALEMON.
TOPOGRAPHIC & GEOLOGIC PLAN
IOWA CANYON FLUORSPAR
LANDER COUNTY, NEVADA
0 40 80 120
Scale of feet
KAISER ALUMINUM & CHEMICAL CORPORATION
L.F. Muller, P.W. West 10/10/55 DWG L-M, LF-1



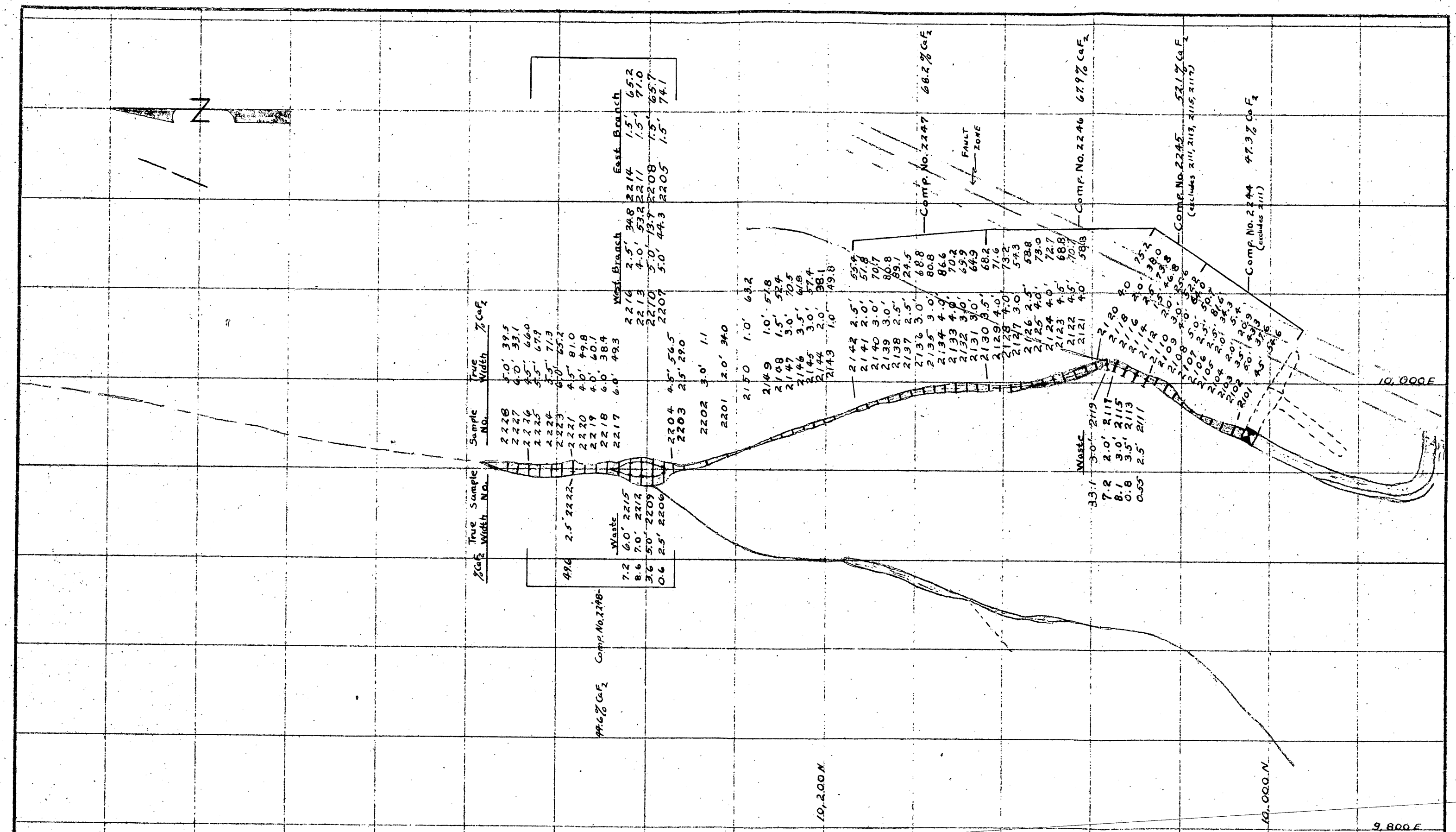
KAISER ALUMINUM & CHEM. CORP.
1924 BROADWAY, OAKLAND 12, CALIF.

EXPLORATION DEPT. LANDER CO, NEV.
COUNTRY

PROPERTY: ASSAY MAP
IOWA CANYON FLUORSPAR

SCALE: 1" = 40' BY L.R. STOISER DATE 11/24/54 DWG. #29-S,LR-2

THE DESIGN, PROCESS, OR IDEA HERE REPRESENTED IS OFFERED ONLY FOR YOUR CONSIDERATION. KAISER ALUMINUM & CHEMICAL CORPORATION MAKES NO WARRANTY OR ASSURANCE THAT IT IS SUITABLE FOR THE PURPOSES INTENDED, AND ASSUMES NO RESPONSIBILITY OR LIABILITY OF ANY KIND FOR ANY RESULT OF ITS USE BY YOU, INCLUDING INFRINGEMENT OF PATENT RIGHTS.



KAISER ALUMINUM & CHEM. CORP.
1924 BROADWAY, OAKLAND 12, CALIF.

EXPLORATION DEPT. LANDER CO, NEV.
COUNTRY

PROPERTY: ASSAY MAP
IOWA CANYON FLUORSPAR

SCALE: 1" = 40' . BY: L.R. STOISER DATE 11/29/54 DWG. #2S—S,LR-2

THE DESIGN, PROCESS, OR IDEA HERE REPRESENTED IS OFFERED ONLY FOR YOUR CONSIDERATION. KAISER ALUMINUM & CHEMICAL CORPORATION MAKES NO WARRANTY OR ASSURANCE THAT IT IS SUITABLE FOR THE PURPOSES INTENDED AND ASSUMES NO RESPONSIBILITY OR LIABILITY OF ANY KIND FOR ANY RESULT OF ITS USE BY YOU, INCLUDING INFRINGEMENT OF PATENT RIGHTS.

EXHIBIT 4cIV

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

Project Summary Report

By: James Hopkins August 11, 1955

1. Docket No. DMEA-3398 - Fluorspar
Contract No. Idm-E727
Iowa Canyon Fluorspar Property
Lander County, Nevada

Operator: Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

Operator's Property Rights: Owner 1/3 interest and Lessee 2/3 interest in 5 mining claims
Iowa Canyon Fluorspar Nos. 1 to 5.

2. Contract: dated October 13, 1955
(a) Work authorized
Bulldozing 800 feet of trench along outcrop
Estimated cost $5,020.00
(b) Amendments: none
(c) Work completed
Bulldozing trench $2,198.78

Work began on October 29, 1954.
Work completed on November 17, 1954.
Ore reserves:

DMEA estimate	Main Vein	S.W. Vein
Measured Ore	618 tons	-
Indicated	897 "	-
Inferred	8,438 "	1,250 tons
Totals	9,947 "	1,250 tons

Operator's estimate		
Measured	350 tons	-
Indicated	875 "	-
Inferred	9,375 "	1,670 tons
Totals	10,600 "	1,670 "

Grade - 56% CaF_2

About 300 tons of 60% CaF_2 had been mined and shipped prior to the project work.

3. Audit: Report of Review dated February 8, 1955

Total cost as billed by Operator	$2,198.78
Exceptions	None
Total accepted cost	$2,198.78
Government participation	$1,099.39

4. Certification of discovery: issued April 15, 1955

5. Comments:

The work was conducted in a very efficient manner.
Engineering was good and reports excellent.

Geological Criteria:

A narrow quartz-fluorspar vein in volcanic rocks was exposed over a distance of several hundred feet.

Geological Criteria upon which work was based:

Fluorite occurs as vein filling and is commonly, but not everywhere, between two ribs of massive or crystalline vein quartz.

The vein filling thickness reaches 6 feet in some instances and offered promise of developing into large and important ore shoots.

Geological Criteria developed during the project:

1. The mineralized zone was found to extend a total distance of 2,000 feet.
2. Structural control of the veins was provided by pre-mineral fracturing of the andesite.
3. The veins range from a few inches to 6 feet in width. The shaft vein averages 3.6 feet for 345 north of shaft and 3.5 feet south of shaft.
4. The east-dipping vein is terminated by the west dipping fault zone some 35 feet down the dip of the vein.
5. Post-mineral movements in the area are shown by locally sheared veins and west dipping fault which terminates the veins in the underground workings.

Future possibilities:

A small body of fluorspar has been discovered by the project work, but no further work is warranted on the property with Government funds.

Recommendations:

The Field Team recommends that the DMEA certify the project as being successful.

The Nonmetallic Minerals Division of DMEA concur in the recommendation.

The Commodity Divisions of the Bureau of Mines and Geological Survey also concur in the Field Team's recommendation.

James Hopkins; Mining Engineer

KAISER ALUMINUM

KAISER ALUMINUM & CHEMICAL CORPORATION

RECEIVED		
DATE		CODE
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		220

October 29, 1964

Mr. Joseph G. Keller
Mr. Robert L. Keller
FALLON, Nevada

Gentlemen:

RE: Iowa Fluorspar Claims

Enclosed is a copy of a letter dated October 13, 1964 from the Office of Minerals Exploration, U.S. Department of the Interior. This letter informs us that the Government has no further interest in the property or in any future production therefrom. It goes on to point out, however, that the contract requires the retention for various periods of certain records.

As you will note from Article 7 of the original Exploration Contract, it is recorded that 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 such records 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.

Under the provisions of our Letter Agreement dated June 23, 1955, you have assumed all of our obligations under Contract Idm-E727 dated October 13, 1954, including all obligations to report and pay royalties. Consequently, we are sending this on to you merely for your information.

Very truly yours,

James J. Durney
Attorney

JJD:it

encl.

Idm-E 727

c.c. Mr. W. R. Griswold, Chief
Division of Minerals
U. S. Department of the Interior
Washington 25, D.C.

DMEA 3398

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
10/13	Fabian	800
	Selfridge	120
12/12	Johnson	110
7	[illegible]	100
		220

OCT 1 3 1964

Messrs. Robert L. and
Joseph G. Keller
Fallon, Nevada, 89406

Re: DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract Idm-E727

Gentlemen:

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

This correspondence relates to the undated Owner's Consent to Lien executed by you under the Defense Minerals Exploration Administration program.

Sincerely yours,

George Fumich, Jr.

Acting Director

Enclosure

MMerrithew/mm (10/13/64)
cc: Director's Reading File
Region II
Docket
Code 120M

23263

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

June 25, 1964

REGISTERED MAIL
RETURN RECEIPT REQUESTED

Re: DMEA-3398 (Fluorspar)
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-E727

Messrs. Robert L. Keller
and Joseph G. Keller
Fallon, Nevada

Gentlemen:

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

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

Sincerely yours,

W. R. Griswold, Chief
Division of Minerals

OFFICIAL FILE COPY
O. M. E
RECEIVED JUL 20 1964

DATE	INITIALS	CODE
7/20		800
		100
7/21		~~110~~
		~~120~~
7/21		11

Thermofax copy to R. H. 7/21/64

MME Form 63
Revised 3-62

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since February 19, 1963, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☐

This Property Has Non Ben Leased to Kaisers For about Seven Years. ?

2. Since February 19, 1963, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

	Quantity	Value

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

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

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

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

Disposition of Material	Quantity	Value

ubmitted by:

Name L. C. Keller Title Porter

Address Vc-S. R. Fallon 894 26 Date July 14, 1964

4511

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Deliver *ONLY* to addressee

☐ Show address where delivered

(Additional charges required for these services)

RETURN RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE *(must always be filled in)*

Mr. Robert Cullen

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED	ADDRESS WHERE DELIVERED *(only if requested in item #1)*
JUN 30 1984	655 West 5th St Fallon Nevada

C55—16—71548-4 GPO

3398

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300

POSTMARK OF DELIVERING OFFICE

INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moisten gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

RETURN TO

REGISTERED NO.	NAME OF SENDER
	Office of Minerals Exploration
CERTIFIED NO.	STREET AND NO. OR P. O. BOX
	Department of the Interior
INSURED NO.	CITY, ZONE AND STATE
	Washington, D. C., 20240

POD Form 3811 Jan. 1958

C55—16—71548·4

DMEA 3398

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

June 25, 1964

REGISTERED MAIL
RETURN RECEIPT REQUESTED

Re: DMBA-3398 (Fluorspar)
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Ldm-8727

Messrs. Robert L. Keller
and Joseph G. Keller
Fallon, Nevada

Gentlemen:

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

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

Sincerely yours,

W. R. Griswold

W. R. Griswold, Chief
Division of Minerals

MME Form 63
Revised 3-62

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since February 19, 1963 , has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☐

2. Since February 19, 1963 , has there been any production from the land subject to the contract? Yes ☐ No ☐

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

	Quantity	Value
_____	_____	_____
_____	_____	_____

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

Type	Quantity	Estimated Grade	Location
Ore	_____ Tons	_____	_____
Concentrates	_____ Tons	_____	_____
Other	_____ Tons	_____	_____

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

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

Disposition of Material	Quantity	Value
_____	_____	_____

Submitted by:

Name _____ Title _____

Address _____ Date _____

4511

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

April 15, 1964

Re: DMEA-3390 (Fluorspar)
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-8727

Messrs. Robert L. Keller
and Joseph G. Keller
Fallon, Nevada

Gentlemen:

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

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

Sincerely yours,

W. R. Griswold
mm

W. R. Griswold, Chief
Division of Minerals

MME Form 63
Revised 3-62

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since February 19, 1969, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☐

2. Since February 19, 1969, has there been any production from the land subject to the contract? Yes ☐ No ☐

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

	Quantity	Value
_____	_____	_____
_____	_____	_____

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

Type	Quantity	Estimated Grade	Location
Ore	_____ Tons	_____	_____
Concentrates	_____ Tons	_____	_____
Other	_____ Tons	_____	_____

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

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

Disposition of Material	Quantity	Value
_____	_____	_____

Submitted by:

Name _____ Title _____

Address _____ Date _____

4511

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
555 Battery Street
San Francisco 11, California

RECEIVED MAR 14 1963

FILE COPY

		220

March 11, 1963

Memorandum

To: Fiscal Section, Division of Administrative Services, Office of the Secretary, Department of the Interior, Washington, D. C.

From: Acting Field Officer, OME, Region II

Subject: DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-E727

Enclosed is the original of a Report of Royalty covering the subject contract. This office concurs in the facts as stated in the Report of Royalty Review.

PAUL V. FILLO

Paul V. Fillo

Enclosurer

cc:
Chief, Division of Field Operations, OME, Washington, D. C.
Contract Administration and Audit Division, OME, Washington, D. C.

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
		220

FEB 2 6 1963

Memorandum

To: Acting Field Officer, Region II

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

Subject: DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-E727

The original and one copy of a Report of Royalty Review covering the subject contract are enclosed. If you concur in the facts stated therein, please make the following distribution:

(a) Original to the Fiscal Section, Division of Administrative Services, Office of the Secretary, U. S. Department of the Interior, Washington 25, D. C.; and

(b) One copy for your files.

This Report of Royalty Review is made for record purposes only; therefore, no copy for the Operator is provided.

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

Enclosures

EDTalbert/ama 2-26-63

cc:
Docket
Director's Reading File
CA & A Division
Fiscal Section

43683

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
10/17	Murphy	500
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
10/17	Talbot	800
10/17	Selfridge	920
10/17	Johnson	110
10-17	Fumich	100
		220

OCT 17 1962

Kaiser Aluminum & Chemical Corporation
Kaiser Center
300 Lakeside Drive
Oakland 12, California

Attention: Mr. Ward B. Saunders, Jr., Assistant Counsel

Re: DMEA 3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract Idm-E727

Gentlemen:

In a letter dated October 12, 1962, Mr. Saunders stated that the "Iowa Fluorspar" claims which are listed in the referenced contract have been transferred to Mr. Joseph G. Keller and Mr. Robert L. Keller of Fallon, Nevada, who assumed all of the corporation's obligations under the contract.

We wish to advise you that under the terms of the subject contract and the certification issued April 15, 1955, we must hold Kaiser Aluminum & Chemical Corporation as surety for any royalty payable on production from the Iowa Fluorspar claims Nos. 1 through 5 listed in the referenced contract.

Sincerely yours,

George Fumich, Jr.

Director

FMMurphy/mm
10-17-62
cc: Director's reading file
Region II (2)
CA & A Div.
Docket
Code 500

43683

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Deliver *ONLY* to addressee

☐ Show address where delivered

(Additional charges required for these services)

RETURN RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE *(must always be filled in)*

Joseph G Heller

3398

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED	ADDRESS WHERE DELIVERED *(only if requested in item #1)*
FEB 19 1988	

C55—16—71548-4 GPO

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300

POSTMARK OF DELIVERING OFFICE

INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moisten gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

RETURN TO

REGISTERED NO.	NAME OF SENDER
598497	MINERALS EXPLORATION
CERTIFIED NO.	STREET AND NO. OR P. O. BOX
	DEPT. INTERIOR
INSURED NO.	CITY, ZONE AND STATE
	WASHINGTON 25, D.C.

POD Form 3811 Jan. 1958

C55—16—71548-4

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

Transfer
$20

February 6, 1960

Re: [illegible] (Thompson)
Exploration Agreement
[illegible] Corporation
[illegible] Thompson
Property
[illegible] County, Nevada
Contract [illegible]

REGISTERED MAIL
RETURN RECEIPT REQUESTED

Messrs. Robert L. Keller & Joseph C. Keller

Keller, Nevada

Gentlemen:

OFFICIAL FILE COPY
O. M. E.

[illegible] 3

After the completion of the approved exploration [illegible] under the contract identified above, we [illegible] to be informed about [illegible] the status of the property and production [illegible] during the period of royalty obligation.

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

Sincerely yours,

W. E. Grunewald

W. E. Grunewald, Chief
Division of Minerals

[illegible] Aluminum & Chemical Corp. [illegible] of the property [illegible]

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

February 6, 1963

Re: DMEA-3398 (Fluorspar)
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-E727

REGISTERED MAIL
RETURN RECEIPT REQUESTED

Messrs. Robert L. Keller & Joseph G. Keller

Fallon, Nevada

OFFICIAL FILE COPY
O. M. E
RECEIVED FEB 25 1963

DATE	INITIALS	CODE
2/26		800
		120
		100
		110
2/28		500
		220

Gentlemen:

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

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

Sincerely yours,

W. R. Griswold

W. R. Griswold, Chief
Division of Minerals

Kaiser Aluminum & Chemical Corporation, Gave up there lease on this property in 1957

MME Form 63
Revised 3-62

DMEA-3398
Idm-E727

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since January 1, 1959 , has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☒

2. Since January 1, 1959 , has there been any production from the land subject to the contract? Yes ☐ No ☒

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

	Quantity	Value

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

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

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

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

Disposition of Material	Quantity	Value

Submitted by:

Name Joseph C. Keller Title partner of Robert L. Keller

Address West Stan Route Date Feb 19, 1963
Fallon, Nevada

4511

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

September 21, 1962

Re: DMSA-3398 (Fluorspar)
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-8727

Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

Gentlemen:

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

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

Copies of this form were forwarded to you on April 6, 1962, but were not returned. Will you kindly complete the forms and return them as promptly as possible.

Sincerely yours,

W. R. Griswold

W. R. Griswold, Chief
Division of Minerals

MME Form 63
Revised 3-62

DMEA-3398
Idm-8727

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since **January 1, 1959**, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☐

2. Since **January 1, 1959**, has there been any production from the land subject to the contract? Yes ☐ No ☐

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

	Quantity	Value
_____	_____	_____
_____	_____	_____

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

Type	Quantity		Estimated Grade	Location
Ore	_____	Tons	_____	_____
Concentrates	_____	Tons	_____	_____
Other	_____	Tons	_____	_____

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

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

Disposition of Material	Quantity	Value
_____	_____	_____

Submitted by:

Name _____ Title _____

Address _____ Date _____

4511

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

APR 6 1962

Re: [illegible] (Fluorspar)
Kaiser Aluminum & Chemical Corp.
Iron Canyon Fluorspar Property
Lander County, Nevada
Contract Ker-[illegible]

Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

Gentlemen:

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

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

Sincerely yours,

Willis R. Grimold, Chief
Division of Minerals

MME Form 63
Revised 3-62

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since January 1, 1959, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☐

2. Since January 1, 1959, has there been any production from the land subject to the contract? Yes ☐ No ☐

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

	Quantity	Value
_____	_____	_____
_____	_____	_____

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

Type	Quantity		Estimated Grade	Location
Ore	_____	Tons	_____	_____
Concentrates	_____	Tons	_____	_____
Other	_____	Tons	_____	_____

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

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

Disposition of Material	Quantity	Value
_____	_____	_____

Submitted by:

Name _____ Title _____

Address _____ Date _____

4511

Re: DMEC-3398

Opr. is "surety" under contract. I suggest Opr. be so advised.

Talbot
10/15/62

agreed

KAISER ALUMINUM

KAISER ALUMINUM & CHEMICAL CORPORATION

KAISER CENTER, 300 LAKESIDE DRIVE, OAKLAND 12, CALIFORNIA

OFFICIAL FILE COPY
O. M. E
RECEIVED OCT 15 1962

DATE	INITIALS	CODE
10/15	[illegible]	800
10/15	[illegible]	100
10/15	[illegible]	~~110~~
10/15	Murphy	500
		220

October 12, 1962

Office of Minerals Exploration
Department of Interior
Washington 25, D. C.

