DMEA Form 9

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE

DMEA NO. 4722

1120

5 AUG 1957

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(Withdrawn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

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

This is the official contract file containing all official records of the project. The records contained in the files are checked and are arranged in this order:

Left Side

Interim Royalty Audits
Reports of Royalty Review
Certification of Discovery
Certificate of Audit (Final)
Interim Audit(s)
Report of Review
✓ Termination Notice or Agreement
Recision Notice
Assignment of Contract
Contract Amendments (latest on top)
Contract with all exhibits and annexes
Owner's Consent to Lien
Subordination Agreement
✓ Leases and assignments of leases
✓ Application and attachments
(3) Envelope for maps

Right Side

Project summary
Work completed analysis
All other material is filed in chronological order with correspondence including the following reports as checked:

Final Field Team Report (Tab)
Operator's Final Report
(2R) Interim Reports
(2R) Operator's monthly reports and all attachments (latest on top)
✓ On-site Exam Report(s) (Tab)
(4) Settlement Sheets

When the volume of records is expected to warrant additional folders, or when convenience of reference warrants separate folders for certain records, they should be set up in this order:

Left Side

Folder No. 2: (In chron. order) Interim Summary Reports by W. O. Engineers

Right Side

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

Folder No. 3: Maps (Use pocket folder or envelope. Fold maps with title block out and show reference to related document or correspondence.)

Folder No. 4: Settlement Sheets

Folder No. 5: Drill Logs

Government's copy

App'd. Sol. Off.

Ching
Ellis
Chamberlin
Johnson
Selfridge

TERMINATION AGREEMENT

It is agreed this 18th day of April, 1958, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and Arthur A. Cervi, hereinafter called the "Operator," parties to that certain Exploration Project Contract Idm-E1120, Docket No. DMEA-4722, dated August 5, 1957, hereinafter called the "Contract," that:

Said Contract shall be and is hereby rescinded and canceled as of the date of the Contract without any obligations whatsoever one party to the other, the same as if said Contract had never been entered into.

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

THE UNITED STATES OF AMERICA

By C O Matthewson
Administrator, Defense Minerals Exploration Administration

Arthur A. Cervi
ARTHUR A. CERVI, Operator

OFFICIAL FILE COPY
DMEA
RECEIVED APR 2 1958
DATE | INITIAL | CODE

Government's copy

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DMEA
RECEIVED AUG 23 1957

DATE	INITIALS	CODE

MF-200
(Revised June 1954)

Docket No. DMEA - 4722

Commodity Uranium

Contract No. Idm-E 1120

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

EXPLORATION PROJECT CONTRACT[1]

It is agreed this 5 AUG 1957 day of ....., 195..., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] ARTHUR A. CERVI, whose mailing address is 979 Miller Street, Lakewood 15, Colorado, hereinafter called the "Operator," as follows:

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

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

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

(b) The Operator represents and undertakes that:

(1) The Operator is the[4] Lessee of[5] the mineral rights in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a[6] Lease,[7] recorded in Book ....., 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: None

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

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

of the land (lessor, seller, optionor, etc.), are attached, as follows: Consent to Lien and Subordination Agreement executed by Nora R. Buckman and Sam G. Horning.

(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 Uranium. The work to be performed is described in Exhibit "A." The Operator on or before September 15, 1957 shall commence the work, and on or before December 31, 1957 (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 costs set forth in Exhibit "A"~~, except as otherwise provided in Exhibit "A" with respect to stages of work. (See Annex II.)

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

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

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

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $17,536.00 The Government shall contribute 75 percent of the allowable costs as they are incurred in a total sum not in excess of $13,152.00: *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 thereof the Operator is not obligated to incur more than his agreed percentage of the estimated total allowable cost of the work~~ **See Annex II**

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

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

CATEGORY (2)—PERSONAL SERVICES.

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

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

Subcategory (c)—Labor.

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

CATEGORY (4)—OPERATING EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 13. *Changes and added provisions.*—

See Annex II.

Britts
Chang
Ellis
Chambers
Johnson
Martin

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C O Mittendorf
Administrator, Defense Minerals
Exploration Administration

ARTHUR A. CERVI
(Operator)

By Arthur A. Cervi

I, ..., certify that I am the ..... secretary of the corporation named as Operator herein; that ..... who signed this contract on behalf of the Operator, was then ..... 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.

.....

[CORPORATE SEAL]

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

EXPLORATION PROJECT CONTRACT
ARTHUR A. CERVI
DOCKET NO. DMEA-4722

ANNEX I

The land referred to in Article 2 of the contract consists of the SE1/4 of the NE1/4 and the NW1/4 of the NE1/4 of sec. 25, and the SW1/4 of the SE1/4 and the NW1/4 of the SE1/4 of sec. 24, in T. 3 S., R. 71 W., 6th P. M. & B., Jefferson County, Colorado. The land is shown on the map entitled "Figure 2 Geologic and Exploration Map of the Cervi Lease, Jefferson County, Colo.," attached hereto and made a part hereof.

The land was leased by the Operator from Nora R. Buckman and Sam G. Horning for a period of ten years by an agreement dated March 11, 1957.

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

For Government's Use Only
EXPLORATION PROJECT CONTRACT
Operator
Docket No. DMEA-
Contract No. Idm-E 1120
Contract Date 5 AUG 1957

CONSENT TO LIEN
and
SUBORDINATION AGREEMENT 1/

To the United States of America:

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

The SE 1/4 of the NE 1/4 and the NW 1/4 of the NE 1/4 of sec. 25, and the SW 1/4 of the SE 1/4 and the NW 1/4 of the SE 1/4 of sec. 24, in T. 3 S., R 71 W., 6th PM & B; a total of 160 acres more or less.

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

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

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

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

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

None

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

2/ Either (a) insert the legal description of the land, or (b) strike out the words "~~as follows~~" and insert "in a lease ~~[or contract, deed, or other document]~~ dated Apr. 1, 1957, and recorded in Book 1053, Page 465, official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

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

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

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

Dated this 13 day of Aug., 1957.

[redacted]	[Seal]		[Address]
Roy R Buckman [redacted]	[Seal]	Route 2 Box 23 Golden Colo	[Address]
Sam G. Harming	[Seal]	Route 2 Box 23 Golden Colo	[Address]
	[Seal]		[Address]
	[Seal]		[Address]
	[Seal]		[Address]

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

Arthur A. Cervi

[Corporate Seal]

INT.-DUP. SEC., WASH., D.C.

5172

EXPLORATION PROJECT CONTRACT
ARTHUR A. CERVI
DOCKET NO. DMEA-4722

ANNEX II

ARTICLE 13. Changes and added provisions.--

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

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

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

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

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

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

EXPLORATION PROJECT CONTRACT
ARTHUR A. CERVI
DOCKET NO. DMEA-4722

EXHIBIT "A"

Description of the Work

General Provisions

The work consists of exploration by bulldozer trenching and core drilling to test uranium-bearing shear zones in Pre-Cambrian gneiss. The general location of the work is indicated on the map, Figure 2, referred to in Annex I.

All bulldozing shall be done with a D-8 bulldozer or an equivalent unit of another make. A radioactivity survey shall be made of each trench upon completion and radioactive exposures shall be sampled by taking representative channel samples across the exposures.

All drill holes shall be cored BX or larger, and may be drilled vertical or inclined. Drilling depths will depend upon geological conditions revealed by the bulldozer trenching, but are expected to range from 170 feet to 300 feet.

All samples from the bulldozer trenches and all core from the drill holes shall be checked for radioactivity and those indicating significant mineralization shall be split; one portion shall be analyzed chemically for uranium and one portion shall be properly labeled and stored for the use of the Government. The nonmineralized samples shall be labeled and stored for inspection by the Government. At the completion of the project, upon Government approval, all stored samples may be disposed of by the Operator.

All drill holes shall be logged geologically and probed radiometrically, and the record of such logging and probing, together with certified copies of all assay certificates shall be submitted with the Operator's monthly progress reports.

No drill hole shall be bottomed closer than 100 feet to the outer boundaries of the land described in Annex I.

The Government shall not contribute to the cost of an incompleted drill hole.

The project shall be supervised at all times by a competent geologist or mining engineer who shall devote full time to the project work.

The location, direction, inclination, and extent of all project work are subject to the approval of the Government.

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

Stage I

Excavate 11 bulldozer trenches to a minimum depth of 5 feet, and of varying lengths averaging a minimum of 250 feet. The trenches shall be cut at right angles to the breccia reef, or reefs, in areas where the shear zone is widest and where layers of amphibolite are transected by the reefs. The trenches shall be at least 75 feet apart, and shall give clean exposures of the shear zones for purposes of observation, radiometric testing, and channel sampling.

250
250
2750
32
=86/hr.

Stage II

Prepare access roads and drill sites and drill 10 holes, more or less, aggregating not more than 2,350 feet, to explore at depth any mineralized zones exposed by Stage I trenching, and to extend laterally or in depth any trends noted as the drilling progresses. In general, the holes are expected to be drilled on an inclination from the east side of the northeast dipping breccia reefs to intersect the shear zone at depth. The points of intersection shall be at least 75 feet apart laterally or in depth. The location, direction, inclination, and depth of each drill hole are subject to the approval of the Government.

Estimated Costs of the Project

Stage I

Actual Costs

Category (1) Independent Contracts

32 hours bulldozing @ $16.00/hr.	$ 512.00	
Categories (2) through (7)		
None	_____	$ 512.00

Fixed Unit Costs (See Annex II)

35 chemical analyses @ $5.00/ each sample	$ 175.00	
Incidental allowance 1/ for each hour of bulldozer work 32 hours @ $7.00/hr.	224.00	$ 399.00
Estimated Total Cost of Stage I		$ 911.00

Stage II

Actual Costs

Category (1) Independent Contracts

2,350 feet core drilling @ $5.76/ft.	13,536.00	
24 hours bulldozing @ $16.00/hr.	384.00	
38 hours cementing and drilling-out time and stand-by time @ $7.50/hr.	285.00	
140 feet reaming and casing @ $2.00/ft.	280.00	14,485.00

Categories (2) through (7)

None

Fixed Unit Costs (See Annex II)

50 chemical analyses @ $5.00/ each sample	250.00	
104 cardboard core boxes @ $1.00/ea.	104.00	
Incidental allowance 1/ for each foot of hole drilled 2,350 feet @ $0.76/ft.	1,786.00	2,140.00
Estimated Total Cost of Stage II		$16,625.00

SUMMARY OF COSTS

Estimated Total Cost of Stage I	$ 911.00
Estimated Total Cost of Stage II	16,625.00

Estimated Total Cost of Project	$17,536.00
Government Participation @ 75%	$13,152.00

1/ Includes all costs that might otherwise be allowable costs of the project under Categories (1) through (7) of Article 6(a), except as otherwise scheduled in Exhibit "A".

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
224 New Customhouse
Denver 2, Colorado

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DMEA
RECEIVED APR 11 1957

DATE	INITIALS	CODE

April 9, 1957

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Application for DMEA Aid (Uranium) Arthur A. Cervi (T. 3 S., R. 71 W., Sec. 24 and Sec. 25) Jefferson County, Colorado

Enclosed are the original and two copies of the subject application. One copy of the application is being retained in our file.

The Applicant proposes to explore a reported mineralized target area by 6,000 feet of core drilling at a total estimated project cost of $51,990.00.

Although the application is presented in a rather general manner, the land proposed does lie within a geologically favorable area.

E. N. Harshman

By E. N. Harshman
Acting Executive Officer

Enclosures

DMEA
DEPARTMENT OF THE INTERIOR
APR 8 - 1957
REGION III
DENVER, COLORADO

979 Miller Street
Lakewood 15, Colorado

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DMEA
RECEIVED APR 11 1957

DATE	INITIALS	CODE

April 5, 1957

Bureau of Mines
New Customs Building
Denver 2, Colorado

Dear Sir:

Submitted herein are four copies of my "Application For Aid in an Exploration Project, Pursuant to DMEA Order 1, Under the Defense Production Act of 1950, as Amended" in accordance with the instructions relative to this act.

This application is submitted for the purpose of obtaining aid in the exploration for uranium.

Sincerely yours,

Arthur A. Cervi

aac:me
encl - 4

Application

For Aid in an Exploration Project,

Pursuant to DMEA Order 1, Under the Defense Production Act of 1950,

As Amended

Exploration Application for Uranium

by

Arthur A. Cervi

Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

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MF-10
(Revised April 1952)

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UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

DMEA
DEPARTMENT OF THE INTERIOR

APR 8 - 1957
REGION III
DENVER, COLORADO

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. 4722
Metal or Mineral URANIUM
Date Received 4-11-57
Estimated Cost $51,990
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: Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado Phone: Belmont 7-1850

(*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. none

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. none

(*d*) If a partnership, add to the above statement the names and addresses of all partners. none

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 section 25, SE¼ of the NE¼ and the NW¼ of the NE¼; township 3 south range 71 west, Jefferson County, Colorado
Section 24, SW¼ of the SE¼ and the NW¼ of the SE¼; township 3 south range 71 west, Jefferson County, Colorado

(*b*) State any mine name by which the property is known. none

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise lessee

(*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. attached

(*e*) If you own the land, describe any liens or encumbrances on it none

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

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. none

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. none

(*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 USGS Circular 320 and USGS Professional Paper 300 - attached

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

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

16—66551-1

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

(*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 attachment

(*c*) The work will start within 30 days and be completed within 6 months from the date of an exploration project contract.

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

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.

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 April 5, 1957

Arthur A. Cervi
(Applicant)

By ARTHUR A. CERVI

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

Application

DMEA

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DATE	INITIALS	CODE

Instructions

4. Physical description.-

(c) Describe the geologic features of the property, etc and reasons for wishing to explore

---

"geologic features of the area"

"reasons"

continue ----------

Cont'd

4. Physical description.-

(c) Reasons for wishing to explore

My reasons for wishing to explore may be summed up in the simple explaination that I firmly beleive that I will find uranium of marketable grade in economically feasible quantities to warrant a respectable mining operation on the property.

The reasons for this strong belief is that the area of my lease appears - from the maps available - to be in the heart of the Southern complex of the mineralized area bearing uranium - in the Idaho Springs formation.

Also, my lease has excellent proximity relative to the other producing mines and proven ore in the area.

The Schwartzwalter mine, the Nigger Shaft, the Yellow Queen and the Ladwig Claims have all shipped ore. Schwartzwalter and the Nigger shaft being to the north; the Yellow Queen borders my lease on the north and the Ladwigs are immediately adjacent to the east.

The Buckman tunnel is across the road from one of my 40's and there is known ore veins in the tunnel.

Immediately across the Golden Gate Canyon road and a hundred feet or so north of the Buckman tunnel a discovery has been made in a hornblende - gneiss vein and it is reported that the ore has a good assay result.

The Union Pacific has proven up large quantities of ore on their property adjacent to the Denver - Golden property in Section 19, Township 3 South Range 70 West and has also made a strike on the Green's property 1½ miles to the West of me. Of course the U.P.R.R. property is only less than one half mile to the east - and a little north of me in some instances.

The Denver-Golden Gary Prospect has been drilled and it is a rumor, however, it is reported that they encountered many strata from 5 to 10 feet in thickness running an average of 5 to 6 percent uranium oxide.

As previously stated - the ore occurs at the intersections of the hornblende - gneiss veins and the cross cutting fault zones. There are many of these geological conditions on my lease and in the area of these conditions there is good radio - activity as recorded with a scintillation counter. please see maps.

The above reasons are those that make me think that my lease is very much endowed with good uranium ore deposits.

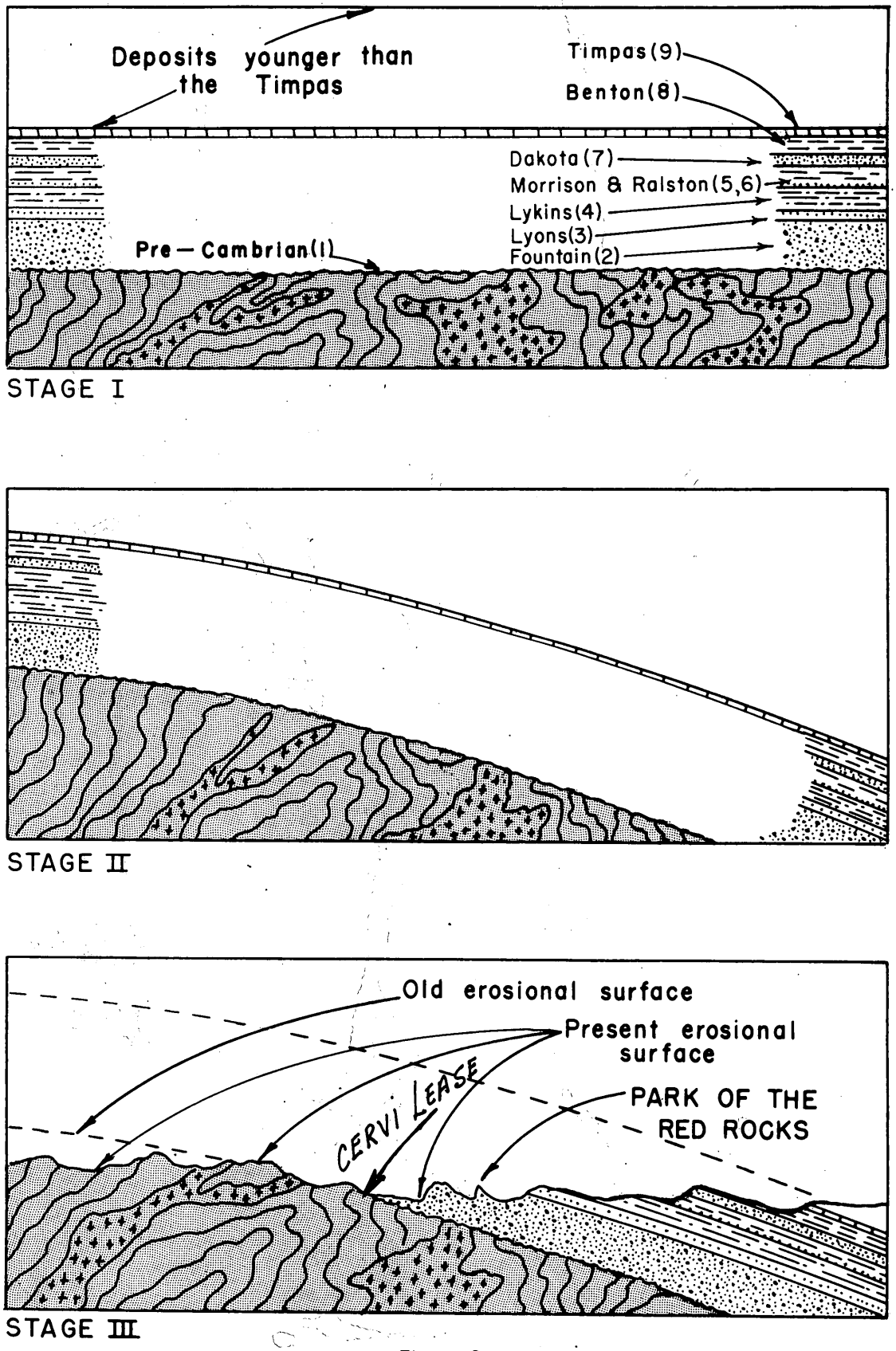
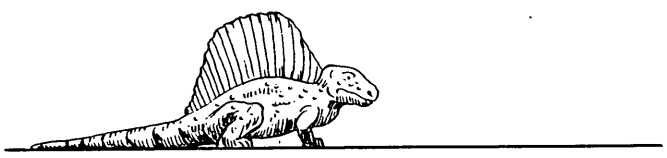

Deposits younger than the Timpas
Timpas(9)
Benton(8)
Dakota(7)
Morrison & Ralston(5,6)
Lykins(4)
Lyons(3)
Fountain(2)
Pre—Cambrian(1)
STAGE I
STAGE II
Old erosional surface
Present erosional surface
CERVI LEASE
PARK OF THE RED ROCKS
STAGE III

Figure 3.

Figure 4. A Columnar Section Showing the Sequence of Formations in the Park of the Red Rocks Area. The oldest rocks in the section are those of the pre-Cambrian gneisses and granites (1). The youngest completely exposed formation is the Timpas limestone (9). Formation younger and overlying the Timpas are not plotted. Geologic periods, names, and formational thickness are given to the left of the section and a brief description of each formation to the right of the section. Strata producing the major landscape features of the Park are bracketed in the lower part of the Fountain. The number within each formation corresponds to those shown on all other figures in this text.



COMMENTS ON THE ORIGIN OF THE PARK

To present a thorough and complete treatment of the origin of the landscapes, geologic structures, and formations of the Park of the Red Rocks is beyond the objective of this summary. The following text is given solely for the purpose of familiarizing the reader with a few of the broad concepts involved in the complicated processes that account for the development of the Park features as they are observed today.

In order to understand these concepts, adequately, one must first realize that, during the millions of years of geologic time, the rocks of the earth's crust have been folded, tilted, and broken repeatedly as a result of gradual or of sudden and violent movements. This crustal unstability is exemplified by the uplifting and lowering of the land with respect to the sea at many places along our present coast lines, by the numerous earthquakes recorded yearly in various parts of the world, and by the presence of volcanoes on or bordering the continents.

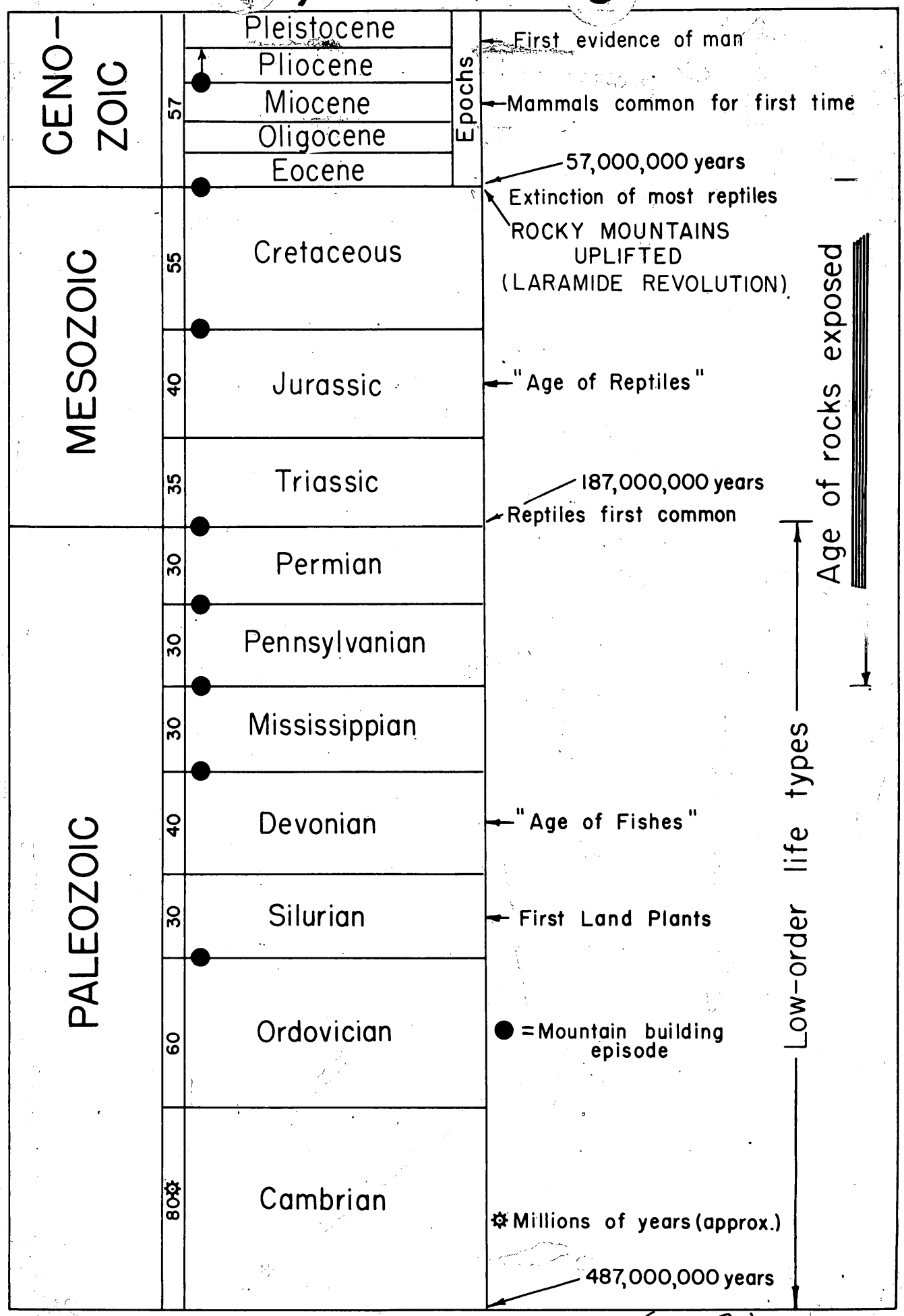
During the Paleozoic, Mesozoic, and Cenozoic Eras (see Figure 2), shallow seas advanced and retreated across North America many times. With each advance and retreat, deposits totaling thousands of feet in thickness, were left behind as conglomerates, sandstones, shales, and limestones. Periodically, these deposits were subjected to tremendous lateral and vertical forces which folded, broke, and elevated the strata into high complex mountain ranges. Accompanying these uplifts, large masses of molten rock intruded the deposits or poured out as extensive lava sheets. It may be difficult to conceive of the idea that some of the greatest mountain ranges of the geologic past were worn by erosion, through millions of years, to relatively flat plains across which widespread seas deposited many types of sediments. Such was the history, in part, of the present Rocky Mountain region of which the Park of the Red Rocks is an integral part.

The schematic drawings in Figure 3 illustrate three of the many stages through which the development of the Park of the Red Rocks passed during geologic time. These drawings are simplified and must be considered as involving only a small portion of the Front Range area of Colorado.

The oldest rocks in the Park are those of the pre-Cambrian, commonly referred to as the "basement" or "basement complex." The history of these rocks is extremely vague. In many areas throughout Colorado, formations of various ages were deposited on pre-Cambrian rocks. In the Park of the Red Rocks, the Fountain formation of Pennsylvanian age (see Figure 2) rests on them. Later in geologic time, and following the deposition of the Fountain, the Lyons, Lykins, Ralston, and Morrison formations were successively laid down by ancient seas and rivers in the order named.

During the Cretaceous Period (see Figure 2) a shallow sea encroached over a large part of western North America, including the area now occupied by the Rocky Mountains, and gave rise to the Dakota, Benton, Timpas, and many other widespread formations. These formations were deposited in a nearly horizontal position as shown in Stage I of Figure 3. At, or near, the close of Cretaceous time, western North America became involved in a major mountain-building episode commonly termed the "Laramide Revolution." During this time the formations deposited by former seas, rivers, and lakes were highly arched (Stage II, Figure 3) and broken. Molten rock intrusions and volcanoes accompanied the disturbance. Many of the formations on the high part of the uplift were removed by erosion. A mountain system was born. Later, during early and middle Cenozoic time (see Figure 2), these rugged highlands were subjected to millions of years of erosion

GEOLOGY OF BEA



PRE-CAMBRIAN CERVI (pre Є)

Figure 2.