Attention: Mr. W. R. Griswold, Chief
Division of Minerals

DMEA-3398 (Fluorospar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar Property
Lander County, Nevada
Contract Idm-E 727

Gentlemen:

Your letter of September 21, 1962 requesting information on the subject property has been referred to me for reply.

Our interest in the "Iowa Fluorspar" claims was transferred to Mr. Joseph G. Keller and Mr. Robert L. Keller of Fallon, Nevada. Under the purchase agreement, the transferees expressly assumed all of our obligations to the United States under the subject contract.

We are forwarding all three copies of your letter to the Messrs. Keller.

Very truly yours,

Ward B. Saunders, Jr.

Ward B. Saunders, Jr.
Assistant Counsel

WBS:s
cc: Mr. Joseph G. Keller
cc: Mr. Robert L. Keller
Fallon, Nevada

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

555 Battery Street
San Francisco 11, California

OFFICIAL FILE COPY
O. M. E
RECEIVED APR 2 1962
DATE

March 27, 1962

4/4 Murphy

800
500
220

Memorandum

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

From: Acting Field Officer, OME, Region II

Subject: Docket DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract Idm-E727

In reference to your memorandum of March 16, 1962, our files disclose no subsequent examinations or information as to the status of the subject contract.

Paul V. Fillo
Paul V. Fillo

Send form 63
Pay.

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code

MAR 1 6 1962

Memorandum

To: Acting Field Officer, Region II

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

Subject: Docket DMEA-3398 (fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract Idn-E727

The Washington office files on the subject contract indicate that the last examination of the property was on December 31, 1957, and also that the property was reported inactive through December 31, 1958. Your advice as to whether the regional files disclose subsequent examinations or information as to status will be appreciated.

In a semi-annual report for the period of January 1 to June 30, 1956, the statement is made that the property was "reported" to be released to the owners who planned on making shipments. It is assumed that no shipments were ever made, but the question arises as to whether the Operator's termination of interest was confirmed.

EDTalbert/cac
March 16, 1962

cc: Director's reading file
Contract Admin. & Audit Div.

43683

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
5/21	Alley	800
5/21	C	220
5/25	L&H	600
		VVO

MAY 21 1959

Memorandum

To: Mr. George Mavor, OME Auditor

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

Subject: Docket No. DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Contract No. Idm-E727

Your Report of Royalty Review on the above-cited contract is approved and normal distribution is authorized.

AMAlley/ama
May 21, 1959

Copy to: Docket
Director's Reading File
CA & A Division

43683

Semi-Annual Report
on
Certified projects for period: 7/1/58-12/31/58
Inactive since last report

Commodity	Docket No.	Contract No.	Operator
Copper	DMA-67X	Idm-E 153	Marshall Mining Company
Corundum-Andalusite	DMEA-2512	Idm-E 457	Corunda Corporation
Fluorspar	DMEA-3398	Idm-E 727	Kaiser Aluminum & Chem. Co.
Iron	DMEA-2853	Idm-E 666	Bessemer Iron Corporation
Lead-Zinc-Copper	DMEA-2257	Idm-E 442	Walker Corporation
Lead-Zinc	DMEA-420X	Idm-E 10	Bristol Silver Mines Co.
Lead-Zinc	DMEA-2309	Idm-E 295	Comet Mines, Inc.
Lead-Zinc	DMEA-1948	Idm-E 302	United Minerals Corporation
Lead-Zinc	DMEA-1949	Idm-E 322	United Minerals Corporation
Lead-Zinc	DMA-66X	Idm-E 404	Ely Valley Mines Company
Lead-Zinc	DMEA-2482	Idm-E 409	Raymond Combined Mines Co.
Lead-Zinc	DMEA-3428	Idm-E 774	Mt. Wheeler Mines, Inc.
Manganese	DMEA-3478	Idm-E 793	Petersen, Lowe, Bush, Campbell
Manganese	DMEA-3954	Idm-E911	Owl Springs Company
Mercury	DMEA-3841	Idm-E 766	Oceanic - leased to M.J. Biaggini
Tungsten	DMA-229X	Idm-E 136	Cherry Creek Tungsten Mining Co. - sold to: American Pipe Co.
Tungsten	DMEA-2082	Idm-E 248	Mt. Wheeler Mines, Inc.
Tungsten	DMA-861X	Idm-E 323	Northfield Mines, Inc.
Tungsten	DMEA-2688	Idm-E 481	M.L.A. Mines Company
Tungsten	DMEA-2801	Idm-E 505	Metallics Unlimited
Tungsten	DMEA-2925	Idm-E 521	Fred M. Andersen, et al. Property - sold to: Robt. N. Avery.
Tungsten	DMEA-2820	Idm-E 556	Garnet Tungsten Mining Co. - leased to: Union Carbide Nuclear Co. (Knowles Bros., Assignee)
Tungsten	DMEA-3273	Idm-E 680	Lory M. Free, dba Y-Z Mining Co.
Tungsten	DMEA-3253	Idm-E681	Incline Mining Company
Tungsten	DMEA-3194	Idm-E 713	William C. Morrison & Sons - Restaked by: S. P. Merrill.

Inactive certified projects since last report, continued:

Commodity	Docket No.	Contract No.	Operator
Tungsten	DMEA-3347	Idm-E 758	Idaho Maryland Mines Corp.
Tungsten	DMEA-3512	Idm-E 775	Wah Chang Mining Corporation
Tungsten	DMEA-3609	Idm-E 787	T.N.T., Inc.
Tungsten	DMEA-3637	Idm-E 788	El Capitan Mining Company
Tungsten	DMEA-3641	Idm-E 853	Holmar Mining & Milling Co., Inc.
Tungsten	DMEA-3782	Idm-E 871	J. Nevinck and J.F. Barnes - (Apollo Mines, Inc., Assignee) - reverted back to owners.
Tungsten	DMEA-3659	Idm-E 905	Obelisk Mining Company
Tungsten	DMEA-4165	Idm-E 961	Kennametal, Inc., Assignee
Tungsten	DMEA-4240	Idm-E 979	Cordero Mining Co., Assignee
Uranium	DMEA-4191	Idm-E 994	Coco Uranium Company
Zinc-Copper	DMEA-1219X	Idm-E 187	The Gilliden Company
Zinc-Copper	DMEA-2495	Idm-E 331	Copper Hill Mine Venture

SEMI-ANNUAL REPORTS OF CERTIFIED PROJECTS

Reporting Period 7/1/57-12/31/57 Date of Examination 12/31/57

Operator Kaiser Aluminum & Chemical Corporation

Mine Name Iowa Canyon Fluorspar

County and State Lander County, Nevada

Docket Number and Commodity DMEA-3398 (Fluorspar)

Contract Number Idm-E 727

Date of Contract

Date of Certification

Expiration Date of Royalty Payments

NO CHANGE

Total Amount of Contract

Total Expenditures under Contract

Amount of Government Participation at %

2/4 C 220

Royalty Payments this Period

Previous Royalty Payments

NO CHANGE

Total Royalty Payments to Date

Percent Government Participation Repaid

Royalty Due on Production to Date

Royalty Remarks:

DMEA-3398 Idm-E 727

	Tons	Analysis
Original Estimate of DMEA Reserves (Field Team Final Report) Mines [ ] Survey [ ] Joint [ ]	______	______
Revised Estimate of DMEA Reserves (Field Team) Mines [ ] Survey [ ] Joint [ ]	______ NO CHANGE	______
Increase of Reserves by work performed subsequent to DMEA project work	______	______
Production DMEA ore (This Period)	______	______
(Previous)	______	______
(To date)	______	______
Operator's ore found subsequent to DMEA work (This period)	______	______
(Previous)	______ NO CHANGE	______
(To date)	______	______

Percent Revised Reserves mined ______

Investment Data

Shafts			Winzes			Drifts & Crosscuts		
Size	Feet	Cost	Size	Feet	Cost	Size	Feet	Cost

NO CHANGE

Raises			Drilling			Rehabilitation	
Size	Feet	Cost	Type & Size	Feet	Cost	Description	Cost

Facilities

Mine Plant		Mill		Roads	
Description	Cost	Description	Cost	Description	Cost

Remarks

NO CHANGE

Signed [signature] (Engineer)
FOR: Henry W. Jones

SEMI-ANNUAL REPORTS OF CERTIFIED PROJECTS

Reporting Period 1/1/57 - 6/30/57 Date of Examination 6/30/57

Operator Kaiser Aluminum & Chemical Corporation

Mine Name Iowa Canyon Fluorspar

County and State Lander County, Nevada

Docket Number and Commodity DMEA-3398 (Fluorspar)

Contract Number Idm-E 727

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 5 1957

DATE	INITIALS	CODE
8/8	[illegible]	100

Date of Contract 10/13/54

Date of Certification 4/15/55

Expiration Date of Royalty Payments 10/13/64

Total Amount of Contract $5,020.00

Total Expenditures under Contract $2,198.78

Amount of Government Participation at 50 % $1,099.39

Royalty Payments this Period None

Previous Royalty Payments None

Total Royalty Payments to Date None

Percent Government Participation Repaid None

Royalty Due on Production to Date None

Royalty Remarks: No production.

Kaiser Aluminum & Chemical Corp. DMEA-3308 Idm-E 727

				Tons	Analysis
Original Estimate of DMEA Reserves (Field Team Final Report)	Mines [ ]	Survey [ ]	Joint [X]	11,197	56% CaF_2
Revised Estimate of DMEA Reserves (Field Team)	Mines [ ]	Survey [ ]	Joint [ ]	No change	
Increase of Reserves by work performed subsequent to DMEA project work				No change	
Production DMEA ore	(This period)			None	-
	(Previous)			None	-
	(To date)			None	-
Operator's ore found subsequent to DMEA work	(This period)			None	-
	(Previous)			None	-
	(To date)			None	-

Percent Revised Reserves mined None

Investment Data

Shafts			Winzes			Drifts & Crosscuts		
Size	Feet	Cost	Size	Feet	Cost	Size	Feet	Cost

Raises			Drilling			Rehabilitation	
Size	Feet	Cost	Type & Size	Feet	Cost	Description	Cost

Facilities

Mine Plant		Mill		Roads	
Description	Cost	Description	Cost	Description	Cost

Remarks

Small exploratory shaft sunk on north end vein system for assessment work. No apparent ore shipments.

Signed Henry W. Jones (Engineer)
Henry W. Jones

SEMI-ANNUAL REPORTS OF CERTIFIED PROJECTS

Reporting Period 7/1/56 - 12/31/56 Date of Examination 12/31/56

Operator Kaiser Aluminum & Chemical Corporation

Mine Name Iowa Canyon Fluorspar

County and State Lander County, Nevada

Docket Number and Commodity DMEA-3398 (Fluorspar)

Contract Number Idm-E 727

Date of Contract 10/13/54

Date of Certification 4/15/55

Expiration Date of Royalty Payments 10/13/64

Total Amount of Contract $5,020.00

Total Expenditures under Contract $2,198.78

Amount of Government Participation at 50 % $1,099.39

Royalty Payments this Period 0

Previous Royalty Payments 0

Total Royalty Payments to Date 0

Percent Government Participation Repaid 0

Royalty Due on Production to Date 0

Royalty Remarks: No production.

RECEIVED JAN 28 1957 D.M.E.A.

Iowa Canyon Fluorspar	Idm-E 727	DMEA-3398
	Tons	Analysis
Original Estimate of DMEA Reserves (Field Team Final Report) Mines / ___ / Survey / ___ / Joint / x /	11,197	56% CaF_2
Revised Estimate of DMEA Reserves (Field Team) Mines / x / Survey / ___ / Joint / ___ /	No change	
Increase of Reserves by work performed subsequent to DMEA project work	No change	
Production DMEA ore (This period)		
(Previous)		
(To date)		
Operator's ore found subsequent to DMEA work (This period)		
(Previous)		
(To date)		

Percent Revised Reserves mined _____

Investment Data

Shafts			Winzes			Drifts & Crosscuts		
Size	Feet	Cost	Size	Feet	Cost	Size	Feet	Cost

Raises			Drilling			Rehabilitation	
Size	Feet	Cost	Type & Size	Feet	Cost	Description	Cost

Facilities

Mine Plant		Mill		Roads	
Description	Cost	Description	Cost	Description	Cost

Remarks

No additional work on property subsequent to termination of DMEA contract.

Signed Henry W. Jones (Engineer)
Henry W. Jones

DEFENSE MINERALS EXPLORATION ADMINISTRATION

Nonmetallic Minerals Division — Date 7-27-56

Semi-Annual Report - Certified Project — Date 6-30-56

DMEA No. 3398 — Operator Kaiser Al. & Chem — Contract No. Idm-E 727

Ore Reserves

Ore Estimates	Tons	Analysis
Original (DMEA)	11,197	56% CaF_2
Increase (Operator)		
Total		
Decrease (Production)		
Net Available	11,197	56% CaF_2

No Change

Investment

None

Shafts			Winzes			Drifts & Crosscuts		
Size	Feet	Cost	Size	Feet	Cost	Size	Feet	Cost

Raises			Drilling			Rehabilitation	
Size	Feet	Cost	Type & Size	Feet	Cost	Description	Cost

Facilities

Mine Plant		Mill		Roads	
Description	Cost	Description	Cost	Description	Cost

Remarks

No Production

3398

ACTION ON INTERIM
OR FINAL FIELD TEAM REPORT, 1956
Date _____

Referred to:

1. ~~Mr. Mittendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. ~~Docket Control Mails and Files~~
5. ~~Mr. Quebbeman~~ Division
6. Docket Control Mails and Files

Note comments in report regarding:

1. Wonder if this contract had the abandonment
2. provision stricken — ~~to~~
3. if owners are obligated to pay royalties
4.

and take appropriate action.

- - - - - - - -

Action taken by Division:
(1) operator surety (primarily liable)
(2) Owners secondarily.

Robert E. Adams

SEMI-ANNUAL REPORTS OF CERTIFIED PROJECTS

Reporting Period 1/1/56 - 6/30/56 Date of Examination 6/30/56

Operator Kaiser Aluminum & Chemical Corp.

Mine Name Iowa Canyon Fluorspar

County and State Lander County, Nevada

Docket Number and Commodity DMEA-3398 (Fluorspar)

Contract Number Idm-E727

Date of Contract 10/13/54

Date of Certification 4/15/55

Expiration Date of Royalty Payments 10/13/64

Total Amount of Contract $5,020.00

Total Expenditures under Contract $2,198.78

Amount of Government Participation at 50 % $1,099.39

Royalty Payments this Period -0-

Previous Royalty Payments -0-

Total Royalty Payments to Date -0-

Percent Government Participation Repaid -0-

RECEIVED JUL 26 1956

Royalty Due on Production to Date -0-

Royalty Remarks:

Original Estimate of Reserves
DMEA Final Report

	Tons	Grade
Measured:	612	
Indicated:	897	56% CaF_2
Inferred:	9,688 / 11,197	

Increase (or Decrease) of Reserves
Work performed subsequent to original and last Field Team estimate:

	Tons	Grade
Measured:		
Indicated:	No change	
Inferred:		

Revised Estimate of Reserves	No change
Production this Period	-0-
Amount of Previous Production	-0-
Total DMEA Production to Date	-0-

Production Remarks: No production from the mine

Other Remarks: Reported to be recently released to owners J. B. McDowell, J. G. and R. L. Keller of Fallon, Nevada who plan on making shipments to Kaiser plant in Fallon.

Signed Walter Bank
for Henry W. Jones

REGION II
SEMI-ANNUAL REPORT
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Docket No.: DMEA-3398 (Fluorspar) **Date:** 12/31/55

Contract No.: Idm-E727

Operator: Kaiser Aluminum & Chemical Corp.
1924 Broadway
Oakland 12, Calif.

Iowa Canyon Fluorspar
Lander Co., Nevada

Date of Contract: 10/13/54 **Completion Date:** 11/17/54

	Total	Expenditures	Gov't Participation
Amount of Contract:	$5,020.00	$2,198.78	$1,099.39

Date Certified: 4/15/55

Estimated Reserves

DMEA Project	Tons	Grade	Gross Value
Measured:	612		
Indicated:	897	56% CaF_2	$313,516.00
Inferred:	9,688		

January 1, 1956

Measured:	612		
Indicated:	897	56% CaF_2	$313,516.00
Inferred:	9,688		

	This Period	Todate	Gross Value
Production:	0	0	0

	This Period	Todate	Percent Payment
Royalty:	0	0	0

Status: Inactive. Apparently there has been no definite results relative to negotiations to lease the property.

called 10-6-54
conferred with
Mr. F. L. Thomas.

JOHN H. MERRIAM, JR.

KAISER ALUMINUM & CHEMICAL CORPORATION
SUITE 909 - 1625 EYE STREET, N.W.
WASHINGTON 6, D.C.
STERLING 3-1555

REGION II
SEMI-ANNUAL REPORT
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Docket No.: DMEA-3398 - (Fluorspar) **Date:** June 30, 1955

Contract No.: Idm-E727

Operator: Kaiser Aluminum & Chemical Corp.
1924 Broadway
Oakland 12, California

(Iowa Canyon Fluorspar,
Lander County, Nevada)

Date of Contract: October 13, 1954 **Completion Date:** November 17, 1954

	Total	Gov't Participation	Operator
Amount of Contract:	$5,020.00	$2,510.00	$2,510.00
Expenditures:	$2,198.78	$1,099.39	$1,099.39

Date Certified: April 15, 1955

Status: Inactive. (See note under remarks)

	Tons	Grade	Gross Value	Deductions	Net Value
Total **Production DMEA:**	11,197*	56.0%			

	This Period	Todate	Percent Payment
Royalty:	None	None	None

Remarks:

*Total ore reserves from DMEA work. There was no production from the mine during the course of the project.

The operator is conducting negotiations to interest leasers in a mining and development operation.

FILE COPY
Surname:

Hopkins
Houk
Chambers
Kiilsgaard
Keyes
Selfridge
Johnson

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

600

APR 18 1955

Kaiser Aluminum & Chemical Corporation
1924 Broadway
Oakland 12, California

Re: Docket No. DMEA-3396 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-8727

Gentlemen:

Transmitted herewith is a certification of discovery or development on Contract No. Idm-8727 on the Iowa Canyon Fluorspar, Lander County, Nevada.

By the terms of the Exploration Project Contract and of the certification, all production from the property from the date of the Exploration Project Contract, October 13, 1954, is subject to the Government's percentage royalty as set forth in the contract until the sum of $1,099.39 is paid or until October 13, 1964, whichever occurs first.

Payments should be made to Mr. Spangler Ricker, Executive Officer, Defense Minerals Exploration Administration Field Team, Region II, Rare and Precious Metals Experiment Station, Bureau of Mines, 1605 Evans Avenue, Reno, Nevada. Checks should be drawn payable to the Defense Minerals Exploration Administration. The purchaser should be advised to deduct the royalties from the amount due on each shipment and forward check to the Executive Officer.

Royalty payments to the Government should be accompanied by suitable evidence, such as copies of settlement sheets showing quantity and grade of ore sold, the name of the purchaser, and the price and charges certified to be correct by the purchaser.

You are requested to notify Mr. Ricker of any changes in ownership or production rights that may have any effect on the Government's right to its percentage royalty. Also, if production ceases at any time for any extended period, please notify Mr. Ricker at six-month intervals that no production has been made.

Sincerely yours,

C. O. Mittendorf
Administrator

Enclosure

JHopkins:ad 4/6/55
Copy to: Mr. Joseph G. Keller
Mr. Robert L. Keller
Admr. R. File
Docket

Mr. Johnson
Mr. Chambers
Operating Committee
Field Team, Region II
Mr. Kiilsgaard, 5222

Mr. Houk
Mr. Arundale, 3516

FILE COPY
Surname:

Hopkins
Hook
Chamberlin
Kulsgaard
Hedges
Selfridge
Johnson

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

APR 18 1955

Mr. Clarence A. Fredell, Acting Director
Materials Division
Emergency Procurement Service
General Services Administration
7th and D Streets, S. W.
Washington 25, D. C.

Re: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-E727

Dear Mr. Fredell:

I am enclosing one copy of a certification of discovery or development relating to the subject contract.

The exploration contract was signed October 13, 1954, with the Government participating to the extent of 50% of $5,020.00 or $2,510.00. The project was started on October 29, 1954, and completed November 17, 1954, after the expenditure of $2,198.78 which is the total net accepted cost according to the Audit Review. The Government paid 50% of the total accepted cost, or $1,099.39.

The work performed on this project consisted of bulldozing 1600 feet of trenches along the outcrop of a quartz-fluorite vein. The property had been explored by several surface cuts, a 30-foot shaft and a drift on the main vein for 40 feet. About 300 tons of 60% CaF_2 ore had been mined and shipped. The project work resulted in the discovery of additional reserves averaging 56% CaF_2 in the following categories:

DMEA estimate:	Main or shaft vein tons	Southwest vein tons
Measured ore	612	
Indicated	897	
Inferred	8,438	1,250
	9,947	1,250
Grand total 11,197 tons		

Operator's estimate	Main or shaft vein tons	Southwest vein tons
Measured	350	
Indicated	875	
Inferred	9,375	1,670
	10,600	1,670
Grand total 12,270 tons		

A.C.4.

The DMEA concurs with the field team's evaluation of the work performed and has certified that a discovery or development has resulted from the work under this contract.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosure

JHopkins:ad 4/7/55
Copy to: Admr. R. File
Docket
Mr. Johnson
Mr. Chambers
Operating Committee
Field Team, Region II
Mr. Hillsgaard, 5222
Mr. ~~Arundale, 3516~~ J. W. Hedges
Mr. Houk

DOCKET FILE
Surname:
Hopkins
Houk
Kiilsgaard
Hedges
Selbridge
Johnson

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

APR 1 8 1955

Mr. Joseph G. Keller

Fallon, Nevada

Re: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-K727

Dear Mr. Keller:

Transmitted herewith for your information is a copy of the certification of discovery or development issued as a result of the exploration program under the above-referenced contract. The property as set forth in the contract was leased by Joseph G. Keller and Robert L. Keller of Fallon, Nevada, to Kaiser Aluminum & Chemical Corporation, under a Mining Lease dated January 25, 1954, and is the same property referred to in the Owner's Consent to Lien.

Also enclosed is a copy of our letter to the Kaiser Aluminum & Chemical Corporation.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosures 2

JHopkins:ad 4/14/55
Copy to: Admr. R. File
Docket
Mr. Johnson
Mr. Chambers
Mr. Houk
Mr. Hedges, 4604
Mr. Kiilsgaard, 5222
Field Team, Region II
Operating Committee

R.C.G.

DOCKET FILE
Surname:

Hopkins
Houk
Kiilsgaard
Hedges
Selfridge
Johnson

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

600

APR 1 8 1955

Mr. Robert L. Keller

Fallon, Nevada

Re: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-K727

Dear Mr. Keller:

Transmitted herewith for your information is a copy of the certification of discovery or development issued as a result of the exploration program under the above-referenced contract. The property as set forth in the contract was leased by Joseph G. Keller and Robert L. Keller of Fallon, Nevada, to Kaiser Aluminum & Chemical Corporation, under a Mining Lease dated January 25, 1954, and is the same property referred to in the Owner's Consent to Lien.

Also enclosed is a copy of our letter to the Kaiser Aluminum & Chemical Corporation.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosures 2

JHopkins:ad 4/14/55
Copy to: Admr. R. File
Docket
Mr. Johnson
Mr. Chambers
Mr. Houk
Mr. Hedges, 4604
Mr. Kiilsgaard, 5222
Field Team, Region II
Operating Committee

R.L.K.

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

RECEIVED
MAR 21 1955

March 18, 1955

Memorandum

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

From: Commodity Specialist, Branch of Construction and Chemical Materials

Subject: Review of final field team report on D.M.E.A. Docket No. 3398, Kaiser Aluminum and Chemical Company, Iowa Canyon Fluorspar, Lander County, Nevada

The field team's recommendations that the project be certified but that no further government participation in exploration on the property is justified, are concurred in. The tonnage of ore involved is rather small, but the Kaiser mill at Fallon, Nevada is a potential market and there appears to be a reasonable possibility that the property might be worked, in which case the government should be reimbursed for its participation in the exploration.

John E. Holtzinger

John E. Holtzinger

Copy to: Files
Div. of Minerals
Br. of Const. & Chem. Mats.
Mr. Holtzinger

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
MAR 1 8 1955

March 15, 1955

Re: DMEA-3398
Idm-E727
Kaiser Alum. & Chem.
Company
Iowa Canyon Fluorspar
Lander County, Nevada

Memorandum

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

From: R. D. Trace, U. S. Geological Survey

Subject: Review of Final Field Team report

The exploration uncovered a small deposit of commercial grade fluorspar. I concur with the Field Team and recommend that a certification be issued.

As the faulted segment of the deposit was not found, no further exploration is warranted.

Bob Trace
R. D. Trace

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAR 10 1955

1605 Evans Avenue
Reno, Nevada

March 9, 1955

Memorandum

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

From: Executive Officer, DMEA Field Team, Region II

Subject: Operator's Monthly Progress Reports - Forms MF-104 and MF-104A

Attached are two copies of each of the subject reports received from the operator listed below. These reports have been audited and passed to the Treasury for payment.

Contract No.	Operator	Report Dated	Period Covered
Idm-E521 DMEA-2925	Fred M. Anderson, et al	11/30/54	July, 1954
Idm-E727 DMEA-3398	Kaiser Aluminum & Chemical Corporation	12/27/54	November, 1954

S. Ricker
Executive Officer
DMEA Field Team, Region II

Attachments

SRicker:gh
cc: R. M. Smith
H. C. Miller
Files

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

Budget Bureau No. 42-R1036.4
Approval expires 6-30-53.

Defense Minerals Administration
RECEIVED
MAR 10 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of November, 1954 Docket No. DMEA 3398 Contract No. Idm-E-727
Operator's Name Kaiser Aluminum and Chemical Corporation Minerals Fluorspar
Address 1924 Broadway, Oakland 12, California
Contract Amount, $ 5,020.00 Government Participation: 50 % Amount, $ 2,510.00

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						
Bulldozing	$727.88	Ø	$727.88	1000.00		
Crosscutting						
Drifting						
(2) Labor and Supervision:						
Labor	234.08	Ø	234.08	1003.00		
Supervision	590.00	Ø	590.00	500.00		
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives	25.78	Ø	25.78	100.00		
Pipe						
Track						
Oil and Gas for Compressor	20.58	Ø	20.58	150.00		
(4) Operating Equipment:						
Rental	113.34	Ø	113.34	400.00		
Purchase						
Depreciation	165.20	Ø	165.20	250.00		
(5) Initial Rehabilitation and Repairs	Ø		Ø			
(6) New Bldgs., Improvements, etc.	Ø		Ø			
(7) Miscellaneous:						
Repairs to Equipment	Ø	Ø	Ø			
Sampling and Analysis	249.00	Ø	249.00	250.00		
Payroll Taxes	54.18	Ø	54.18	No Provision		
Liability Insurance	16.55	Ø	16.55	220.00		
Postage for samples	2.19	Ø	2.19	No Provision		
(8) Contingencies (specify):						
TOTALS	2,198.78		2,198.78			

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

Date Dec. 27, 1954 *Payee Kaiser Aluminum & Chemical Corporation

Per A. N. Warburton, Jr. Title Assistant Secretary

*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:

$ 1099.39

Signature [illegible] Stolarczyk
(Authorized Certifying Officer)

Date [illegible] 2 1955 Vou. No. SF-DMEA-23

(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. Idm[illegible]721 in accordance with the terms of the contract.

Signature George H. Holmes, Jr. Title Mining Methods Research Engineer Date 12/30/54

Approval by DMEA Executive Officer or Alternate:

Signature S. Ricker Title Executive Officer, DMEA Field Team, Region II Date 1/3/55

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAR 10 1955

SCHEDULE SUPPORTING OPERATOR MONTHLY REPORT AND VOUCHER

Month of: November 1954 - Docket No. DMEA 3398 - Contract No. IDM-E-727

	VENDOR	INVOICE DATE	INVOICE NUMBER	AMOUNT
(1)	Contracts - Bulldozing			
	McLeod Trucking Service	11- 3-54	5722	$218.88
	Frank E. Gillespie	11-10-54	--	285.12
	McLeod Trucking Service	11-12-54	5810	223.88
				727.88
(2)	Labor and Supervision - Labor			
	T. B. McDowell	11- 7-54		83.60
	T. B. McDowell	11-14-54		83.60
	F. E. Gillespie	11-14-54		66.88
				234.08
	Labor and Supervision - Supervision			
	L. R. Stoiser	11-30-54		590.00
(3)	Operating Materials and Supplies - Explosives			
	Kaiser Aluminum & Chemical Corporation	11- 2-54	03220	25.78
	Operating Materials and Supplies - Oil and Gas for Compressors			
	Standard Oil Company	11-18-54	P/OFP-02562	20.58
(4)	Operating Equipment - Rentals			
	Contractors Equipment Supply	11-19-54		102.84
	Kaiser Aluminum & Chemical Corporation	12-20-54		10.50
				113.34
	Operating Equipment - Depreciation			
	Kaiser Aluminum & Chemical Corporation	12-20-54		165.20
(7)	Miscellaneous - Sampling and Analysis			
	Oscar N. Briboch	12- 1-54		249.00
	Miscellaneous - Payroll Taxes			
	Kaiser Aluminum & Chemical Corp.-Oakland	11-30-54		42.48
	Kaiser Aluminum & Chemical Corp.-Fallon	11-14-54		11.70
				54.18
	Miscellaneous - Liability Insurance			
	Kaiser Aluminum & Chemical Corp.-Fallon	11-14-54		16.55
	Miscellaneous - Postage			
	Kaiser Aluminum & Chemical Corp.	12-20-54		2.19
		GRAND TOTAL		$2,198.78

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

RECEIVED

420 Custom House
555 Battery Street
San Francisco 11, Calif.

February 9, 1955

Memorandum

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

From: Executive Officer, DMEA Field Team, Region II

Subject: Operator's Monthly Report - Form MF-104 A and Narrative

In connection with Contract No. Idm-E727, Docket No. DMEA-3398, Kaiser Aluminum and Chemical Corporation, attached is copy of MF-104A for the month of November 1954 as this is the final voucher to be rendered for the project.

The Operator's narrative report was combined with his final report, which was mailed to you on January 27, 1955.

As soon as the final liquidation and settlement are made of this account, the additional copy of Form MF-104A as well as the audited copies of MF-104 will be sent to your office.

S. Ricker
Executive Officer
DMEA Field Team, Region II

Attachment

Copy to: Roscoe Smith, USGS
F. Horton

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151
Approval expires 6-30-53.

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of November 1954 Docket No. DMEA 3398 Contract No. Idm-E-727
Operator's Name Kaiser Aluminum & Chemical Corporation Minerals Fluorspar
Address 1924 Broadway, Oakland 12, California

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								
Churn								
Auger								
Stripping								
Trenching	Feet	2193.78	1600	$2,193.78	1600	$1.37		
Test Pits								
Roads and Trails								
TOTAL DISTRIBUTED COSTS		2,193.78	1600	2,193.78				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$2,193.78		$2,193.78				

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 Dec. 27, 1954 Operator Kaiser Aluminum & Chemical Corporation
Per A. N. Warburton, Jr. Title Assistant Secretary

REMARKS:

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)

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

DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
FEB 14 1955

420 Custom House
555 Battery Street
San Francisco 11, Calif.

February 7, 1955

Memorandum

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

From: Executive Officer, DMEA Field Team, Region II

Subject: Docket No. DMEA-Fluorspar (3398)
Kaiser Aluminum and Chemical Company
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-E727

Attached are four copies of the Final Report on above project submitted by Henry W. Jones, Mining Engineer, U. S. Bureau of Mines, and Earl H. Pampeyan, Geologist, U. S. Geological Survey, dated February 3, 1955.

Work consisted of 2,000 linear feet of trenching by which 11,197 tons of ore containing 56 per cent CaF_2 were discovered. Total cost of the project work in which the Government participated was $2,198.78 of which the Government's share was $1,099.39.

The report recommends that the project be certified but that further participation in exploration work on the property by the Government is not warranted. Roscoe Smith and I concur in the recommendation.

S. Ricker
Executive Officer
DMEA Field Team, Region II

Attachment

Copy to: Roscoe Smith, USGS
A. C. Johnson, Reno
George Mavor
F. Horton

Reviewed by
DMEA OPERATING COMMITTEE
2-18-55
(date)

Field Team Final Rpt

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 14 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION II

Final Report

Idm-E727
Kaiser Aluminum & Chemical Corp.

DMEA-3398, Iowa Canyon Fluorspar

Lander County, Nevada

Henry W. Jones, Mining Engineer
U. S. Bureau of Mines

Earl H. Pampeyan, Geologist
U. S. Geological Survey

February 3, 1955

Reviewed by
DMEA OPERATING COMMITTEE
2-18-55
(date)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 14 1955

FINAL REPORT

Docket No.: DMEA-3398

Name and address of operator: Kaiser Aluminum & Chemical Corp., 1924 Broadway Oakland 12, Calif.

1625 Eye Street, N. W., Washington, D. C.

Name and location of property: Iowa Canyon Fluorspar Lander County, Nevada

Contract No.: Idm-E727

SUMMARY

A Defense Minerals Exploration Administration contract between the Kaiser Aluminum & Chemical Corporation (a Delaware corporation) and the United States government was signed on October 13, 1954 for the purpose of exploring the Iowa Canyon Fluorspar property, Lander County, Nev.

The submitted bulldozer trenching and sampling project with an estimated total allowable cost of $5,020.00 and 50 percent government participation was to be completed in a period of four months, starting on or before October 29, 1954. Pending results of information gleaned from the program, a diamond drilling schedule was to be initiated.

Actual work on the project started on October 29, 1954 and was completed by November 17, 1954, during which time a bulldozing, vein stripping, sampling and mapping program was completed. Total expendi-

tures amounted to $2,198.78, of which the government was to share 50 percent of the cost or $1,099.39.

CONCLUSIONS

As a result of the surface stripping program, it was revealed that the expected ore reserves persisted for only a short distance and was cut off down dip at a shallow depth by a large fault of unknown displacement. Due to the small tonnages indicated, the operators concluded that further exploration on the property was not warranted.

RECOMMENDATIONS

The DMEA field team are in agreement that a small but commercial body of fluorspar ore was extended as a result of the DMEA exploration program. Current reserves are not of sufficient size to interest a larger company, however, they may be of commercial interest to a leaser or small operator.

It is, therefore, recommended that:

1. DMEA certify the project as being successful and the government entitled to subsequent royalties from production.

2. No further exploration is warranted on the property with government funds.

3. The distance from the local market, and the low current price of fluorspar material, makes the property marginal. Production might be economically feasible if handled by a small operator.

DESCRIPTION OF WORK COMPLETED

Work was started on the project October 29, 1954. A compressor was rented and moved to the property. Rock outcrops were blasted along the strike of the ore structure to facilitate removal. A D-7 caterpillar dozer and operator was hired and operations were started on November 4, 1954. Due to the shallowness of the overburden, the 800 feet of stripping operations, as outlined by the DMEA, was completed in a short time. In order to more fully realize the usage of the bulldozer and delineate the ore structure to a greater degree, additional work was completed in the four days ending November 8, 1954. In the period, approximately 900 linear feet of vein system to the north of the shaft and two parallel areas above and to the east of the shaft, each about 350 feet in length and 1 foot in depth, were stripped in an attempt to pick up the faulted vein segment. Additional bulldozing was completed on the operators account in areas not prescribed by the DMEA loan contract.

The vein structures exposed by the dozer trenches were cleaned of all dirt and debris by means of a jet of compressed air. Samples were taken by the operators at 5- and 10-foot intervals along the minable width of the ore. A total of 83 samples were taken by them with results included on the attached map, furnished by the operators.

A stadia survey was made to extend and correct the previous map and also show the exposed vein system. Work was completed on the property on November 17, 1954.

GEOLOGY

The Iowa Canyon Fluorspar property, and surrounding area, is underlain by Tertiary volcanic rocks, but a mantle of soil and slope wash, 1 to 5 feet thick, overliés most of the area. Croppings of andesite and vein quartz penetrate the soil cover locally, and associated with the vein quartz is massive fluorite in veins up to 6 feet thick.

Structural control of the veins was provided by pre-mineral fracturing of the andesite. Minor movement of a small degree also took place at the same time the fluorite was being deposited. Post-mineral movements in the area are shown by locally sheared veins and by a west-dipping fault zone which terminates the east-dipping main (Shaft) vein in the underground workings.

ORE DEPOSITS

Fluorite occurs as vein fillings and is commonly, but not everywhere, between two ribs of massive or crystalline vein quartz. The veins, which strike N. 35° E. to N. 20° W. and dip 45° SE. to 85° NW., were formed along existing fractures in the andesite. Kaolinization of the wall-rock, which occurs along the quartz- and fluorite-bearing veins, appears to be related to the deposition of fluorite as the intensity of alteration is directly proportional to the amount of fluorite in the veins.

During the DMEA exploration work, the mineralized zone was uncovered over a total distance of 2,000 feet. The Shaft vein was uncovered

by surface trenching for more than 500 feet north, and about 100 feet south of the shaft. This east-dipping vein is terminated by the west-dipping fault zone some 35 feet down the dip of the vein in the underground workings. The faulted-off southern extension of the Shaft vein (?) was traced for about 500 feet south of the shaft. Branches of the Shaft vein, referred to as the Northeast and Southwest veins, were also uncovered for several hundred feet (see geological map).

The veins range from a few inches to 6 feet in width. The average thickness of fluorite in the Shaft vein for a distance of 345 feet north of the shaft is 3.6 feet, and this same vein averages 3.5 feet in thickness for about 100 feet south of the shaft. The Southwest vein contains a 3-foot average thickness of fluorite over a strike length of 100 feet. The remaining portions of the Shaft, Southwest, Northeast veins and other veinlets east of the shaft do not contain enough fluorite to be of commercial value.

Previous production from the underground workings on this property amounted to 262 tons of crude fluorspar. This ore, shipped to Kaiser's Fallon mill in 1953, was successfully concentrated to acid grade fluorspar.

ORE RESERVES

Total reserves discovered by the DMEA trenching program equal 11,197 tons of ore containing an average of 56 percent CaF_2, or about 6,270 tons of CaF_2.

Measured reserves south of the shaft, in a block measuring 60 feet along the strike, 35 feet down the dip and averaging 3.5 feet thick, equal 612 tons. (This excludes the 40-foot long block mined in 1953). Indicated reserves, in a block measuring 75 feet north from the shaft, 35 feet down the dip from the surface and averaging 3.6 feet wide, equal 897 tons. Down dip below this block of indicated ore lies a block of inferred ore. It has the same strike length and average width as the block above but lies between 35 and 50 feet below the surface. This block contains 338 tons of ore. Another block, from 75 to 345 feet north of the shaft, 270 feet long, averaging 3.6 feet wide and measuring 100 feet down the dip, contains some 8,100 tons of inferred ore. Inferred reserves in the Southwest vein, in a block measuring 100 feet along the strike, 50 feet down the dip and averaging 3 feet wide, equal 1,250 tons. For computing ore reserves a factor of 12 cubic feet per ton was used for the fluorite-bearing vein material. The average grade of 56 percent CaF_2 was derived from five composite samples assayed by the operator.

SAMPLING

Five samples were taken by the visiting engineer at locations as described to check the results of company.

Sample No.	Width, feet	Percent $CaCO_3$	SiO_2	R_2O_3	CaFe	Description
110	4.5	6.88	28.34	9.06	55.56	75feet north of shaft.
111	3.0	3.46	15.16	1.14	80.08	150 feet north of shaft.
112	1.0	4.60	44.92	4.76	45.46	220 feet north of shaft.
113	4.0	3.16	24.54	1.76	70.48	305 feet north of shaft.
114	2.5	3.20	29.64	3.70	63.14	340 feet north of shaft.

The assay results checked sufficiently close to those reported by the operator.

EXPENDITURES

Total approved	$5,020.00
Total cost of project	2,198.78
Government's share of cost	1,099.39
Government's share unexpended	1,410.61

There was no production from the mine during the course of the project.

EFFICIENCY OF OPERATIONS

Operations proceeded in a very efficient manner with no undue difficulties being encountered. The exploration representative for the project, Mr. L. R. Stoiser, appeared quite competent. The final report submitted by him was well written and very informative.