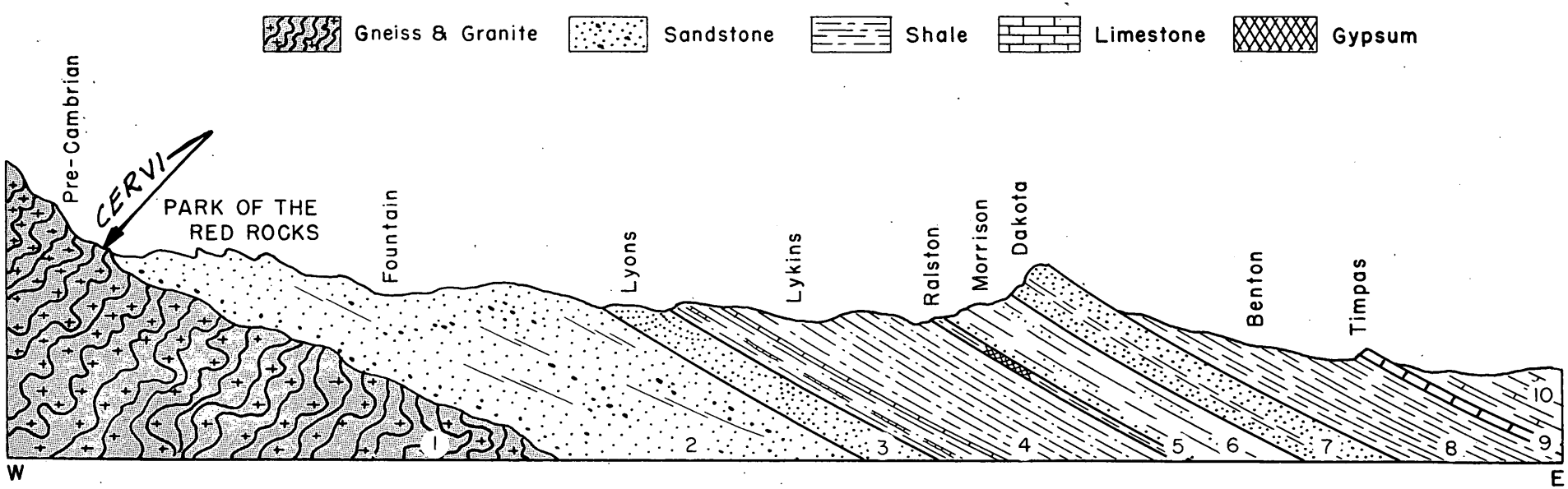


Figure 5. An East-West Geologic Cross Section Through the Area

This sketch illustrates the sequence of the eastward dipping formations. Numbers above the base line of the section correspond to those on Figure 4. Note how the Dakota formation produces a "hogback" as a result of erosion of the softer overlying Benton and underlying Morrision formations.

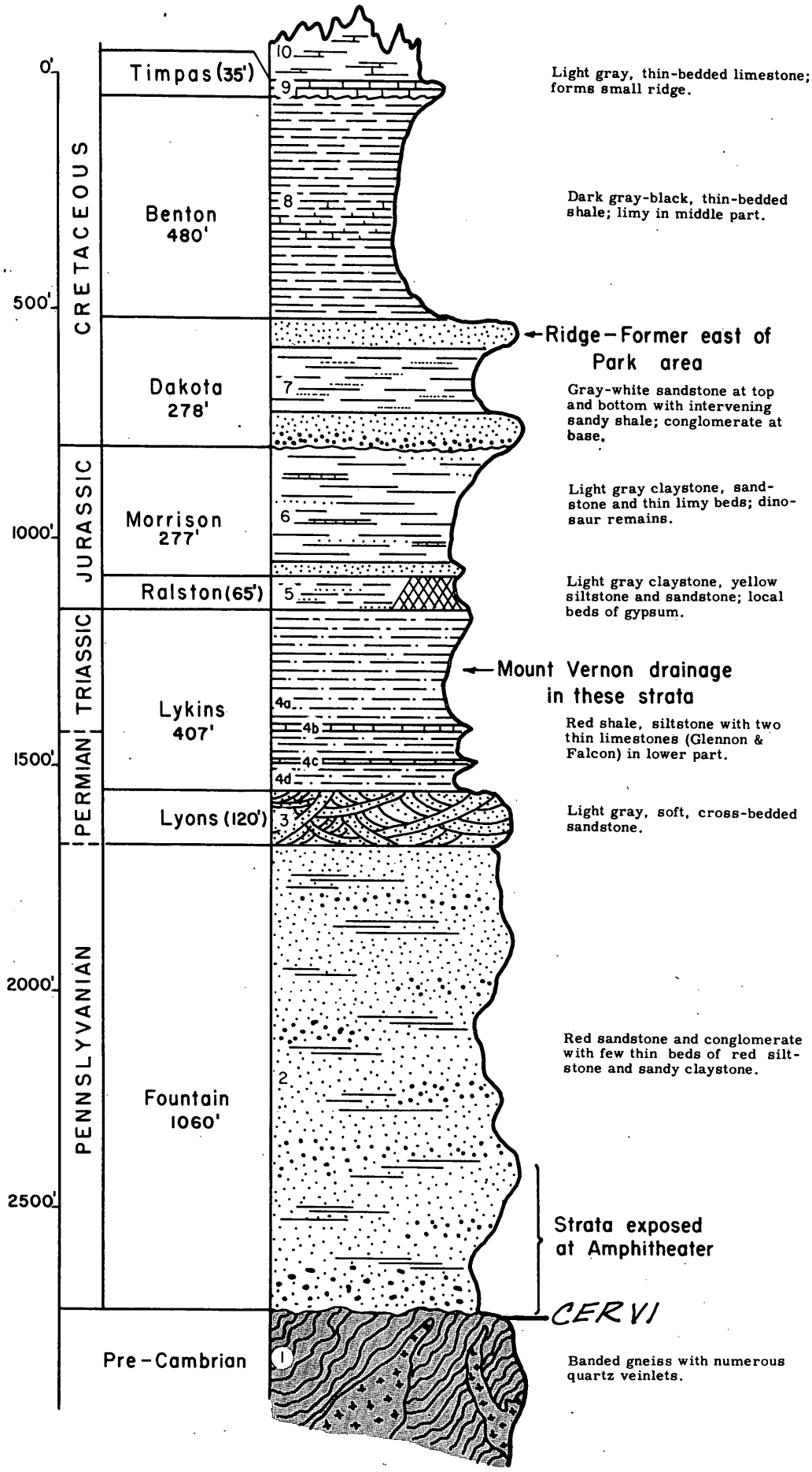

0'
500'
1000'
1500'
2000'
2500'
CRETACEOUS
JURASSIC
TRIASSIC
PERMIAN
PENNSLYVANIAN
Timpas (35')
Benton 480'
Dakota 278'
Morrison 277'
Ralston (65')
Lykins 407'
Lyons (120')
Fountain 1060'
Pre-Cambrian
10
9
8
7
6
5
4a
4b
4c
4d
3
2
1
Light gray, thin-bedded limestone; forms small ridge.
Dark gray-black, thin-bedded shale; limy in middle part.
Ridge-Former east of Park area
Gray-white sandstone at top and bottom with intervening sandy shale; conglomerate at base.
Light gray claystone, sandstone and thin limy beds; dinosaur remains.
Light gray claystone, yellow siltstone and sandstone; local beds of gypsum.
Mount Vernon drainage in these strata
Red shale, siltstone with two thin limestones (Glennon & Falcon) in lower part.
Light gray, soft, cross-bedded sandstone.
Red sandstone and conglomerate with few thin beds of red siltstone and sandy claystone.
Strata exposed at Amphitheater
CER VI
Banded gneiss with numerous quartz veinlets.

Figure 4.

Figure 6. Photographs of Hand Specimens of the Major Types of Rocks Outcropping in the Area.

A. *Gneiss*—This rock type is classified as a metamorphic. It comprises the major portion of the pre-Cambrian, which is well exposed just west of the Park and in Bear Creek Canyon. The banding is due to differences in texture and mineral composition. (One-half size)

B. *Schist*—This rock exhibits a distinct cleavage and wrinkling and is classified as a metamorphic. It lacks the distinct banding shown by gneisses. (One-half size)

C. *Granite*—A coarse-grained rock that has cooled from a molten condition and is classified as igneous. (Natural size)

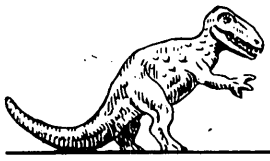
D. *Conglomerate*—A sedimentary rock consisting of rounded pebbles of various sizes and types. The degree of cementation of the constituents varies considerably. (Natural size)

E. *Sandstone*—A medium-to fine-grained sedimentary rock of variable hardness, color, and composition. (Natural size)

F. *Siltstone*—A very fine-grained sedimentary rock whose particle size is between that of a sandstone and shale. (Natural size)

G. *Shale*—A very fine-grained, relatively soft, sedimentary rock made up essentially of clay minerals. Shales have a tendency to split easily. (Natural size)

H. *Limestone*—A sedimentary rock containing large amounts of the mineral calcite ($CaCO_3$). The crystalline texture and percentage of impurities of limestones are extremely variable. (Natural size)



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TYPES OF ROCKS IN THE PARK AREA

Rocks are systematically classified on the basis of (1) conditions under which the rock formed; (2) minerals within the rock; and (3) size, shape, and arrangement of the mineral constituents composing the rock.

Rocks fall into three major groups—metamorphic, igneous, and sedimentary. In the following paragraphs these groups are briefly discussed, and photographs of specimens typifying each group are given for the purpose of identifying the various rock types characterizing the formations of the Park area.

Metamorphic Rocks

Rocks within the earth's crust commonly undergo changes in composition, texture, and structure as a result of high temperatures, pressures, and chemical activity. These rocks are called "metamorphics." Two types representing this group are

Gneiss—a coarse-grained rock, the minerals of which are arranged more or less in bands or layers varying in thickness from a fraction of an inch up to two inches or more (Figure 6A).

Schist—a fine-grained rock exhibiting flaky or cleavable characteristics. Schists (Figure 6B) do not show the conspicuous banding as do the gneisses.

Igneous Rocks

Igneous rocks result from the cooling of molten material that at one time existed below the surface of the earth. An example of one of the many varieties of igneous rocks is given below.

Granite—a coarse-grained rock consisting essentially of the minerals quartz and feldspar. The feldspar is generally light pink and shows pronounced reflecting surfaces (cleavage) (Figure 6C).

Sedimentary Rocks

Sedimentary rocks are formed from deposits of silt, clay, sand, and other materials deposited in seas, rivers, lakes, and above water as, for example, in dunes and beaches. Many rocks of this group are composed of minerals precipitated from sea water. Several of the more common types of sedimentary rocks are listed and briefly defined below.

Conglomerate—a rock composed essentiallly of large rounded pebbles; a consolidated gravel (Figure 6D).

Sandstone—a rock consisting generally of several varieties of sand grains cemented together. Quartz is a prominent mineral in most sandstones (Figure 6E).

Siltstone—a rock composed of various types of minute mineral grains of which quartz and clay are most common. (Figure 6F).

Shale—a rock consisting of microscopic particles of clay size and which commonly shows paper-thin banding (Figure 6G).

Limestone—a rock composed essentially of calcium carbonate (lime) and shows extreme variation in texture, purity, and color (Figure 6H).

FORMATIONS OF THE PARK AREA

Eight prominent, easily recognizable formations crop out in the Park of the Red Rocks area. These same formations are exposed either totally or partly for many miles along the Front Range of Colorado. Erosion of their uptilted edges has produced fantastic and weird relief features that cannot be slighted even by the most casual observer. The superposition of formations in the Park of the Red Rocks area is shown in Figure 4 and in the following paragraphs the major characteristics of these formations are discussed briefly, beginning with the oldest (pre-Cambrian).

Pre-Cambrian

Rocks of the pre-Cambrian (see Figures 9, 10) are very old, probably exceeding a billion years. Formed as a result of tremendous heats, enormous pressures, and drastic chemical changes, these rocks compose the core of the Front Range of the Rocky Mountains of Colorado as well as of many other major mountain ranges of North America and of the world. Most of these rocks are represented by gneisses and schists into which many veins of quartz and granite have been injected. The pre-Cambrian rocks are hard and resistant to erosion, thus producing the rough, steep slope immediately west of the Amphitheater in the Park. Many varieties of pre-Cambrian rocks crop out in road cuts in Bear Creek Canyon southwest of the Park and in ravines west of the Amphitheater.

Pennsylvanian

Fountain Formation (Figures 11 and 12)

The Fountain formation represents the oldest sedimentary deposits in the Park. It consists of 1060 feet of red and pink, soft to hard, coarse-grained sandstones and consolidated gravels (conglomerate). Thin layers of red, sandy shales occur throughout the formation. The red discoloration of the formation results from its iron content. The variation of hardness of the weathered, dipping Fountain sandstones is the primary cause of the scenic landscape features of the Park.

The Fountain formation of the Park area has failed to yield fossils of either plants or animals and is interpreted as having been deposited by flowing streams and rivers that existed in an ancient semidry climate. Yet, during Pennsylvanian time, in many areas in the eastern part of the United States, widespread swamps afforded conditions favorable for the development of commercial coal deposits mined there today.

The Fountain also produces the famous "Flat Irons" south of Boulder and, in part, the "Garden of the Gods" near Colorado Springs.

Permian

Lyons Formation (Figures 13, 14, and 15)

The Lyons is not so prominent a scenic formation in the Park as is the underlying Fountain. It consists of 120 feet of soft, light gray sandstone showing conspicuous cross-bedding, a feature produced as a result of consolidation of ancient sand dunes and off-shore sandbar deposits. To date, fossils have not been found in this formation.

Permo-Triassic

Lykins Formation (Figure 16)

This formation is composed of 407 feet of essentially red shale and siltstone. In the lower part, two thin, minor ridge-forming limestones (see Figures 4 and 9) are present. For many years the upper one was mined for the processing of lime, but it is no longer of commercial importance.

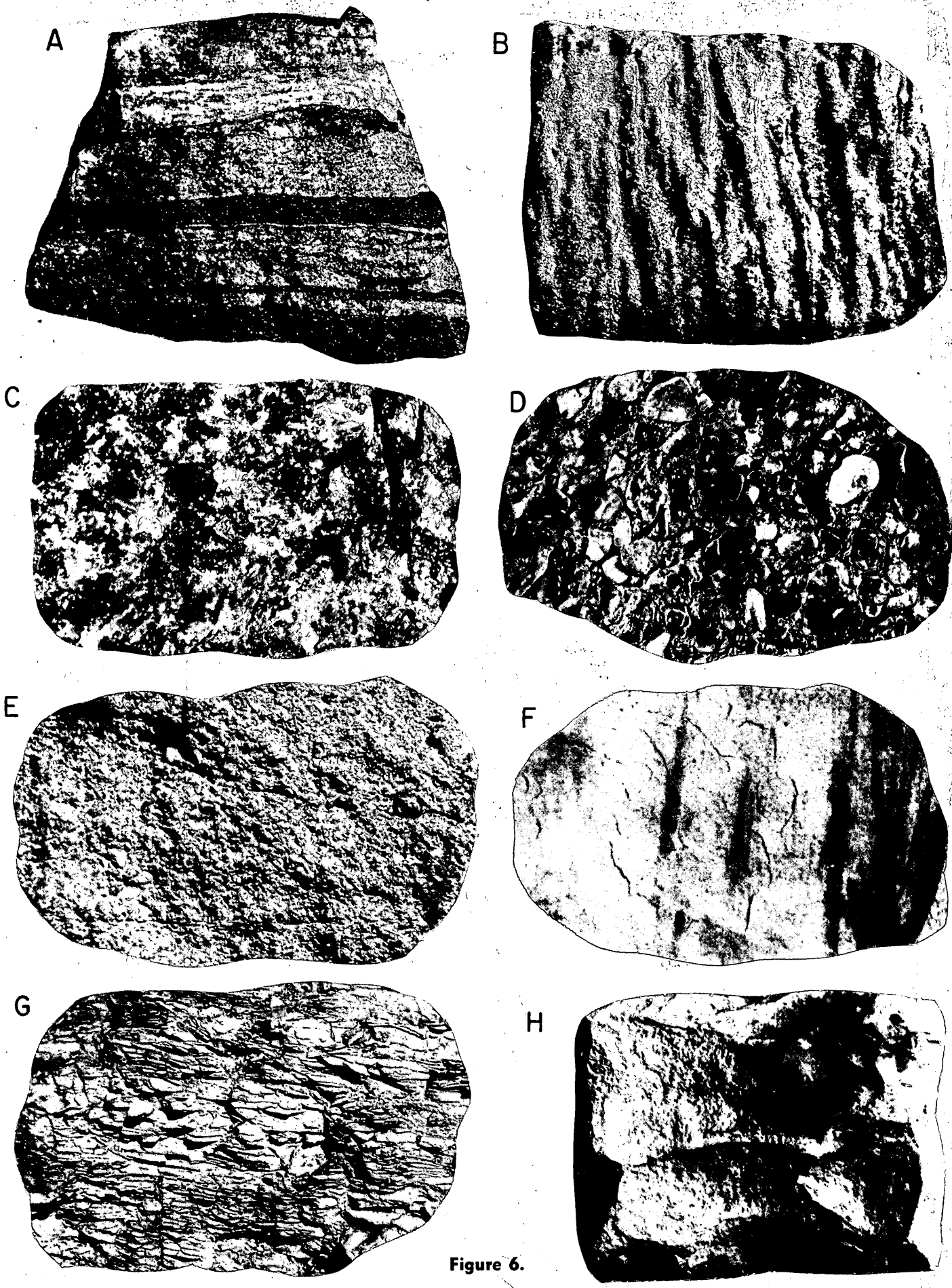

Figure 6.

Geological Report of Area

UNITED STATES GEOLOGICAL SURVEY Professional Paper 300

(Arthur A. Cervi - Application)

Contributions to the Geology of Uranium and Thorium by the United States Geological Survey and Atomic Energy Commission for the United Nations International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland 1955

Compiled by LINCOLN R. PAGE, HOBART E. STOCKING, *and* HARRIET B. SMITH

GEOLOGICAL SURVEY PROFESSIONAL PAPER 300

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10.

SUMMARY OF WALL-ROCK CONTROL OF CERTAIN PITCHBLENDE DEPOSITS IN GOLDEN GATE CANYON, JEFFERSON COUNTY, COLORADO

By John W. Adams and Frederick Stugard, Jr., U. S. Geological Survey

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ABSTRACT

Carbonate veins cutting metamorphic rocks of Precambrian age in Golden Gate Canyon, Colo., contain pitchblende and base-metal sulfides. The veins occupy extensive faults considered to be of Laramide (earliest Tertiary) age and normally contain pitchblende only where they cut hornblende gneiss. At the Union Pacific prospect, which was studied in detail, pitchblende, hematite, and some ankerite formed in advance of sulfides, except possibly for minor earlier pyrite. Base-metal sulfides and most of the ankerite vein-filling were deposited after the pitchblende. Chemical analyses show a high ferrous-iron content in the hornblende gneiss in contrast to low ferrous iron in the adjacent biotite gneiss. It is thought that ferrous iron released by alteration of hornblende was partly oxidized to hematite by the ore-bearing solutions and, contemporaneously, uranium was reduced and deposited as pitchblende.

In other veins, which are not in hornblende gneiss, biotite or iron sulfides may have been similarly effective in precipitating pitchblende. Apparently both the ferrous ion and the sulfide ion can serve as reducing agents and control pitchblende deposition. Rocks rich in ferrous iron or preexisting sulfides are particularly favored sites for uranium deposition.

GEOLOGY

Pitchblende and secondary uranium minerals are found in Golden Gate Canyon, Colo. The deposits, which were discovered in 1951, occur in or near Laramide (earliest Tertiary) fault zones that cut gneisses, schists, and pegmatites of Precambrian age.

During a preliminary study of these deposits (Adams and others, 1953), most of the occurrences of uranium minerals and of high radioactivity anomalies in the area were found where the fault zones cross hornblende gneiss, and conversely, no significant radioactivity has been found along the same fault zones where they pass through other rocks. The distribution of the known uranium occurrences in relation to the hornblende gneiss and the faults is shown on figure 14. In the vicinity of the deposits, quartz-biotite gneiss is adjacent to hornblende gneiss.

The fault zones, or "breccia reefs," are extensive structures as much as 20 feet wide and possibly many miles long. In the area studied they consist of carbonates and potash feldspar as a fine-grained groundmass enclosing rock fragments that have been replaced in different degrees by these minerals. Ankerite is the most abundant carbonate mineral in the reefs and, with potash feldspar, appears to be the product of widespread introduction of hydrothermal solutions into the faults.

At the Union Pacific prospect (fig. 15) pitchblende and base-metal sulfides occur along the hanging wall of a carbonate potash feldspar reef cutting hornblende gneiss. The pitchblende occurs as thin films or more commonly as colloform masses less than 0.1 millimeter in diameter that coat crystals of ankerite of comparable size. The pitchblende-ankerite veinlets are irregularly distributed through intensely altered wall rock and are replaced in different degrees by later sulfides. Both

11.

formation of all sulfides, with the exception of the very minor pyrite formed during propylitization.

After depletion of the available uranium, several simple copper sulfides, sphalerite, galena, and emplectite (?) were deposited in an intricate network of fractures that only partly follow the original pitchblende-bearing veinlets. Deposition of these sulfides was followed by tennantite replacement. It is questionable whether this replacement was part of a continuous period of sulfide deposition or whether a "rest interval" took place. Relations seen in polished sections favor discontinuity with a new wave of solution, containing arsenic and antimony in addition to copper and iron, migrating along the margins of preexisting veinlets. On the depletion of the arsenic and antimony, sufficient copper remained, so that chalcopyrite formed locally throughout the tennantite and along grain boundaries of tennantite and other minerals. With the deposition of chalcopyrite the sulfide mineralization waned, and a vigorous carbonate phase began which was to continue until the close of hypogene activity. The bulk of the carbonate deposited was extremely fine-grained ankerite, succeeded at the last by somewhat coarser grained calcite. The calcite, which is sparse, forms veinlets and fills cavities in the ankerite. Minute pyrite crystals that developed along the edges of the calcite-filled openings indicate that a very weak sulfide phase marked the transition point between the two carbonates. Figure 17 graphically presents the paragenesis of the deposit.

The ore deposit at the Union Pacific prospect is, so far as is known, confined to hornblende gneiss wall rocks. This localization, repeated at several other uranium occurrences in the area, appears to be largely the result of the composition and texture of the wall rock.

As previously discussed, the deposition of uranium probably was effected by the oxidation of ferrous to ferric iron. Analyses of the two rock types involved showed that the hornblende gneiss contains almost four times as much ferrous iron as the biotite gneiss. Field observations and thin-section studies indicate that the hornblende gneiss was readily altered by the solutions introduced along the fault and that hornblende, the dominant iron-bearing mineral of the rock, was especially subject to attack. It is believed that the release of iron from hornblende and its subsequent reprecipitation provided an effective mechanism for uranium deposition.

The nature of the iron-bearing mineral probably was of little consequence, providing it was reactive and present in sufficient quantity. Thus, a rock rich in

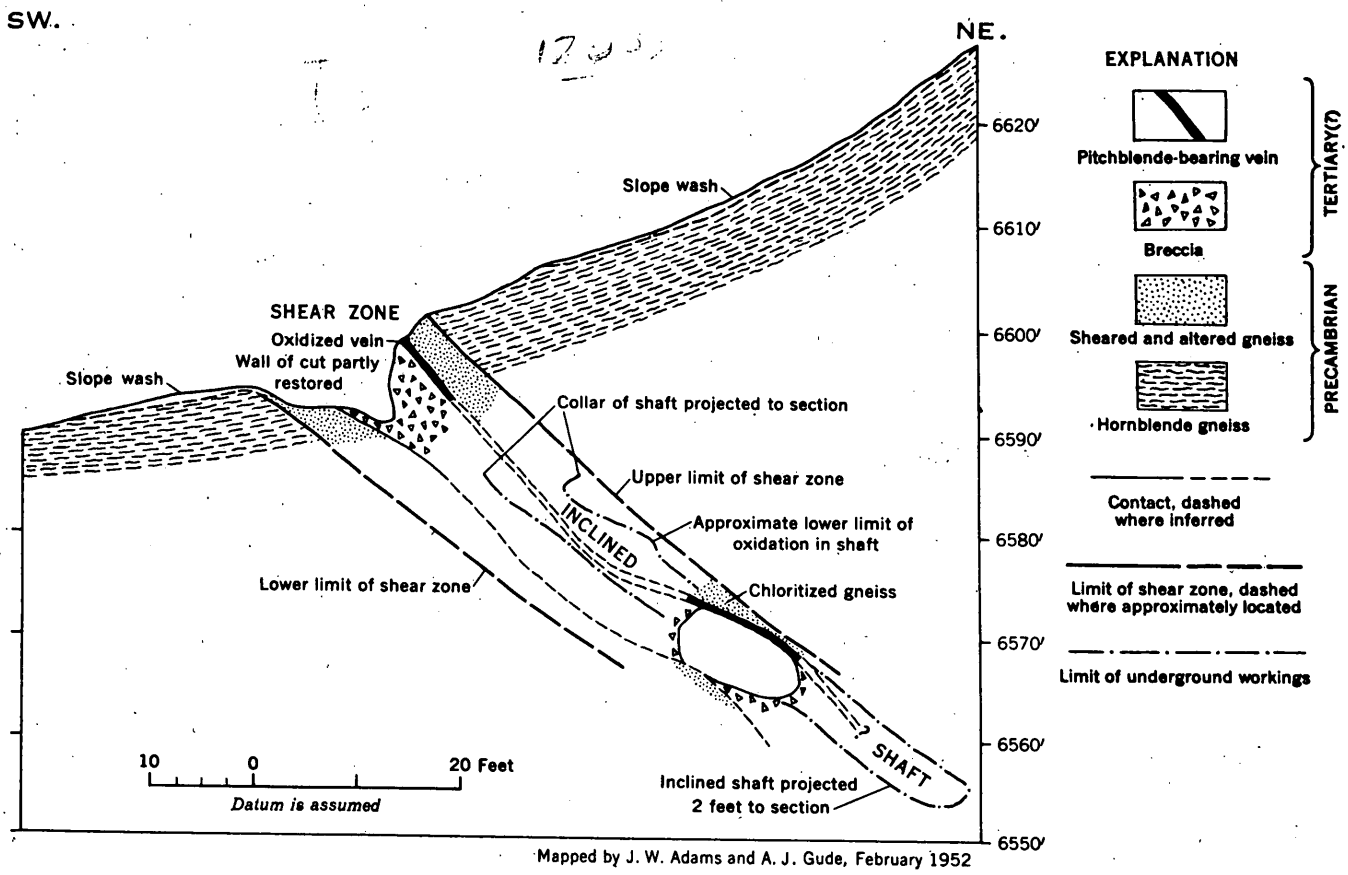

FIGURE 15.—Geologic section of the Union Pacific prospect, Jefferson County, Colo.

Geologic Report of Area

UNITED STATES GEOLOGICAL SURVEY Circular 320

(Cervi - application)

UNITED STATES DEPARTMENT OF THE INTERIOR
Douglas McKay, Secretary

GEOLOGICAL SURVEY
W. E. Wrather, Director

GEOLOGICAL SURVEY CIRCULAR 320

URANIUM OCCURRENCES IN THE GOLDEN GATE CANYON AND RALSTON CREEK AREAS, JEFFERSON COUNTY, COLORADO

By J. W. Adams, A. J. Gude 3d, and E. P. Beroni

This report concerns work done on behalf of the U. S. Atomic Energy Commission and is published with the permission of the Commission.

Washington, D. C., 1953

Free on application to the Geological Survey, Washington 25, D. C.

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URANIUM OCCURRENCES IN THE GOLDEN GATE CANYON AND RALSTON CREEK AREAS, JEFFERSON COUNTY, COLORADO

By J. W. Adams, A. J. Gude 3d, and E. P. Beroni

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ABSTRACT

Pitchblende, associated with base-metal sulfides, has been found at nine localities in the northern part of Jefferson County, Colo., in shear zones that cut pre-Cambrian metamorphic and igneous rocks, chiefly hornblende gneiss, biotite schist, and granite pegmatite. The known deposits are in the vicinity of Ralston Creek and Golden Gate Canyon, in the foothills of the Colorado Front Range and about 15 miles east of the pitchblende-producing area of the Central City district. Two of the pitchblende occurrences were found by a local prospector in 1949; the seven other deposits were found by Geological Survey personnel in 1951-52.

The pitchblende deposits, with one exception, are in major shear zones that contain veinlike bodies of carbonate-rich breccia that ranges from 1 to 5 feet in thickness. The breccias probably are related to the Laramide faults, or "breccia reefs" of similar trend, mapped by Lovering and Goddard (1950). The breccias are composed of fragments of bleached and iron-stained wall rock, usually hornblende gneiss, that have been cut by veins and cemented by carbonate minerals, quartz, and orthoclase(?). Pitchblende and associated ore minerals, chiefly copper sulfides, occur in and along the margins of the breccias and apparently were introduced at a late stage of the carbonate deposition. At one deposit, the Buckman, the pitchblende is in narrow shear zones not closely related to any large breccia bodies.

Secondary uranium minerals are subordinate except at the Schwartzwalder mine, where torbernite and metatorbernite are common. Some alteration of pitchblende to nonopaque materials, believed to be

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hydrated oxides, has been noted in ore from two of the deposits.

INTRODUCTION

The recent discovery of nine uranium-bearing vein deposits in pre-Cambrian rocks of northern Jefferson County, Colo., indicates a new district favorable for uranium prospecting. The known deposits are in two small areas in the foothills of the Colorado Front Range, less than 20 miles from Denver (fig. 1) and about 15 miles east from the pitchblende-producing area of the Central City district.

The initial discovery of pitchblende was probably made before 1884, as a note in Mining and Science Press (1884) for that year describes its occurrence in Jefferson County in thin seams but in "too small quantity to be economically valuable." No specific location for the deposit was given.

In the spring of 1949 samples of pitchblende and torbernite ores from the northern, or Ralston Creek, area were brought to the attention of the Atomic Energy Commission by Fred Schwartzwalder of Golden. In 1951, the first of the several occurrences in the Golden Gate Canyon area was found by members of the Geological Survey. More recently additional discoveries in both areas, have been made by members of the Survey; this work was done on behalf of the Division of Raw Materials of the U. S. Atomic Energy Commission. In all the deposits the uranium is associated with copper, and most of the occurrences had been prospected for metals as early as 1894.

Preliminary studies show striking parallelisms in the geology and mineralogy of the several occurrences that are suggestive of a common period of deposition and similar environmental conditions. In general, pitchblende occurs along the walls of fault zones that contain vein fillings of carbonate and potash feldspar rock, presumably of hydrothermal origin, and genetically related to the ore. The wall rock is usually hornblende gneiss that has been severely bleached adjacent to the veins. Breccia fragments in the vein have been wholly or partly replaced by sulfides. Copper minerals are invariably present in the veins, and include chalcopyrite, covellite, bornite, chalcocite, tetrahedrite-tennantite, malachite, and azurite. Pyrite is less abundant than chalcopyrite; galena has been noted at only two localities. Carbonates are generally abundant. Ankerite is the dominant gangue mineral of the carbonate and potash feldspar vein material and is earlier than calcite, which probably is largely postpitchblende.

The fault zones in which the pitchblende deposits occur have a similar trend and possibly are related to the extensive Laramide faults, or breccia reefs mapped by Lovering and Goddard (1950). At least one such breccia reef is present in the Ralston Creek area, 250 feet from, and roughly parallel to, a pitchblende-bearing vein. The individual reefs have not as yet been correlated with those mapped a few miles to the north (Lovering and Goddard, 1950). The relationship between breccia reefs and the uranium-bearing veins possibly is analogous to that of the reefs and certain ore deposits in nearby Boulder County, where the reefs are probably served as deep channels for the ore deposited in adjacent fissures (Lovering and Goddard, 1950, p. 239).

The known uranium deposits will be discussed as those of the Golden Gate Canyon area (fig. 2) and the Ralston Creek area (fig. 6).

GOLDEN GATE CANYON AREA

The known deposits in the Golden Gate Canyon area (fig. 2) are alined along a narrow belt that trends N. 75°-80° E. The trend of this belt is essentially parallel to the trend of the well-developed foliation of the pre-Cambrian metamorphic rocks of the area. The individual deposits, however, with the possible exception of the Buckman, are found at the intersection of northerly-trending, carbonate-bearing fault zones and the N. 75°-80° E.-trending belt.

The rocks in the vicinity of the deposits are predominantly interlayered gneisses and schists of the Idaho Springs formation and include hornblende gneiss, biotite schist, and quartz-biotite gneiss. For this investigation they have been differentiated only megascopically. The hornblende gneiss is a fine-grained black rock containing about 50 percent hornblende and 50 percent quartz and feldspar. It is well foliated and is generally fresh and unaltered in outcrops. Interlaminated with the hornblende gneiss are narrow layers of biotite schist. These layers, which are soft and friable, possibly represent hydrothermally altered gneiss. The hornblende gneiss and biotite schist make up a rock layer or unit that is about 100 feet thick at the Union Pacific prospect.

Stratigraphically above and below this unit the rocks are dominantly gray and foliation is not as well developed. These lighter colored rocks are chiefly fine grained quartz-biotite gneiss in which the quartz, biotite, and feldspar content varies considerably from layer to layer. A few narrow layers of a black, hornblende-rich rock are interbedded with the gray gneiss.

Field studies indicate that the previously mentioned alinement of the pitchblende deposits is due to their occurrence in the hornblende gneiss-biotite schist unit. This layer is the host rock of the four oocurrences of pitchblende in section 19 (fig. 2), and probably includes the pitchblende vein north of the Buckman adit.

It is not yet known whether the occurrence of the uranium deposits in the hornblende gneiss is the result of structural control or of some physical or compositional difference. The carbonate-bearing fault zones generally show a slight anomalous radioactivity. This anomalous radioactivity, together with the proximity of the pitchblende to the fault zones, suggests that they represent the channelways along which the ore solutions moved. Uranium minerals have not been found along all the carbonate-bearing faults that cross the hornblende gneiss-biotite schist unit, but all such intersections may be potentially ore-bearing.

About 700 feet north of the hornblende gneiss-biotite schist unit, anomalous radioactivity has been found at several places along another belt of hornblende gneiss and biotite schist which is parallel to the favorable unit. The radioactivity apparently is confined to narrow beds of bleached biotite schist cut by carbonate-bearing faults. The radioactivity anomalies suggest the existence of another zone of favorable host rocks, although no uranium or copper minerals have as yet

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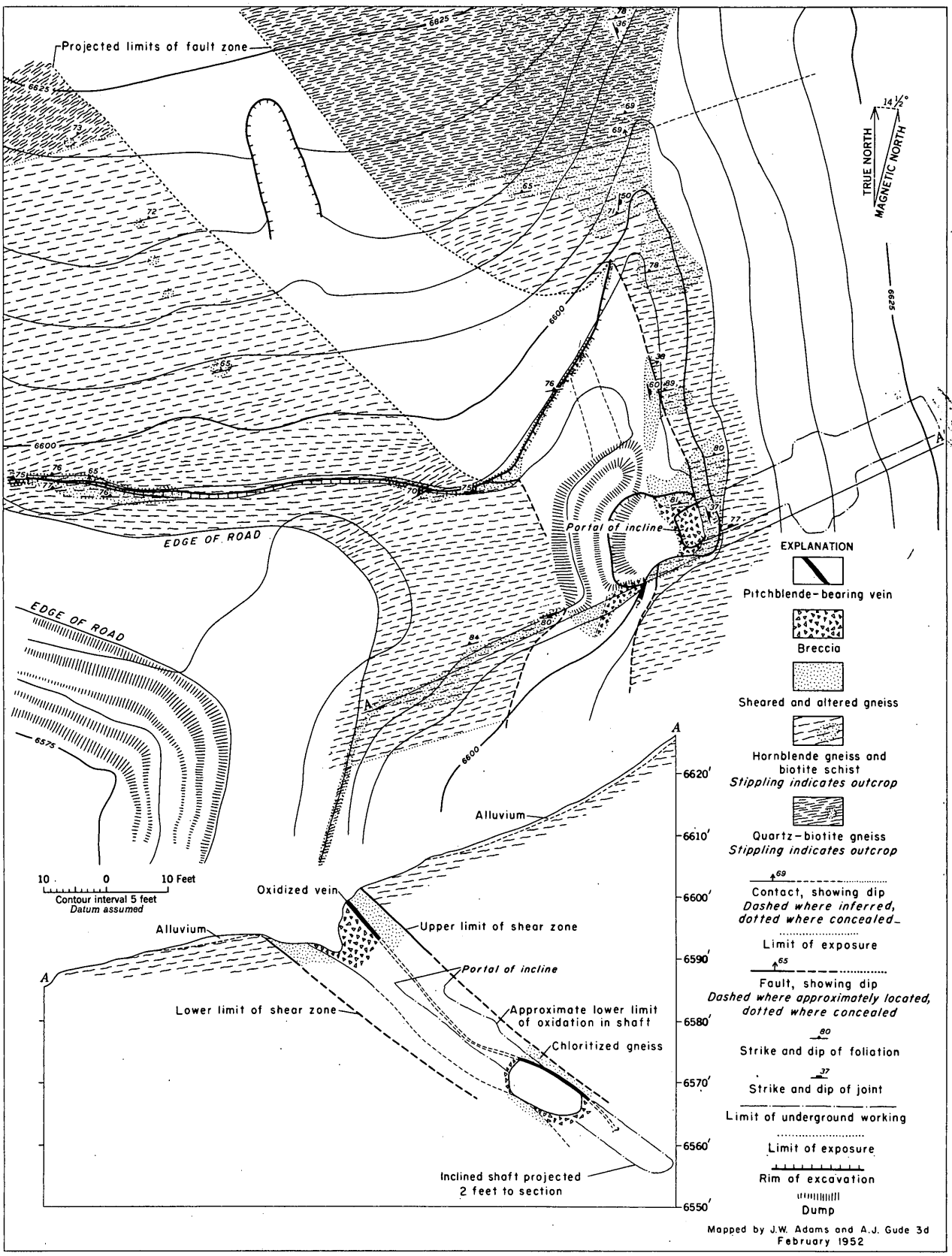

Figure 3.—Geologic map and section of the Union Pacific prospect, Jefferson County, Colorado.

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Table 1.—Analyses of samples from Golden Gate Canyon and Ralston Creek area, Jefferson County, Colo.

[Channel samples unless otherwise noted.]

Locality	Field no.	Width of channel (feet)	Material	Equivalent uranium (percent)	Uranium (percent)	Copper (percent)	Lead (percent)	Zinc (percent)	Fe_2O_3 (percent)	Manganese (percent)	Gold (oz./ton)	Silver (oz./ton)	$CaCO_3$ (percent)	Remarks
Union Pacific prospect.	SA-1	(1)	Carbonate-breccia with pitchblende.	0.130	0.110	---	---	---	---	---	---	---	---	Sample from dump.
	UP-1	3.0	Altered gneiss and carbonate-breccia.	.006	.004	---	---	---	---	---	---	---	---	Sample from underground workings.
	UP-2	3.0	----do----------	.006	.003	---	---	---	---	---	---	---	---	Do.
	UP-3	4.0	----do----------	.006	.004	0.21	0.01	0.08	---	---	---	---	8.8	Do.
	UP-4	4.0	----do----------	.005	.003	---	---	---	---	---	---	---	---	Do.
	UP-5	4.4	----do----------	.009	.004	---	---	---	---	---	---	---	---	Do.
	UP-6	4.2	----do----------	.014	.006	.10	.005	.07	---	---	---	---	3.3	Do.
	UP-7	4.0	----do----------	.094	.086	.49		.33	---	---	---	---	---	Do.
	UP-8	4.0	----do----------	.230	.260	.33	0	.50	---	---	Tr.	0.20	---	Do.
	UP-9	3.0	----do----------	.007	.003	.25	0	.95	---	---	Tr.	Tr.	---	Do.
	UP-10	1.0	----do----------	.007	.005	---	---	---	---	---	---	---	---	Do.
	UP-11	2.3	----do----------	.006	.003	---	---	---	---	---	---	---	---	Do.
	UP-12	2.6	----do----------	.006	.004	---	---	---	---	---	---	---	---	Do.
	UP-13	4.3	----do----------	.650	.810	.32	---	.35	---	---	---	---	---	Do.
	UP-14	4.9	----do----------	.014	.011	---	---	---	---	---	---	---	---	Do.
	UP-15	.3	----do----------	5.60	5.84	.29	.04	.45	---	---	Tr.	.72	---	Do.
	UP-16	.8	----do----------	.015	.006	.20	---	.25	---	---	---	---	---	Sample from portal of inclined shaft.
	UP-17	4.0	----do----------	.008	.003	.16	---	.25	---	---	---	---	---	Do.
	UP-18	1.0	----do----------	.009	.003	---	---	---	---	---	---	---	---	Sample taken from outcrop N. 63° W. of portal.
Buckman property----	GGC-3	.5	Pitchblende in gouge----	.250	.260	---	---	---	---	---	---	---	---	Sample from adit.
	GGC-4	.5	Altered gneiss----------	.010	.003	---	---	---	---	---	---	---	---	Do.
	B-1	(1)	Pitchblende in altered gneiss.	1.20	1.23	---	---	---	---	---	---	---	---	Sample from road cut, 300 feet N. of adit.
	RB-4	.5	Pitchblende in fractured quartz.	1.50	.860	.08	.07	.03	4.04	---	Tr.	.04	.2	Sample from adit.
	RB-5	.5	Pitchblende in gouge----	.220	.220	.10	.015	.05	8.19	---	0	0	5.4	Do.
	RB-6	1.0	Pitchblende in gouge; gneiss.	.072	.062	.08	---	---	6.29	---	Tr.	.04	---	Sample includes wall rock adjoining pitchblende shear.
	RB-7	4.0	Schist and pegmatite-----	.004	---	.16	---	---	5.22	---	Tr.	Tr.	---	Sample from adit.
	RB-8	.5	Altered pegmatite-------	.032	.013	.01	---	---	3.81	---	Tr.	Tr.	---	Do.
Ladwig No. 1--------	L-1	(1)	Pitchblende in altered gneiss.	.980	1.36	---	---	---	---	---	---	---	---	Sample taken 1 foot below soil zone.
	L-2	(1)	Carbonate-breccia-------	.006	.007	---	---	---	---	---	---	---	---	Sample from dump of copper prospect.
Ladwig No. 2-------	L2-1	(1)	Carbonate-breccia with pitchblende and copper.	.250	.300	8.25	.10	.10	---	---	---	---	.2	Sample from dump.
North Star mine----	NS-3	1.0	Mineralized breccia shear.	.370	.510	5.50	.11	.38	---	---	---	---	.5	Sample from underground workings.
	NS-4	(1)	Breccia with pitchblende.	.720	.850	16.83	---	---	---	---	---	20.30	---	Sample from dump.
	NS-5	1.0	Mineralized breccia shear.	.140	.110	3.08	.10	.10	---	---	---	---	.1	Sample from underground workings.
	NS-6	.5	----do----------	.062	.027	5.74	.10	.10	---	---	---	---	.2	Do.
	NS-7	.5	----do----------	.023	.010	1.84	---	---	---	---	Tr.	1.12	---	Do.
	NS-8	.5	----do----------	.005	.002	.29	---	---	---	---	Tr.	Tr.	---	Do.
	NS-9	.5	----do----------	.007	.002	.02	---	---	---	---	0	0	---	Do.
	NS-10	.5	----do----------	.011	.005	.08	---	---	---	---	0	0	---	Do.
	NS-11	.5	----do----------	.010	.006	4.12	---	---	---	---	Tr.	6.42	---	Do.
Nigger shaft--------	AJG-9	4	Carbonate-breccia-------	.010	.004	---	---	---	---	---	---	---	22.9	Sample from underground workings.
	AJG-10	.2	Carbonate vein with pitchblende.	.320	.220	---	---	---	---	---	---	---	---	Do.
	AJG-11	.2	----do----------	.280	.310	.29	.015	.06	---	---	---	---	20.4	Do.

Schwartzwalder mine.	RB-9	4	Altered gneiss----------	.021	.011	---	---	---	---	---	---	---	---	Sample taken in adit.
	RB-10	2	Altered breccia with torbernite and pitchblende.	.880	1.07	.32	2.67	---	---	---	---	---	.1	Do.
	RB-11	3	----do----------	.320	.360	.21	.74	.10	---	.40	Tr.	1.24	.1	Sample taken in adit. Contains 0.13 percent V_2O_5.
	RB-12	4	Altered breccia with torbernite.	.110	.082	---	---	---	---	---	---	---	---	Sample taken in adit.
	RB-13	4	Altered silicified gneiss.	.039	.010	.15	---	---	---	.07	---	---	---	Do.
	RB-17	(1)	Carbonate-breccia with torbernite.	.094	.084	---	---	---	---	---	---	---	---	Sample from upper prospect pit, 52 feet above portal of adit.
	RB-18	(1)	----do----------	.340	.470	---	---	---	---	.15	---	---	---	Do.
	RB-20	(1)	Altered breccia with pitchblende and torbernite.	.260	.330	---	---	---	---	---	---	---	---	Sample from ore bin.
	RB-21	.5	Altered breccia with pitchblende and sulfides.	1.40	1.94	.09	.53	.13	---	.24	---	---	3.3	Sample taken in adit.
	RB-22	1	Breccia with torbernite-	.084	.058	---	---	---	---	---	---	---	---	Sample from prospect pit 35 feet above portal of adit.
	RB-23	(1)	----do----------	.59	.790	---	---	---	---	---	---	---	---	Random sample from dump of prospect pit 35 feet above portal of adit.
	RB-24	1.5	----do----------	.13	.059	---	---	---	---	---	---	---	---	Sample from prospect pit, 52 feet above portal of adit.
	RB-27	(1)	Carbonate-breccia-------	.33	.43	2.0	---	---	---	---	---	---	---	From prospect 1,000 feet northeast of Schwartzwalder mine. Contains 1.10 percent V_2O_5.
	RB-28	1	Altered breccia with pitchblende.	4.1	5.29	---	---	---	---	---	---	---	---	Sample taken in adit, near floor of workings.
	RB-29	(1)	Carbonate-breccia-------	.018	.014	---	---	---	---	---	---	---	---	From prospect 1,000 feet northeast of Schwartzwalder mine.
	H-651	2	Altered schist----------	.44	.59	---	---	---	---	---	---	---	---	From incline.
	H-652	2	Altered breccia with pitchblende.	2.9	4.32	---	---	---	---	---	---	---	---	From incline. Contains 0.14 percent V_2O_5.
	H-653	3	----do----------	.5	.65	---	---	---	---	---	---	---	---	Do.

[1] Grab sample.

outcrops of carbonate breccia about 300 feet and 700 feet northwest of the mapped area, as well as a shear zone in rocks on the south side of Golden Gate Canyon, probably represent the same structure, and indicate that it has a strike length of at least 1,000 feet.

The surface cut and underground workings at the Union Pacific prospect are entirely within the fault zone in the hornblende gneiss and biotite schist layer previously mentioned as a "favorable bed" for uranium deposition. This layer, which is about 100 feet thick and dips steeply to the north, apparently has been displaced from 10 to 25 feet to the northwest on the west side of the fault.

The southeast wall of the shaft showed anomalous radioactivity from the collar to a few feet below the stub drift. On the southeast wall of the cut a radioactive gossan from 6 inches to 1 foot thick underlies the hanging-wall shear zone, and many of the fracture surfaces in the shear zone itself show strong radioactivity. Anomalous radioactivity was found in much of the soil-covered area between the north rim of the cut and a shallow trench about 75 feet northwest of the shaft. The anomalies occur within the limits of the fault zone as shown on figure 3.

Pitchblende, the only uranium mineral that has been observed in the deposit, is associated with chalcopyrite, tetrahedrite-tennantite, bornite, chalcocite, covellite, and pyrite in a zone that ranges from 6 inches to 1 foot in thickness along the contact between the carbonate-breccia and the hanging-wall shear. The ore minerals are largely concentrated in the altered and sheared hornblende gneiss, but they are also present in the upper few inches of the underlying breccia. The pitchblende occurs chiefly as lustrous, black films along minor shear planes that are roughly parallel to the major structure of the fault. Less conspicuous pitchblende, accompanied by the sulfides, is disseminated through most of the rock in the ore zone; at least some of this pitchblende is a late mineral in carbonate-lined veinlets.

Most of the pitchblende observed in the deposit was found on the walls of the stub drift; samples taken across the shaft walls at points above and below the drift showed a rapid decrease in uranium (fig. 4). It is possible that the radioactive gossan in the southeast wall of the surface cut is an oxidized and leached part of the pitchblende-bearing body exposed underground, and that both represent the north edge of a lenticular ore shoot whose direction of plunge is a few degrees south of the direction of the shaft. The localization of ore on the crest of rolls in the breccia zone is suggested by the relationships observed underground.

Copper minerals are abundant in some samples, but the copper content of the ore zone is low. Zinc was detected in analysed samples, but no zinc minerals have been recognized. Gold, silver, lead, nickel, and cobalt are present in trace amounts only.

The paragenesis of the minerals from the deposits in the area has not been studied sufficiently to be discussed at length in this paper, but it seems probable that the pitchblende was formed after the brecciation of the wall rocks and during the last stage of carbonate deposition.

Buckman property

Pitchblende has been found in an abandoned adit about 15 feet east of the Golden Gate Canyon road (fig. 2, locality 2), on land owned by Nora R. Buckman of Golden, Colo. About 1916 the adit was driven 86 feet in a northeasterly direction roughly parallel to the foliation of steeply-dipping pre-Cambrian biotite schist and gneiss; presumably the adit prospected sulfide-bearing quartz stringers. A winze which is now filled with water, had been sunk to a depth of 25 feet near the heading.

The biotite schist and gneiss exposed in the adit is cut by granite pegmatite dikes and discontinuous quartz bodies that contain local concentrations of pyrrhotite and chalcopyrite. The quartz bodies, which may represent segments of a single quartz vein, are cut by the pegmatites and are assumed to be pre-Cambrian.

Pitchblende occurs at two places along the south wall of the adit (fig. 5). Near the portal, it forms masses as much as one-half inch thick in a shattered, iron-stained quartz vein. The pitchblende shows colloform rim structures around angular quartz fragments. Interstitial to the pitchblende-coated quartz fragments are iron oxides, chalcopyrite, uranophane, and an unidentified green uranium mineral. A hydrated uranium sulfate, uranopilite, was identified by X-ray and optical data obtained by the Geological Survey laboratory. Although the relations are somewhat obscure, the shattered quartz in which the pitchblende is found apparently lies along a prominent shear that strikes N. 15° E., and dips 40° E., but no anomalous radioactivity has been found in the shear away from the quartz body.

About 45 feet along the adit, pitchblende is found in an oxidized shear striking N. 45° E., and dipping 71° SE. Although this shear cuts a quartz vein, the only pitchblende observed occurred a few inches outside of the quartz vein, in the adjacent sheared and silicified gneiss. Anomalous radioactivity was not detected along the shear except where the pitchblende was found.

In spite of the localization of the pitchblende in and adjacent to the quartz veins, it is doubtful that they are genetically related, and a postquartz vein origin seems more probable.

The pyrrhotite and chalcopyrite sparsely disseminated in and along the margins of the quartz veins probably are essentially contemporaneous with the quartz.

About 300 feet northwest of the adit, a pitchblende-bearing vein is exposed in a road cut at the east edge of the highway. The vein is 1 to 3 inches thick, strikes approximately north, and is essentially vertical. Although the radioactive part of the vein is less than 2 feet long, it is remarkably rich, containing surfaces of hard, botryoidal pitchblende one-eighth to one-fourth inch thick that coats a carbonate mineral tentatively identified as calcite. Minor amounts of chalcopyrite also are present in the vein. The vein cuts hornblende gneiss at approximately right angles to the foliation. The gneiss is almost completely bleached for a width of an inch or more along the contacts. Beyond the

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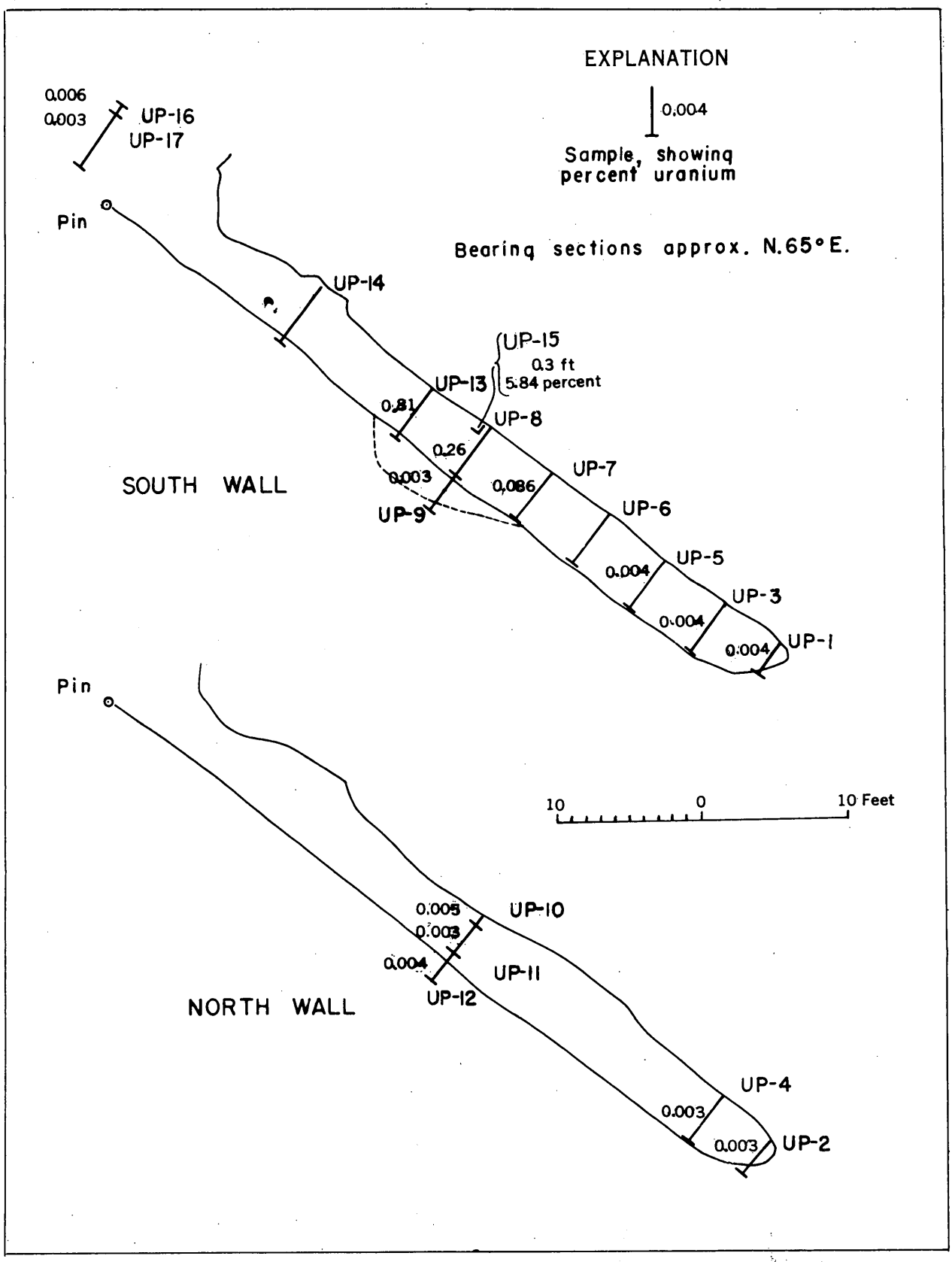

Figure 4.—Assay map of walls of inclined shaft at Union Pacific prospect, Jefferson County, Colorado.