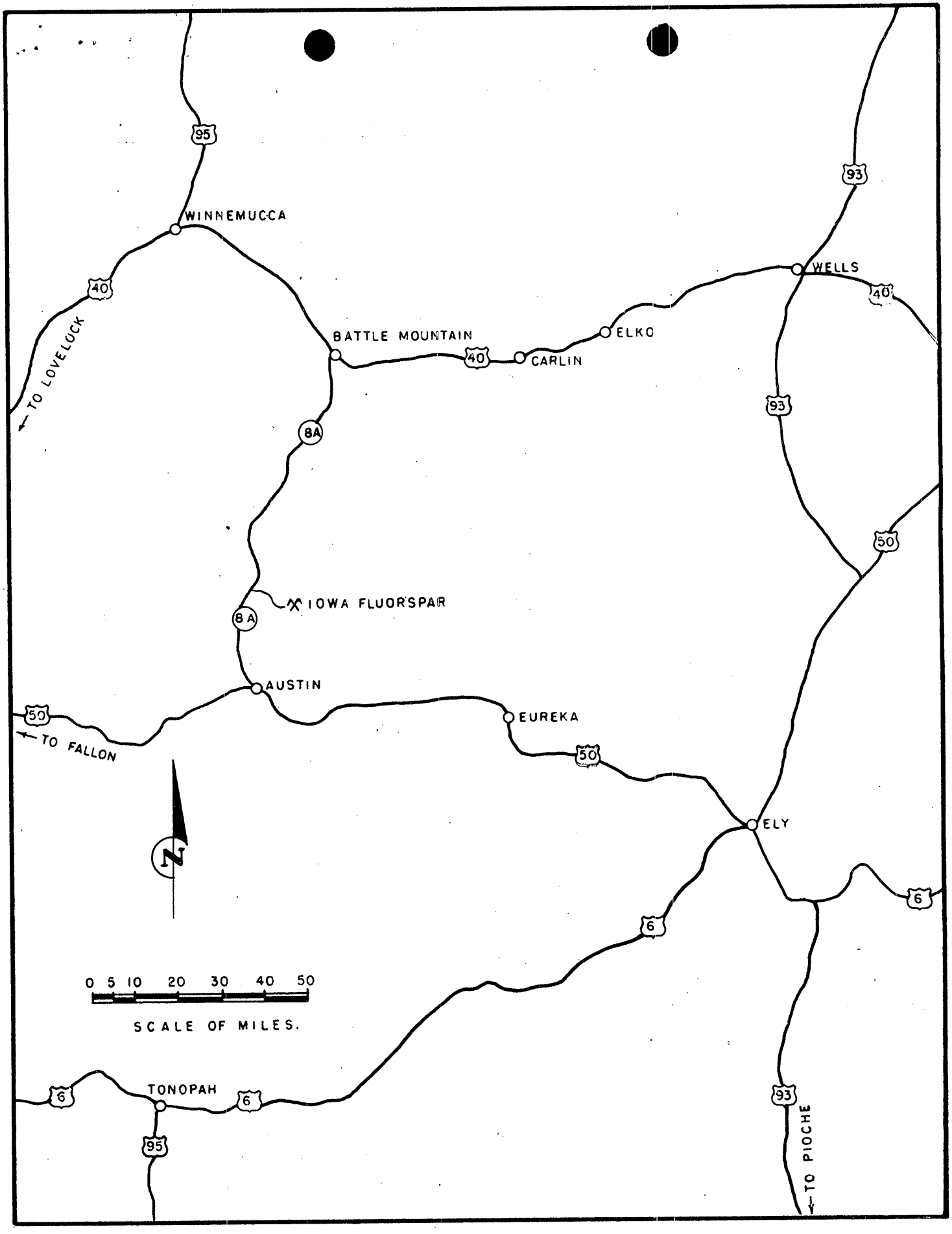
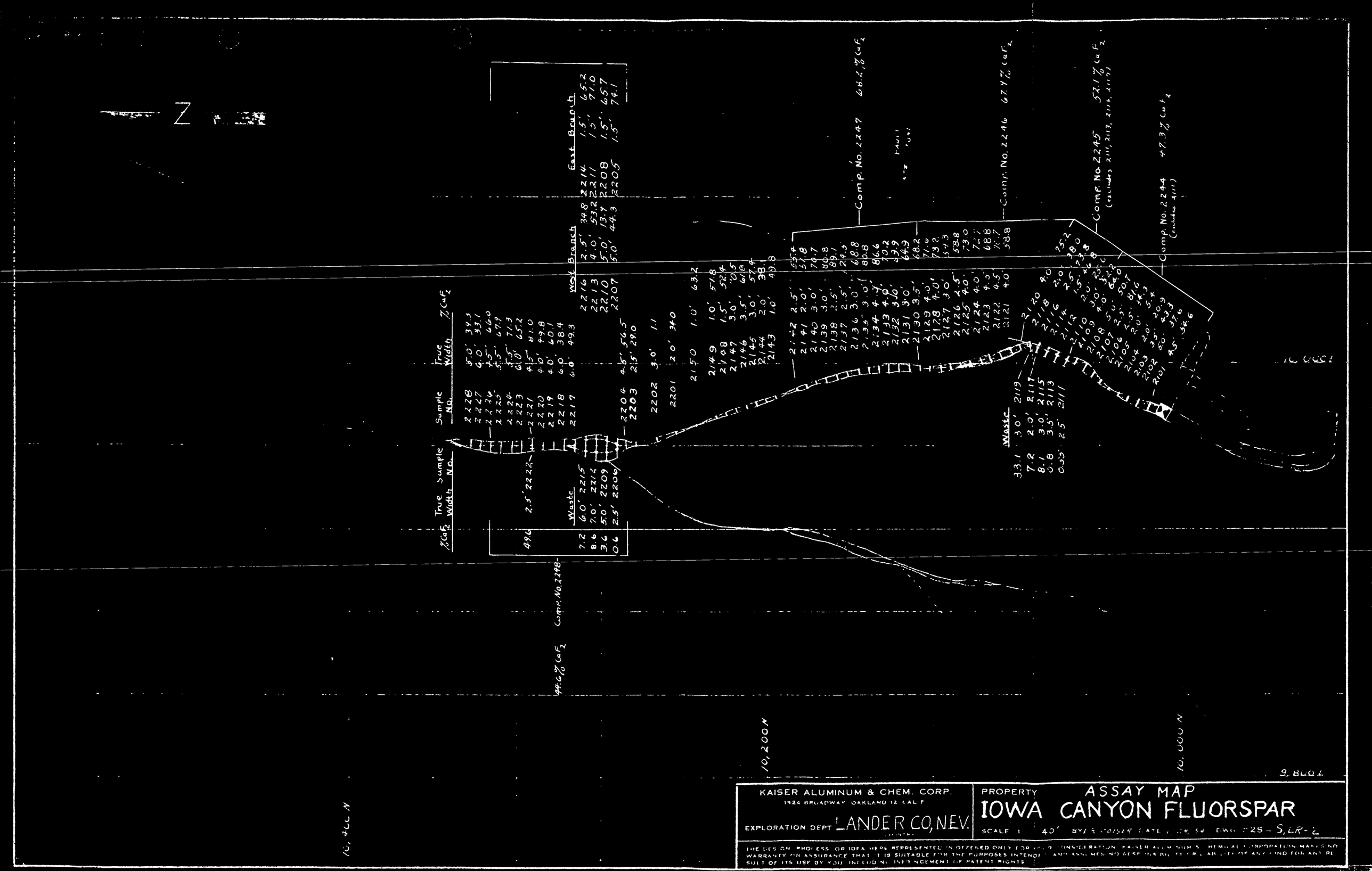


FIGURE I. LOCATION MAP.


Z
Comp. No. 2247 68.2% CaF2
Comp. No. 2246 67.4% CaF2
Comp. No. 2245 52.1% CaF2
(includes 2111, 2113, 2115, 2117)
Comp. No. 2244 +7.3% CaF2
(includes 2111)
Comp. No. 2248
44.6% CaF2
West Branch
East Branch
Waste
10,200 N
10,000 N
KAISER ALUMINUM & CHEM. CORP.
1924 BROADWAY OAKLAND 12 CALIF
EXPLORATION DEPT LANDER CO, NEV.
PROPERTY
ASSAY MAP
IOWA CANYON FLUORSPAR
SCALE 1" = 40'
THE DESIGN, PROCESS OR IDEA HERE REPRESENTED IS OFFERED ONLY FOR YOUR CONSIDERATION. KAISER ALUMINUM & CHEMICAL CORPORATION MAKES NO WARRANTY OR ASSURANCE THAT IT IS SUITABLE FOR THE PURPOSES INTENDED AND ASSUMES NO RESPONSIBILITY OR LIABILITY OF ANY KIND FOR ANY RESULT OF ITS USE BY YOU, INCLUDING INFRINGEMENT OF PATENT RIGHTS

N
OVERBURDEN
FAULT ZONE
SHEAR ZONE
SHEAR ZONE
SHEAR ZONE
IOWA CANYON FLUORSPAR NO. 2
NO. 1
LEGEND
VEIN
FAULT
SHAFT
UNDERGROUND WORK
STRIPPED AREA
KAISER ALUMINUM & CHEM. CORP
1924 BROADWAY OAKLAND 12 CALIF.
EXPLORATION DEPT LANDER CO, NEV.
PROPERTY GEOLOGY & TOPOGRAPHY
IOWA CANYON FLUORSPAR

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

RECEIVED

420 Custom House
555 Battery Street
San Francisco 11, Calif.

January 27, 1955

Memorandum

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

From: Executive Officer, DMEA Field Team, Region II

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum and Chemical Company
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-E727

Attached are four copies of the Operator's final report on the subject property by L. R. Stoiser, of the Kaiser Aluminum and Chemical Corporation Exploration Department, dated December 17, 1954.

S. Ricker
Executive Officer
DMEA Field Team, Region II

Operator's Final Rpt

Attachment

Copy to: R. M. Smith, USGS
A. C. Johnson, Reno
George Mavor
F. Horton

SECRETARY OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 21 1954

IOWA CANYON FLUORSPAR PROPERTY
LANDER COUNTY, NEVADA

Exploration Project, Oct. 29 - Nov. 17, 1954

DOCKET NO. DMEA - 3398

Kaiser Aluminum & Chemical Corporation
Exploration Department December 17, 1954

This is Copy No. 1

Copies to:	Copy No.	
A. C. Johnson U.S.B.M. Dept. of Interior Reno, Nevada	1 thru 5	(Supporting documents attached to #1)
E. A. Hassan, Jr.	6 and 7	
Ira B. Joralemon	8	
L. F. Muller	9	
L. R. Stoiser	10	
W. C. Humphreys	11	
B. G. Wester	12	
R. R. York	13	

L. R. Stoiser

L. R. Stoiser

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Assay Map

Geological & Topographical Map

I. SUMMARY & CONCLUSION

This is a combined monthly and final report on the surface exploratory work done by the Kaiser Aluminum & Chemical Corporation on the Iowa Canyon Fluorspar property, located in Lander County, Nevada. It covers the period October 29 - November 17, 1954, inclusive, during which time the work was initiated and completed. This project was carried on jointly with the U.S. Government, acting through the Department of the Interior, under an Exploration Project Contract, Docket No. DMEA - 3398. The writer was assigned as supervising engineer by Kaiser Aluminum.

The purpose of the surface exploration was to determine whether the property warranted the undertaking of a diamond drilling and underground exploration program. Actual expenditure under the terms of the DMEA contract totaled $2,198.78 of which 50%, or $1,099.39, is to be reimbursed to Kaiser Aluminum by the Government. In addition Kaiser spent $680.63 exploring on the surface portions of the vein system not outlined in the Government contract.

The surface work indicates that the expected tonnage does not exist. The main vein is of mineable width for only 445 feet of its length along the strike, and the mineable portion is cut off at a shallow depth by a strong fault, 170 feet of the vein being cut at less than 50 feet in depth. It is estimated that there is a total of 12,270 tons of 49% CaF_2 ore in this block and a portion of the southwest vein to an inferred depth of 100 feet. These small ore bodies could not be mined and shipped to Fallon at a profit by Kaiser Aluminum. We concluded, therefore, that the property does not warrant further exploration by this Company.

II. PHYSICAL DESCRIPTION

A. Location and Ownership: The property consists of five adjoining claims in good standing named Iowa Canyon Fluorspar and numbered one through five. The original location was made by Thomas B. McDowell of Stillwater, Nevada, on August 10, 1952. He later assigned two-thirds interest in the property to Joseph G. and Robert L. Keller of Fallon, Nevada, in exchange for assessment work done by them on the property, and he recently sold his remaining one-third interest to Kaiser Aluminum & Chemical Corporation. This Company has an option to purchase the two-thirds interest outstanding.

The property is reached by traveling 27.2 miles north on State Highway 8-A from the nearest town of Austin then 11 miles east on a dirt road. The claims are located in open and rolling topography on the east side of Iowa Canyon. A small stream runs through the canyon and is impounded behind an earthen dam about four miles west of the property. The Nevada State Engineer reports that water rights on this stream were first filed in 1866. Through succeeding transfers water rights have now been acquired by Wayman, present owner of the ranch at the entrance to Iowa Canyon.

B. Geology:

1. General: The local host rock for the fluorite-bearing veins is an andesite of Tertiary age. Whether the andesite is intrusive or extrusive is uncertain.

2. Vein System: The veins on this property strike from N. 35° E. to N. 20° W. and dip from 45° to the southeast to 85° to the northwest. The width of the veins varies considerably along the strike, reaching a maximum of about six feet. Hanging and foot walls are fairly well defined along most sections of the vein system. The main vein is referred to as the shaft vein, and its branches as the southwest and northeast veins.

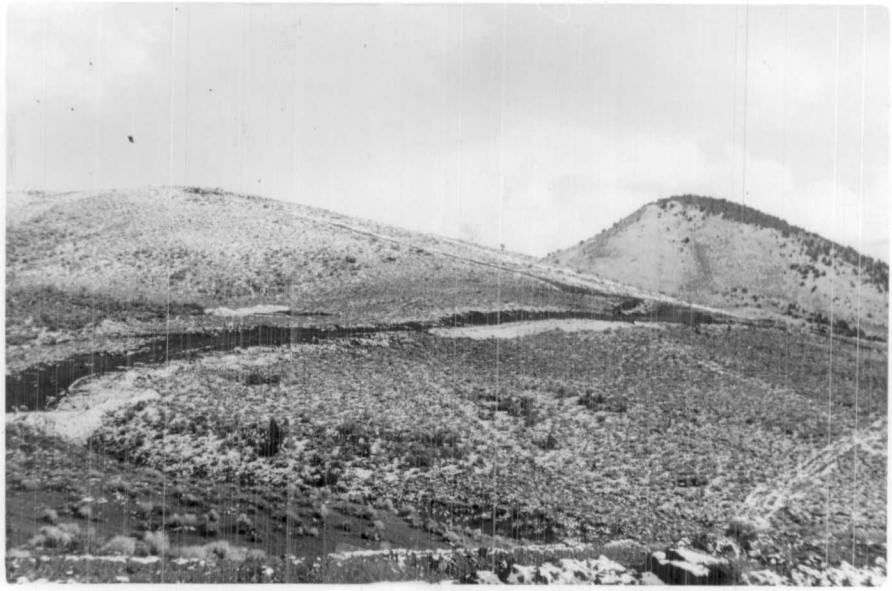
3. Mineralization and Rock Alteration: Fluorite mineralization is mainly confined to silicified veins. Although some is massive, much of the fluorite is intergrown with fine-grained quartz. In color most of the fluorite is green; a little is purple.

Alteration of the country rock is extensive in the central area containing the more important veins. Alteration consists of silicification, kaolinization and bleaching of the country rock for some distance on either side of these veins. However, this alteration decreases rapidly in intensity about 350 feet north from the main shaft, and the shaft vein at this point diminishes to a veinlet of no consequence to the north.

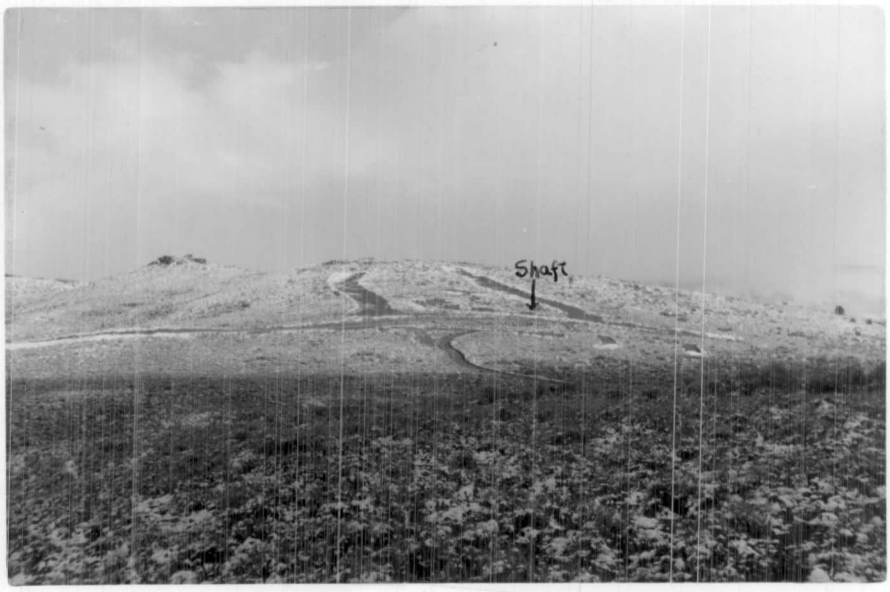
In contrast to the above 500 feet south of the shaft there is exposed a large vein that strikes in the same general direction as the shaft vein. This vein averages five feet in width and consists largely of a massive, fine-grained quartz with only a minor amount of fluorite formed along its footwall contact. Alteration of the andesite in this area is again less intense than in the central area.

4. Faulting: Faulting has taken place prior to, during and following the mineralization period. Mineral deposition took place along shear zones which had provided channels for mineral-bearing solutions from depth. Movement along the shear zone continued soon after a small vein of quartz containing silver and iron sulfide minerals had formed. During the deposition of fluorite that followed, the movement was of lesser degree. Sometime after the deposition of calcite, the latest mineral in evidence, minor cross-shearing of the then firm veins took place, either separately or in conjunction with a strong fault which cuts the main vein.

Prior to the surface exploration just completed on the Iowa Canyon Fluorspar property, it was thought that the strong fault that transects the shaft vein 100 feet south of the shaft experienced only normal displacement. However, bulldozing of the surface exposures of these two physical features indicates that oblique reverse faulting of the shaft vein had taken place prior to normal displacement. The block forming the west wall of the fault



No. 1 Trenching on shaft vein (looking SE).



No. 2 Trenching on shaft vein. Cross-trenching on the hill east of main shaft (looking east).

has moved south and upward with respect to the east block, thus overlapping the faulted section of the shaft vein east of the fault in the vicinity of the shaft. The normal movement as indicated in the crosscut probably is the last movement along the fault zone, this displacement not being great enough to bring the buried shaft vein to the surface east of the shaft. Several fluorite-bearing veinlets are exposed in the hillside east of the shaft, but none comparable to the shaft vein.

South of the shaft about 500 feet and extending for at least another 500 feet farther south is a strong quartz vein with minor fluorite along its footwall contact. It strikes and dips in the same general direction as the shaft vein. Projection of the fault zone brings it immediately in front of the northernmost outcrop of this quartz vein. It is supposed that this vein is the continuation on the surface of the shaft vein east of the fault. Difference in elevation between the shaft and the quartz outcrop is 70 feet.

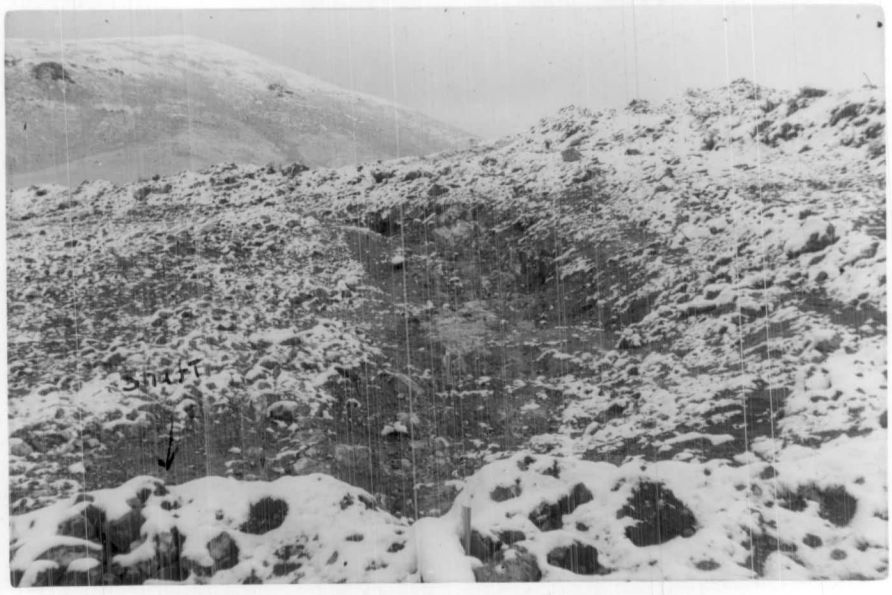
III. PRODUCTION

Production to date consists of 260.7 short dry tons of ore assaying 61% CaF_2, all of which was shipped to Kaiser's Fallon mill. This tonnage was taken out in 1953 from the underground workings on No. 2 claim. These workings now consist of a 22-foot crosscut and a 39-foot drift with a stoped out area above, both starting from the bottom of a 45-foot inclined shaft. The property is idle at present. (For further details on the above see DMEA application and 1952 field reports.)

IV. EXPLORATION

A. Surface: Between the dates October 29 and November 17 the Company bulldozed, drilled and blasted, cleaned, sampled and surveyed the vein systems as exposed on the surface of the Iowa Canyon Fluorspar property. The purpose of this project was to determine whether the property warranted a program of diamond drilling and underground exploration. The prospect of proving important tonnage by exposing the vein system was good, based on fragments of float and large outcrops exposed. However, after the bulldozer stripped the shallow overburden, it was found that ore of mineable width was contained in only 445 feet of vein along a mineralized zone traceable for 2,000 feet. Practically all of this length had been indicated by prominent outcrops or float, and almost no float or outcrops were seen in areas beyond that covered by the work. The mineable section directly south of the shaft is 100 feet long and averages 3.5 feet wide; however, 261 tons of ore have been mined from a 40-foot section of this block already. North of the shaft the vein was cleaned and sampled for 345 feet. This section averages 3.6 feet in width. Bulldozing for 450 feet beyond the sampled section failed to expose commercial material.

No. 3 Stripped area on shaft vein. (a) Southernmost outcrop of shaft vein (looking SW).



No. 4 70-foot section of shaft vein, average 3 feet wide (looking NE).

The southwest and northeast branches of the shaft vein are not of mineable width for any great length. About 100 feet of the southwest vein averages three feet. The average width for the 505 feet of mineable ore in the shaft vein and southwest vein is 3.5 feet.

On No. 3 Claim there is an 8-foot test pit sunk on a high grade stringer. Bulldozing along this vein in both directions away from the pit showed that the vein is less than 200 feet long, and its maximum width is two feet at the pit.

The bulldozer cleaned a large area on the hillside east of the main workings, but the faulted section of the shaft vein was not there. Several fluorite-bearing veinlets were found, but none comparable to the shaft vein.

Drilling and blasting of outcrops to facilitate stripping of the vein system by bulldozing began on November 2. Over 100 2-foot holes were drilled prior to or in conjunction with the bulldozing which began on November 4. Equipment for drilling included a 125cfm Jaeger compressor and J-30 Ingersoll-Rand jackhammer. Results were satisfactory.

Stripping was done with a D 7 Caterpillar tractor and D 7 bulldozer. During the first four days of bulldozing, the bulldozer stripped 900 linear feet of the vein system north of the shaft, and 700 linear feet of the overburden on the hillside east of the shaft. The 1600 feet of stripped area averaged 28 feet wide and 1.3 feet deep; total volume of dirt moved amounted to 2100 cubic yards.

By directing obliquely a stream of compressed air against the surface of the bulldozed veins, it was possible to clean the veins of any remaining overburden with but little effort. This light overburden consisted of fine, dry dirt and broken vein fragments.