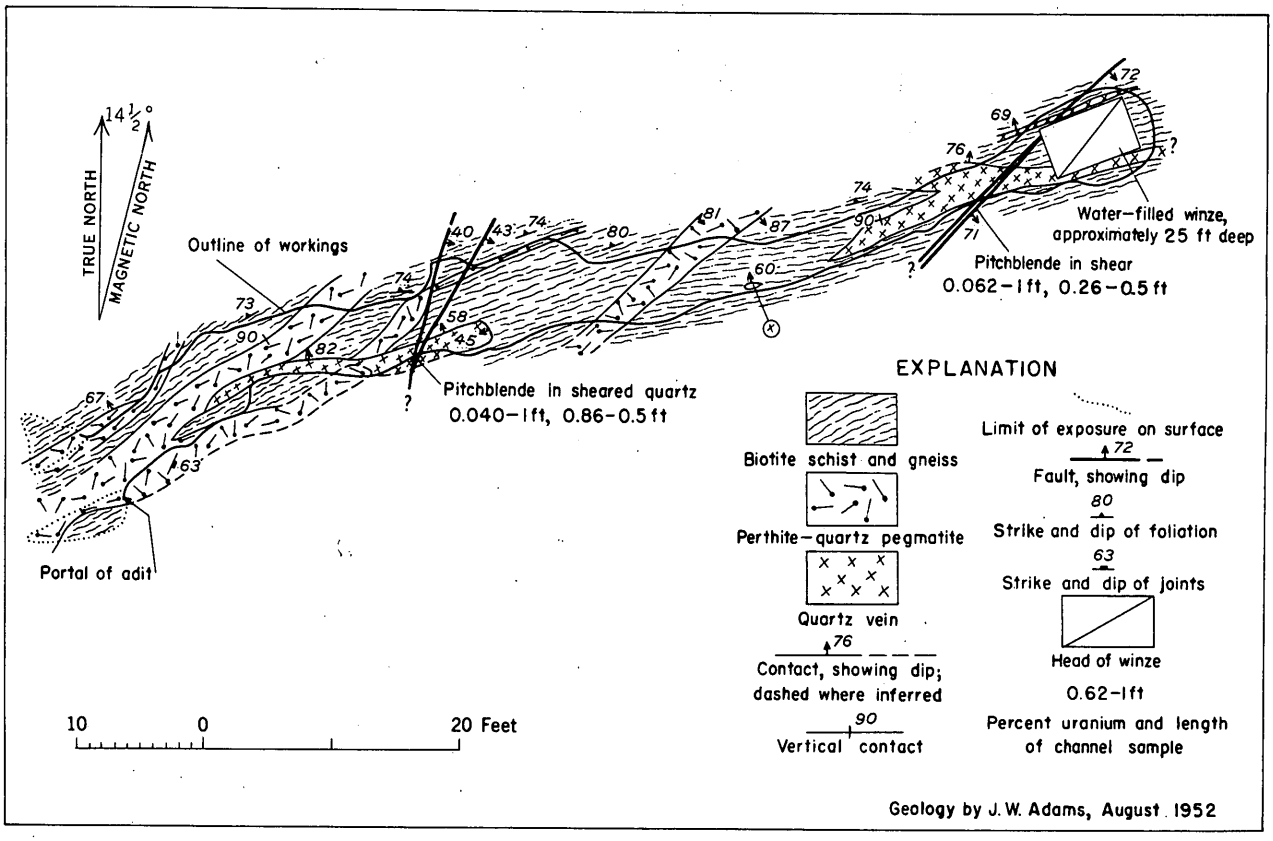

Figure 5.—Geologic map of adit, Buckman property, Jefferson County, Colorado.

pitchblende-bearing area, only a barren fracture marks the course of the vein.

Because of its proximity to the adit, the vein is included in the description of the Buckman property, but its location, so far as can be determined, is so near the north edge of the property that its ownership is uncertain.

The black hornblende-gneiss layer in which the small pitchblende vein occurs may be a westward extension of the favorable bed previously described. This gneiss, where exposed along the highway, is about 100 feet thick, strikes N. 80° E., and dips 62° to 85° N. It has been traced for about 300 feet west of the road to a northwest-trending fault zone that contains large bodies of carbonate-cemented breccia. Anomalous radioactivity is widespread along the fault near its intersection with the gneiss, and although no uranium minerals have been found west of the road, the geologic environment, by analogy with the deposit at the Union Pacific prospect, would appear favorable for an ore body. The small occurrences of pitchblende at the Buckman adit and in the road cut differ from the other known deposits in Golden Gate Canyon in that they show no close relationship to the carbonate-bearing faults, the nearest known fault of this type is at least 300 feet to the west. This variance with the mode of occurrence of the other deposits suggests that the Buckman occurrences may be indicative of a strong uranium mineralization capable of depositing pitchblende at some distance from the faults.

Ladwig No. 1

Strong anomalous radioactivity was detected at the Ladwig No. 1 property (fig. 2) by a gamma scintillation detector. The radioactivity, which is traceable over an area of about 50 square feet, is caused by uranium minerals in rocks concealed under 1 to 3 inches of soil. Torbernite, which coats foliation planes of altered biotite schist, was noted in the few samples that could be collected. A few small fragments in the soil appear to be carbonate breccia, and contain minute grains of pitchblende and an altered yellow uranium mineral that resembles uranophane. Secondary copper minerals are also present. Float of carbonate breccia and exposures of altered rock indicate that the occurrence of uranium minerals is related to a northwesterly-trending fault.

The relative positions of the contacts of the favorable bed of hornblende gneiss with the quartz-biotite

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gneiss indicate that the fault has an offset of about 100 feet, the west block moving south relative to the east block.

The anomaly is about 330 feet N. 50° W., of a water-filled prospect shaft showing copper minerals on the dump. The shaft was sunk in altered biotite schist cut by a carbonate breccia 1 to 2 feet wide that strikes north and dips about 70° E. Much of the material on the dump is quartz associated with pyrite and limonitic material, and some bornite, covellite, and copper carbonates. In spite of the close association of uranium with copper in the area, no appreciable uranium has been found in ore samples from this locality. It may be significant that although the copper prospect lies along a carbonate-bearing fault, it does not lie within the favorable hornblende gneiss layer.

Mineral rights to the Ladwig No. 1 and two other localities are held by Lyman C. Ladwig of Golden, Colo.

Ladwig No. 2

At the Ladwig No. 2 property (fig. 2), uranium minerals have been found on the dump of an abandoned prospect shaft and in a small trench 100 feet to the east. The shaft, which is now 12 feet deep but may have been considerably deeper, was sunk in a radioactive carbonate breccia zone, 1 to 2 feet wide, that strikes north and dips steeply to the east. The breccia zone cuts the hornblende gneiss-biotite schist layer that, in the vicinity of the shaft, is extensively sheared and bleached for several feet on the hanging-wall side of the contact. No uranium minerals were found in place, but specimens collected from the dump of the shaft contain pitchblende and torbernite in limonite-stained breccia host rock. Additional radioactive samples, probably derived from another breccia zone, were found in the debris from the lower of two shallow cuts about 100 feet east of the shaft. Copper minerals, notably carbonates, are conspicuous on the dump where the uranium minerals are found.

The radioactive breccia zone is also exposed at the caved portal of an adit 125 feet south of the shaft. Here the breccia zone is 6 feet thick and contains altered but recognizable wall-rock fragments that are several inches in diameter. No uranium or copper minerals were noted at the adit or in the shallow cut that exposes the breccia zone about 40 feet north of the shaft.

Ladwig No. 3

A single specimen of pitchblende and associated copper carbonates was found on the dump of the lower of two small prospect pits at the Ladwig No. 3 property (fig. 2). As at the previously described deposit, the pitchblende and copper minerals occur in or near a north-trending breccia zone. This occurrence is poorly exposed, and at present is chiefly of interest as another example of uranium mineralization along the favorable zone.

RALSTON CREEK AREA

Three pitchblende-bearing deposits are known in a small area in the vicinity of Ralston Creek (fig. 6), about 6 miles north-northwest of the prospects in

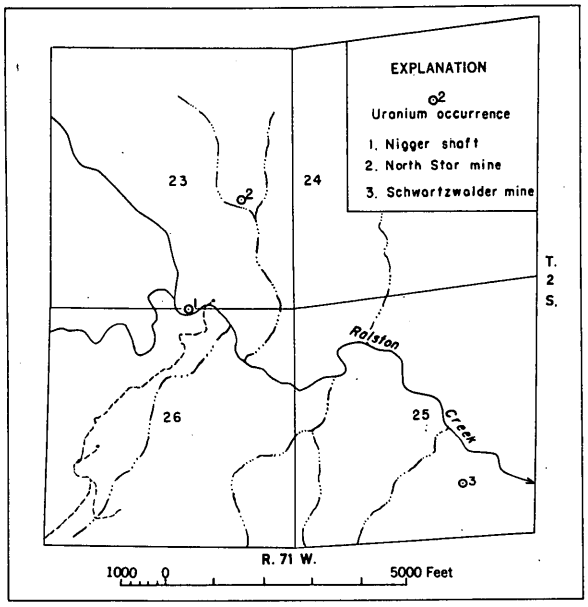

Figure 6.—Index map showing known uranium occurrences in the Ralston Creek area, Jefferson County, Colorado.

Golden Gate Canyon. The deposits are similar to those in Golden Gate Canyon as they are related to north or northwest-trending breccia zones; they do not, however, show a similar alinement in a northeasterly direction. None of the deposits are easily accessible. The North Star and Nigger Shaft deposits can best be reached from the north by a private road to the A. G. Brumm ranch from Coal Creek Canyon. From the end of the ranch road, it is possible to drive 4-wheel drive vehicles to within walking distance of the workings. The Schwartzwalder mine, on the southwest side of Ralston Creek, can be approached by 4-wheel drive vehicles via an access road leading up the creek from Ralston reservoir 5 miles north of Golden. Analyses of samples from this area are shown in table 1.

North Star mine

Pitchblende was discovered at the abandoned North Star mine in April 1952 by geologists of the Geological Survey. The mine is on the ranch of A. G. Brumm and is probably in the south half of section 23, mineral rights of which are held by the Union Pacific Railroad Co. According to Brumm, 4 tons of copper ore was taken from the mine in 1894, and another 12 tons was shipped in 1916.

The mine was worked by a short upper level (fig. 7) and a lower level connecting with a stope that

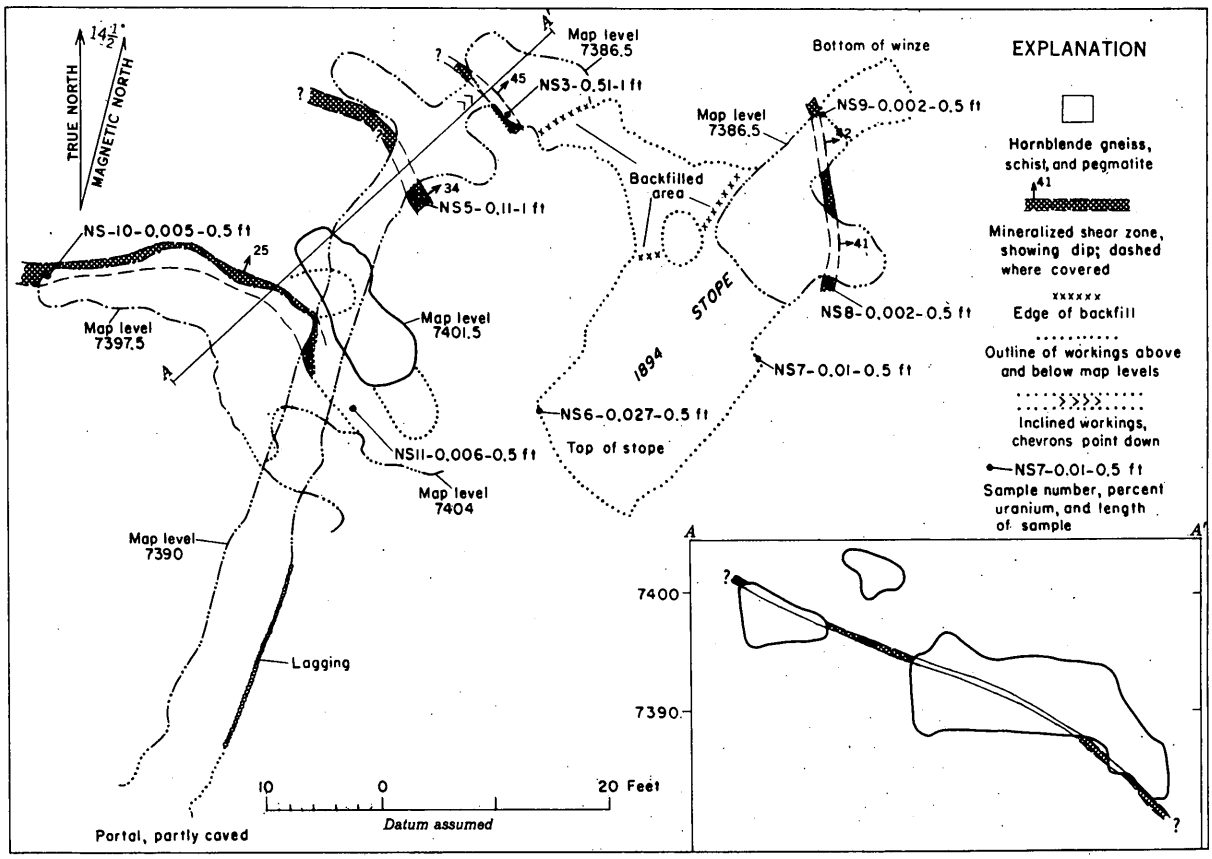

Figure 7.—Map and section of underground workings, North Star mine, Jefferson County, Colorado.

at one time was open to the surface. The portal of the lower level is badly caved, and a backfilled area in the workings makes access to the stope quite difficult. Several other small prospect workings, apparently not on ore, are in the general vicinity of the mine.

The rocks exposed in the area are pre-Cambrian hornblende gneiss, quartz-biotite schist, and granite pegmatite. The foliation of the metamorphic rocks strikes northeast and dips steeply southeast; the pegmatites show a similar northeast trend but are locally discordant. These rocks are cut by a carbonate-orthoclase(?) vein that strikes northwest and dips from 25° to 45° NE. Much of the vein exposed in the mine is altered to a limonitic gossan, but, where fresh, it shows streaks and patches of incompletely incorporated wall-rock fragments, and is a breccia-filling similar to those in the Golden Gate Canyon area.

Uranium and copper minerals occur throughout the vein as fracture fillings and as interstitial material surrounding breccia fragments. The ore minerals are not consistently present along the vein, and the small tonnage of copper ore that was mined probably came from narrow lenses of which little evidence remains. The best copper and uranium ore now showing in the mine (fig. 7) constitutes a zone 6 inches to 1 foot thick above the carbonate vein exposed at track level near the face of the lower adit. Some of the ore observed underground is comparable to the pitchblende-bearing rock found on the upper-level dump. This ore is made up largely of reddish-brown rock fragments, generally less than 1 inch in diameter, cemented by primary and secondary copper and uranium minerals that include bornite, chalcocite, covellite, malachite, azurite, pitchblende, uranophane, and several unidentified uranium minerals. Some of the breccia fragments apparently are hornblende gneiss and granite, but the alteration, particularly the hematite(?) staining, makes identification of the original material difficult. This ore probably came from the small workings of the upper level, where, according to Brumm, the richest copper ore was found. In addition to uranium and copper, the ore contains an appreciable amount of silver (table 1), but no silver minerals have as yet been recognized.

A microscopic study of pitchblende at the North Star mine shows alteration from the opaque isotropic mineral to a brown transluscent to transparent material that is very weakly anisotropic and has an index of refraction of about 1.87. The brown mineral, which is locally abundant in some specimens of the ore, has a radial structure reflecting the original rounded or spherical surfaces of the original pitchblende. It is thought to be a hydrated uranium oxide, but its identity is still uncertain.

The position and attitude of the vein in the stope and at the same map level (fig. 7) in the lower adit indicate either that there are two veins or that postvein faulting has taken place. Geologic mapping of the

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underground workings, although not complete, indicates that the vein is probably faulted.

Anomalous radioactivity was found at a small prospect trench on the hillside about 600 feet southeast of the North Star workings. The few radioactive samples found on the dump contain secondary copper minerals.

Schwartzwalder (Ralston Creek) mine

The Schwartzwalder (Ralston Creek) mine (fig. 6) is on a heavily wooded, steep slope southwest of Ralston Creek, at an altitude of about 7,000 feet. Surface and mineral rights to the property are owned by Paul White of Golden, Colo. The uranium deposit at the mine currently is being explored by Fred Schwartzwalder of Golden, who discovered secondary uranium minerals at a caved adit on the property early in 1949.

The deposit was investigated for the Atomic Energy Commission by Anderson[1] and Baker[2].

The caved adit and three shallow pits nearby remained from earlier attempts to mine copper at the locality by the Golden Mining Company, during and before October 1897. Mr. Schwartzwalder has excavated the caved adit as an opencut and has driven a new adit and incline (fig. 8). The new workings were begun where the secondary minerals were found and continued in rocks showing abnormal radioactivity and concentrations of secondary uranium minerals. Pitchblende was first found about 40 feet from the portal, where the adit intersects a fault zone which trends northwest and dips at a low angle to the southwest. The fault was followed downdip by an incline to the present (1953) extent of the workings.

The rocks at the Schwartzwalder property are quartzose gneiss and mica schist of the pre-Cambrian Idaho Springs formation. The foliation of the schist, as noted in the underground workings, strikes N. 80° E. and dips 77° S. The gneiss and schist exposed in the workings have been highly altered and faulted, and appear to have been invaded by a large body of massive quartz. Much of the quartz is distinctly smoky in color. The gneiss, schist, and massive quartz have been cut by a fault that is marked by an iron-stained breccia consisting mostly of shattered quartz.

The uranium minerals are mostly concentrated in the fault zone that is as much as 5 feet thick where exposed in the incline. Pitchblende is found almost exclusively in the shattered quartz of the fault zone, whereas secondary uranium minerals are common in all the fractured wall rocks. The pitchblende is finely disseminated and partly sooty. Secondary uranium minerals identified from the deposit include torbernite, metatorbernite, and autunite. Associated with the uranium minerals are minor quantities of chalcopyrite, tetrahedrite-tennantite, bornite, galena, pyrite, limonitic material, malachite, azurite, ankerite, calcite, barite, and an unidentified potash feldspar. The sulfides and associated gangue minerals generally are extremely fine grained.

A strongly radioactive, northerly-trending quartz breccia similar to that exposed in the mine is exposed in a shallow pit 34 feet above and a short distance southwest of the portal of the adit. This breccia, which is about 4 feet thick, contains visible torbernite and malachite along fracture surfaces.

A third exposure of radioactive quartz breccia is in an old excavation 52 feet above the mine adit. About 100 feet above and 150 feet south-southeast of the mine adit, an old shaft 18 feet deep also exposes similar radioactive rock. All these exposures of radioactive breccia probably represent a single fault zone. Continuation of this zone south of the prospected area is indicated by breccia float, in which fine-grained rock fragments are cemented by carbonates. Relationships of uranium minerals to a breccia reef in the Schwartzwalder mine area are analogous to most of the other deposits described. The quartzose character of the breccia is probably due to local composition of the wall rocks rather than to a more siliceous ore-bearing solution.

Pitchblende(?) associated with base-metal sulfides and secondary copper carbonates was noted in another breccia shear zone on the east side of Ralston Creek, about 1,000 feet northeast of the Schwartzwalder (Ralston Creek) mine. This shear zone trends northwest and dips steeply to the northeast. Two samples, RB 27 and RB 29, from this locality contained 0.43 and 0.014 percent uranium respectively.

Nigger shaft (Hoffmeister prospect)

Pitchblende was first recognized in the Ralston Creek area in 1949 at an abandoned copper prospect, locally known as the Nigger shaft. The discovery was made by Fred Schwartzwalder of Golden, Colo., who submitted samples of the radioactive rocks to the Atomic Energy Commission. The prospect, worked between 1912-14 by Hoffmeister, consists of a 20-foot inclined shaft connected to a small stope (fig. 9). A short adit was driven from a point about 130 feet southeast of the shaft, presumably to intersect the vein below the shaft level.

The ownership of the deposit is unknown because the workings are situated on or very close to the boundary line between sections 23 and 26. If the deposit is in section 23, the mineral rights are owned by the Union Pacific Railroad Co. Surface and mineral rights to the adjacent land in section 26 are owned by Oscar Dahlberg of Golden.

The rocks in the vicinity of the Nigger shaft are pre-Cambrian hornblende gneiss, biotite schist, granite pegmatite, and aplite. These rocks are cut by a northerly-trending breccia reef that probably is an extension of one of the major Laramide fault zones mapped three-quarters of a mile to the north by Lovering and Goddard (1950, pl. 2). The reef, bordered by sheared and altered rocks, crops out 250 feet northeast of the shaft, and can be traced by float and outcrops for 1,000 feet or more to the northwest.

[1] Anderson, J. P., 1950, Preliminary reconnaissance, Atomic Energy Comm. Rept. 35. [Unpublished.]

[2] Baker, K. E., 1953, Preliminary report on uranium occurrence at the Ralston Creek mine, Jefferson County, Colo. [Report in files of the Atomic Energy Commission.]

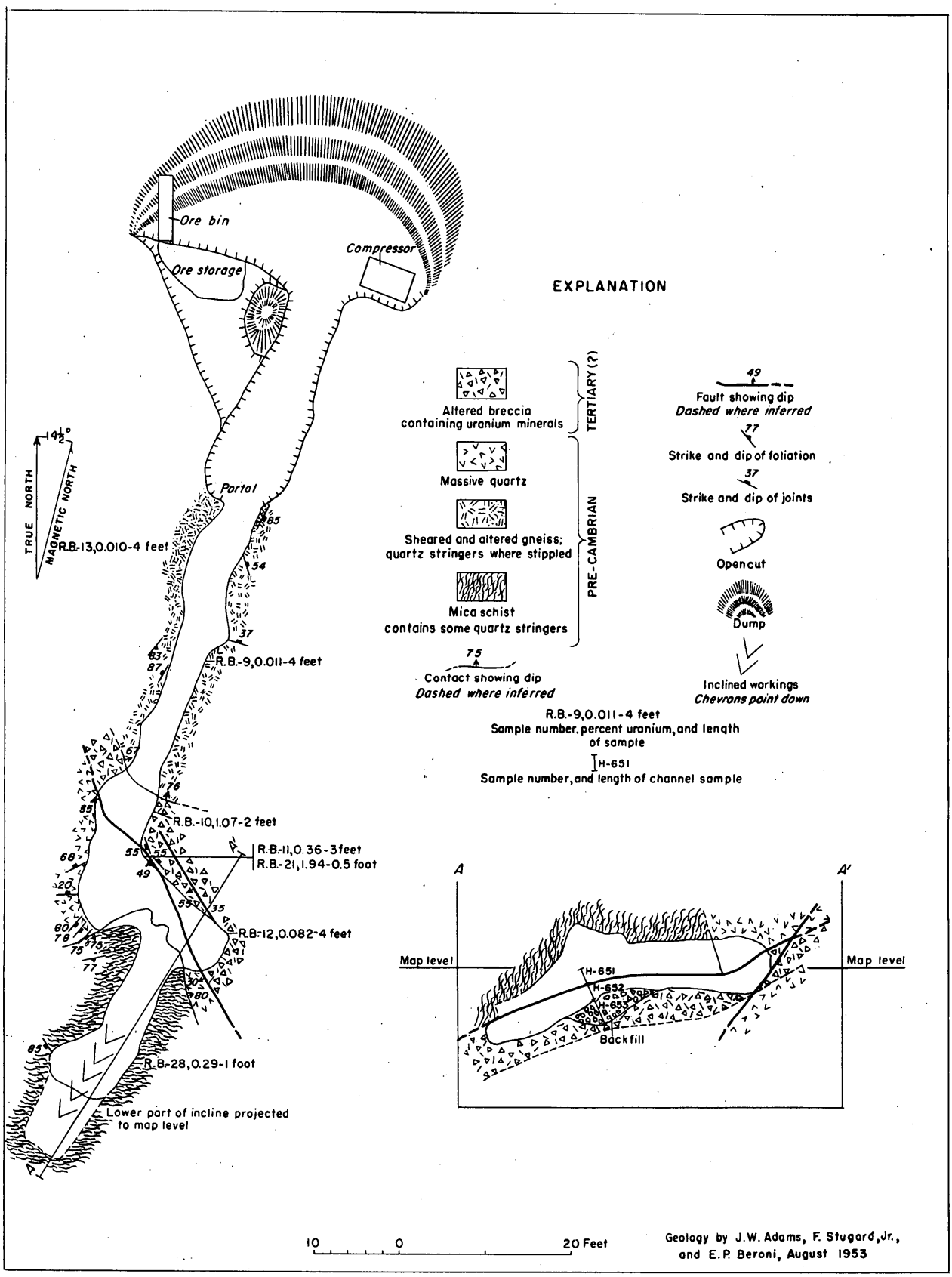

Figure 8.—Geologic map and section of the Schwartzwalder mine, Jefferson County, Colorado.

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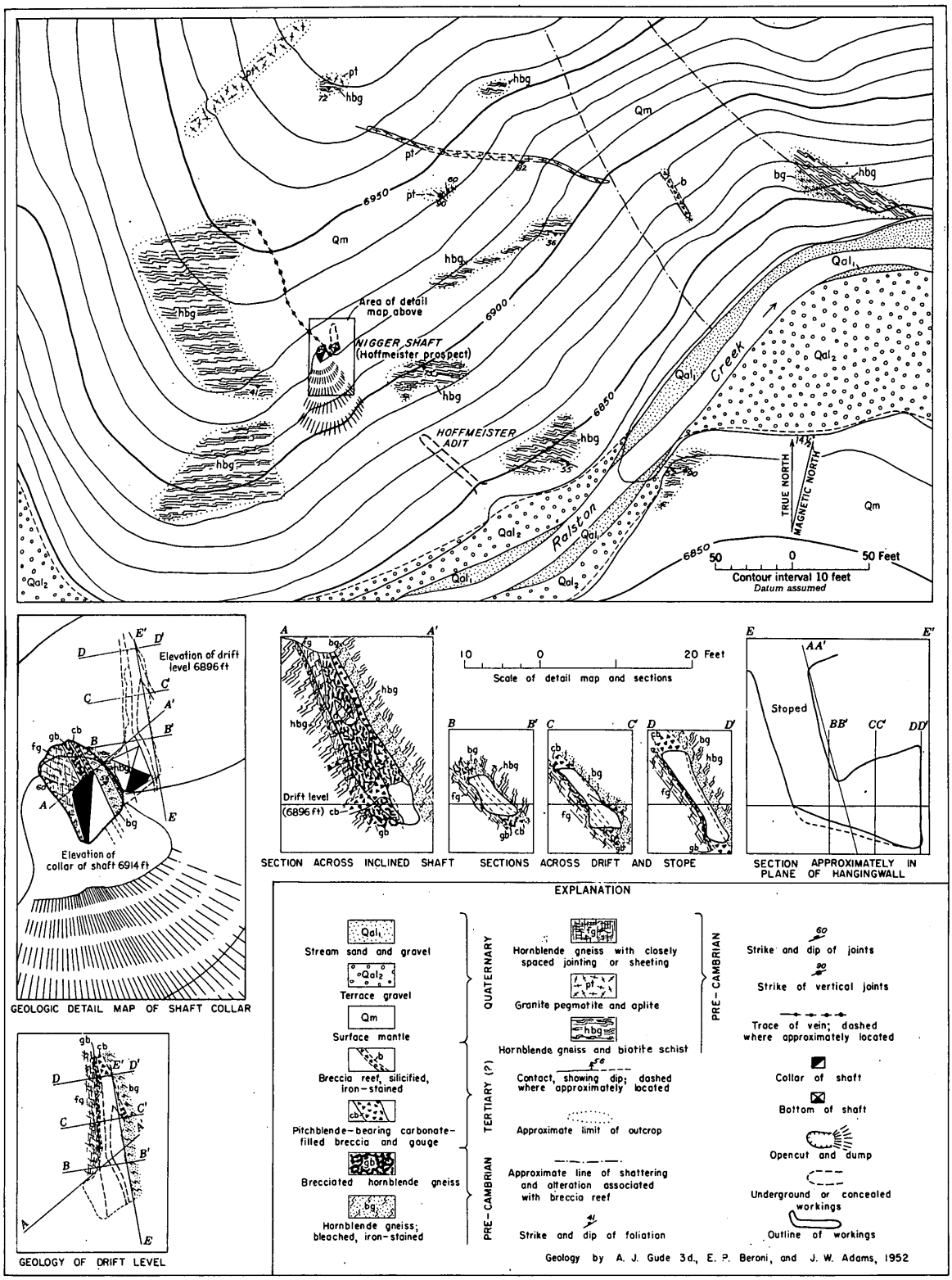

Figure 9.—Geology of Nigger shaft (Hoffmeister prospect), Jefferson County, Colorado.

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The pitchblende deposit of the Nigger shaft is in a shear zone that is roughly parallel to the breccia reef. The shear exposed in the workings strikes N. 3° E. and dips 50°-60° E., but the surface exposures and radioactivity data indicate that the general trend of the shear is northwest. The shear zone is from 4 to 8 feet thick and consists of brecciated and sheared hornblende gneiss that is cut by an irregular body of carbonate-rich rock which contains the ore. This rock, which averages about 2 feet in width, apparently represents that part of the shear zone that was invaded by the ore-bearing solutions. It is made up of bleached and altered gneiss fragments intricately cut by veins and cemented principally by carbonates; it constitutes a stockwork of dense, hard, light-brown rock that in surface exposures appears as a brick-red gossan.

The sheared gneiss along the hanging wall of the vein has been bleached by hydrothermal action for as much as 2 feet outward from the vein, but the brecciated gneiss in the footwall of the shear zone appears to be relatively fresh.

The vein has been traced by radioactivity for 100 feet to the northwest, but it is almost entirely concealed by soil. Pitchblende and copper minerals were recovered from the soil in an area of high anomalous radioactivity about 50 feet from the shaft.

Pitchblende occurs in the deposit chiefly as thin seams in carbonate veinlets along the margins of the stockwork. The seams of pitchblende which range from 0.05 to 0.5 millimeter in thickness, form rims around earlier crystals of carbonate and orthoclase(?). Later carbonate and sulfides fill the center of the veinlets. The botryoidal upper surface of the seams suggests that they were developed by the coalescence of many individual hemispherical bodies, such as occur singly or in groups where the seams are discontinuous.

Sulfide minerals, including covellite, chalcopyrite, bornite, chalcocite, pyrite, and galena, have been identified in polished sections of the ore. Except for pyrite and some chalcopyrite, they occur within the carbonate veinlets. Most of the sulfides appear to have been deposited later than the pitchblende. Detailed mineragraphic studies have not been made, however, to determine the paragenetic sequence of the ore minerals.

Calcite, ankerite, and quartz are the dominant gangue minerals in the pitchblende-bearing veins. The sequence of their deposition has not been definitely established, but preliminary studies show that the iron-rich carbonate formed both before and after the deposition of the pitchblende. Calcite is interstitial to ankerite and quartz and apparently is the last gangue mineral to be formed. All the quartz, so far as known, is younger than the pitchblende.

Crystals of a nearly uniaxial mineral of negative sign and low birefringence occur along the edges of the pitchblende-bearing veinlets. These crystals, thought to be orthoclase, were deposited before the pitchblende. A dark-green mineral, tentatively identified as chlorite, forms radial aggregates in the postpitchblende vein filling.

Most of the pitchblende in the veinlets is surrounded by an orange-brown layer, about 0.02 millimeter wide that may be in direct contact with the pitchblende or is developed entirely in the adjacent gangue minerals. The layer may end abruptly at an interface between two carbonate crystals or between a carbonate crystal and quartz. The material forming the layer has not been identified, but its distribution and color suggest that it is made up of finely dispersed iron oxides formed in ankerite as a product of radiation from the pitchblende. It has not been observed in quartz, and, where present in one carbonate and not another, it is assumed that the barren carbonate is calcite.

A mineral tentatively identified as a hydrated uranium oxide occurs sparsely in oxidized and leached breccia. It is light to dark brown, transparent, isotropic, and has an index of refraction of about 1.75. Qualitative texts show that it contains uranium and lead. This mineral was probably derived from pitchblende exposed to supergene solutions by the partial removal of enclosing carbonates, and is analogous to the brown material found in more abundance at the North Star mine.

Several secondary copper minerals are present in the ore; they are not abundant and are chiefly confined to cavities in the veinlets.

LITERATURE CITED

Anonymous, 1884, Mining and Science Press, v. 48, no. 11, p. 195.

Lovering, T. S., and Goddard, E. N., 1950, Geology and ore deposits of the Front Range, Colorado: U. S. Geol. Survey Prof. Paper 223.

INT.-DUP. SEC., WASH., D.C. 53114

30

Application
for Aid in an Exploration Project, Pursuant to
DMEA Order 1, Under the Defense Production Act
of 1950, as Amended

Instructions

4. Physical description. - (d) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

1. Access roads: There is a County maintained improved road in excellent condition running parallel and through 80 acres of the property.

   Bull-dozer cuts will have to be made to provide road surface to the other 80 acres and also, access roads must be cut to the drill sites or hole locations.

2. Distances to shipping: The property is approximately 3 (three) miles from the railhead at Golden, Colorado, this being three miles of excellent County maintained road.

3. Denver, Colorado is approximately 18 or 20 miles to the east of the property and can be reached over excellent State highways or - super 4 lane highways.

   Every known mining and construction supply can be purchasedd in Denver and most can be purchased in Golden three miles from the property.

   Housing is in abundance in both Denver and Golden, Colorado.

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

1. Man power is unlimited.

2. Materials can be purchased upon demand in Denver, Colorado.

3. Supplies in any need or quantity are immediately available.

4. Water must be hauled initially, however, if the property is developed water can be piped in to the operation by drilling wells or piping from flowing springs, OR SUMP.

5. Power must be portable initally however, if the property is developed power is immediately available in the area.

Application -

Instructions - cont'd

5. The exploration project.-

(b) Describe fully the proposed work, including a map or sketch of the property showing a plan of any mine workings and the location of the proposed exploration work as related to such features as contacts, veins, ore bearing beds, etc..

Reference: Please see - U.S.G.S. Professional Paper 300 -
U.S.G.S. Circular 320

Union Pacific Railroad Anomaly Map of area adjacent to Cervi lease

Drill Hole Map of proposed exploration drill holes on Cervi lease

According to U.S.G.S. Professional Paper and Circular - 300 and 320 respectively - contained herein, the ore deposits occur in or near the Laramide fault zones that cut or intersect the Hornblende gneiss and schist veins and the pegmatites of the pre - Cambrian age.

This fact is proven by the geology of the producing mines in the area and upon inspection of operating mines locally it was found that the ore occurs against the hanging or foot walls of the faults.

These hornblende gneiss veins and cross faults occur in the Cervi lease and altho the Union Pacific Anomally Map does not extend its exploration into the Cervi lease it does show the westerly trend of the favorable conditions through the Cergi lease.

The proposed work:

1. The first of the proposed work will consist of bull-dozing roads to the drill site locations.

Cuts and leveling will be accomplished for the drill rigs at the hole locations. Drilling will start - utilizing angular drilling to the best geologic advantage.

The thought is to drill into the intersections of the fault zones and the gneiss veins in an attempt to drill into the hanging wall and foot wall of the faults where the occurance of uranium seems to prevail.

2. Drill holes:

Hole Number	Direction	Verticle Angle	Length
1 through 11 ------	S 49 deg W -----	Top holes 60 - 65 deg	300 ft
		center - 55 deg	300 ft
		bottom - 45 - 50 deg	300 ft
12 through 20 ----	S 68 deg W ---	same as above --- all	300 ft
		20 holes --- total footage ----	6000 ft

Application

cont'd
Instructions

5. The exploration project.-

(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 operation.

1. Experience and background of applicant

(please see attachment - Personal Data Sheet)

2. Background of person or persons who will supervise the operations.

The person or persons who will supervise the operations will be well qualified, competent, resident area engineers or engineer.

Also, the applicant may be the person who will supervise the operations.

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Personal Data Sheet

Confidential

Instructions - cont'd

5. The exploration project.-

(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 who will supervise the operation.

1. Experience and background of applicant

Name: Arthur A. Cervi

Address: 979 Miller Street, Lakewood 15, Colorado

Phone: Belmont 7-1850

Age: 39

Martial Status: Married, no children

Education: 1 year - University of Colorado, major - journalism
$3\frac{1}{2}$ years - Colorado College, major subject - geology
$\frac{1}{2}$ year - University of San Francisco - 4 units math

Degree: B.A. - Colorado College - 1947; returned to college after war

Other Schools: Sanz School of Languages, Washington,D.C., subject - French

Arabian American Oil Company Training Center, Riverhead, L.I., New York, subject - Arabic and Arab Customs

Also, military schools - next paragraph

Military Service: December 1942 to March 1946
Branch of Service - Corps of Engineers
Rank - Captain (enlisted as private)
Overseas Service - 26 months
Medals - Soldiers Medal
Bronz Star
(recommended for Legion of Merit)
Other Awards - Sharpshooter - M1 and .45
Unit Presidential Citation
3 Combat Stars
Theater Service Awards
Victory Medal - etc.

personal data sheet - cont'd

Military Schools: Army Fire Fighting School; Officers Candidate School - Engineers; Combat Engineer Training; Army Safety School

Foreign Languages: French - fair
Arabic - some
Persian - a little (pharsi and pushtu)

Foreign Countries Traveled and Resided in: Afghanistan - 2 years
France - 14 months
Arabia - 1 year
England - 10 months
India, Pakistan, Italy, Holland
Ireland, Belgium, Germany,
Portugal, the Hawaiian Islands

Personal Knowledge and Experience With Equipment and Instruments:

All surveying instruments; drafting instruments; typewriter; adding machine; fire fighting equipment; heavy construction equipment; motor vehicles; demolitions - dynamite, plastic, TNT, caps, fuses, time pencils, primacord, etc..; small arms and weapons; fine arts and commercial arts materials; camera equipment; most athletic equipment; some physics and chemistry equipment

Licenses: Registered Land Surveyor - State of Colorado - No. 2179

Publications: Circulation Manager - Cervi's Rocky Mountain Journal
Managing Editor - Colorado College yearbook

Inventions: Special Fire Fighting Equipment for the Air Force During War

Hobbies: Fine arts painting, Lapidary work, orchid growing, fishing, golf

Sports in college - football, basketball, baseball, boxing - intermural champion three years and Golden Gloves tri-State champion one year, skiing

Clubs and Organizations: Member - National Press Club, Washington, D.C.
Denver Art Museum
Ballet Theatre Foundation
Orchid Growers Organization
Phi Gamma Delta - college fraternity

Previous Employment: See attachments

References: Armin B. Barney - President, Colorado Springs National Bank
Colorado Springs, Colorado
Dan Kamphausen - Tower 2, Continental Oil Bldg., Denver, Colo.
Joseph Huttlinger - National Press Building, Washington, D.C.
George F. Prussing - 2911 Q. St. N.W. Washington, D.C.
Morrison-Knudsen Afghanistan Inc., San Francisco, Calif.

Personal Data Sheet

DMEA

Instructions - cont'd

5. The exploration project.-

(d) - 1. Experience and background of applicant

Employment attachment - description of work

April 1954 to the Present

The work that I have been engaged in for the past three years has been that of an independent geological engineer.

All work by me has been done on a contract or fee basis.

Most, this work has been in the mining and minerals field, however, I have done some work in petroleum.

The application of the work consisted of making detailed geology and engineering reports for various uranium firms.

These reports would include geologic description of formations and strata, the geologic time units of the area under investigation, distinctive features, orogeny and dates. Also, paleontology and stratigraphy of the area under investigation, the geography and physiography.

I have also done surveying work for my clients in conjunction with boundry identification, claim staking and filing.

Recommendations concerning the value of the properties in question and advice concerning the purchase of a property.

Relative to the land surveys maps were drawn of the properties.

Some of the geologic surveys included work on the Las Vegas Land grant in New Mexico; the Pecos Claims in the Dolores River Canyon for the United Uranium Co; Prior Mountain in southern Montana for ColotahUranium; Gunnison properties of the Monarch Mining and Developement Co.; New Mexico property for the Homestead Uranium Co.; Utah property for the John Scott Uranium Co.; and many others.

I have also surveyed, staked and filed on many mineral claims for myself and have done geologic work on them.

Arthur A. Cervi

ATTACHMENT EMPLOYMENT

Description of Work: January 1951 ~~to Present~~ TO APRIL 1954

During this period, I worked as Chief Fire Prevention Engineer in Headquarters of the Arabian American Oil Company (to be referred to as the Company) at Dhahran, Saudi Arabia.

The Company has three major self-sustaining districts of between 1500 and 2000 Americans each and over 5000 persons of 27 different nationalities other than American.

As Chief Fire Prevention Engineer, I made exhaustive, detailed surveys of all installations in the district from a fire hazard and fire prevention point of view. These installations included all residential buildings, hospitals, theaters, retail stores, garages and transportation facilities, machine shops, Air Force operations, hangars, aircraft, administrative buildings, storehouses and warehouses, storage yards, dynamite storage, chemical storage, gas oil separator plants, stabilizers, pumping stations, refineries, marine operations and shipping and pipe lines. Surveys were also made of ground water sources, water tables, geological structures, amount of water consumption per capita, water pressures and gaugings.

Recommendations were made for an improvement in conditions from a fire prevention point of view and these recommendations were eagerly accepted and acted upon by management.

As Chief Fire Prevention Engineer, I also wrote job descriptions for eight grades of employees in the Safety Engineering Division, wrote fire prevention policies and coordinated these policies in all Company installations in Arabia. I coordinated the requisitioning of fire fighting equipment and standardized this equipment.

I was a member of the "Manuals Committee" which reviewed, discussed and approved or disapproved suggested Company policy. If the Manuals Committee approved a policy it was submitted to top management for final approval before it became company policy.

I made a detailed survey of a new and fourth district that was being created in the newly discovered Safiniya field in Saudi Arabia and made recommendations for

a fire fighting system that included water mains, hydrants, pumps, booster pumps, cathodic treatment and treating of all manifolds and metal equipment to prevent corrosions. Also made recommendations for the purchase of new fire fighting equipment to supply this district and organized a complement of personnel of 16 Arabs and 22 Americans to man the fire department.

I made an inspection of all existing buildings in the area and made recommendations for the destruction of some buildings, the repair of others and complete new construction of still others.

The setting up of this project would entail expenditure of over one half million dollars.

I also wrote articles for the weekly Safety Division Bulletin and did sketching and cartooning for this publication.

After five months in the above mentioned job, I was highly commended for a job well done and given an increase in salary and promoted to the position of Assistant to the Manager of the RasTanura District in charge of Special Studies.

The RasTanura District does all of the refining in Arabia, producing approximately 150,000 barrels of refined products a day and also does all marine shipping of petroleum products which amounts to approximately 500,000 barrels a day.

As Assistant to the RasTanura District manager, I was in a position of complete confidence. In view of this, it is impossible for me to give much detail in my job description for the reason of betraying the confidence placed in me and revealing trade secrets and confidential company information. However, I can say that I did detailed and extensive planning for personnel in almost all phases of work in refining and marine shipping concerning work procedures in their respective jobs. I made recommendations that were accepted without change for work organizations for various plant operations and wrote comprehensive job descriptions so that this personnel could perform their duties with the greatest efficiency. I made recommendations that were accepted by the Company for the training of personnel in recommended work procedures.

I have been highly commended for my work in all phases in which I participated.

2. Description of Work:

October 1949 to January 1951

During this period, I worked as Circulation Manager for Cervi's Rocky Mountain Journal, a weekly newspaper, owned, edited and published by a member of my immediate family.

In this position I directed the circulation policies of the paper. As Circulation Chief, I shoed a result of between 10-20 new yearly subscriptions per day.

It was my responsibility to determine the press run each week and coordinate with the managing editor.

I worked up the most complete and extensive mailing list in the region covering nearly every business in six states, listing approximately 25,000 addresses.

Also, I put the Journal on the newsstands for the first time in Denver and gave it circulation throughout the United States.

I directed the activities of three telephone solicitors and several street salesmen and sold some advertising.

3. Description of Work:

September 1947 to October 1949

During this period, I worked as topographer and engineer for the Morrison-Knudson Construction Company in Afghanistan.

I started as topographer and worked my way up to the position of Chief Topographer.

I drew maps of a gigantic irrigation project in the Helmand River Valley and on the Nad-i-ali and Marja deserts in Afghanistan.

I also drew detailed maps of dam sites and hydroelectric plant sites in eight different regions of Afghanistan. In conjunction with this, I also made some geological reconnaissance and surveys for feeder and lateral canals.

At all times, I maintained a force of 5 or 6 Afghans and had an American level party assigned to my group. I made an exploratory reconnaissance, mapping the course of the Kabul River from the junction of the Kunar River and Kabul River to Samar-Kan, a distance of approximately 50 miles through the rugged Hindu Kush mountain terrain.

In September 1949, on the strength of my exploratory adventure on the Kabul River and upon my general ability as an explorer, I was asked by Walter Fairservice of the Anthropology Department of the American Museum of Natural History to go on an expedition into Tibet to take place in April 1951. This expedition was cancelled due to the Communist occupation of the country.

In the late summer of 1949, I took another expedition out and made a large scale map of approximately 100 square miles in the Paltu River Basin for the purpose of dam construction and drainage. The Paltu River Basin is located in Waziristan, Afghanistan.

4. Description of Work:

March 1946 to September 1947

I was discharged from the Army in March of 1946 and returned to Colorado College and received my B.A. Degree in June 1947.

While in college, I worked as Engineering Lab. Assistant teaching the freshman and sophomore classes the principles and techniques of using all types of surveying instruments. I also took on private work and surveyed an airfield, two sub-divisions and city lots.

I was Managing Editor of the 1947 Colorado College Nugget (the college yearbook) and elected to the position of the 1946 homecoming chairmanship (Alumni Week).

5. Description of Work:

December 1942 to March 1946

During this period, I served in the Corps of Engineers, U. S. Army.

I enlisted as a private and was honorably discharged with the rank of Captain.

I attended O.C.S. at Fort Belvoir and was trained as a combat engineer officer, graduating in July of 1943. While in the Army, I activated, organized, trained, equipped and commanded three different fire fighting platoons of 32 men each.

Also, was Construction and Utilities Officer on an air base and commanded 57 men, and was later transferred to 9th Bomb Division Headquarters as Assistant Division Engineer.

Was overseas from November 1943 until January 1946. I won the soldiers medal for heroism and the bronze star for meritorious service. I qualified as sharpshooter with an M-1 rifle.

6. Description of Work:

1937 to 1942

Prior to Army Service, I attended college and held summer jobs which include three summers with the General Land Office surveys, surveying public lands.

I worked for a cost estimator at the Denver Arms Plant for one summer and worked on construction drawings making material take-offs for cost estimating purposes.

Also, I worked for the U.S.E.D. for 6 months in the Hawaiian Islands as General Construction Inspector.

I also ran a survey party and made tunnel surveys of a confidential nature, and worked on a survey party installing transmission lines.

My salary in my college vacation jobs ranged from $720.00 per year to $2600.00 per year.

Application

DMEA

Instructions:

6. Estimate of costs.-

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

(a) Independent contracts.-

1. Core Drilling.- (1, 2, 3)

average cost per foot - $6.50
20 holes at 300 ft ea - total ft - 6000'.....$39,000.00

2. Cementing and Standby Time -

20 holes - 5 hrs per hole - at $7.50 per hour..... 750.00

3. Reaming and Casing -

$2.00 per foot with casing - 20 ft per hole
20 holes at 20 ft ea - 400 ft - at $2.00..... 800.00

4. Sampling and Assaying -

10 samples per hole in ore - 20 holes
200 samples at $10 ea assay..... 2,000.00

5. Bull-dozing, Roads, Grading, Leveling

4.2 miles of graded road plus drill site leveling 5,240.00

6. Probing -

.21 cents per foot - 6000 feet..... 1,200.00

$48,990.00

6. (b) Labor, Supervision, Consultants -

The work will be supervised by a competent resident area engineer. This maybe done by the applicant.....

$500.00 per month for 6 months..... 3,000.00

total cost - $51,990.00

Application

DMEA

Instructions:

6. Estimate of costs.-

(c) Operation materials and supplies

none

(d) Operating equipment

none

(e) Rehabilitation and repair

none

(f) New buildings, improvements, installations

none

(g) Miscellaneous

none

(h) Contingencies

none

7. Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation?

Yes

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

money

Explain in detail

Draw the money out of the bank and pay my share of the cost when it comes due.

GOLDEN DRILLING COMPANY
DIAMOND DRILLING CONTRACTORS
2301 EAST STREET
GOLDEN, COLORADO
PHONE CRestview 9-1371

W. E. MATTHEWS,
MANAGER

March 23, 1957

Mr. Art Cervi
979 Miller Street
Lakewood 15, Colorado

Dear Mr. Cervi:

The Golden Drilling Company will core Drill the Buckman Property three (3) miles above Golden, Colorado in the Golden Gate Canyon at $6.00 per foot.

AX size bit. Holes not to exceed 300 feet.

Cementing and stand-by time will be $7.50 per hour.

Reaming and casing at cost.

Roads and set-ups are to be furnished by Art Cervi.

Yours truly,

GOLDEN DRILLING COMPANY

W E Matthews

W.E. Matthews
WEM:plm

LIVINGSTON & WILSON EXPLORATION DRILLING

LONGMONT, COLORADO

PHONE 1333

SHOT HOLE AND DIAMOND CORE DRILLING CONTRACTORS

WALTER W. WILSON

FRED L. LIVINGSTON

March 27, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Dear Mr. Cervi:

We would like to submit the following bid:

Non-Core Drilling	
0 to 100 feet	$4.25
100 to 200 feet	4.50
Core Drilling	
0 to 100 feet	4.75
100 to 200 feet	5.25
200 to 300 feet	6.50

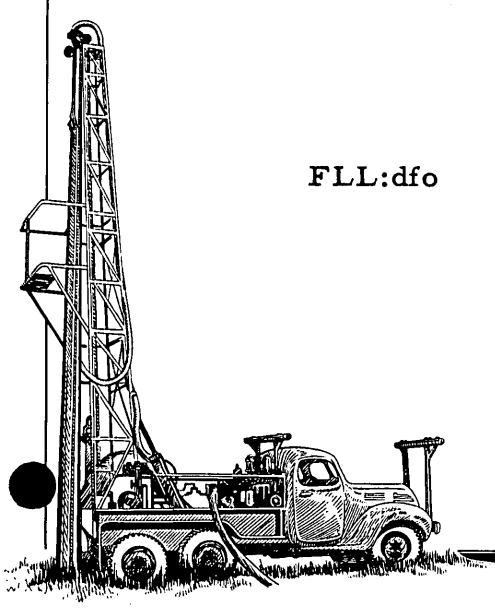
Very truly yours,

LIVINGSTON & WILSON EXPLORATION AND DRILLING CO.

Fred L. Livingston

Fred L. Livingston

FLL:dfo



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ATLAS DRILLING COMPANY

DISTRIBUTOR -:- DRILLING CONTRACTOR

3705 EUDORA ST. EA 2-1391

DENVER 7, COLORADO

ESTIMATE

ORDER AND CONTRACT*

TO: Mr. Arthur Cervi
979 Miller
Lakewood 15, Colorado

QUAN.	MODEL, TYPE, OR PART NO.	DESCRIPTION	UNIT PRICE		TOTAL NET PRICE
6000	feet	Drilling BX Core	$ 6.00/ft		
		(smaller sizes available)		24	
		Dozer work	$10.00/hr.		
		We also have a compressor available, if needed, and jack-hammer and powder would be at rental cost.			
		We will work on a cost plus or day work basis, also.			
		Thank you,			

DELIVERY: F.O.B. TERMS: To be arranged

ABOVE QUOTATION IS BASED ON IMMEDIATE ACCEPTANCE.

ACCEPTED AS TO ITEMS AND/OR SERVICES AND/OR TERMS AND SO ORDERED BY

*This Estimate shall Become an Order and Contract when Properly Executed by the Parties Hereto.

DATE Mar. 27, '57

BUYER

ATLAS DRILLING CO.
By W S Burks
SELLER

ATLAS DRILLING CO.
By W S Burks
ESTIMATOR

Terms and Conditions On Reverse Side Shall Be Part of Order and Contract When Executed By the Parties

TERMS AND CONDITIONS COVERING THE SALE OF EQUIPMENT AND/OR THE SERVICES OUTLINED ON THE REVERSE SIDE OF THIS AGREEMENT

All prices of materials and/or services quoted are FOB Denver, Colorado, unless otherwise stated.

The order is firm and non-cancellable by the Buyer except as hereinafter provided:

In the event Buyer shall cancel this order prior to the start of service, production and/or delivery, he shall be responsible for the payment of actual expenses and other obligations incurred by Seller on Buyer's behalf, or 10% of the value of the contract, whichever is greater.

In the event Buyer shall cancel due to non-discovery of U_3O_8 by reason of a drilling operation which may be included in this contract, there shall be no penalty to the Buyer, except his obligation to the extent of the actual drilling footage completed and/or the casing completed and furnished, but in no event subject to cancellation prior to drilling of the contract depth.

The Seller will not be liable for delays in shipment and/or in the performance of this contract, or for any damages of any nature whatsoever which may be the result of such delays of materials or performance which may be due to causes beyond Seller's control, including but not restricted to acts of God or the public enemy, acts of government, fires, floods, earthquakes, sabotage, equipment breakdowns, inability or delay in obtaining materials, strikes, labor disputes and/or labor shortages.

Seller agrees that all labor and/or services performed will be in a first class workmanlike manner according to the customs and practices of the trade.

All quotations made and orders accepted are based on information furnished by the Buyer. Any conditions which shall subsequently arise and which shall be out of the ordinary for such services and/or equipment as are quoted and which have not been specifically outlined, shall be regarded as information omissions by the Buyer and it is agreed that such omissions when requiring changes in materials and/or services shall be treated as added costs to the quoted contract and Buyer agrees to pay such added costs.

All equipment and materials used are warranted to be free from defects in materials and workmanship, but only to the extent of the warranty of the original manufacturer of said product. Such defective materials will, when found to be so by Seller's inspection, be repaired or replaced as per the terms of the manufacturer's warranty.

ADDED TERMS AND CONDITIONS COVERING SERVICES AND MATERIALS FOR WATER WELL DRILLING

The Seller agrees to have a well drilled and cased in a first class workmanlike manner in accordance with the customs and practice of the trade and complying with known health and sanitation requirements. Casing sizes and depths of drilling and casing settings will be as outlined on the reverse of this agreement.

Any variations as to sizes, depths, lengths, etc., will be at Buyer's expense or to his credit, as the completion of the drilling operations may show, and it is so agreed between Buyer and Seller.

Seller agrees that drilling operations, in the event of breakdown to rig, trucks and/or pertinent accessory equipment, will be resumed as rapidly as repairs may be made, but in no event shall Seller be responsible for any subsequent damage or inconvenience which may result from said breakdowns or delays.