In performance of the exploration, the first work comprised that outlined in the DMEA contract. This failed to present a conclusive picture of the vein system especially in view of the nature of faulting. For this reason and because overburden was shallower than anticipated, it was decided to do additional trenching in the hope of still finding ore. It is believed that the inclusion of this extra work as part of the program is fully justified. Further additional work was done entirely beyond the area delimited in the contract, but its cost has been solely for KACC account.

B. Underground: A 4-foot round was drilled and blasted in the face of the crosscut, extending the crosscut to a new length of 22 feet. The new face exposed was still in the fault.

C. Sampling and Assaying: Samples were taken at 5 or 10-foot intervals along the vein, starting at five feet north from the shaft and ending at 345 feet. In order that any variance in this ore zone could be shown, a total of 83 samples were taken and assayed for CaF_2. Also five weighted composites were prepared and assayed from the better sections of the vein. One additional sample was taken of altered wall rock to be tested to ascertain

if any of its calcium content not soluble in acetic acid would be liberated in the oxalate method for determining CaF_2 content. Only 0.4% was liberated. All samples were split and prepared at our Fallon mill and then shipped to Oscar N. Bribach in Denver for assaying. Bribach uses the oxalate method of determining CaF_2 content. Assays are recorded on the attached assay map.

It is safe to assume that the arithmetic average of the five composite assays is representative of the grade of ore in place within the sections of the shaft vein and southwest vein delineated below in the Tonnage Estimate. The 505 feet of mineable vein then averages 56% CaF_2. Allowing a 4-foot mining width, the grade decreases to 49% CaF_2. Average vein width for the 505 feet is 3.5 feet.

Assumed shipping grade $\frac{56 \times 3.5}{4} = 49\%$

D. Tonnage Estimate:

	SHORT DRY TONS FLUORSPAR ORE(a)			
	Measured	Indicated	Inferred	Total
Shaft Vein South of Shaft - 60 feet section(b) Surface - 35 ft. depth	350			
Shaft to 75' North Surface - 35 ft. depth		875		
35 - 50 ft. depth			375	
75' to 345' north of shaft Surface - 100 ft. depth			8000	
TOTAL - SHAFT VEIN	350	875	9,375	10,600
SW Vein - 100 ft. section Surface - 50 ft. depth			1,670	
TOTAL - ALL CLASSES			11,045	12,270

Assuming a yield of 90 tons of acid-grade concentrate per 100 tons of CaF_2 contained in the ore, and 15% left in pillars, potential production of acid-grade fluorspar would be approximately 4,600 tons.

(12,270) (.90) (.85) (.49) = 4,600 tons

(a) 4-foot mining width allowed, average vein width is 3.5 feet. Total strike length of mineable blocks is ~~555~~ 545 feet less 40 feet mined out in 1953 - 505 feet.

(b) Excludes first 40 feet mined out in 1953.

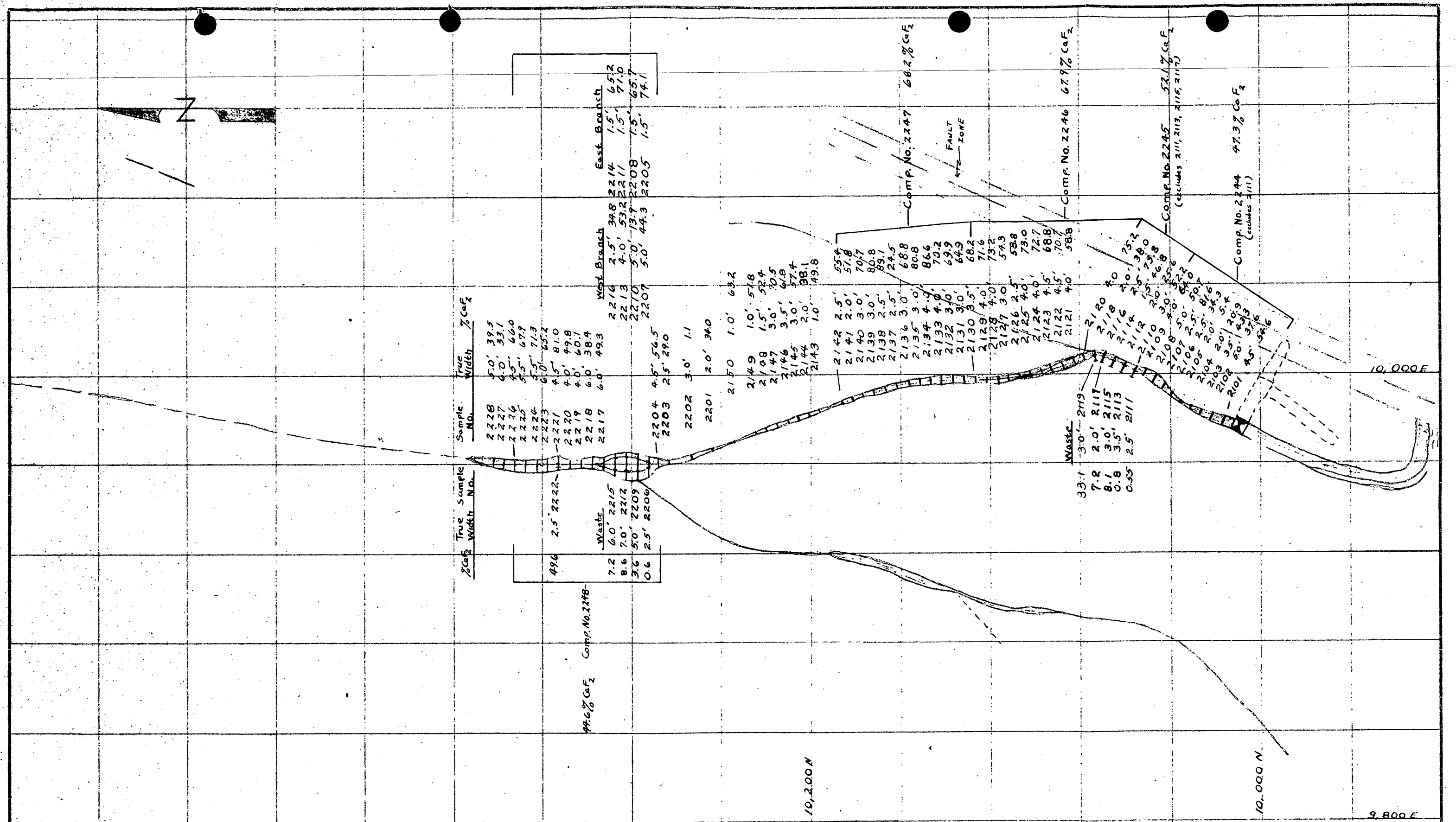
V. COST DISTRIBUTION

The distribution of costs incurred on this project are shown in the attached "Operator's Monthly Report and Voucher". Those costs allowable under the DMEA Exploration Contract are supported by proper documents. Our Company did additional surface exploration during the interim of the project.

We submit this report and the attached voucher in compliance with the terms of the DMEA Contract. According to our figures the cost of the project should be divided between the Government and Kaiser Aluminum as follows:

TOTAL COST	$2,879.41
Less Operator's Non-Reimbursable Cost	680.63
TOTAL REIMBURSABLE COST	$2,198.78
Less KACC Participation @ 50%	1,099.39
Government Participation @ 50%	$1,099.39

Total cost allowed in the DMEA Contract for this project was $5,020. Government participation was set at 50%, or $2,510 of the total. Inasmuch as the actual expenditure was less than $5,020, we ask that the Government reimburse Kaiser Aluminum in the amount of $1,099.39 as supported by this report and the attached voucher.



KAISER ALUMINUM & CHEM. CORP.
1924 BROADWAY, OAKLAND 12, CALIF.

EXPLORATION DEPT. LANDER CO, NEV.
COUNTRY

PROPERTY: ASSAY MAP
IOWA CANYON FLUORSPAR

SCALE: 1" = 40' . BY L. R. STOISER DATE 11/24/54 DWG. #25 – S, LR-2

THE DESIGN, PROCESS, OR IDEA HERE REPRESENTED IS OFFERED ONLY FOR YOUR CONSIDERATION. KAISER ALUMINUM & CHEMICAL CORPORATION MAKES NO WARRANTY OR ASSURANCE THAT IT IS SUITABLE FOR THE PURPOSES INTENDED AND ASSUMES NO RESPONSIBILITY OR LIABILITY OF ANY KIND FOR ANY RESULT OF ITS USE BY YOU, INCLUDING INFRINGEMENT OF PATENT RIGHTS.

Docket Copy
Surname:
Houk
Chairman
Selfridge
Mitchendorf

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

NOV 1 0 1954

Mr. Spangler Ricker
Executive Officer, DMEA
Field Team, Region III
U. S. Bureau of Mines
420 Custom House
555 Battery Street
San Francisco 11, California

Subject: Docket No. DMEA-3398
Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Ldm-E727

Dear Mr. Ricker:

Reference is made to your letter of November 3, 1954, transmitting Kaiser Aluminum & Chemical Corporation's request of October 29, 1954, to amend the subject contract.

The funds set up in the contract should be sufficient to complete the 800 feet of trenching and other work outlined in the contract. However, if this is not the case we would be pleased to have your recommendations on the additional work necessary to explore the target. You may give written approval for additional work subject to approval of the Washington Office, informing the company the work will be for their account if the Washington Office disallows it. Please note paragraph three of our letter of October 13, 1954.

The company may, while the equipment is on the property, complete such additional work as they desire for their own account.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (245)

Approved:

J. H. Hedges (245)
Member, Bureau of Mines

E. L. Newcomb (245)
Member, Geological Survey

LGHouk:gad 11/9/54
Copy to: Admr. R. File
Docket
Operating Committee
Mr. Kiilsgaard, 5222
Mr. Arundale, 3516
Mr. Houk

R.G.S.

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

Department of the Interior
Land Records Administration
RECEIVED
NOV 3 1954

420 Custom House
555 Battery Street
San Francisco 11, Calif.

November 3, 1954

Memorandum

To: George C. Selfridge, Chairman, Operating Committee, DMEA
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-E727

Attached is a copy of a letter dated October 29, 1954, from Mr. E. A. Hassan, Jr., Manager, Exploration Department, Kaiser Aluminum and Chemical Corporation.

You will note that in the last paragraph Mr. Hassan states he would like an opinion from Washington concerning his request. I certainly am happy to "pass the buck" on to you as I wouldn't know whether the request should be allowed or not.

H. C. Miller for
S. Ricker
Executive Officer
DMEA Field Team, Region III

Attachment - [redacted]

Copy to: Roscoe Smith, USGS

KAISER ALUMINUM & CHEMICAL CORPORATION

KAISER BUILDING, 1924 BROADWAY, OAKLAND 12, CALIFORNIA

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 8 - 1954

October 29, 1954

Refer to	Noted	Date
RCWilliams	HMiller	11/1
Acknowledged		

United States Department of the Interior
Defense Minerals Exploration Administration
420 Custom House
555 Battery Street
San Francisco 11, California

Attention: Mr. H. C. Miller

Re: Docket No. DMEA-3398 (Fluorspar)
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-E727

Gentlemen:

Recently our Mr. R. W. Koskinen talked with you regarding the possibility of allocating the bulldozer operator costs to Category 2b - "Labor," rather than Category 1 as stipulated in our DMEA contract. If the cost were left in Category 1, we would only get eight days of actual field work from our $1,000 alloted for the bulldozer work. The facts are as follows:

Expected Costs

Transport bulldozer from Reno to Iowa Canyon at 25 miles per hour - both ways at $12.50/hr. Distance 200 miles: $\frac{200}{25} \times 2 \times 12.50$	$ 200.00
Travel time for empty transport at 50 m.p.h. - both ways at $12.50/hr. Distance 200 miles: $\frac{200}{50} \times 2 \times 12.50$	100.00
Bulldozer operator at $3.00/hr. - 8 days, 3 x 8 x 8	192.00
Bulldozer rental at $8.00/hr. - 8 days, 8 x 8 x 8	512.00
TOTAL	$ 1,004.00

If we were permitted to allocate the $192.00 for the operator to labor, we would then be able to get another three days' work from the bulldozer: $64/day x 3 = $192.00.

Also, we would like to allocate the transportation costs from Category 1 and include them under Category 7 - Transportation of Supplies and Equipment. The $300 saved in this instance would allow us approximately 4½ days' additional work from the bulldozer: $64/day x 4½ = $288.00.

Even if these requests are granted, it will probably require considerably more bulldozing time to properly explore the vein system on the property.

The work on this property is going ahead as per schedule. However, we would like to have an opinion from Washington as to whether the contract could be amended to meet our requests. Your help on this matter will be appreciated.

Yours very truly,

KAISER ALUMINUM & CHEMICAL CORPORATION

E. A. Hassan

E. A. Hassan, Jr.
Manager
Exploration Department

EAH:lf

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

420 Custom House
555 Battery Street
San Francisco 11, California

November 1, 1954

Memorandum

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

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3398 (Fluorspar)
Kaiser Aluminum and Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada
Contract No. Idm-E727

Reference is made to Mr. George C. Selfridge's letter of October 13, 1954 transmitting to this office the original and five copies of the subject contract.

The contract has been executed on the part of the Operator and one copy retained by him. Distribution has been made of the Field Team and Finance Officer's copies and the original and two remaining copies are returned herewith.

H. C. Miller for
S. Ricker
Executive Officer
DMEA Field Team, Region III

Attachments

Copy to: Finance Officer, Region III (copy of contract attached)
A. C. Johnson, Reno (copy of contract attached)
R. M. Smith, USGS (no attachment)
George Mavor (no attachment)

Docket Copy
Surname:
Houk
Chamber
Arundale
Selfridge
Johnson

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

OCT 13 1954

Mr. H. C. Miller
Executive Officer, DMEA
Field Team, Region III
U. S. Bureau of Mines
420 Custom House
555 Battery Street
San Francisco 11, California

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada

Dear Mr. Miller:

Please find herewith the original and five copies of a contract covering the subject exploration project which have been signed by the Government with register number and effective date as shown.

If the contract meets with your approval present it to the Operator for approval and signature. Please explain to the Operator that the contract, when executed, is a firm commitment under the terms of which it is obligated to complete the work outlined at the agreed unit cost. If any part of this contract 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 of the contract are to be returned to this office, together with the proposed changes for consideration.

Recommendation for the additional trenching the company engineers had in mind when working up the cost data on the subject application should be made after the first visit of the Field Team to the property. Please note that the consulting engineer recommended shallow diamond drilling at the completion of the 600 feet of trenching and sampling. Your recommendation on the relative effectiveness and economy of trenching versus diamond drilling should be made at that time so that a contract amendment may be prepared in this office if the results of stage one justify.

After execution of the contract, the copies are to be distributed in the usual manner. Copies of a memorandum from the Geological Survey, dated August 26, 1954, are enclosed.

Approved:

J. H. Hedges (HB)
Member, Bureau of Mines

Thor H. Kiilsgaard (HB)
Member, Geological Survey

Enclosures 8

Sincerely yours,

George C. Selfridge (HB)
Chairman, Operating Committee

LGHouk:gad 10/11/54
Copy to: Admr. R. File
Docket
Operating Committee
Mr. Kiilsgaard, 5227
Mr. Arundale, 3516
Mr. Houk
R. G. J.

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

October 7, 1954

Memorandum

To: The Administrator, DMEA
Through: L. G. Houk

From: Acting Assistant Solicitor, Defense Minerals

Subject: Docket No. DMEA-3398, Kaiser Aluminum & Chemical Corporation (Fluorspar)

Attached hereto is an exploration project contract drafted for your signature pursuant to the request of Mr. Houk. It is approved subject to procuring the Owner's Consent to Lien of the lessors of a two-thirds interest in the property: Joseph G. Keller and Robert L. Keller (Thomas B. McDowell, the third lessor, has transferred his interest to the Applicant).

Exhibit 3(e) of the application indicates that the applicant's interest in the property is subject to a mortgage and deed of trust to secure the payment of $104,000,000. No doubt it would be impracticable to procure the subordination agreement of the mortgagee and trustee, and the contract form therefore shows the waiver of such subordination agreement.

Of course, it looks strange to see a contract in such a small sum, $5,000, with the land subject to a mortgage in the sum of $104,000,000. I understand from Mr. Houk that this is merely a preliminary undertaking, and that if it is successful the company expects to apply for much larger sums. In that event you may wish to consider further whether the subordination agreement of the mortgagee and trustee can be waived.

J. L. Hoffiund
J. L. Hoffiund
Acting Assistant Solicitor
Defense Minerals

Attachments 8

KAISER ALUMINUM & CHEMICAL CORPORATION

General Offices: 1924 BROADWAY, OAKLAND 12, CALIFORNIA

Washington Office: SUITE 909, 1625 EYE STREET, N.W., WASHINGTON 6, D. C.

October 11, 1954

Mr. L. G. Houk, Chief
Non-Metallic Minerals Division
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.

Re: Docket 3398

Dear Mr. Houk:

Attached are six copies of Owner's Consent to Lien which are to be made a part of our loan application, Docket 3398.

Very truly yours,

KAISER ALUMINUM & CHEMICAL CORPORATION

John H. Merriam, Jr.

JHM/pg
Att.

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

SEP 20 1954

420 Custom House
555 Battery Street
San Francisco 11, Calif.

September 17, 1954

Air Mail

Memorandum

To: George C. Selfridge, Chairman, Operating Committee, DMEA
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada

Reference is made to the letter dated August 27, 1954, from W. S. Martin to me concerning the subject docket from the cost standpoint.

During my absence from the office, Mr. Ricker sent A. C. Johnson a copy of the cited letter for comment.

I now have a memorandum reply from Mr. Johnson outlining a cost estimate for work under the subject application. Two copies of Mr. Johnson's memorandum are attached.

It is regretted that the examining engineer did not make a detailed check on the costs at the time the property was examined. Mr. Roscoe Smith and I naturally assumed that that had been done and that the costs other than those requested for a consulting geologist were just and proper.

Mr. Johnson is being informed to check closely all costs for projects recommended for approval and I trust that what happened on this occasion will not occur again.

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Attachment

Copy to: Roscoe Smith, USGS
A. C. Johnson, Reno

xxxxxxxxxxxxxxx
Mining Division

1605 Evans Avenue

September 16, 1954.

Memorandum

To: Mr. H. C. Miller, Executive Officer, DMEA Field Team Region III

From: Chief, Mining Division, Region III

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada

In compliance with Mr. Ricker's memorandum of September 3, I have reviewed the report on the Iowa Canyon Fluorspar by Russell R. Trengove, Mining Engineer of the U. S. Bureau of Mines, and Earl H. Pampeyan, Geologist of the U. S. Geological Survey.

The costs for this project, as set up, are too expensive. There are several items included in their application that have a tendency to pad the amount for the project. The following expenditures should more or less be in line with the work that they have requested:

a.	Bulldozer with operator - 120 hrs. @ $12.50 hr.		$1,500.
b.	Supervision - 2 mos. @ $600. per mo.	$1,200.	
	Miners, surface - 78 man days @ $16.72 per day	1,304.	2,504.
c.	Operating materials and supplies:		
	Explosives	100.	
	Tools	150.	
	Sample sacks and tags	50.	
	Compressor gasoline, oil and supplies	100.	400.
d.	Rental of compressor, jackhammer and accessories		500.

e. Miscellaneous

Analyses of samples - 100 @ $5.	$500.	
Transportation of supplies and equipment	500.	$1,000.
	Sub-total:	$5,904.
f. Contingencies		590.
	Total estimated cost:	$6,494.

The equipment that will be used at the property will be rented. The company estimates that it will be necessary to move approximately 2,000 yards of overburden with a bulldozer and another 100 yards of rock will have to be moved to clean the trenches.

A. C. Johnson.

CC: Mr. Roscoe M. Smith, USGS

INTER-OFFICE MEMORANDUM

TO Dick Ward
Washington, D. C.

DATE September 9, 1954

FROM H. S. Fowler
Oakland

COPIES TO: W. C. Humphreys E. A. Hassan, Jr.
R. R. York
B. G. Wester
L. F. Muller

SUBJECT Iowa Canyon Fluorspar

I shall attempt to answer your several recent questions by an explanation of the probable procecure that we will follow. I am enclosing a colored print hoping to help you visualize the actual work on the ground.

1 - a. First work on ground will be bulldozer trenching following in general the recommendations made by Mr. Joralemon. The reason for this procedure is that we agree that the general zones selected by Mr. Joralemon are the most favorable in light of present knowledge. If the results at this point are unfavorable, we believe the work should be terminated without further expenditure, except for such items as are necessary to make comprehensive record of the limited work performed. If the results of this work are favorable, you will see by reference to the map that there would still be large gaps in the continuity of the possible vein system.

b. In the attempt to extend the knowledge and fill in some of the gaps, we think the logical next step is to do further bulldozer trenching immediately. Because of the isolation of the area, it is very costly to move heavy equipment in and out. Further, because of the isolation, obtaining the services of a bulldozer is frequently a difficult and time-consuming procedure; therefore, we feel that it would be sensible to do the additional work while the machine is at hand. The work suggested might be somewhat as indicated in red on the sketch. I think you will agree that if favorable results were obtained in this additional work, we would then have a much more comprehensive picture on which to plan over-all development of the deposit.

2. Contemporaneously with the bulldozer work we will carry out handwork for cleaning up the bottom of the bulldozer trenches. Completion of this will require considerable time after the bulldozer is through.

3. After completion of the above items we would expect to call on Mr. Joralemon to examine the work and render an opinion whether further work is warranted, and, if so, to assist us in planning the work.