Seller agrees to exercise all possible care during drilling operations but it is agreed that Seller shall not be responsible for any damage caused by traverse of lawns, driveways, or any other property, nor shall the Seller be responsible for damage or inconvenience caused by mud or water which are part of or shall be the result of drilling operations.

It is understood and agreed between the Buyer and the Seller that no guarantee is given, intimated or assured regarding the depth of drilling required for a U_3O_8 discovery, if any, nor are there any guarantees as to the quantity of U_3O_8 subsequent to any discovery, nor to the quality, purity or color of such U_3O_8 as may be discovered.

It is understood and agreed between the Buyer and Seller that footage drilling prices quoted are for normal drilling operations unless otherwise stated, and, that any formation encountered which shall slow drilling operations to less than forty feet per eight hour day, shall proceed on an hourly rate of $12.00 per hour, this provision applying to the drilling of eight, six, four inch holes or wells.

TERMS OF PAYMENT

Unless otherwise provided, payment for materials, labor and services furnished under this agreement shall be cash upon completion of the job. Failure to make payment when due shall void all warranties, express or implied. Buyer agrees to pay all court costs, reasonable attorneys' fees, and interest at the rate of 10% per annum on past due accounts or on such accounts where Seller shall have to resort to legal action in order to effect payment of amounts owed to him by the Buyer.

Failure to make payment as herein provided shall void all discounts, if any, which may have been extended for any reason whatsoever, and the basic list price is the amount which shall be due and payable.

KERDY WRECKING CO.

BONDED WRECKING CONTRACTORS

NEW AND USED BUILDING MATERIAL
2819 WEST 9TH AVENUE
DENVER 4, COLORADO

March 25, 1957

Mr. Arthur Cervi
979 Miller St.
Lakewood, Colorado.

Dear Sir;

We are submitting an estimate of fifty two hundred and forty ($5240.00) dollars to cut and grade 4.2 miles of road located on your properties at Golden, Colorado. Our estimate also includes the leveling of twenty(20) locations for core drilling purposes.

In the event this work be put up for contract bid we would appreciate your contacting this firm or myself personally to give you the best service available. We will apprciate any consideration extended and guarantee satisfactory completion of the work in an efficient and workman like manner.

Sincerly

Ramon O. Kerr

Kerdy Wrecking Co. Inc.
Ramon O. Kerr, Mgr.

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U. S. Government Messenger Envelope

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2. Void previous block.
3. Write clearly.

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[illegible]	RUN / STOP	George Faust	RUN / STOP
Anna King Lopez	RUN / STOP	[illegible]	RUN / STOP
Budget + Finance	RUN / STOP	P. Cloud, Chief P & S Branch US Natl Museum	RUN / STOP
Mr F. P. Jones 338 N. Museum	RUN / STOP	Mr Ladd	RUN / STOP
1. 12th & Ind. Ave. N.W.	RUN / STOP	Mr W. T. Vecera	RUN / STOP
Mr Lemmon Rm 4231 2 SA	RUN / STOP	S. G. Sachs 7245 Interior	RUN / STOP
Mr. Whitmore Rm. 4225	RUN / STOP	Mr. Guied [illegible]	RUN / STOP
Mr. Cahee Geologic Survey	RUN / STOP	Mr. Ellis 4443 Int.	RUN / STOP
R. L. Smith G 218	RUN / STOP		RUN / STOP
Mr Garrels Room 1241-C	RUN / STOP		RUN / STOP

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"	Johnson	110
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		220
		225

JUN 25 1958

Hon. John A. Carroll
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Senator Carroll:

Reference is made to your letter of June 19, regarding Mr. Cervi's original mine lease.

Enclosed is a copy of Mr. Cervi's letter of April 5, 1957, to the Bureau of Mines at Denver, submitting four copies of an application to the DMEA. Since only four copies of the application were submitted and only one copy, at most, of the lease would be attached to each copy of the application, there does not appear to be any reason for Mr. Cervi to submit the original and four copies of the lease to the DMEA.

This conclusion is supported by our recent investigations and actions. On May 5 we returned to Mr. Cervi the copy of the lease which was attached to the original copy of the application held in this office. Following our request, our Executive Officer at Denver, on May 9, returned a complete copy of the application to Mr. Cervi, including a copy of the lease. This action left a copy of the application in the hands of our Field Team in Denver and a copy with the Geological Survey in Washington. The Field Team's copy of the application was checked and found to contain a copy of the lease, but not the original. The Geological Survey copy of the application was also found to contain a copy of the lease which was returned to Mr. Cervi on May 23. Thus, all four copies of the application have been checked, three copies of the lease have been returned to Mr. Cervi, and the remaining copy of the lease has been definitely established as a copy only.

PRS 1457

8623

As you can see, we have made every effort to locate Mr. Cervi's original lease, without success. We can only conclude that it was never submitted to us.

If we can be of further assistance to you in this matter, please call upon us.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosure

MChing/gla
6-24-58
cc to: Secretary's Reading File
Admr.'s Reading File
MR (2)
DL
DCCO
Mr. Ching
DMEA Field Team, Region III (2), w/2cc Senator Carroll's letter

JAMES O. EASTLAND, MISS., CHAIRMAN
ESTES KEFAUVER, TENN.
OLIN D. JOHNSTON, S. C.
THOMAS C. HENNINGS, JR., MO.
JOHN L. MC CLELLAN, ARK.
JOSEPH C. O'MAHONEY, WYO.
SAM J. ERVIN, JR., N. C.
JOHN A. CARROLL, COLO.
ALEXANDER WILEY, WIS.
WILLIAM LANGER, N. DAK.
WILLIAM E. JENNER, IND.
ARTHUR V. WATKINS, UTAH
EVERETT MCKINLEY DIRKSEN, ILL.
JOHN MARSHALL BUTLER, MD.
ROMAN L. HRUSKA, NEBR.

United States Senate

COMMITTEE ON THE JUDICIARY

PRS
JUN 23 1958 1457

TO: MDM	
REPLY TO BE PREPARED BY:	MDM
FOR SIGNATURE OF:	MDM
COPY OF LETTER FURNISHED	
MR DL	
SEND REPLY COPY TO ABOVE	

June 19, 1958

Mr. C. O. Mittendorf
Administrator
United States Department of Interior
Defense Minerals Exploration Administration
Washington 25, D. C.

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Cervi Lease, T. 3 S., R. 71 W
Jefferson County, Colorado

Dear Mr. Mittendorf:

Reference is made to a letter I received from Mr. Arthur Cervi concerning the above captioned docket number.

Mr. Cervi, as you know, is interested in the recovery of the original lease to his Golden Gate holdings. He advises me that he surrendered the original lease to the Bureau of Mines when he applied for a DMEA loan sometime ago. Mr. Cervi alleges that he submitted 1 original and 4 copies of the lease when he applied for the loan, and upon asking DMEA for return of the original, has received instead "copies."

At your earliest opportunity, I should appreciate receiving a letter from you advising me what action you are taking on attempting to locate Mr. Cervi's original mine lease.

Your assistance is appreciated.

Sincerely,

John A. Carroll

JOHN A. CARROLL

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 24 1958

DATE	IN	CODE
6 24	C	220
3	Chung	700

JAC/cad

DMEA Form 20
March 1958

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
Washington 25, D. C.

MEMORANDUM OF CONGRESSIONAL CALL

TO: Director, Division of Legislation (DL)

FROM: Administrator, DMEA C. O. Mittendorf (Signature) 6/5/58 (Date)

Call from Miss Connie Duran / Sen. Carroll's office — Date of call 6/5/58 — Time 2:15 p.m.

State below subject of call and conclusions or action taken.

Miss Duran explained that the Senator had received a letter from Mr. Cervi, with which he forwarded Mr. Mittendorf's letter of May 23, 1958, insisting that he must have the original of his lease since he wants to sell the property.

Since I was better acquainted with the facts than either Mr. Knouse or Mr. Murphy, and in the absence of Mr. Ellis and Mr. Ching on leave, I referred to the docket and read Mr. Harshman's letters of May 15 and 21 to Miss Duran by way of explaining the thoroughness of this office and our Denver office in checking each copy of the application and copies of leases attached, and the subsequent return of such copies of leases to Mr. Cervi.

This satisfied Miss Duran; but she said they would have to write a letter to Mr. Cervi and wondered if we would write a further letter of explanation to their office. I suggested that she forward Mr. Cervi's letter to the Administrator and request a report, to which an immediate reply would be made. She conferred with the Senator's Administrative Assistant and they agreed that would be done.

6/18 - No further letter from Sen. Carroll's office. glr

Grace L. Ault — Call received by — 6/5/58 Date

Grace L. Ault

Prepare in duplicate when call is received. Send both copies to Administrator who will send original to DL and copy to DMEA Central Files. If call pertains to application or contract, copy will be recorded and filed in official docket.

34038

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/22	Ching	700
5/22	Ellis	700
"	Johnson	110
"	Hartenday	100
5/26	C	220
		~~225~~ 700

MAY 23 1958

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Cervi:

Reference is made to your letter of May 8 to us and that of May 12 to our Acting Executive Officer at Denver, regarding the original of your lease.

We have investigated the matter further and found the enclosed signed copy of the lease attached to the fourth copy of the application. The latter was used in the field and then returned to the Geological Survey in Washington.

We note that this signed copy of the lease does not fully meet the description of the original contained in your letters. The original signatures are present but the lease itself is a carbon copy and none of the recording data are present. However, this is the best that we can do. We have returned the copy of the lease that was attached to the original of the application. Mr. Harshman has returned one complete copy of the application, including a copy of the lease. Thus you will have three of the four copies of the lease that came with the four copies of the application. Mr. Harshman has the remaining copy at Denver and he has assured us that it definitely is not the original.

Under these circumstances, you must look elsewhere for the original lease described in your letters.

Sincerely yours,

C. O. Mittendorf
Administrator

Enclosure
MChing/izm 5-22-58
cc: Mr. Ching
Admr.'s Reading File
DMEA FT Reg. 3 (2)

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado
May 21, 1958

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 24 1958

DATE	INITIALS	CODE
5/23	H.G.	225
5/26	[illegible]	700

Memorandum

To: Chairman, Operating Committee

From: Acting Executive Officer, DMEA Field ~~Team,~~ Region III

Subject: Docket No. DMEA 4722 (Uranium) Contract No. Idm-E1120
Arthur A. Cervi (Cervi Lease) (T. 3, S., R. 71 W.)
Jefferson County, Colorado

This responds to your letter of May 15, 1958, on the subject docket.

The Bureau of Mines copy was returned to Cervi. It did not contain the original copy of the lease. The Field Team copy has been checked and it does not contain the original copy of the lease. The only other copy, in addition to the one in the Washington DMEA files, is the Survey copy which was returned to Thor Kiilsgaard on July 9, 1957. Mr. Kiilsgaard normally sends the Survey copy of all uranium applications to TEPCO here in Denver. A check with TEPCO failed to locate the Survey copy. We suggest that you check with Mr. Kiilsgaard for the whereabouts of the Survey copy since that copy may possibly contain the missing original lease, if such original was actually submitted by the Applicant.

for E. N. Harshman

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado

May 15, 1958

ORIGINAL FILE COPY
DMEA
RECEIVED
19 1958
3/19 C
220
700

Memorandum

To: Chairman, Operating Committee, DMEA

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium), Contract No. Idm-E1120
Cervi Lease (T 3 S, R 71 W) Jefferson County, Colorado

Enclosed are the original and one copy of a letter dated May 12, 1958, from Arthur A. Cervi and two copies of our reply.

In accordance with Mr. Mittendorf's letter of May 5, 1958, to the Applicant (copy of which was forwarded to this office,) the application used by the Engineer Field Examiner was returned to Mr. Cervi with our letter of May 9, 1958. The Field Team copy of the application remains in our file but it does not contain the original copy of the lease which the Applicant has requested to be returned.

E. N. Harshman

E. N. Harshman

Encls.

224 New Customhouse
Denver 2, Colorado

May 15, 1958

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract No. Idm-E1120
Cervi Lease (T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Cervi:

This will acknowledge receipt of your letter dated May 12, 1958, requesting the return of the original copy of lease on the captioned property.

At the request of the Washington Office, DMEA, we returned our copy of the application to you May 9, 1958.

Your letter of May 12, 1958, is being forwarded to the Washington Office, DMEA.

Very truly yours,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer,
DMEA Field Team, Region III

HMC:bh
cc: Chmn. Op. Comm. (2)
Harshman
Townsend
Corres. File E-1120
Chron.

(4)

RDH
HMC

979 Miller Street
Lakewood 15, Colorado

May 12, 1958

Docket No. DMEA 4722
Uranium
Contract No. Ldm - E1120

DMEA
DEPARTMENT OF THE INTERIOR
MAY 13 1958
REGION III
DENVER, COLORADO

Executive Officer
DMEA
Bureau of Mines
224 Customs House
Denver, Colorado

OFFICIAL FILE COPY
DMEA
RECEIVED 19 1958
CODE

Dear Sir:

Thank you very much for the return of the copy of the "captioned" application returned by you.

However, this is not the copy request by me, nor was the copy returned by Mr. Mittendorf the one I want.

The copies you are returning are exactly what we are calling them - "copies". And are useless to me - as such.

What I want is the - "original copy of my lease" - that I submitted to you.

It has all of the original signatures on the lease; the book, page and registration number of the lease when recorded; not to over look the date of the lease, the date of recording, the hour, minute and the person by whom it was recorded.

These copiess contain none of this original and pertinent data - and actually, I can crank these copies out all day and all of them togather will still be worthless to me.

It would be much appreciated if you would return the original to me.

Sincerely yours,

Arthur A. Cerovi

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/13	Ching	700
5/13	Ellis	700
5/14	GCS	130
"	Jones	110
"	Attendant	100
5/15	C	220
		700

MAY 15 1958

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Harshman:

Enclosed are copies of a letter, dated May 8, 1958, from the subject Operator which are self-explanatory.

Since the other three copies of the application are in the field, will you kindly investigate to see if the original lease is among them.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Enclosures

APPROVED:

Frank D. Lamb

Member, Bureau of Mines

W. P. Williams

Member, Geological Survey

MChing/izm 5-13-58
cc: Mr. Ching
Admr.'s Reading File
Operating Committee
THKiilsgaard, 5224

8623

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 12 1958

DATE		CODE
5/12	C	220
5/14		800
5/13		700

224 New Customhouse
Denver 2, Colorado
May 9, 1958

Mr. Arthur A. Gervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract No. 14m-31120, Gervi
Lodge (T. 1 S., R. 71 W.) Jefferson County, Colorado

Dear Mr. Gervi:

In accordance with the request of the Washington Office, DMEA, we are returning herewith a copy of the captioned application.

Very truly yours,
Original signed by
E. N. HARSHMAN

E. N. Harshman

[redacted]

cc: [redacted] Cg. Comm. (2)
[redacted]
Harshman
Comm. File 31120
[redacted]
Chron.

ARTHUR A. CERVI

MINING and GEOLOGICAL ENGINEERING
Sacramento Gulch Mining Company
Silver - Gold - Uranium - Crystal

979 Miller Street
Lakewood 15, Colorado

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 12 1958

DATE	INITIALS	CODE
5/12	C	220
5/11	C Ching	700

May 8, 1958

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

Attention: Mr. Mittendorf

Dear Sir:

Thank you for your letter of May 5, 1958 - with the "copy" of my original lease enclosed.

However, this "copy" is not at all the original nor can it replace the original.

Firstly, the original has all of the original signatures of the principles involved in the lease. This "copy" does not.

Next the original has the book, page and index number of the registration - not to over look the time of day, the day, the year and by whom it was recorded. This copy contains none of that - pertinant data.

It would be very much appreciated if you would return - "the original - legally signed and registered document."

Sincerely yours,

Arthur A. Cervi

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/2	Ching	700
5/2	Ellis	700
5/2	Johnson	110
"	Stettenbaugh	100
5/5	C	

MAY 5 1958

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Cervi:

In accordance with the request contained in your letter of April 24, 1958, to our Executive Officer at Denver, we are returning herewith the original copy of your lease.

The original copy of the application must be retained as a permanent record in our files. However, by a copy of this letter, we are requesting our Denver office to return a copy of the application to you.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

MChing/EWEllis/izm 5-2-58

cc: Mr. Ching
Admr.'s Reading File
DMEA FT Reg. 3 (2)

8623

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 2 1958

224 New Customhouse
Denver 2, Colorado
April 29, 1958

CERTIFIED MAIL

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Arthur A. Cervi, (Cervi Lease,
T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Cervi:

Enclosed is the Operator's copy of the Termination Agreement, which has been executed to rescind and cancel Exploration Project Contract Idm-E1120, effective the date of the contract.

In reference to your request by letter of April 24, 1958, the original copy of your loan application was submitted to the Washington Office, DMEA, therefore, your request for return of the application has been forwarded to the Washington Office for their consideration and reply to you.

Yours very truly,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III

Enclosure

JDC:hmh

cc: Chmn. Op. Comm. (2)
Harshman
DMEA/DFC
Townsend
Corres.file, Reg.III
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado
April 29, 1958

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 2 1958

DATE		CODE
5/2	C	220
"	Chrny	700

Memorandum

To: Chairman, Operating Committee, DMEA

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium) Contract Idm-E1120, Arthur A. Cervi, (Cervi Lease, T 3 S, R 71 W) Jefferson County, Colorado

Enclosed are the Government's and Audit copies of the Termination Agreement, dated April 18, 1958, which was forwarded by your letter of April 21, 1958, for signature by the Operator.

Also enclosed is the original and one copy of the Operator's transmittal letter of April 24, 1958, wherein the Operator requests the return of the No. 1 copy of his loan application, which reportedly contains the original signed copy of the reported mining lease. The original copy of the application was forwarded to your office on April 9, 1957, therefore, we request that you reply directly to the Operator concerning his request for the return of the application.

E. N. Harshman

E. N. Harshman

Enclosures

ARTHUR A. CERVI

MINING and GEOLOGICAL ENGINEERING

979 Miller Street
Lakewood 15, Colorado

DMEA
DEPARTMENT OF THE INTERIOR
APR 28 1958
REGION III
DENVER, COLORADO

April 24, 1958

Re: Docket No. DMEA 4722
Uranium
Contract No. Idm E1120

Executive Officer
DMEA
Bureau of Mines
224 New Customs House
Denver 2, Colorado

Dear Sir:

Enclosed please find signed termination agreement.

With your kind permission, may I request that my No. 1 copy of my loan application be returned to me, in as much as it has the - original - copy of my lease (the recorded lease) in it and I find it necessary to return this copy of the lease to my files.

Sincerely yours,

Arthur A. Cervi

OFFICIAL FILE COPY
DMEA
RECEIVED
DATE

224 New Customhouse
Denver 2, Colorado
April 23, 1958

RECEIVED 1958

4/25 H.D. 220
4/25 300
" 700

CERTIFIED MAIL

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract No. Ida-N1120
Arthur A. Cervi
(Cervi Lease, T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Cervi:

Enclosed are the Government's, Audit, Finance Office, and Field Team copies of a proposed TERMINATION AGREEMENT which has been prepared in reference to your letter of April 4, 1958 to cancel the Contract.

If the Termination Agreement is satisfactory, all copies are to be signed by you as indicated and all copies promptly returned to this office. Upon receipt of the properly signed copies of the Termination Agreement, the "Operator's Copy" will be forwarded to you.

Very truly yours,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III

Enclosures

JWT:prl

cc: Chmn. Op. Comm. (2)
Harshman
DMEA/DFC (Winkel)
Corres. file
Townsend
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4/17	Ching	700
4/17	Ellis	700
4/17	Champ	800
4/18	[illegible]	1300
4/17	[illegible]	110
18	[illegible]	00
	[illegible]	[illegible]
4/22	C	220
		700

APR 21 1958

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-41120
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Harshman:

In accordance with the Field Team's recommendation of April 8, 1958, we are enclosing the original and four copies of a Termination Agreement between the Government and Arthur A. Cervi, signed by the Administrator. Also enclosed are two extra copies of the agreement for the use of the Field Team.

If you and the Operator find the agreement satisfactory, please have it executed by the Operator and make the usual distribution thereafter.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures

APPROVED:

/s/ ~~Thor H. Kiilsgaard~~ J. Ross (JB)

Member, Bureau of Mines

Thor H. Kiilsgaard (THK)

Member, Geological Survey

MChing/izm 4-17-58

cc: Mr. Ching
Admr.'s Reading File
Operating Committee
THKiilsgaard, 5224

8623

DMEA Form 7
(12-56)

C
INTERIOR DEPT.
APR 11 1958
SOLICITOR

RECEIVED
APR 11 1958
ASSOC. SOLICITOR
MINERAL RESOURCES

OFFICIAL FILE COPY

Date	Surname	Code
4/10	Ching	700
		140

April 10, 1958

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Ernest Wm. Ellis, Director
Division of Rare and Miscellaneous Metals

Subject: Rescission of Contract
Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Please prepare an agreement between the Government and Arthur A. Cervi providing for a rescission of the subject contract without Government participation in the cost of any work done. No payments have been made to date by the Government.

The Operator's request, dated April 4, 1958, for cancellation of the contract, is in the docket. Evidently the Operator is not interested in continuing the contract under proposed Amendment No. 1 which was recently drafted.

EWE

Ernest Wm. Ellis

MChing/izm 4-10-58
cc: Mr. Ching

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
224 New Customhouse
Denver 2, Colorado
April 8, 1958

ORIGINAL FILE COPY
DMEA
RECEIVED APR 10 1958

VIA AIR MAIL

Memorandum

To: Chairman, Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium), Contract No. Idm-E1120, Arthur A. Cervi (Cervi Lease, T 3 S, R 71 W), Jefferson County, Colorado

Enclosed are the following, which are in reference to your letter of April 3, 1958 and the enclosed proposed Amendment No. 1:

1. The original and three copies of the Operator's letter of April 4, 1958, requesting cancellation of the contract.

2. Two copies of a letter from this office, dated April 8, 1958, acknowledging receipt of the Operator's letter and advising disposition thereof.

3. All copies of proposed Amendment No. 1, as forwarded by your letter of April 3, 1958.

It is recommended that a suitable agreement be prepared, or such other action as is required be initiated, by your office to rescind the contract as though it had never existed.

E. N. Harshman

E. N. Harshman

J. W. Townsend

J. W. Townsend
Acting Member

Enclosures

OFFICIAL FILE COPY
DMEA
RECEIVED APR 10 1958
DATE

224 New Customhouse
Denver 2, Colorado
April 8, 1958

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15
Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
(Cervi Lease, T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Cervi:

Receipt is acknowledged of your letter of April 4, 1958, wherein you request cancellation of Contract No. Idm-E1120.

Your letter has been forwarded to the Washington Office, DMEA, for their consideration and appropriate action, on which you should hear at an early date.

Very truly yours,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III

JWT:prl

cc: Chmn. Op. Comm. (2)
Harshman
DMEA/DFC (Winkel)
Corres. file
Townsend
Chron.

120

DMEA
DEPARTMENT OF THE INTERIOR

APR 8 - 1958
REGION III
DENVER, COLORADO

ARTHUR A. CERVI
Mining and Geological Engineering
979 Miller Street
Lakewood, Colorado

ORIGINAL FILE COPY
DMEA
RECEIVED APR 10 1958
DATE | | CODE

April 4, 1958

Executive Officer
DMEA
Bureau of Mines
224 New Custom House
Denver, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Sir:

Please consider this letter a formal request to cancel the above listed contract.

Very truly yours,

Arthur A. Cervi

Arthur A. Cervi

Government's copy

DMEA
RECEIVED APR 10 1958
DATE

EXPLORATION PROJECT CONTRACT
ARTHUR A. CERVI
DOCKET NO. DMEA-4722

AMENDMENT NO. 1

It is agreed this 2nd day of April, 1958, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and Arthur A. Cervi, hereinafter called the "Operator," that Exploration Project Contract No. Idm-E1120, Docket No. DMEA-4722, dated August 5, 1957, hereinafter called the "Contract," is amended, effective December 31, 1957, as follows:

1. In Exhibit "A," Description of the Work, under the heading General Provisions, the second paragraph is revised to read as follows:

"All bulldozing shall be done with either a D-8 Caterpillar bulldozer, a D-6 Caterpillar bulldozer, or equivalent units of the same or other make. A radioactivity survey shall be made of each trench upon completion and radioactive exposures shall be sampled by taking representative channel samples across the exposures."

2. In Exhibit "A," Estimated Costs of the Project:

(a) Under the heading, Stage I, Actual Costs, Category (1) Independent Contracts is revised to read:

"Category (1) Independent Contracts

32 hours bulldozing with D-8 @ $16/hr.
or 24 hours with a D-8 @ $16/hr. and
12.8 hours with a D-6 @ $10/hr. $512.00"

(b) Under Stage II, Actual Costs, Category (1) Independent Contracts is revised to read:

"Category (1) Independent Contracts

2,350 feet core drilling @ $5.76/ft.	$13,536.00	
24 hours bulldozing with D-8 @ $16/hr. or 38.4 hours with a D-6 @ $10/hr.	384.00	
38 hours cementing and drilling-out time and standby time @ $7.50/hr.	285.00	
140 feet reaming and casing @ $2/ft.	280.00	$14,485.00"

3. (a) Work under the Contract shall be suspended during the period beginning October 16, 1957, and ending not later than May 1, 1958.

(b) The Government shall not contribute to any costs incurred by the Operator during the period of suspension nor to any costs of rehabilitation or repair which in its opinion would not have occurred if there had been no suspension of work.

(c) The Operator, at its own cost and expense, without contribution by the Government, during the period of suspension shall preserve and protect the project work.

4. The date fixed in Article 3 for the completion of the work is extended from December 31, 1957, to July 31, 1958.

5. The maximum period for royalty payments and the lien to secure the payment thereof, as provided in Article 8(b)(2) of the Contract, is increased from ten (10) to eleven (11) years from the date of the Contract.

6. It is of the essence of this Contract that the work be resumed on or before May 1, 1958, and be completed on or before July 31, 1958; and if not so resumed and completed in the manner required by the Contract, the following provisions shall thereupon become effective.

(a) The Contract and all obligations of the parties thereunder, except as hereinafter otherwise specified, shall be and are hereby terminated as follows:

(i) Effective October 16, 1957, if the work has not been resumed on or before May 1, 1958.

(ii) Effective July 31, 1958, if the work is resumed on or before May 1, 1958, but is not completed on or before July 31, 1958.

(b) If the Contract is terminated under Item 6(a)(i), the Government will not contribute to any costs incurred prior to October 16, 1957.

(c) If the Contract is terminated under Item 6(a)(ii) and Stage I work has not been completed, the Government will not contribute to any costs incurred prior to July 31, 1958.

(d) If the Contract is terminated under Item 6(a)(ii) and Stage I work has been completed, the Government will contribute only to allowable costs incurred prior to July 31, 1958.

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

(f) All rights of the Government respecting percentage royalty and liens to secure the payment thereof, reports (including preservation of Operator's records), accounts, audits, and the right to recover any overpayment are hereby preserved. 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 the royalty on production provided for in the Contract, in the same manner and amount and for the full time and subject to the same conditions provided in the Contract, as if certification of discovery or development had been made, such certification being hereby waived by the Operator.

Long
Snedger
App'd. Sr. Off.
Ching
Ellis
Chambers
Selbridge
Johnson

(g) The Operator hereby releases and agrees to save the Government harmless from all claims or demands under or arising out of the Contract, except as otherwise provided in this Amendment No. 1.

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

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C O Mittendorf
Administrator, Defense Minerals
Exploration Administration

Arthur A. Cervi (Operator)

March 26, 1958

Ellis

JUSTIFICATION FOR AMENDMENT NO. 1

Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado.

The Operator suspended work on the subject project on October 16, 1957, claiming to have completed 11 bulldozer trenches aggregating 2400 lineal feet.

The examiners report that only 8 trenches, totaling 2,000 lineal feet, can be considered as acceptable or nearly acceptable. Two of the 8 trenches must be deepened in order to be entirely acceptable, and three additional trenches, totaling 750 lineal feet, must be excavated in accordance with contract specifications before Stage I can be considered completed. The examiners state that completion of Stage I is necessary for a proper initial evaluation of the property.

The Operator has submitted a voucher covering the period through September, 1957. No payments have been made by the Government and the Operator has been advised that no payments will be made until Stage I work is completed.

The Operator has requested an extension of the contract completion date. He has also misinterpreted contract specifications and engaged in controversial exchanges with the Field Team. A letter, dated March 21, 1958, from the Administrator, was designed to clarify matters and prepare the way for the present Amendment No. 1.

The amendment provides for the desired flexibility in future bulldozing work, a recess in operations, an extension of the completion date, and an increase in the maximum royalty payment period. Because of the erratic performance of the Operator, special provisions are included, in case of default, for termination and pseudo certification.

Michael Ching

Michael Ching

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4/2/58	Ching	700
"	Ellis	700
"	Chamberlin	800
4/2	[illegible]	130
"	Johnson	110
"	Mattenden	200
4/3	C	220
		700

APR 3 1958

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Harshman:

In accordance with Mr. King's memorandum of March 5, 1958, we are enclosing the original and four copies of a proposed Amendment No. 1 to the subject contract, signed by the Administrator. Also enclosed are two extra copies of the amendment for the use of the Field Team. We are also returning the two sets of 104 forms and supporting data enclosed with Mr. King's memorandum.

If you and the Operator find the proposed amendment in order, it is ready for execution as indicated and the usual distribution thereafter.

Please note the following points:

1. The cost of any bulldozing prior to December 31, 1957, with other than a D-8 machine is not allowable.

2. Suspension of work should end not later than May 1. This date is in lieu of the April 15 date suggested by Mr. King.

3. The completion date is extended to July 31. This will allow completion of Stage II in the event this stage is approved.

4. In case of default, special provisions are included for termination and pseudo certification.

MChing/gla
4-2-58

Sincerely yours,

cc to: Admr.'s Reading File
Operating Committee
THKillsgaard, 5224
Mr. Ching

George C. Selfridge

Enclosures

Chairman, Operating Committee (GCS)

APPROVED: P. F. Yopes (GCS)
Member, Bureau of Mines

N. E. Nelson (GCS)
Member, Geological Survey

8623

DRAFT
3/25/58
MChing/gla

ARTHUR A. CERVI
DOCKET NO. DMEA-4722

Amendment No. 1

It is agreed this _____ day of _____, 1958, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and Arthur A. Cervi, hereinafter called the "Operator," that Exploration Project Contract No. Idm-E1120, Docket No. DMEA-4722, dated August 5, 1957, hereinafter called the "Contract," is amended, effective December 31, 1957, as follows:

1. In Exhibit "A," Description of the Work, under General Provisions, the first sentence in the second paragraph is changed to read: All bulldozing shall be done with a D-8 bulldozer, & D-6 bulldozer, or equivalent units of the same or another make.

2. In Exhibit "A," Estimated Costs of the Project:

(a) Under Stage I, Actual Costs, Category (1) Independent Contracts, the only item is changed to read:

32 hrs. bulldozing with D-8 @ $16/hr.
or 24 hrs. with a D-8 @ $16/hr. and
12.8 hrs. with a D-6 @ $10/hr. $512.00

(b) Under Stage II, Actual Costs, Category (1) Independent Contracts, the second item is changed to read:

24 hrs. bulldozing with D-8 @ $16/hr.
or 38.4 hrs. with a D-6 @ $10/hr. $384.00

3. (a) Work under the Contract shall be suspended during the period beginning October 16, 1957, and ending not later than May 1, 1958.

(b) No costs incurred by the Operator during the period of suspension shall be allowable for contribution by the Government.

(c) The Operator, at its own cost and expense, without contribution by theGovernment, during the period of suspension shall preserve and protect the project work and any property in which the Government has an interest.

4. The date fixed for the completion of the work in Article 3 of the Contract is extended from December 31, 1957, to July 31, 1958.

5. The maximum period for royalty payments and lien for the payment thereof, provided for in the Contract, is increased from 10 years to 11 years.

6. It is of the essence of this Contract that the work be resumed on or before May 1, 1958, and be completed on or before July 31, 1958; and if not so resumed and completed in the manner required by the Contract, the following provisions shall thereupon become effective:

(a) The Contract and all obligations of the parties thereunder, except as hereinafter provided, shall be and are hereby terminated as follows:

(i) Effective October 16, 1957, if the work has not been resumed on or before May 1, 1958.

(ii) Effective July 31, 1958, if the work is

resumed on or before May 1, 1958, but is not completed on or before July 31, 1958.

(b) If the Contract is terminated under Item 6(a)(i), the Government will not contribute to any costs incurred prior to October 16, 1957.

(c) If the Contract is terminated under Item 6(a)(ii) and Stage I work has not been completed, the Government will not contribute to any costs incurred prior to July 31, 1958.

(d) If the Contract is terminated under Item 6(a)(ii) and Stage I work has been completed, the Government will contribute only to allowable costs incurred prior to July 31, 1958.

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

(f) All rights of the Government respecting reports, accounts, audits, and the right to recover any overpayment, are hereby preserved.

(g) The total net amount contributed by the Government shall be repayable in the form of a percentage royalty on any minerals mined or produced from the land described in Article 2 of the Contract, in the manner and amount provided in the Contract, certification of discovery or development being hereby waived.

(h) The Operator hereby releases and agrees to save the Government harmless from all claims or demands under or arising out of the Contract, except as otherwise provided in this Amendment No. 1.

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

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By _____
Administrator, Defense Exploration Minerals Administration

_____
Arthur A. Cervi

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
3-17	Ching	700
3-17	Ellis	700
3-18	Chamberlin	800
3/18	Selfridge	1200
"	Johnson	110
		200
3/24	C	220
		700

MAR 21 1958

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Contract No. Idm-E1120
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Cervi:

Our Executive Officer at Denver, Mr. W. H. King, has referred your letter of January 8, 1958, to us for consideration. He also recommended that the contract be amended to provide a recess to cover the period during which work under the contract was suspended, to extend the completion date, and to allow substitution of a D-6 bulldozer or equivalent unit for a D-8 bulldozer. This, we are preparing to do.

We regret that some misunderstanding has arisen in interpreting work specifications under the contract. We will not attempt to answer your letter point by point since a general explanation on our part should suffice to clarify the situation.

Regarding costs of the contract, the estimated costs under Stage I, such as $512.00 for bulldozing, $175.00 for chemical analyses, and $224.00 for incidental allowance, are the maximum allowable amounts for completing the work specified in each case. Thus, if you require more than 32 hours with a D-8 bulldozer to complete 11 trenches to a minimum depth of 5 feet and a minimum average length of 250 feet, the cost of the extra hours of bulldozing will be for your own account.

Regarding the amount of work that has been completed, the contract (Exhibit "A") states that "the location, direction, inclination, and extent of all project work are subject to the approval of the Government." Thus, while you claim that 11 trenches totaling 2,400 lineal feet have been completed, we find that only 8 trenches totaling 2,000 lineal feet can be considered as acceptable or nearly acceptable. Two of the 8 trenches must be deepened in order to be entirely acceptable, and three additional trenches, totaling 750 feet, must be excavated in accordance with contract specifications before Stage I can be considered completed.

8623

We note that your voucher and progress report for September include 24 hours of bulldozing with a D-8 machine. To complete the work under Stage I you will be allowed 8 hours with a D-8 or, if the contract is amended as contemplated, 12-2/3 hours with a D-6 bulldozer, Any work done heretofore with a bulldozer other than a D-8 or that does not meet contract specifications should be considered for your own account. For your information, we usually provide for some flexibility in the size of the bulldozer to be used, but in some cases a specific size is designated when it is understood that such size machine is desired by the Operator or is readily available to him.

While we are preparing the amendment mentioned in our first paragraph, it is suggested that you make the necessary preparations to complete Stage I trenching as outlined by our field examiners when you visited the Geological Survey offices on October 3, 1957. When this work is completed the overall results can be appraised and a decision made as to the desirability of doing work under Stage II. Unless Stage I work is completed to our satisfaction, no payments will be made for the work done to date. We will appreciate it if you will advise us promptly when the work is resumed. The proposed amendment will read "not later than May 1, 1958."

Sincerely yours,

Acting Administrator

MChing/izm 3-17-58
cc: Mr. Ching
Admr.'s Reading File
IMEA FT Reg. 3 (2)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
224 New Customhouse
Denver 2, Colorado

OFFICE FILE COPY
DMEA
RECEIVED MAR 7 1958

DATE	INITIALS	CODE
3-7	C	220
3-10	Ching	700

March 5, 1958

VIA AIR MAIL

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium), Contract No. Idm-E1120, Arthur A. Cervi (Cervi Lease, T 3 S, R 71 W), Jefferson County, Colorado

Enclosed are the following pertaining to operations under the subject contract:

1. Two complete sets of data, consisting of Forms MF-104 and MF-104A and supporting data, submitted by the Operator pertaining to work completed during the month of September, 1957.

2. The original and two copies of a joint memorandum, dated March 3, 1958, from E. W. Buel, Mining Engineer, Bureau of Mines, and D. H. Richter, Geologist, Geological Survey.

3. Two copies of a letter, dated November 15, 1957, from T. A. Christensen, Acting Regional Director, Region III, to Mr. Cervi, which was previously referred to under item 3 of our memorandum to you dated December 30, 1957.

The accounting and statistical report under item 1 was not processed for reimbursement to the Operator because there was no firm basis to make partial payment, as the contract stipulates that Stage I work consists of eleven trenches averaging 250 feet in length.

For further reference in the matter, you are referred to the following:

(a) The Operator's letter of January 8, 1958, copies of which were forwarded to you by copies of our memorandum dated January 20, 1958 to the field examiners, requesting their recommendations relative to changes in the contract requested by the Operator.

(b) Memorandum to you from this office, dated December 30, 1957, and material transmitted thereby under items 1 and 2.

We have not replied to questions posed by the Operator in his letter of January 8, 1958 because, in the past, he has referred matters to Senator Carroll, and we hesitated to render an interpretation that might develop into a controversial issue; also, because we believe that an attempt to further clarify matters with the Operator would serve no useful purpose until a decision is reached regarding future operations.

If, after review of the Operator's letter of January 8, you consider he should be favored with a reply, we will appreciate your reply direct to him or advice to us as to the nature and text of our reply.

In part based on recommendations of the field examiners, and based on past experiences with the Operator, we recommend that an amendment to the contract be prepared which will provide for the following:

1. Extension of the completion date from December 31, 1957 to June 1, 1958.

2. Provide for a suspension of operations from October 16, 1957 to end not later than April 15, 1958.

3. Increase the maximum period for payment of royalties and lien for payment thereof to eleven years from the date of the contract.

4. Provide for the optional use of a D-6 tractor-dozer or a comparable unit of other make as follows:

   (a) Stage I - 51 hours at $10.00/hour

   (b) Stage II - 38 hours at $10.00/hour.

5. That provision be incorporated in the amendment that the contract is automatically rescinded as though it had never existed if the work under Stage I is not resumed on or before April 15, 1958 and if Stage I work is not completed to the satisfaction of the Government in accordance with contract provisions on or before June 1, 1958.

Exposures disclosed by trenching to date indicate little probability that Stage II work will be desirable.

W H King

W. H. King

Enclosures

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

DMEA
DEPARTMENT OF THE INTERIOR
MAR 5 - 1958
REGION III
DENVER, COLORADO

March 3, 1958

DMEA
RECEIVED MAR 7 1958

DATE	INITIALS	CODE

Memorandum

To: Executive Officer, DMEA Field Team, Region III
Through: E. N. Harshman

From: E. W. Buel
D. H. Richter

Subject: Docket DMEA 4722 (Uranium), Contract Idm-E 1120, Arthur A. Cervi (Cervi Lease), Jefferson County, Colorado

In a letter dated December 19, 1957, the operator requested an extension of the completion date, for work under the subject contract, from December 31, 1957, to April 15, 1958.

Work under the contract was started in August 1957 and at the present time only a portion of Stage I, which consists entirely of a modest amount of trenching, is completed. Reasons for this delay, such as inclement weather in March-April 1957 and the breakdown of bulldozers, as given by the operator, are absurd excuses and only reflect his incompetency in supervising the program. This incompetent supervision has led to a number of difficulties in the normal, and generally smooth, execution of contract matters.

Nonetheless, if personalities are disregarded, the fact remains that the completion of Stage I, as stipulated in the contract, is necessary for a proper initial evaluation of the property.

On October 1, 1957, R. U. King and D. H. Richter visited the property and laid out in the field for the operator's benefit three new trench sites, which when completed along with the deepening of two existing trenches, would essentially complete the Stage I work.

On October 3, 1957, the operator visited the Survey offices at which time he agreed to complete Stage I trenching as outlined by the examiners. A map showing the approximate locations of three additional trench sites was given the operator to assist him in completing the trenching under Stage I. Another examination was made on February 27, 1958, by D. H. Richter, Geological Survey, and E. W. Buel, Bureau of Mines, to determine if the operator performed any trenching as agreed upon during his visit of October 3. An examination of the property showed that the operator did not perform any of the recommended trenching.

In a letter of January 8, 1958, to the DMEA Field Team, the operator poses a number of questions, some of which need clarification.

The question of employing a D-4 or D-6 in lieu of a D-8 bulldozer has some merit in view of the fact that some of the trenching could probably have been adequately undertaken with a smaller bulldozer. We recommend an amendment to permit the substitution of a D-6 or equivalent bulldozer at a rate of $10.00 per hour.

The operator states that he is fully aware of the contract specifications. He also says that 11 trenches totaling 2,400 lineal feet have been completed. As seen during the examinations, these statements certainly can be challenged from the locations, measurements, and specifications of the trenches. In a memorandum of September 24, 1957,

to the DMEA Field Team, examiners Richter and Winkel state that a total of 7 trenches totaling 1,905 feet were completed. Of this amount only 1,355 feet of trenching meets contract specifications as liberally interpreted by the examiners. Since the inspection on September 19, 1957, the operator performed no additional bulldozer trenching. Used D-4 & D-5 to Oct. 15 according to letter of Jan. 8.

The examiners believe that before a proper appraisal of the property can be made, Stage I work must be completed. This will require the completion of 3 trenches (totaling about 750 feet) and the deepening of two existing trenches, as discussed with the operator during his visit of October 3, 1957. This limited amount of work under Stage I and any subsequent Stage II work, which at this time appears doubtful, should be easily completed, if diligently carried out, by June 1, 1958.

It is recommended that the completion date of the project be advanced from December 31, 1957, to June 1, 1958.

E. W. Buel

E. W. Buel, Mining Engineer

R. U. King for

D. H. Richter, Geologist

OFFICIAL FILE
DMEA
RECEIVED JAN 23
DATE | INITIALS | CODE
1/23 | C | 220
1/24 | [illegible] | 800
1/[illegible] | [illegible] | 700

224 New Customhouse
Denver 2, Colorado

January 20, 1958

Memorandum

To: E. N. Harshman - w/enclosure
DMEA/DFC (Winkel) - w/enclosure

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium), Contract No. Idm-E1130, Arthur A. Cervi (Cervi lease, T 3 S, R 71 W), Jefferson County, Colorado

Enclosed is a copy of the Operator's letter of January 8, 1958, in reference to matters discussed in our letter of December 30, 1957.

After you have reviewed the Operator's letter, please submit a joint memorandum report containing your comments pertinent to points raised by the Operator.

Original signed by
W. H. KING

W. H. King

JWT:yrl

cc: Chmn. Op. Comm.-3) w/copy of
Corres. file) enclosure
Townsend
Chron.

ARTHUR A. CERVI
OFFICIAL FILE COPY
DMEA
RECEIVED JAN 23 1958

DATE	INITIALS	CODE

MINING and GEOLOGICAL ENGINEERING
DMEA
DEPARTMENT OF THE INTERIOR
979 MILLER STREET
LAKEWOOD 15, COLORADO
PHONE BELMONT 7-1850

JAN 20 1958
REGION III
DENVER COLORADO

January 8, 1958

Re: Docket No. DMEA 4722
Commodity - Uranium
Contract No. Idm - E1120

Executive Officer,
Defense Minerals Exploration Administration
224 New Customs House
Denver 2, Colorado

Dear Sir:

After studying and consideration of your letter of December 30, 1957 please permit me to respectfully make the following comments:

1. Paragraph two of your letter:

a. Suspension of operations to be established by an amendment to the contract.

In my most humble and modest opinion I think the technicality "suspension of operations" is debateable. Were operations actually suspended; Altho heavy equipment was absent from the project for a period of time - I personally did considerable work in other categories - on the project. Time, effort, professional skill and labor was expended and money was spent during the period you refer to as "suspended operations". Re: my letter 12;19;57.

I suggest that in this case "suspended operations" be defined.

b. Your letter "quote - As the suspension of operations is involved with the extension of the date presently fixed .....etc., - I "think" I know what is ment by this sentence, however, I hesitate to independently interpret it's meaning for fear of misinterpretation. Therefore I must respectfully request a - restatement concerning that thought.

2. Your letter - paragraph three:

a. I was under the impression that I had established January 15, 1958 as the date - fixed - for the resumption of operations. Obviously, I did not. Now, due to anticipated inclimate Spring weather I fix April 15, 1958 as the date to resume operations.

b. Your letter : Please advise last date bulldozer work under contract was performed.

My records show that the last - D-8 bulldozer work was done on September 9, 1957; however, (of course this was verbal) a representative of the Government said "that if I used a - smaller than D-8 dozer - and the work was efficiently, and capabily performed the contract could be "amended"

to include the cost of the "smaller than D-8" bulldozer work.

In as much as I did engage a D-4 or D-5 dozer - what ever it was - and this dozer was performing work - the last day which was October 15, 1957 or there about - and in as much as this small dozer did perform adequately, efficiently, and executed faster, cleaner work than that performed by the D-8 dozer - am I to state that September 9, 1957 or October 15, 1957 was the last day of bulldozer work?

3. Your letter - paragraph 4:

a. The question asked in my letter of December 19, 1957 - was in essence - who would pay the bill for the - additional trenches - requested by you or the U.S. G. E. or whom ever requested or recommended them?

I am aware of the specifications as stipulated in the contract for the completion of Stage I.

If you will kindly refer to my letter of December 19, 1957 - you will note that I have stated in paragraph five (5) that eleven (11) trenches and 2400 lineal feet of trenching had been completed. To add to this twenty nine (29) hours were expended by the D-8 dozer.

Please refer to paragraphs 12, 13 and 14 of the above mentioned letter by me to you.

These paragraphs state that - altho, I consider that 11 trenches have been already dug, the Government representitives request that three additional trenches be dug according to their recommended location on the property.

These three trenches would require - as previously stated - 750 lineal feet and approximately 45 hours time on the job. The cost of this work at $5.00 per hour would be $250.00 for the dozing and an additional $150.00 for portal to portal moving for a grand total of $400.00.

If you will review my 104 members that I submitted last September and the enclosed maps of the work completed you will note that the 11 (eleven) trenches are in the precise locations - or "nearly" the exact locations that were recommended and pointed out to me by a representative of the Government.

Also, please observe that 29 hours of the allotted and specified hours for trenching have been expended. The contract calls for 32 hours and here - leaves only three hours of the total.

Here, about 2400 lineal feet of the 2,750 lineal feet allotted under the contract have been used up. That leaves only 350 lineal feet.

The reason for my question on page two of my letter of December 19, 1957 inquiring what the Government participation would be - is not that I am not familiar with the terms of the contract - but, How will I dig the three additional trenches requested by you - the trenches you consider that by chance you are willing to acknowledge the work under Stage I completed. Please inform me how it is possible to do this work in the time remaining and the 350 lineal feet remaining under the terms of the contract.

4. Refering to paragraph six or the last paragraph of your letter you have stated "....the Government cannot contribute to any costs incurred formed under Stage I until all eleven (11) trenches have been completed."

I maintained and still do that - all eleven (11) trenches have been completed. Also, a representitive of the Government - stood at my side "one day" and the two of us reviewed a map with the work done drawn on it and each of us clearly defined and counted eleven trenches.

Also, the above mentioned trenches are precisely - or with only slight veriation - dug on the sites or locations as recommended and finger pointed to - by a representitive of the Government. Any trenches dug in places other than those recommended by your men - were paid for by me and no claim made for them - they were also over and above the specified eleven (11) trenches.

5. In paragraph five (5) of your letter you mention that the Government will contribute 75% of the - "actual" - cost of Stage I work.

It would be easy for a sensitive person to misinterpret the real meaning of this statement, however, in my case it is common knowledge that the "actual" cost to me - so far has been close to three thousand dollars ($3,000) since the signing of the contract.

A representitive of the Government - in reality - prepared the 104 vouchers that I submitted to claim my 75% reimbursal. Receipts and other documented evidence establishes that fact, wherein, of the over $3,000 "actual" expendature only five hundred and eleven dollars ($511) was considered spent within the framework of the contract.

Some of the $3,000 spent included the "smaller than contract specified D-8 dozer" which a Government representitive - said - could be claimed under a revised contract.

6. There is a point in question regarding the contract - that I immediately recognised before signing the contract. But, I let it slip by and signed anyway due to the fact that I was anxious to get the project rolling.

The point refered to - is why the Government geologists and/or engineers would hamstring a contract with a D-8 - "only" - clause, when any experienced engineer in construction, excavation or earthwork knows and realises that due to terrain, climate and other pertinent working conditions - that a D-8 is not always the best piece of equipment for a given job and any good engineer will leave the situation flexable to enable him to enterchange equipment.

7. Concerning the - extra or "additional" three trenches requested by you to consider the Stage I phase completed - if you will kindly review my map in my original application for a loan - you will notice that the location and area of the - newly recommended trenches - is the area in which I had originally recommended the exploration be conducted. My original application may have needed - accurate revision but at least all of the money that I have spent so far would have been spent in the area or location that you are now requesting [illegible] to explore.

Sincerely yours,

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado
December 30, 1957

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DMEA
RECEIVED JAN 2 1958

DATE	INITIALS	CODE
1/2/58	C	220
		130
"		700

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium) Contract Idm-E1120
Arthur A. Cervi (Cervi Lease, T 3 S, R 71 W)
Jefferson County, Colorado

Enclosed are the following pertaining to an amendment to the subject contract to provide for a suspension of operations and extension of the date on or before which the work shall be completed.

1. Two copies of the Operator's letter of December 19, 1957.

2. Two copies of a letter from this office to the Operator, dated December 30, 1957, replying to his letter of December 19, 1957.

3. Two copies of a letter to Mr. Cervi, from T.A. Christensen, dated November 15, 1957.

You will note that the Operator indicates a copy of its letter was forwarded to Senator John A. Carroll, and he has in the past referred other matters to the Senator.

All of Stage I work could have been completed long ago had the Operator shown any diligence in pursuing the work. The matter of completing Stage I has been discussed with him on numerous occasions and he has failed to resume work as promised.

The results of the work performed to date indicate that in all probability work under Stage II will not be recommended by the field examiners or this office.

When the requested information is received from the Operator we will forward it to you for preparation of the necessary amendment and we firmly recommend that recitation be incorporated into the amendment that the contract be rescinded unless the Operator resumes and completes the work by the dates provided therefor.

W. H. King

W. H. King

Enclosures

OFFICIAL FILE COPY
DMEA
RECEIVED JAN 2 1958

DATE	INITIALS	CODE

DMEA
DEPARTMENT OF THE INTERIOR
DEC 30 1957
REGION III
DENVER, COLORADO

ARTHUR A. CERVI MINING AND GEOLOGICAL ENGINEERING

979 Miller Street
Lakewood, 15 Colorado
Phone Belmont 7-1850

December 19, 1957

Docket No. DMEA - 4722
Commodity - Uranium
Contract No. - Idm E - 1120

Executive Officer
Defense Minerals Exploration Administration
224 New Customs House
Denver 2, Colorado

Dear Sir:

This is to apply for a 90 (ninety) day extension of the above listed contract.

Work was started under this contract on August 30, 1957 and was suspended approximately the middle of October 1957.

The work specified under this contract could be completed in a relatively short period of time under ideal or near perfect or normal working conditions, however, anticipating the unpredictable and acts of God, this work should be resumed about the 15th of January 1958 and completed not later than April 15, 1958.

Of course, you can recall the heavy and abnormal precipitation we had in March and April 1957, wherein everything and every person was snowed "in" on three consecutive week-ends.

The reason the work was suspended in October 1957 is that the D-8 bulldozer that was engaged digging the trenches was released - after digging what we thought to be eleven trenches and about 2400 lineal feet of trench.

Thence, the above mentioned dozer was engaged in Blackhawk on a much bigger job and has been unavailable.

Another D-8 bulldozer was engaged, however, enroute to the job it stopped "over" for servicing and repairs. This dozer has not been completely overhauled at this date and it's services are unpredictable.

The above listed bulldozers, however, may be ready to go onto the project shortly after the first of the year and both have been contacted and my intentions have been made known to them.

Altho the dozers were not working on the job - considerable work has been done during the period between the middle of October and this date. This includes geological reconnaissance, more sampling, more investigation and analyzing of the accumulated data. Outside opinion by "expert" uranium, structural, and geophysical men from the Western Slope.

Also, in the absence of a D-8 as specified in the contract, I did engage a smaller dozer in the D-5 or D-6 class and did very adequately deepen the trenches.

This dozer work - small than a D-8 dozer - was paid for by me and no claim has been made on a 104 voucher for reimbursement, altho, I think I should be permitted to claim Government participation in this cost - as the small dozer did "as good" or perhaps better work than could have been accomplished by a D-8.

Government representatives have advised me that three (3) more trenches are desired by them - each to be not less than 250 long and 5 feet deep.

This would require about 750 lineal feet of dozer work and approximately 15 hours time.

The cost would be about (at $16 per hour) $250.00 for work on the site and $150.00 (one hundred and fifty dollars) for portal to portal moving; an extra cost of about $400.

It would be appreciated if you would reply stating what the cost would be to me and what the Government participation would be - after reviewing the 104 vouchers already submitted by me - and after determining how much of my Stage I appropriation has been used up, i.e., hours and cost already expended - hours and cost still available.

I have been told that the additional three trenches are desired before Stage I can be considered completed.

Your reply would be appreciated at the earliest possible time.

Sincerely yours,

(s) Arthur A. Cervi

copies: Senator John A. Carroll
file
dmea 6

OFFICIAL FILE COPY
DMEA
RECEIVED JAN 2 1958
DATE | INITIALS | CODE

224 New Customhouse
Denver 2, Colorado
December 30, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract Idm-E1120
Arthur A. Cervi
(Cervi Lease, T3S, R71W)
Jefferson County, Colorado

Dear Mr. Cervi:

Reference is made to your letter of December 19, 1957, regarding a 90 day extension of the date fixed on or before which work under Contract Idm-E1120 shall be completed.

Since you advise that work under the contract was suspended in October, 1957, and will not be resumed until about the 15th of January, 1958, it is desirable that the period of suspension of operations be established by an amendment to the contract. As the suspension of operations is involved with the extension of the date presently fixed for completion of the work, we prefer that the amendment to extend the completion date also provide for the suspension of operations.

You advise that work should be resumed about the 15th of January, 1958; however, a specific date must be established in the amendment on or before which work will be resumed, therefore, please advise if the date of January 15, 1958, is satisfactory for the specific date required. Also please advise the date the last bulldozer work under the contract was performed.

Further reference is made to your letter of December 19, 1957, regarding the extent of Government participation in the costs of the work performed under Stage I of the contract. Stage I of the contract provides for the excavation of 11 bulldozer trenches to a minimum depth of five (5) feet and of varying lengths averaging a minimum of 250 feet, which in effect establishes a minimum aggregate of 2,750 feet for the 11 trenches.