4. If the trenching has given favorable results, we would expect the next stage to be a diamond drilling campaign to determine the extention to shallow depth of all the veins exposed on the surface. We believe that such diamond drilling could be planned much more effectively if trenches 1, 2, 3 and 4

were followed by additional trenching in zones A, B, C and D. Such diamond drilling is not contemplated in the present program but would be in a later program.

5 - a. Regarding the form of contract, Short Form, Article 4, mentions, "units of work per foot of drifting per cubic yard of material etc." If the word et cetera may mean per hour for bulldozer work and per month for compressor rental and similar items, we believe we could use the short form. Because of unknowns and the relatively small extent of the job, we do not consider volume a satisfactory basis for planning. If the DMEA officials insist on volume, we can only guess at it using Joralemon's figure of a five-foot depth of overburden. Thus, for a ten-foot bulldozer blade, we would have approximately two cubic yards per linear foot of trench. We suggest a cost of $1.00 per cubic yard of overburden, but actual cost per yard will be much higher if the overburden proves to be shallow. Rock trenching may amount to one cubic yard for every twenty cubic yards of overburden. The suggested cost, excluding supervision, consulting, miscellaneous and contingencies but including operating supplies and compressor rental, is $30.00 per cubic yard of solid rock vein material.

b. Because of the sparse population and the isolation mentioned previously, it is not practical to get firm bids until we are actually ready to go to work. People available today will not be available a week hence, for the miners of Nevada necessarily move frequently to follow available work. The same applies to equipment. We can see no practical way to arrange this except to get the best available deal at the time we start work. In this connection we may be able to rent a compressor, to get drills and all accessory equipment for under $500 per month, and, if we can, we certainly will. We are certainly anxious to get the necessary information at the minimum cost. Because of all these reasons we still recommend the long form which is designed for an accounting on an actual cost basis.

6. Regarding the basis for repayment, we suggested a means in our memorandum to Ward Humphreys dated June 14. We notice the Short Form, Article 6A, and the Long Form 9A mention net concentrator returns. We do have an established schedule on which we have purchased custom ore. Perhaps we could arrange repayment on the basis of our custom ore schedule. If you will compare the value for 60% ore in the schedule below with our proposal dated June 14, you will see that the rate of return to the Government based on custom ore would be much slower. However, it is conceivable that the Government would prefer this merely because of the simplicity of settlement on this basis. Further, this would tend to tie in directly with any shipments that might be made by the original owners of the property should Kaiser drop the property and let it revert to the owners. The actual rate of return to the Government is immaterial to us as far as this project is concerned.

For Acceptable Ores Payment F.O.B. Fallon Mill Has Been As Follows

% CaF_2 in Ore	Dollars per Ton of Ore - Dry Basis
Under 40%	Nothing
40%	$10.00
50%	15.00
60%	18.00
70%	21.00
80%	24.00
90%	27.00

With proportionate value for intermediate grades.

Mr. York is preparing consent-to-lien forms for signature by the original owners, and we will try to have these completed and returned to you shortly.

We hope the above will show you why we consider that we should provide for more surface work than the minimum recommended by Joralemon and that the only practical method of accounting is actual cost basis. If we should reach the diamond drilling stage and negotiate a contract for that, a footage basis would be fine. If there is anything in the above outline that is not clear to you, please do not hesitate to call on me for further information. Meanwhile, we will leave the matter in your hand to make the best arrangements possible.

HSF:mlp
Enc.

QA050-

OQ066-WASH OAKA 80 8-31-54 RUSH RUSH RUSH

DICK WARD

RE IOWA CANYON APPLICATION. ANSWERS TO YOUR QUESTIONS FOLLOW:

1. BULLDOZER TRENCHING DEPENDS ON DEPTH OF OVERBURDEN, WHICH IS UNKNOWN. PROBABLY ABOUT 2,000 CUBIC YARDS. HAND CLEANUP IN ROCK WILL VARY WITH AMOUNT OF VEIN FOUND, PROBABLY ABOUT 100 CUBIC YARDS.

2. BULLDOZER IS TO BE RENTED. SIZE CANNOT BE STATED NOW BECAUSE MACHINE WILL BE SECURED BY COMPETITIVE BIDS. FRAZINI OF VASSAR STREET, RENO, HAD ONE AT AUSTIN RECENTLY. IF NOT STILL AVAILABLE, SEVERAL CONTRACTORS IN FALLON AND RENO DO HAVE SUITABLE EQUIPMENT, MOSTLY IN THE RANGE OF CATERPILLAR D-7 AND D-8 OR EQUIVALENT.

3. COMPRESSOR PROBABLY 105 CFM AND JACK HAMMER ABOUT 50 POUNDS. EXPECT TO RENT FROM RENO. TRAVEL TIME ONE DAY EACH DIRECTION. IF SUITABLE EQUIPMENT IS AVAILABLE ELSEWHERE AT LOWER COST, WE WILL USE IT.

4. IF ACTUAL WORK RECOMMENDED BY JORALEMON IS COMPLETELY NEGATIVE, WE MAY BE ALL THROUGH IN TWO WEEKS. IF IT IS FAVORABLE, WE WILL DO MORE EXTENSIVE BULLDOZER WORK WHILE EQUIPMENT IS ON THE SITE. FURTHER, AFTER COMPLETION OF DOZER WORK, HAND CLEANUP AND SAMPLING WILL REQUIRE CONSIDERABLY MORE TIME. SUPERVISOR WILL BE REQUIRED EXTRA TIME AT THE START TO ARRANGE FOR MEN. ACCOMMODATION, AND EQUIPMENT RENTAL, AND AT THE FINISH FOR PREPARATION OF MAPS AND REPORT, WITHOUT WHICH ALL THE WORK WOULD BE WASTED.

WE UNDERSTAND THAT OUR APPLICATION WAS TO HAVE BEEN FOR MAXIMUM EXPECTED EXPENDITURE, AND THAT WE MAY HOPE TO ACCOMPLISH THE WORK AT LOWER COST. ANSWERS TO ALL QUESTIONS ARE SUBJECT TO ANY MODIFICATIONS NECESSARY TO ACHIEVE THE LOWEST POSSIBLE COST AT THE TIME THE WORK IS PERFORMED.

H.S. FOWLER

320 PM

CORR: 12TH LN 6TH WD LOWER. 3RD LN FM END 3RD WXX 2ND WD LOWER.

Docket Copy
Surname:
Houk
Chambers
Kilsgaard
Martin

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

AUG 27 1954

Mr. H. C. Miller
Executive Officer, DMEA
Field Team, Region III
U. S. Bureau of Mines
420 Custom House
555 Battery Street
San Francisco 11, California

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada

Dear Mr. Miller:

Reference is made to the field examination report on the subject property.

We find the examination report inadequate from the cost standpoint. The field team apparently have accepted the costs as set forth by the applicant deleting the $1,150 consultant fees.

The application work is based on the report by Ira B. Joralemon who states that about 600 feet of trenching can be accomplished with a small bulldozer in a week or two. It would appear that $19.16 per linear foot of trenching that can be done with a small bulldozer is not in line with costs obtained for similar work in other Regions. The metallurgical testing under "g. Miscellaneous", should not be included as an allowable cost. The field examination report makes no mention as to whether the equipment to be used on the property is to be company owned or rented. If the primary equipment is company owned a use rental allowance of 1/60 of its present value is considered adequate monthly rental.

Kindly give an estimate of the yardage that will be moved by bulldozer and the yardage of rock work that will be necessary to clean the trenches. Determine, if possible, if the supervisor is to spend full time on the project.

We shall contact the applicant's Washington Office for the Owner's Consent to Lien.

Sincerely yours,

W. S. Martin
Chairman, Operating Committee

Approved:

J. H. Hedges
Member, Bureau of Mines (JHB) ACTING

s/ Thor H. Kilsgaard
Member, Geological Survey (THK)

LGHouk:gad 8/26/54
Copy to: Admr. R. File
Operating Committee
Docket
Mr. Arundale, 3516
Mr. Kiilsgaard, 5227

Mr. Houk

IN REPLY REFER TO:

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

August 26, 1954

Memorandum

REVIEW OF FIELD TEAM REPORT ON APPLICATION DMEA-3398 (fluorspar)

To: Lawrence G. Houk, Defense Minerals Exploration Administration
From: R. D. Trace, U. S. Geological Survey
Applicant: Kaiser Aluminum and Chemical Corporation
Name of property: Iowa Canyon Fluorspar
Location of property: Lander County, Nevada
Date of Field Team Report: August 18, 1954
Authorship of Field Team Report: R. R. Trengrove, USBM, and E. H. Pampeyan, USGS.
Field Team's recommendation: Approve contract of $10,350 for bulldozing and sampling in 4 trench sites.
Comments: Because of the known production and showings, a small exploration program, as recommended by the Field Team, is warranted. This area reminds me of the Duncan (Ariz.) fluorspar deposits.
ACTION RECOMMENDED: Follow Field Team recommendation.

Bob Trace
R. D. Trace

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

420 Custom House
555 Battery Street
San Francisco 11, Calif.

August 20, 1954

Memorandum

To: George C. Selfridge, Chairman, Operating Committee, DMEA
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3398 - Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada

Reference is to your letter dated July 2, 1954, requesting a field examination of the subject property.

A joint Bureau of Mines-Geological Survey examination of the property has now been made and attached are four copies of the examiners' report entitled "DMEA-3398, Iowa Fluorspar, Kaiser Aluminum & Chemical Corp., Lander County, Nevada," by Russell R. Trengove, Mining Engineer, U. S. Bureau of Mines, and Earl H. Pampeyan, Geologist, U. S. Geological Survey, dated August 18, 1954.

The engineer and geologist are in agreement that some exploration work is warranted on the property. They have recommended that the work be carried out in two stages. First by bulldozer trenching to determine if there is continuity to the fluorspar outcrops and then to be followed by diamond drilling in the event that the bulldozer trenching is successful. This second phase of exploration, however, is not included in the company's application and if to be done jointly by the company and DMEA will require the company to make an application for such work and if approved, a new contract will have to be drawn.

Mr. Roscoe Smith and I concur with the recommendations that have been made by the engineer and geologist.

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

On-site Exam Rpt.

As the office of the applicant is given as 1625 Eye Street, N. W., Washington, D. C., we presume that you will obtain needed Owner's Consent to Lien forms from that address.

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Attachment

Copy to: Roscoe Smith, USGS
A. C. Johnson, Reno

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA-3398, Iowa Fluorspar

Kaiser Aluminum & Chemical Corp.

Lander County, Nevada

Russell R. Trengove, Mining Engineer
U. S. Bureau of Mines

Earl H. Pampeyan, Geologist
U. S. Geological Survey

August 18, 1954

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

EXAMINATION REPORT

Docket No.: DMEA-3398 (Fluorspar)

Name and address of applicant: Kaiser Aluminum and Chemical Corp., 1924 Broadway, Oakland 12, Calif.

Name and location of property: Iowa Fluorspar, 37 miles northeast of Austin, Lander County, Nev.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

An engineer of the Bureau of Mines and a geologist of the Geological Survey made a joint examination of the Iowa Fluorspar mine in July 1954. The property is situated about 37 miles northeast of Austin, Nevada (fig. 1). The purpose of the examination was to determine if the geological conditions and the grade of mineralization were favorable to justify approval of an application for a Government loan. The total estimated cost of the applicant's proposed exploration, dated June 22, 1954, is $11,500.

The Iowa Fluorspar property and surrounding area is underlain by Tertiary volcanic rocks and a mantle of soil and slope wash, from one to ten feet thick, overlies most of the area. Croppings of andesite and vein quartz penetrate the soil cover locally, and associated with the vein quartz is massive fluorite in veins up to five feet thick.

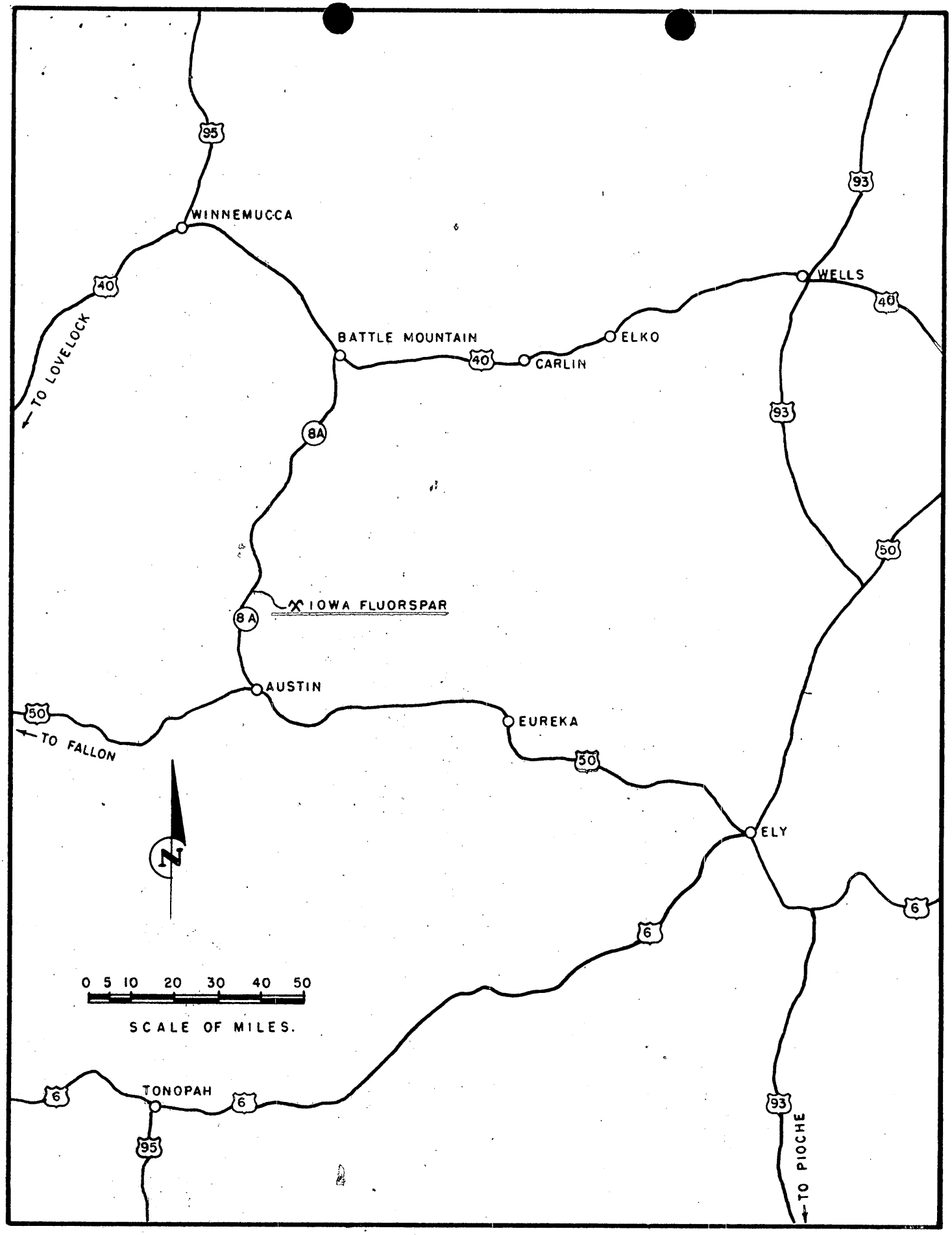


FIGURE I. LOCATION MAP.

An inclined shaft 30 feet deep and a drift 40 feet long (fig. 2) were driven along a vein of massive fluorite three to five feet thick. This vein was stoped for 15 feet along 33 feet of the drift and had an average thickness of three feet. The vein pinches to the south and is only 2-1/2 feet thick in the face of the drift and also the south side of the stope. Samples taken by the Bureau engineer in these points analyzed 39.9% and 34.8% CaF_2. About 260 tons, analyzing 61.0% CaF_2 was shipped to the Fallon mill of Kaiser Aluminum & Chemical Corp.

The proposed exploration consists of removing the overburden by bulldozing along the strike wherever the overburden is light and at right angles to the strike where the overburden is heavy. After removing the overburden, some common labor will be required to clean the trenches preparatory to sampling.

The Kaiser Aluminum & Chemical Corp. has competent mining engineers and geologists headquartering in Fallon, Nev. It is evident that for a small project, comprised of only 600 linear feet of bulldozing stripping, the services of a consulting geologist for four days at $250 per day plus expenses amounting to $1,150 is not necessary. It is therefore recommended that the applicant's request for a DMEA loan of $11,500 be reduced by $1,150 and approved for $10,350, of which the Government's share would be $5,175. This approval is based upon the past production and because the geological setting suggests good possibilities for economic amounts of fluorspar.

Further proposed exploration by diamond drilling will depend upon the results obtained by sampling the surface trenching.

INTRODUCTION

An application for a Government loan under Sec. 202 of the Defense Production Act of 1950 was made by T. J. Ready, Jr., vice president, Kaiser Aluminum & Chemical Corp., 1924 Broadway, Oakland 12, California on June 22, 1954. An engineer of the Bureau of Mines and a geologist of the Geological Survey made a joint examination of the Iowa Fluorspar in July 1954. They were accompanied by the following employees of Kaiser Aluminum & Chemical Co.: H. S. Fowler, Project Engineer from the Oakland office; L. F. Muller, General Superintendent, Fallon, Nev.; and P. W. West, Geologist, Fallon, Nev.

HISTORY, OWNERSHIP AND PRODUCTION

The fluorspar deposit was discovered in 1952 by Thomas B. McDowell, one of the lessors. The owners of the five claims are Joseph G. Keller, Robert L. Keller and Thomas B. McDowell, all of Fallon, Nev. Their work to date comprises two shallow test pits, and a 30-foot inclined shaft with 40 feet of drifting and 15 feet of crosscutting into the hanging wall at the bottom of the shaft. A small open, overhand stope has been excavated from the drift. Only a small surface pillar remains above this stope. About 260 tons of fluorspar was mined from this stope and was shipped to the Fallon mill of the Kaiser Aluminum and Chemical Corporation. One lot of 209.23 tons analyzed 61.48% CaF_2.

Indicated ore reserve is virtually nil.

The Kaiser Aluminum & Chemical Corporation obtained a lease and option on the property January 25, 1954.

LOCATION AND PHYSICAL FEATURES

The Iowa Fluorspar deposit is situated, probably in T. 23 N., R. 44 E. at an elevation of about 6770 feet. To reach the property, starting at the junction of U.S. 50 and State Highway 8A, just a little west of Austin, follow hard-surfaced 8A northerly a distance of 26.4 miles to the Hall Creek road. Follow the Hall Creek dirt road southeasterly a distance of 2.2 miles then turn right, follow this road 1.5 miles, then turn right following this road a distance of 6.8 miles to the mine, a total distance of 36.9 miles from the junction.

There are no buildings or equipment on the property. The small steel headframe used in sinking the shaft and mining 260 tons of ore has been removed. Vegetation consists of desert grasses and sagebrush. Mine equipment and supplies can be obtained from Reno, Nev., 214 miles distant. There is no transmitted power in the area. Water can be obtained from Iowa Creek, 1,200 feet distant. The nearest railroad is a branch of the Southern Pacific railroad at Fallon, Nev., about 158 miles distant.

GEOLOGY AND ORE DEPOSITS

The Iowa Fluorspar property, and surrounding area, is underlain by Tertiary volcanic rocks, and a mantle of soil and slope wash

from 1 to 10 feet thick overlies most of the area. Croppings of andesite and vein quartz penetrate the soil cover locally, and associated with the vein quartz is massive fluorite in veins up to 3 feet thick. Although the underground workings passed through two faults, no evidence for faulting was seen on the surface.

Fluorite occurs as vein fillings usually, but not always, between two ribs of massive or crystalline quartz. No lithologic controls were apparent at the time of this examination. The pattern made by fluorite-bearing outcrops and float did not suggest any structural controls.

An inclined shaft 30 feet deep and a drift 40 feet long (fig. 2) were driven along a vein of massive fluorite 3 to 5 feet thick. This vein was stoped for 15 feet along 33 feet of the drift and had an average thickness of 3 feet. The lower end of the incline passes through a fault, 12 feet of brecciated andesite, and ends against a second parallel fault. The faults cut off the vein and, as the displacement appears to be normal, float found up slope from the incline collar could indicate the offset portion of the vein. The vein pinches to the south and is only 2-1/2 feet thick in the face of the drift. In the north wall of the incline the vein splits about 15 feet below the collar. The upper split, under the thin siliceous rib which forms the back of the incline, is two feet thick at the drift level. Thickness of the lower split is unknown, as the vein dips steeply below the floor of the incline, but is at least 3 feet thick where last seen. Good showings of fluorite are exposed in several

outcrops and these have been noted on fig. 2. The thickness of fluorite in these limited surface exposures varies from a few inches to 3 feet. In most cases the boundary between fluorite and silica is relatively sharp but in some of the narrow veins the two minerals are intimately mixed. There are several other occurrences of fluorite within a half mile radius of the shaft; those off the mapped area are of little consequence.

About 300 tons of 60 percent effective fluorite was mined from these workings. Two hundred and sixty-two tons of crude fluorspar, shipped from this property to Kaiser's Fallon mill in 1953, was successfully concentrated to acid grade fluorspar.

ORE RESERVES

The reserves are difficult to estimate because of the scattered surface, and limited underground exposures. There is no measured ore. On the basis of the underground workings and nearby surface exposures, it seems likely that an amount of fluorite equal to the amount already mined could be considered as indicated ore. Inferred reserves would be in the order of several thousands of tons if the veins, as indicated by float, are continuous between the outcrops.

PROPOSED EXPLORATION

The applicant proposes to explore the subject fluorspar deposit by means of surface trenching and diamond drilling. Trenching would be done on veins 1, 2, 3, and 4 (fig. 2) as follows:

No. 1. Trench along vein for 150 feet (north from shaft).

No. 2. Crosscut trench about 30 feet to locate vein, then trench along vein about 60 feet.

No. 3. Crosscut trench about 40 feet to locate vein, then trench along vein in both directions 140 feet.

No. 4. Crosscut 40 feet to locate source of float at N10,730, then trench 120 feet along vein to N10,630.

If this work uncovered sufficient favorable showings before the allotted footage was expended, some additional trenching would be done near the croppings at A, B, C and D. The trenching would be done by bulldozer, with some hand labor to prepare them for inspection. The applicant has estimated this phase would require 600 feet of trenching averaging 5 feet deep and would cost $11,500. A second phase of exploration--dependent upon the results of the first phase--would consist of a diamond drilling program to determine the vertical extent of the mineralized veins. This second phase, however, will not be proposed until the favorable completion of phase one.

The applicant's geologists and engineers have planned the program with care. Surface trenching and diamond drilling would offer the fastest and least expensive method of exploration. The proposed trenches would show whether or not the veins extend between the most prominent croppings, and whether further expenditures for diamond drilling would be justified.

The geologist believes that trenching proposed for phase one would be the most feasible method of exploration. Upon completion of this surface work, the results should be appraised by all parties concerned before a drilling program is outlined.

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 8 - 1954

July 8, 1954

Memorandum

To: Mr. Lawrence Houk, Chief, Nonmetallic Minerals Division, D. M. E. A.

From: Assistant Chief, Construction and Chemical Materials Branch

Subject: Docket No. DMEA-3398, Kaiser Aluminum and Chemical Corporation, Iowa Canyon Fluorspar, Lander County, Nevada - Fluorspar

I recommend that the subject application be referred to the field team for review and recommendations.

Joseph C. Arundale

J. C. Arundale

DOCKET FILE
Surname:
Houk
Arundale
Hedges
Gunkel
Sellorge
Johnson

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

JUL 2 - 1954

Kaiser Aluminum & Chemical Corporation
1625 Eye Street, N. W.
Washington, D. C.

Re: Docket No. DMEA-3398 - Fluorspar
Iowa Canyon Fluorspar
Lander County, Nevada

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. H. C. Miller, Executive Officer, DMEA Field Team, Region III, Bureau of Mines, 420 Custom House, 555 Battery Street, San Francisco 11, California, for further consideration and possibly a field examination.

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

Sincerely yours,

C. O. Mittendorf

Administrator

LGHouk:gad 7/1/54
Copy to: Admr. R. File
Docket File
Operating Committee
Field Team, Region III
Mr. Arundale, 3516
Mr. Van Alstine, 5216
Mr. Houk

DOCKET FILE
Surname:
Houk
Arundale
Selfridge
Johnson

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

JUL 2 - 1954

Mr. H. C. Miller
Executive Officer, DMEA
Field Team, Region III
Bureau of Mines
420 Custom House
555 Battery Street
San Francisco 11, California

Subject: Docket No. DMEA-3398 -
Fluorspar
Kaiser Aluminum & Chemical Corporation
Iowa Canyon Fluorspar
Lander County, Nevada

Dear Mr. Miller:

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

Copies of memorandum from the Geological Survey, dated June 28, 1954, are enclosed for your information.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (24B)

Approved:

J. H. Hedges (24B)
Member, Bureau of Mines

Philip W. Guild (24B)
Member, Geological Survey

Enclosures 2

LGHouk:gad 7/2/54
Copy to: Admr. R. File
Docket File
Operating Committee
Mr. Barrabee, 5216
Mr. Arundale, 3516
Mr. Houk

R.C.B.

IN REPLY REFER TO:
G-MD-CNM

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

Memorandum

June 28, 1954

REVIEW OF APPLICATION DMEA-3398 (FLUORSPAR)

To: L. G. Houk, Defense Minerals Exploration Administration
From: R. E. Van Alstine, U. S. Geological Survey.
Applicant's name and address: Kaiser Aluminum & Chemical Corp., 1625 Eye St., N. W., Washington, D. C.
Name of property: Iowa Canyon Fluorspar; Iowa Claims Nos. 1-5.
Location of property: 4 miles east of Iowa Canyon Dam, Iowa Canyon Mining District, Lander Co., Nevada; T. 22 N., R. 45 E.; 149 miles by road from Corp. mill at Fallon.
Summary of applicant's proposal: $11,500 worth of bulldozing and sampling in 4 trench sites along fluorspar veins in andesite.
Sources of information on applicant's property: None, other than that in memorandum reports supplied by applicant.
Comments:

1) We have no data on this new deposit, which is said to have been discovered in August 1952.

2) The grade (60% CaF_2), as indicated by the 200 to 300 tons shipped to Kaiser's mill at Fallon, Nev., is good. What were the results of this mill test? Was an acid-grade concentrate made successfully?

3) Proposal needs appraisal on the ground.

RECOMMENDATION: Refer to Field Team.

R. E. Van Alstine

R. E. Van Alstine

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

June 24, 1954
Subject: DMEA-3398
Re: Exploration Assistance
Iowa Canyon Fluorspar

Kaiser Aluminum & Chemical Corp.
1625 Eye Street, N. W.
Washington, D. C.

Gentlemen:

The receipt of your application dated June 22, 1954 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

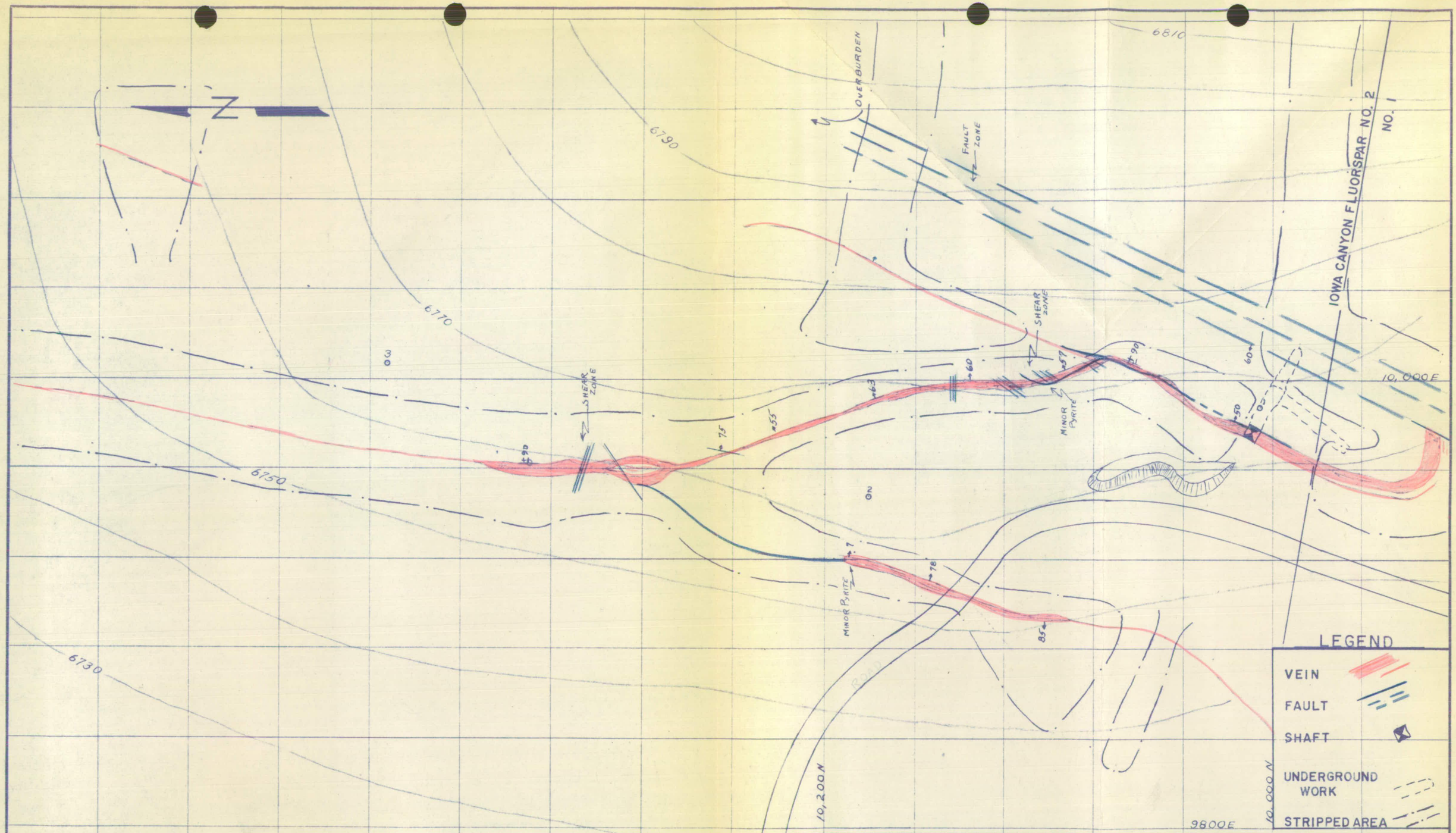
Your application has been assigned Docket Number DMEA-3398 and referred to the Non-Metallic Minerals Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932



KAISER ALUMINUM & CHEM. CORP.
1924 BROADWAY, OAKLAND 12, CALIF.

EXPLORATION DEPT. LANDER CO, NEV.
COUNTRY

PROPERTY: GEOLOGY & TOPOGRAPHY
IOWA CANYON FLUORSPAR

SCALE: 1" = 40' . BY L. R. STOISER DATE 11/24/54 DWG. #2S – S, LR-1

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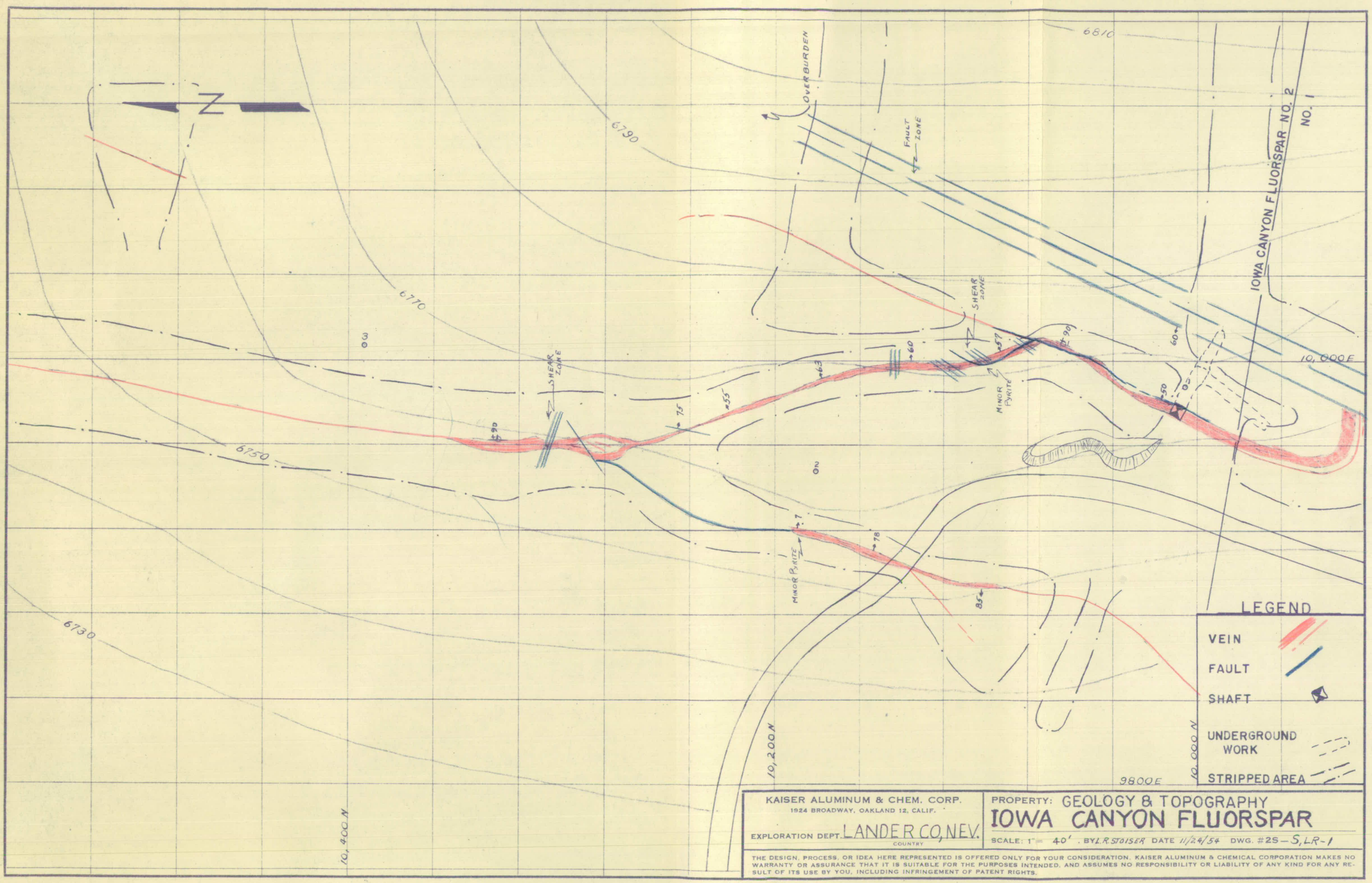
N
6810
6790
6770
6750
6730
OVERBURDEN
FAULT ZONE
IOWA CANYON FLUORSPAR NO. 2
NO. 1
SHEAR ZONE
SHEAR ZONE
MINOR PYRITE
MINOR PYRITE
10,000E
9800E
10,200N
10,000N
10,400N
LEGEND
VEIN
FAULT
SHAFT
UNDERGROUND WORK
STRIPPED AREA
KAISER ALUMINUM & CHEM. CORP.
1924 BROADWAY, OAKLAND 12, CALIF.
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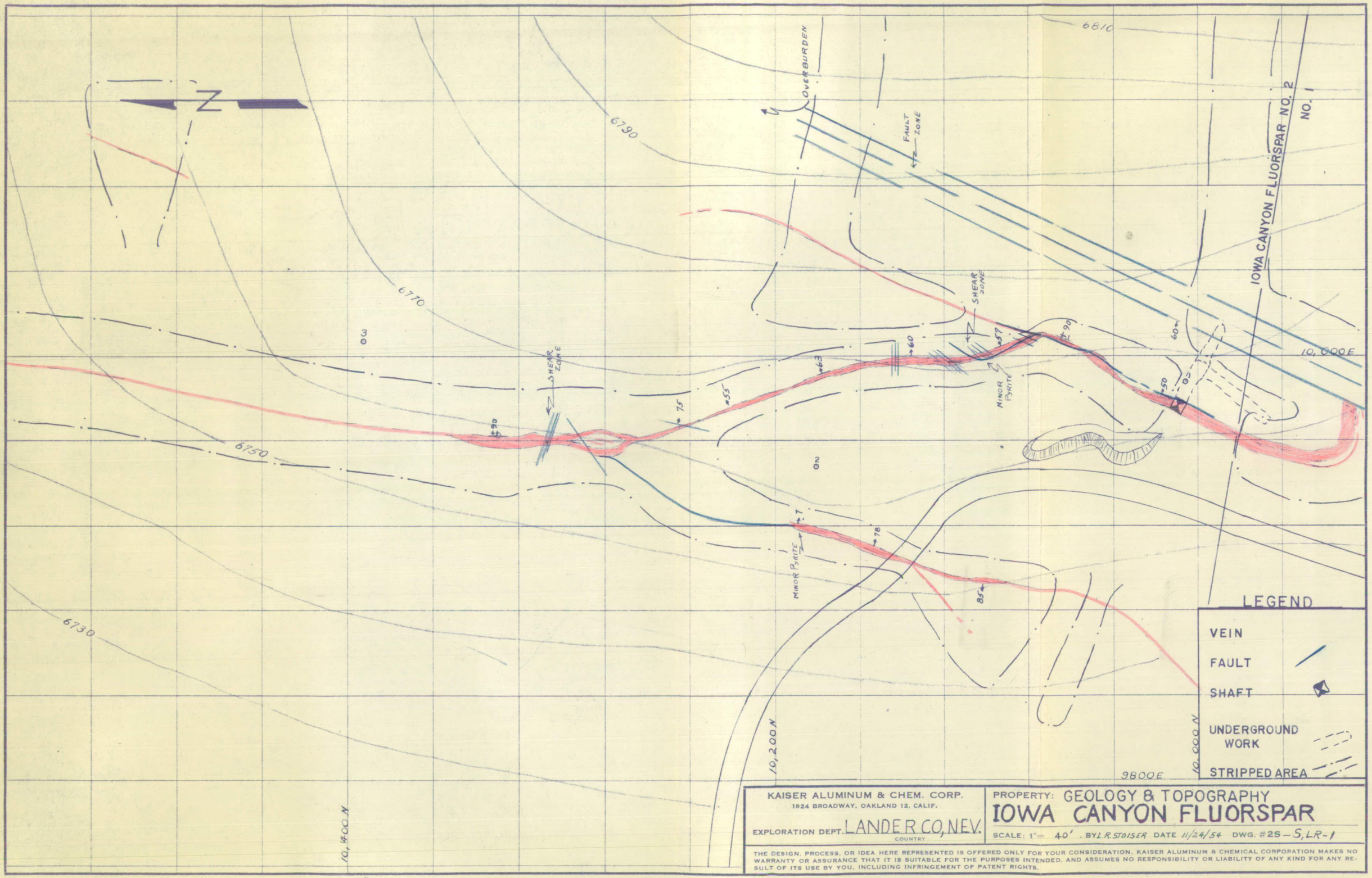
N
6810
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FAULT ZONE
SHEAR ZONE
SHEAR ZONE
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MINOR PYRITE
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10,000E
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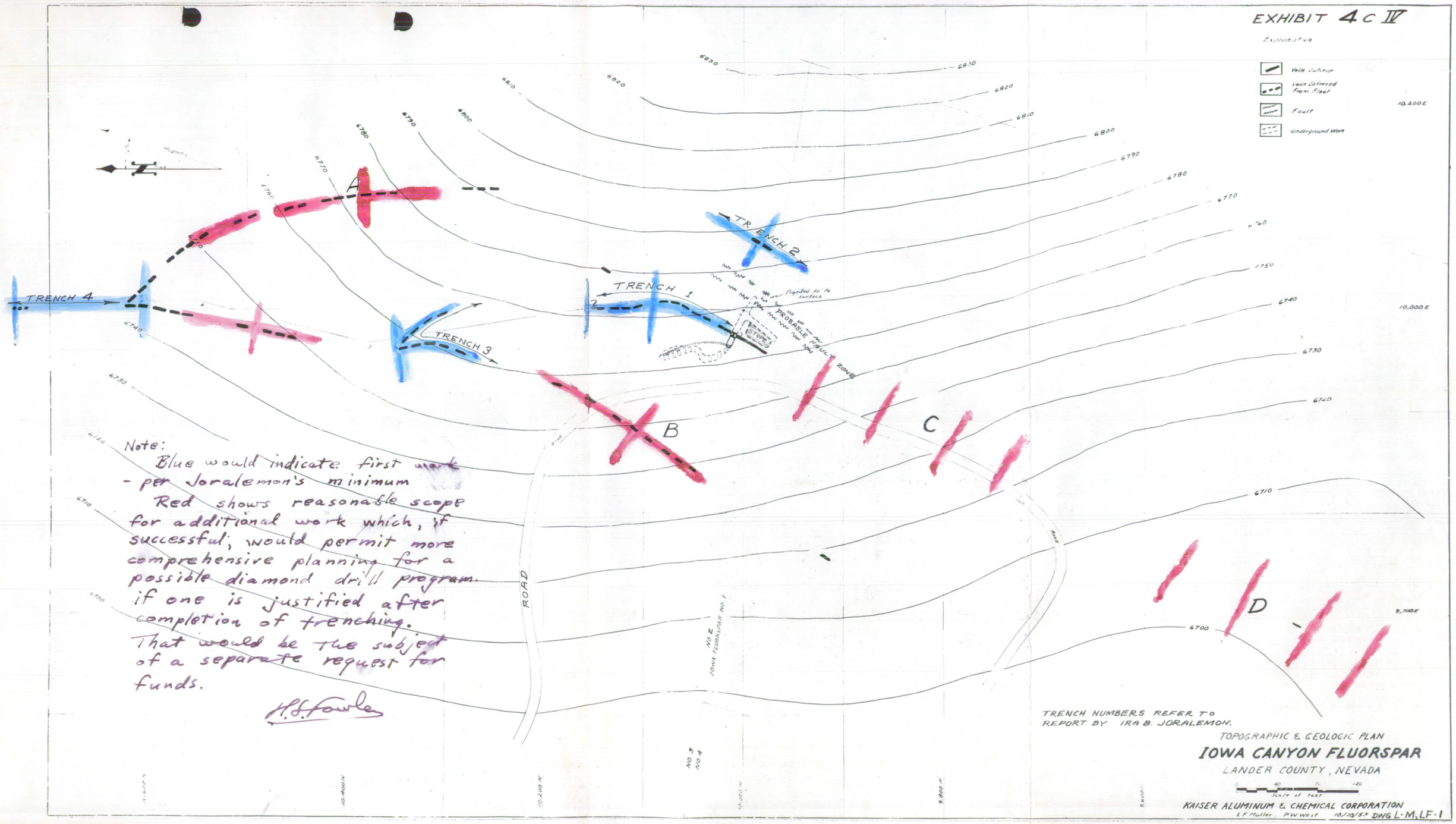
EXHIBIT 4c IV

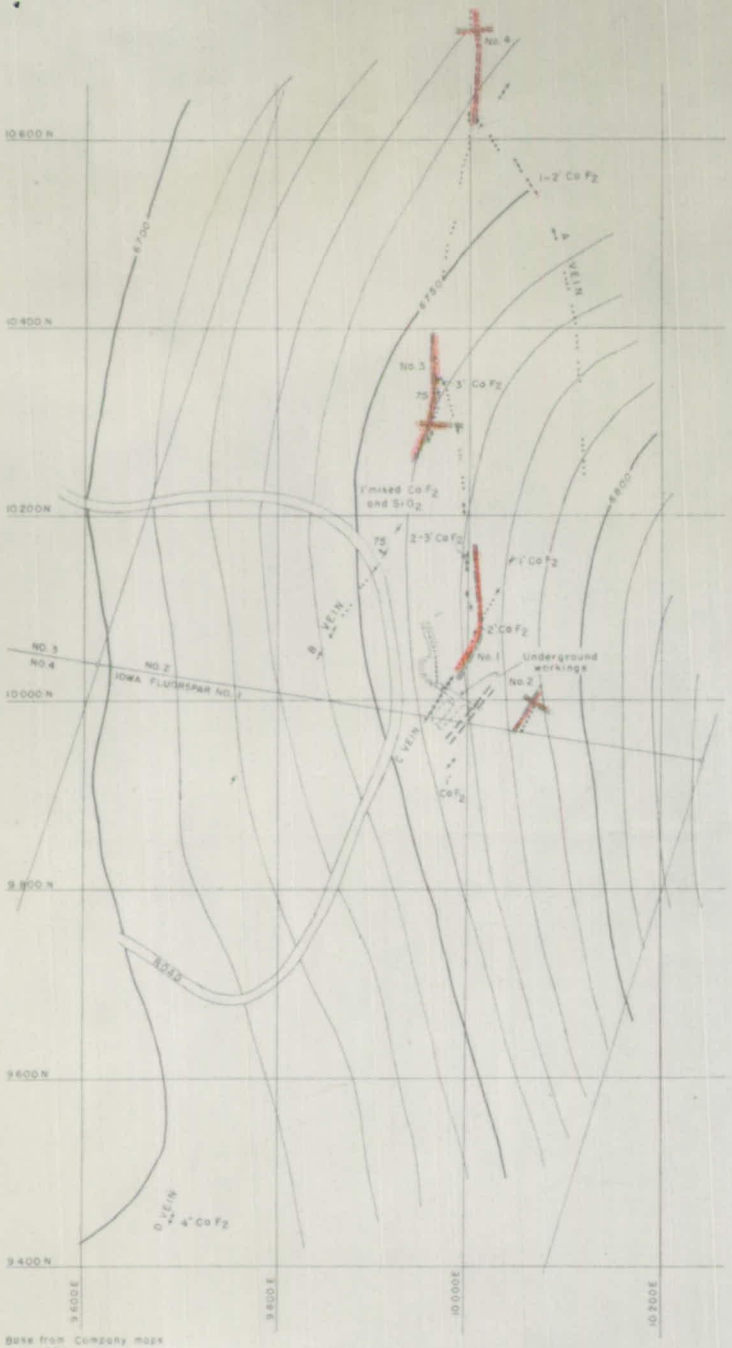


Note:
Blue would indicate first work - per Joralemon's minimum
Red shows reasonable scope for additional work which, if successful, would permit more comprehensive planning for a possible diamond drill program if one is justified after completion of trenching.
That would be the subject of a separate request for funds.

H.S. Fowler

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

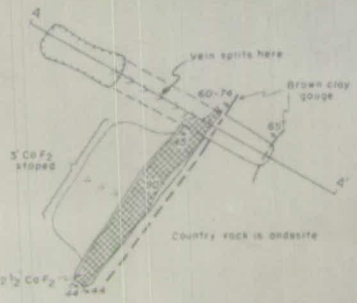
OMEA 3398
(FLUORSPAR)



Base from Company maps
July 1954

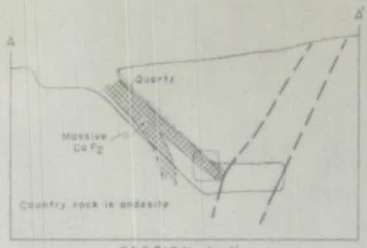
SURFACE MAP

100 0 100 200 FEET



SKETCH MAP OF UNDERGROUND WORKINGS

20 0 20 40 FEET



SECTION A-A'

EXPLANATION

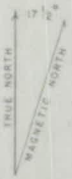
Fault, showing dip (Dashed where approximately located)

Fluorite-bearing vein, showing dip

Vein inferred from float

Proposed trenches

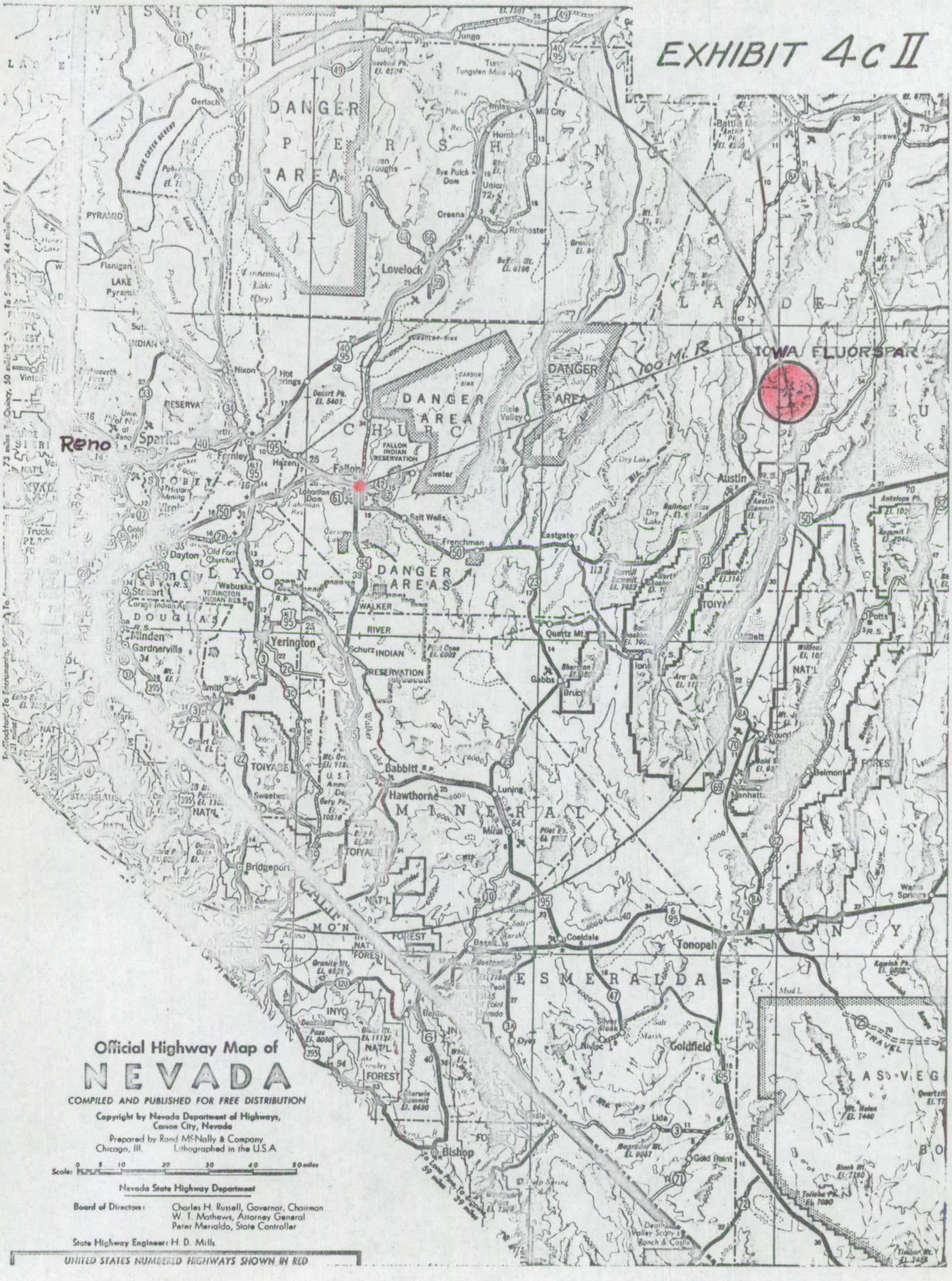
Area underlain by andesite and largely covered by slope wash.



IOWA CANYON FLUORSPAR, LANDER COUNTY, NEVADA

FIGURE 2

EXHIBIT 4c II



BUREAU OF MINES
1012 Flood Building
~~870 Market Street~~
~~San Francisco 2, Calif.~~
OFFICIAL BUSINESS

(PMGC)

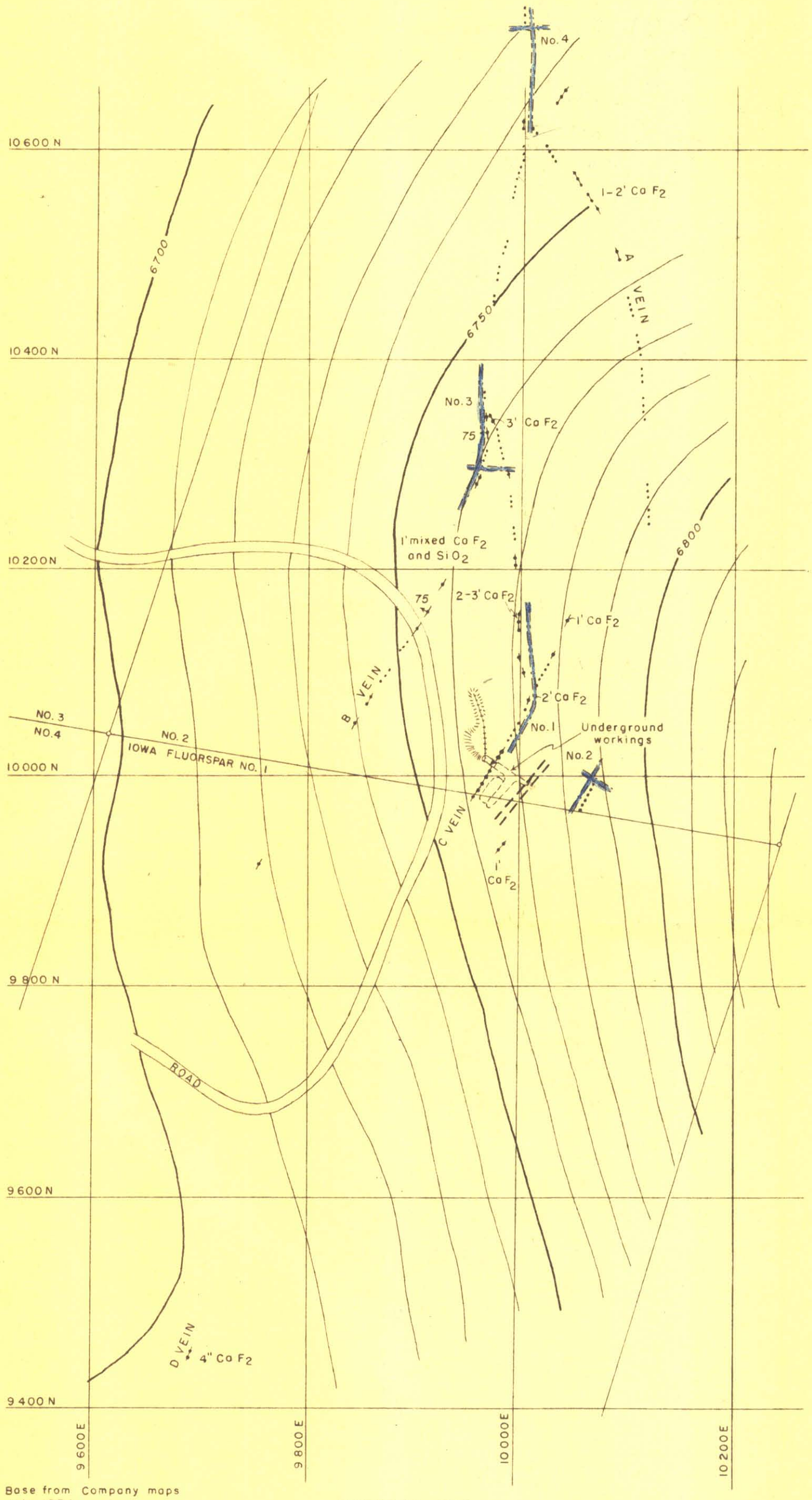
SAN FRANCISCO, CALIF.
SE 22 7 PM
1952

Defense Minerals Exploration Administration
Interior Building
Washington 25, D. C.

FIRST

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

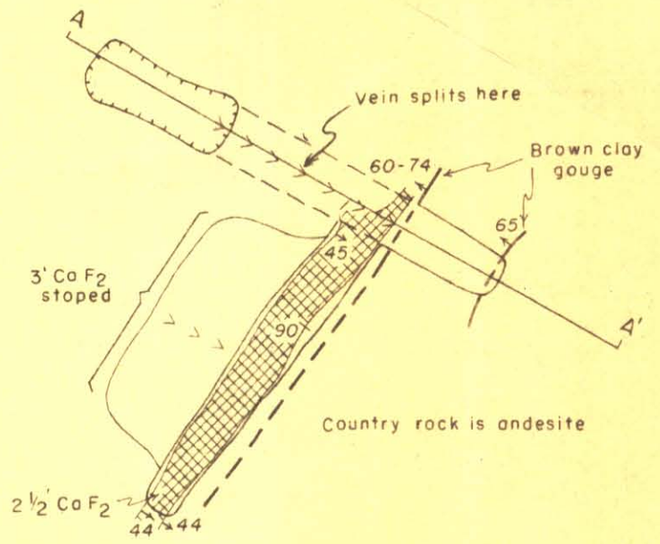
DMEA 3398
(FLUORSPAR)



Base from Company maps
July 1954

SURFACE MAP

100 0 100 200 FEET



SKETCH MAP OF UNDERGROUND WORKINGS

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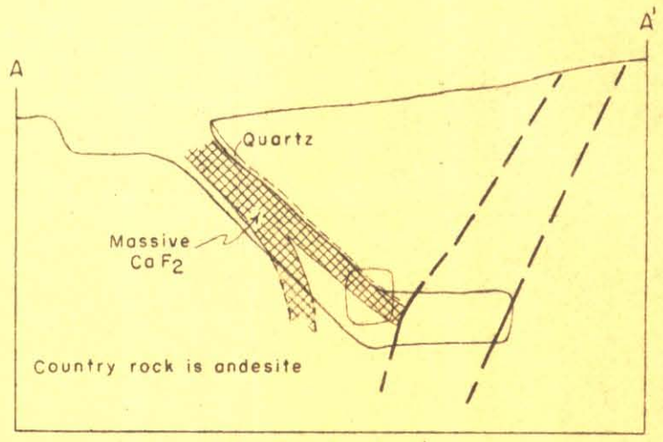

SECTION A-A'

EXPLANATION

65
Fault, showing dip
(Dashed where approximately located)

45
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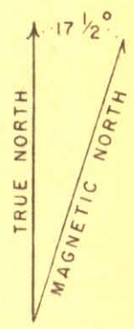
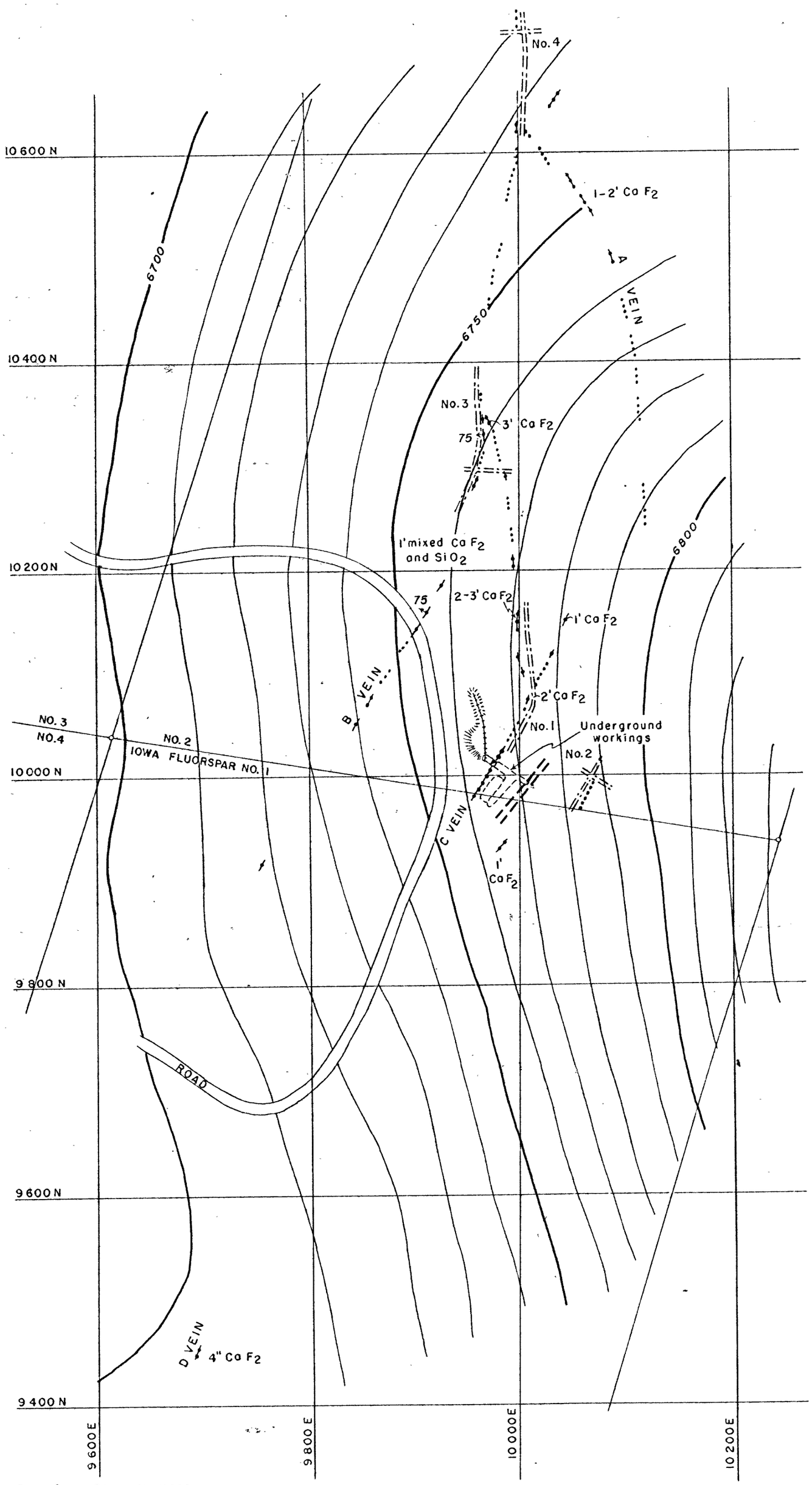


IOWA CANYON FLUORSPAR, LANDER COUNTY, NEVADA

FIGURE 2

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

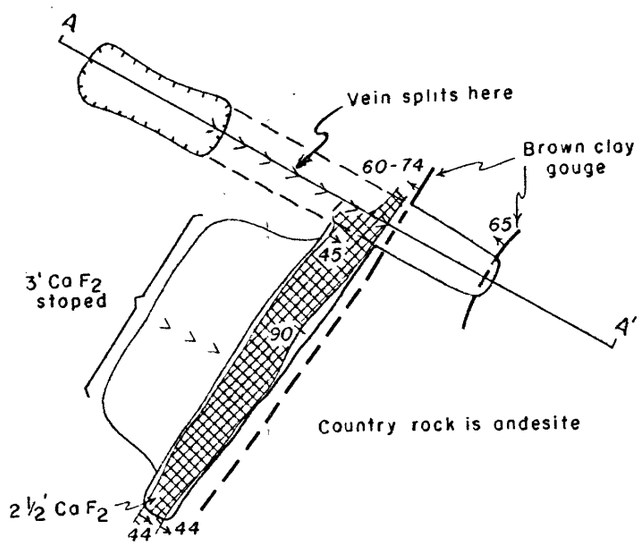
DMEA 3398
(FLUORSPAR)



Base from Company maps
July 1954

SURFACE MAP

100 0 100 200 FEET



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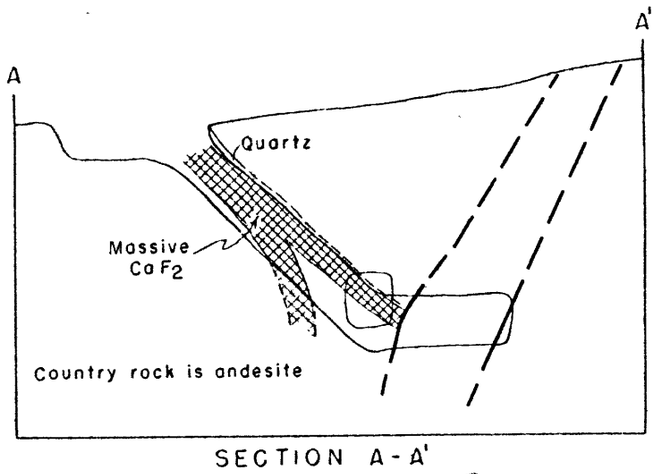

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FIGURE 2