Under the provisions of the contract the Government will contribute 75 percent of the "actual" cost of Stage I work, which does not exceed 32 hours of bulldozing time at a maximum of $16.00 per hour, plus such "fixed costs" as are established in the contract.

As explained to you on your visit to this office the Government cannot contribute to any of the costs performed under Stage I until all 11 trenches have been completed to contract specifications because there is no firm basis established by which to pro rate the allowable costs either on the basis of a portion of the trenches or a portion of the lineal feet of trenching completed.

Yours very truly,

Original signed by
W. H. KING
W. H. King
Executive Officer, DMEA
Field Team, Region III

JWT:hmh

cc: Chmn. Op. Comm. (2)
Harshman
DMEA/DFC (Winkel)
Townsend
Corres.file, Reg. III
Chron

2218

DATE	INITIALS	CODE

November 15, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Dear Mr. Cervi:

In response to a telephone call from Senator Carroll, I checked with our Defense Minerals Exploration Administration office as to why your September voucher had not been paid.

I learned that certain trenching had to be completed in order to determine a basis for payment. I understand that Mr. Townsend discussed this matter with you by telephone today, also that you had previously discussed the voucher with Mr. Cooper. I understand you are arranging to complete the trenching at once and then submit a new voucher. As soon as this phase of the work is completed and the voucher received, it will be audited and payment made in accordance with the contract terms.

Very truly yours,

T. A. Christensen
Acting Regional Director, Region III

Copy to:
Senator Carroll
223 New Customhouse
subj, chron, DMEA, TAC

11-19-57
copies distributed to:
Harshman
DMEA/Dfc
Townsend
corres. file, Rg III

OFFICE OF THE COM. DMEA RECEIVED DEC 30 1957		
DATE	INITIALS	CODE
12/30	C	220
1/2/58	GEG	800
"	Chron	700

224 New Customhouse
Denver 2, Colorado

December 27, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract Idm-E1120
Arthur A. Cervi
(Cervi Lease, T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Cervi:

The date fixed for completion of the work provided for under Contract Idm-E1120 is December 31, 1957. If, for reasons beyond your control, it will not be possible to complete the work by December 31, 1957, you should submit to this office for consideration by the Government, the original and five copies of a request for extension of the completion date for such specific additional time as you anticipate will be required.

Yours very truly,

Original signed by
W. H. KING
W. H. King
Executive Officer, DMEA
Field Team, Region III

JDC:hmh

cc: Chmn. Op. Comm. (2)
Harshman
DMEA/DFC
Townsend
Corres.file, Reg. III
Chron

OFFICIAL FILE COPY
DMEA
RECEIVED NOV 18 1957

DATE	INITIALS	CODE
11-18	C	220
11/18	[illegible]	800
11	[illegible]	700
	[illegible]	

224 New Customhouse
Denver 2, Colorado
November 15, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket DMEA 4722 (Uranium)
Contract Idm-E1120
Arthur A. Cervi
(Cervi Lease, T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Cervi:

Confirming telephone conversations between you and this office regarding non-payment of your Voucher for the month of September, 1957, you are advised that partial payment of Stage I work cannot be made because there is no firm basis by which to pro rate the bulldozer hours to the number of trenches completed. Therefore, when the presently excavated trenches and the balance of the 11 trenches have been completed to contract specifications we will then be in a position to effect payment on a voucher submitted by you on that basis as provided for in the contract.

Yours very truly,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III

JWT:hmh

cc: Chmn. Op. Comm. (2)
J. H. Last
Harshman
DMEA/DFC (Winkel)
Townsend
Corres.file, Reg. III
MF-104 file, Reg. III
Chron

OFFICIAL FILE COPY
DMEA
RECEIVED SEP 23 1957
DATE | INITIALS | CODE
9/23 | C | 220
9/23 | [illegible] | 800
" | [illegible] | 700

224 New Customhouse
Denver 2, Colorado

September 19, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract No. Idm-E1120
Arthur A. Cervi
(Cervi Lease, parts of Sections
24 and 25, T 3 S, R 71 W),
Jefferson County, Colorado

Dear Mr. Cervi:

From your letters of September 14 and September 16, 1957, it is apparent that you have neither studied the contract nor our letter of August 20, 1957, by which we forwarded the copy of the contract to you.

The contract provides, "The work is divided into two stages as hereinafter described. The Operator shall complete Stage I, and perform as much of Stage II as the Government approves in writing in advance." The contract gives you considerable latitude in the location and extent of the work to be performed under Stage I, provided the work is performed in the manner stipulated. It is the intent of the contract that the location and extent of work approved for Stage II be contingent upon the results of the work performed under Stage I.

We have been given to understand that you were told on several occasions by the DMEA field examiners that any drilling performed prior to the issuance of approval for such by this office would be at your sole expense without contribution by the Government.

Since the Government was not given an opportunity to examine the results of the work under Stage I, nor did it approve in advance the drilling you have performed, therefore the Government will be unable to participate in the costs of any drilling performed to date.

In reference to your letter of September 16, requesting approval for Stage II drilling, please refer to the next to the last paragraph on page 2 and the third paragraph on page 3 of our letter to you of August 20, 1957.

Your request for the Government's approval for the drilling under Stage II is to be in sextuplicate, each copy complete with a map showing the location of the work performed under Stage I, the location and results of any samples taken, and an evaluation statement as to your opinion concerning results of Stage I work, and specific locations of the holes you propose to drill under Stage II.

Before submitting a claim for reimbursement on the bulldozing time expended in Stage I work, please carefully review the specifications and specific stipulations pertaining to the manner in which the Stage I work is to be performed, to ascertain that you have complied with contract requirements.

Very truly yours,

Original signed by
J. W. TOWNSEND

J. W. Townsend
Alternate Acting Executive Officer
DMEA Field Team, Region III

JWT:prl

cc: Chmn. Op. Comm.-2) w/copy of Operator's
Marshman) letters of September
DMEA/DFC-Winkel) 14 and September 16.
Corres. file)
Townsend
Chron.

ARTHUR A. CERVI

MINING and GEOLOGICAL ENGINEERING

979 MILLER STREET
LAKEWOOD 15, COLORADO
PHONE BELMONT 7-1850

DMEA
DEPARTMENT OF THE INTERIOR
SEP 18 1957
REGION III
DENVER, COLORADO

September 16, 1957

Docket No. DMEA - 4722
Commodity - Uranium
Contract No. Idm - E 1120

Executive Officer
DMEA
Bureau of Mines
224 New Customs Building
Denver, Colorado

Dear Sir;

May I take this opportunity to advise you that My "Stage One" Bull-dozer work has been completed and that I desire to start "Stage Two" drilling.

Presently, I have a drill site leveled and a drilling rig in position to start drilling.

May I respectfully request your permission to start drilling on this location?

Sincerely yours,

Arthur A. Cervi

ARTHUR A. CERVI

MINING and GEOLOGICAL ENGINEERING

979 MILLER STREET
LAKEWOOD 15, COLORADO
PHONE BELMONT 7-1050

DMEA
DEPARTMENT OF THE INTERIOR
SEP 18 1957
REGION III
DENVER, COLORADO

September 14, 1957

Docket No. DMEA - 4722
Commodity - Uranium
Contract No. Idm - E 1120

Executive Officer
DMEA
Bureau of Mines
224 New Customs House
Denver, Colorado

Dear Sir:

Due to a misunderstanding and the fault being entirely mine, it seems that I prematurely started my exploration program.

I desire to try to clarify matters and perhaps the following explanation will do so.

On August 30, 1957 I engaged my D - 6 bull-dozer and he moved into my area and immediately started to work making the prescribed cuts.

Prior to August 30, 1957 I had talked to Bill Mathews of the Golden Drilling Company about subcontracting the drilling. My choice of Mathews being that he had drilled all of the other properties in the area and had or has a valuable knowledge and background in relation to this project; besides being the best driller in the area.

Mr. Mathews told me that he had a contract in Leadville, Colorado and that I would have to start using him immediately (on or before August 30, 1957) or I would have to wait four to six months for his services.

Consequently, I ordered him to move his drill into position and start drilling a hole that I had selected by surface outcroppings and faulting, and mineralization showing at the surface.

Coincidently, this coinsided with the starting of the bull-dozer work. However, my first bull-dozer cut was on the mountain side immediately above the drill and all of my calculations proved to be correct as shown by the geology in the cut.

Also, the bull-dozer work on this cut was finished in a few hours and before the drilling had really gotten underway.

At this location we drilled hole no. 1 - to depth of 240' and hole no. 2 - to 82 feet. We cored about 90 percent with the remaining ten percent being sand, gravel and conglomerate through which we drove stand pipe.

In the interim the bull-dozer had finished all of the work that I felt necessary at this time and I discharged it.

If this is contrary to the terms of the contract I repeat that the fault is mine through a misunderstanding, however, I would naturally like to have credit for the holes totaling 322 feet and be allowed to submit forms MF-104A for reimbursement.

Your favorable consideration will be greatly appreciated by me.

Sincerely yours,

Arthur A. Cerv

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
224 New Customhouse
Denver 2, Colorado

August 20, 1957

Memorandum

To: Chairman, Operating Committee, DMEA

From: Alternate Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4722 (Uranium), Contract No. Idm-E1120, Arthur A. Cervi (Cervi Lease, T 3 S, R 71 W), Jefferson County, Colorado

Enclosed are the Government's and Audit copies of Exploration Project Contract No. Idm-E1120, which was forwarded by your letter of August 5, 1957 for attaching executed Consent to Lien form, insertion of the starting date under Article 3, and signature by the Operator.

Also enclosed are three copies of a letter from this office, dated August 20, 1957, whereby we forwarded the "Operator's Copy" of the Contract, blank report forms and instructions relative to reporting on work performed under the Contract, and procedure to be followed in communicating with this office in all matters pertaining to the Contract.

The Contract, dated August 5, 1957, provides for work estimated to cost $17,536.00, toward which the Government will contribute 75%, or an amount not in excess of $13,152.00.

Copies of the Contract have been distributed to the Finance Office, Region III, and to others concerned.

J. W. Townsend

J. W. Townsend

Enclosures

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 23 1957

DATE	INITIALS	CODE
8/23	C	220
8/26	B	215
		700

[illegible] New Customhouse
Denver 2, Colorado

CERTIFIED MAIL

AUG 20 1957

Mr. Arthur A. Carvi
979 Miller Street
Lakewood 15
Colorado

Re: Docket No. DMEA 4722 (Uranium)
Contract No. Idm-X1180
Arthur A. Carvi
(Carvi Lease, T 3 S, R 71 W)
Jefferson County, Colorado

Dear Mr. Carvi:

Enclosed herewith is the "Operator's Copy" of Exploration Project Contract No. Idm-X1180, Docket No. DMEA 4722.

Also enclosed are six copies of Form MP-104, "Operator's Monthly Report and Voucher," and six copies of Form MP-104A, "Operator's Unit Cost and Progress Report." At the end of the first calendar month after work is commenced, and monthly thereafter, you are required to submit the original and four copies of each form to the

Executive Officer
Defense Minerals Exploration Administration
[illegible] New Customhouse
Denver 2, Colorado.

The extra copy is for your records.

Forms MP-104 and MP-104A are to be combined into five sets of one of each form. Each set of the combined forms is to be accompanied by a map or sketch showing the location and extent of work performed and a signed narrative report which describes the work performed, conditions encountered, and results of the work. The monthly accounting report will not be processed for reimbursement unless it is accompanied by a signed narrative report and other required or pertinent data. Additional copies of Forms MP-104 and MP-104A will be sent to you each month on receipt of your report for the prior month.

For your information, and in reply to many questions that have been asked, after Forms MP-104 and MP-104A are received, an engineer will check progress on the project and review your accounts, after which the report forms will be forwarded to this office for

administrative examination and vouchering. If the report is in order, a check will be issued by the Treasury Department for the Government's portion of the approved costs. If you have any difficulty in completing these forms and the reports, please call on this office for assistance.

In the matter of your claim for reimbursement of drilling costs under the terms of the contract, reimbursement to you will be on the basis of a hole or holes completed to the objective, which has, or have been drilled in compliance with the conditions under the "General Provisions" section of Exhibit "A" of the contract and the special conditions pertaining to the drilling under each stage. Therefore, your monthly report should include only such holes which are completed to that extent and the required records make a part of your claim for reimbursement.

The contract is prepared on Form NF-650, and under its provisions and as outlined in Exhibit "A" of the contract, the allowable costs are a combination of actual costs with a maximum average unit cost established for work under Category (1) and fixed unit costs for performing the remaining items of work or services. Under the provisions of Exhibit "A", the work under Category (1) is to be performed by subcontract. The costs recorded under item (1) on Form NF-104 for such work must be supported each month by a signed or certified copy of the billing from the subcontractor. Amounts reported on the basis of the "Fixed Unit Costs" require no documentation, as they are otherwise verified.

In reference to ANNEX II (f) of the Contract pertaining to the average unit cost of the drilling, if excess costs are suspended by reason of exceeding the maximum unit cost of the drilling described under Category (1), the excess costs will be held in suspense and be reinstated by this office, to the extent suspended funds are available, in the event the unit costs for any month should cause the average unit cost to fall below the maximum average unit cost established in the contract for the drilling.

In the event you desire to perform the work under Category (1) on company account instead of subcontracting it, as provided in the contract, it will be necessary that you request and obtain an appropriate amendment to the contract before reimbursement can be made to you for the Government's portion of the allowable incurred costs.

Your requests to this office for work approval, changes in the contract, or any other communication pertaining to operations under the contract, must be in writing, of which please supply the original and five copies, each copy complete with maps or other pertinent data. Each request for action by this office must pertain to one matter only. Such requests are <u>not</u> to be incorporated in your narrative report accompanying monthly progress report forms NF-104 and NF-104A.

The location of the work to be performed under Stage I is indicated on the map, "Figure 2," attached to the contract. Should conditions encountered necessitate any appreciable change in the location

or direction of any of the work, approval of this office for the change must be obtained prior to performance of the work. Otherwise, the work may not be acceptable for reimbursement to you under the terms of the contract.

Your attention is directed to the provision that Stage II work is contingent on results obtained from Stage I, and performance of the work under Stage II is subject to prior written approval of the Government.

When work under Stage I has been completed, or sufficiently so to permit evaluation of the results of the work, you must request approval from this office for the work you propose to perform under the next stage. Your request for the work approval must be in sextuplicate, each copy complete with a map showing the location and extent of the work completed and the location of the additional work proposed. Also, your request must include an evaluation of the work completed and include assay returns and any other pertinent data which will be of value to the Government in appraising the results of the work.

You should anticipate a suspension of operations between stages of work, to enable the Government geologist and engineer to evaluate the results of the work performed and make recommendations to this office relative to the additional work you propose.

To eliminate as much delay to operations as possible, if that is of serious consideration, you should expedite forwarding of the results of the work completed and your request for the Government's approval of the additional work you propose.

No oral statement of any person shall be construed to modify or change the terms of the contract. Field Representatives of the Government are not authorized to approve any changes in the work program or contract provisions. Such approval can only be given by the Washington Office, DMEA, or by the DMEA Field Team, Region III.

It is a regulation that reimbursement for the cost of work accomplished prior to the date of the contract will not be allowed. It is a requirement and imperative that you notify this office in writing the date work actually commences under the contract.

Very truly yours,

Original signed by
J. W. TOWNSEND

Alternate Acting
Executive Officer, DMEA
Field Team, Region III

JWT:yrl

cc: Chmn. Op. Comm. ✓ - 3
Finance Office, Region III
Amendment file, Region III
Harshman
DMEA/BFC
Townsend
Corres. file
Chron.

224 New Customhouse
Denver 2, Colorado

August 15, 1957

CERTIFIED MAIL

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15
Colorado

Re: Docket No. DMEA 4722 (Uranium)
Arthur A. Cervi
(Cervi Lease, T 3 S, R 71 W)
Jefferson County, Colorado -
Proposed Exploration Project
Contract No. Idm-E1120

Dear Mr. Cervi:

Enclosed are the Government's, Audit, Finance Office, and Field Team copies of proposed Exploration Project Contract No. Idm-E1120, which has been prepared pursuant to your application for Government assistance in exploration work under the Defense Minerals Exploration Administration program.

If the Contract is satisfactory, all copies are to be signed by you as indicated and all copies promptly returned to this office.

In the event the Contract is not satisfactory, all copies are to be returned promptly to this office, together with your comments on or objections to the Contract.

Your attention is especially directed to three provisions in the Contract:

1. The Government will not contribute to the costs of any of the work that is provided for in the Contract which is performed prior to the date of the Contract.

2. The contract requires completion of the exploration work by the date fixed therefor. Approval must be obtained from this office for any suspension of work which may result in failure to complete the work by the date specified.

3. Royalty is due the Government on all production from the land described in the Contract, beginning on the date of the Contract.

If the Contract is satisfactory, and upon return of all copies properly signed, the "Operator's Copy" of the Contract will be forwarded to you, together with blank report forms and instructions relative to reporting on work performed under the Contract. Also, instructions will be given as to the procedure to be followed in corresponding with this office in matters concerning operations under the Contract.

Very truly yours,

Original signed by
E. N. HARSHMAN
E. N. Harshman
Acting Executive Officer
ERDA Field Team, Region III

Enclosures

JWT:prl

cc: Chmn. Op. Comm. - 2
Harshman
ERDA/DFC
Townsend
Docket
Chron.

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 9 1957

DATE	INITIALS	CODE
8/9	O.K.	220
4	Chrig	700

224 New Customhouse
Denver 2, Colorado

August 7, 1957

Mr. Arthur A. Cervi
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA 4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Cervi:

We have at hand proposed Exploration Contract Idm-E1120, which has been prepared pursuant to your application for government assistance in exploration work under the Defense Minerals Exploration Administration program.

Forwarding of the contract to you for signature is subject to providing executed Consent to Lien and Subordination Agreement forms by the property owners. For that purpose, enclosed are the original and five copies of form MF-205 Consent to Lien and Subordination Agreement. Please have Item 4 of the form completed as indicated; the forms dated and all copies signed by Nora H. Buckman and Sam G. Horning as indicated; also their addresses inserted in the spaces provided.

When the forms have been properly completed and executed, please return the original and four copies to this office, upon receipt of which, we will then be in a position to forward the contract to you for execution.

Yours very truly,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer

Enclosures

JWT:eh

cc: Ch. Op. Comm. (2)
Harshman
DMEA/DFC
Townsend
Docket
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
7/31	Ching	700
7/31	Ellis	700
8-1	Chambers	800
8/2	Martin	130
8/2	Johnson	110
5	Mathewson	100
		220
8/6	S.K.	220
		700

AUG - 5 1957

Mr. William H. King
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. King:

Enclosed are the original and four copies of a proposed long-form contract between the Government and Arthur A. Cervi, signed by the Administrator. The contract consists of Form MF-200, Annexes I and II, Exhibit "A" (4 pages), and map (Figure 2). Also enclosed are two extra copies each of Annexes I and II, Exhibit "A," and the map (Figure 2) for the use of the Field Team.

The original and five copies of a Consent to Lien and Subordination Agreement form, prepared for the signatures of the owners of the subject property, are also enclosed. The owners should fill in item 4 and the date, affix their signatures and addresses as indicated, and return the original and four copies to you for attachment to the contract prior to distribution of the latter. Otherwise, if you and the Operator find the proposed contract satisfactory, it is ready for the signature of the Operator, provided that a suitable final starting date is inserted under Article 3.

As suggested by the Field Team, Stages II and III of the Report of Examination have been combined into a single stage. Other modifications include a change in the allowance for supervision in order to provide supervision at all times, and a reduction in the Independent Contract price for core drilling from $6.00 to $5.76 per foot. The difference of $0.24 per foot for 2,350 feet is equivalent to the estimated cost of any cementing and drilling out, standby time, and reaming and casing that may be required. Thus, the total cost, including these items, is $6.00 per foot which is the same amount allowed for a similar type of drilling under Docket No. DMEA-4621, Cunac Minerals, Inc.

Sincerely yours,

W. S. Martin
ACTING Chairman, Operating Committee (2/B)

Enclosures
APPROVED:

P. F. Yopes (2/B)
Member, Bureau of Mines

Thor H. Kiilsgaard (2/B)
Member, Geological Survey

MChing/izm 7-31-57
cc to: Mr. Ching
Admr.'s Reading File
Operating Committee
THKiilsgaard, 5224

8623

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

JUL 29 1957

Memorandum

To: Administrator, DMEA
Attention: Chief, Division of Rare and Miscellaneous Metals

From: Associate Solicitor, Division of Mineral Resources

Subject: Docket No. DMEA-4722 (Uranium), Arthur A. Cervi

As requested in Mr. Ellis' memorandum dated July 9, 1957, we have prepared the attached contract.

The Consent to Lien and Subordination Agreement referred to in Mr. Ellis' memorandum should be attached to the contract prior to execution.

Robert P. Dwyer

Attachment

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
7/9	Ching	700
"	Ellis	700
7/10	GCS	130
		110
		100
		220
		700

Mr. W. H. King
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. King:

Enclosed are the original and five copies of a Consent to Lien and Subordination Agreement form, prepared for the signature of the owners of the subject property. The parties executing this document should fill in item 4 and the date, affix their signatures and addresses as indicated, and return the original and four copies to you for forwarding to this office. The sixth copy is for the owners.

Your attention is called to our letter of March 25, 1957, regarding the preparation of consents to lien and subordination agreements, and our referral letter of April 19, on the subject application. Under circumstances such as the present, a considerable amount of time would have been saved if the Applicant, after having been warned of our requirements, had proceeded immediately to secure the required consents to lien. Your views as to why the Applicant did not so proceed would be appreciated.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (SHB)

MChing/ms/gla (7-8-57) 7-9-57
cc to: Admr.'s Reading File
Operating Committee
Code 700, Mr. Ching
THKiilsgaard, Rm. 5224

Enclosures

APPROVED:

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

Thor H. Kiilsgaard (SHB)
Member, Geological Survey

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
7/8	Ching	700
"	Ellis	700
		130
		110
		100
		220

Mr. C. E. Ring
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Ring:

Enclosed are the original and five copies of a Consent to Lien and Subordination Agreement form, proposed for the signature of the owners of the subject property. The parties executing this document should fill in item 4 and the date, affix their signatures and address as indicated, and return the original and four copies to you for forwarding to this office. The sixth copy is for the owners.

Your attention is called to our letter of March 25, 1957, regarding the preparation of consents to lien and subordination agreements, and our referral letter of April 19, on the subject application. Under circumstances such as the present, a considerable amount of time will be saved if you will prepare and forward the forms to the applicant, for securing the signatures of the owners, as soon as you determine that a contract will be recommended.

Sincerely yours,

Chairman, Operating Committee
MChingsma 7/8/57
Copy to: Docket
Code 700
Mr. Ching
Adm. R. File
Operating Committee
Messrs: JHCrawford, Rm. 3643
THKillsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

Enclosures: 6

DMEA:

Member, Bureau of Mines

Member, Geological Survey

8623

Mr Ellis:

We should follow our standard procedure of sending out CSRSA with contract to Jacobs Corp.

If we send them more it implies there is an, that could be offered. Since there may be difficulties & the contract as no warranty has been found in property, we should have sign sending CSRSA with a copy of his property thoroughly explained and then we are clear about it.

JEF.

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

Mr. W. H. King
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. King:

Enclosed are the original and five copies of a Consent to Lien and Subordination Agreement form, prepared for the signature of the owners of the subject property. The parties executing this document should fill in item 4 and the date, affix their signatures and addresses as indicated, and return the original and four copies to you for forwarding to this office. The sixth copy is for the owners.

Your attention is called to our letter of March 25, 1957, regarding the preparation of consents to lien and subordination agreements, and our referral letter of April 19, on the subject application. Under circumstances such as the present, a considerable amount of time will be saved if you will prepare and forward the forms to the Applicant, for securing the signatures of the owners, as soon as you determine that a contract will be recommended.

Sincerely yours,

Chairman, Operating Committee

Enclosures: 6

APPROVED:

Member, Bureau of Mines

Member, Geological Survey

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
7/9	Ching	700
"	Ellis	700
		140

INTERIOR DEPT.
JUL 11 1957
SOLICITOR

July 9, 1957

Memorandum

To: Associate Solicitor,
Division of Mineral Resources

From: Ernest Wm. Ellis, Director
Division of Rare and Miscellaneous Metals

Subject: Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Will you kindly prepare a long-form contract between the Government and Arthur A. Cervi in accordance with the attached draft.

Also attached are eight copies of a map (Figure 2) for use with the contract.

The required Consent to Lien and Subordination Agreement form is being sent out for execution by Nora R. Buckman and Sam G. Horning and should be available by the time the contract is ready for execution.

/s/ Ernest Wm. Ellis

Ernest Wm. Ellis

MChing/gla
cc to: Mr. Ching

RECEIVED
JUL 12 1957
ASSOC. SOLICITOR
MINERAL RESOURCES

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
7/9	Ching	700
"	Ellis	700

July 9, 1957

Memorandum

To: The File

From: Michael Ching, Mining Engineer
Division of Rare and Miscellaneous Metals

Subject: Proposed Contract Costs
Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

The following costs are based upon costs suggested in the Report of Examination, dated June 25, 1957. Some modifications have been made in the price for core drilling, the allowance for supervision and labor, the number of bulldozer hours for preparation of access roads and drill sites, and in the number of core boxes. A major change was made in the allowance for supervision in order to provide supervision at all times in accordance with our usual requirement. Another major change was made in reducing the Independent Contract price for core drilling from $6.00 to $5.76 per foot. The difference of $0.24 per foot for 2,350 feet is equivalent to the estimated cost of cementing, stand-by, reaming, and casing. Thus, the over-all cost, including these items, is $6.00 per foot which is the same for the same type of drilling allowed under Docket No. DMEA-4621, Cunac Minerals, Inc.

Estimate of Costs

Independent Contracts

56 hrs. bulldozing @ $16/hr.	$ 896.00	
2,350 feet core drilling @ $5.76/ft.	13,536.00	
38 hrs. cementing and stand-by @ $7.50/hr.	285.00	
140 feet reamining and casing @ $2.00/ft.	280.00	$14,997.00

Incidental Allowance

Stage I Bulldozing

Supervision and sampling	$ 200.00	
Miscellaneous	24.00	
Total - 32 hrs. bulldozing @ $7.00/hr.		224.00

8623

Stage II Drilling

Supervision - 3 mos. @ $5x00/mo.	$ 1,500.00	
Probing equipment rental, 3 mos. @ $70/mo.	210.00	
Miscel. office expenses	76.00	
Total - 2,350 feet @ $0.76/ft.		$ 1,786.00

Fixed Unit Costs

85 chemical analyses @ $5.00 each	425.00	
104 cardboard core boxes @ $1.00 each	104.00	529.00

Estimated total cost of the project	$17,536.00
Government participation @ 75%	$13,152.00

Michael Ching

Michael Ching

DRAFT
7/9/57
MChing/gla

DOCKET COPY

MF-200
(Revised June 1954)

Docket No. DMEA-4722

Commodity Uranium

Contract No. Idm-E

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

EXPLORATION PROJECT CONTRACT[1]

It is agreed this ..... day of ....., 195...., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] Arthur A. Cervi, whose mailing address is 979 Miller Street, Lakewood 15, Colorado, 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 Map (Figure 2).

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

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

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] Lessee of [5] the mineral rights in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a [6] Lease, [7] ..... recorded in Book ....., 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: None

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

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

of the land (lessor, seller, optionor, etc.) are attached as follows: Consent to Lien and Subordination Agreement form executed by Nora R. Buckman and Sam G. Horning

(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 Uranium The work to be performed is described in Exhibit "A." The Operator on or before ..... shall commence the work, and on or before December 31, 1957 (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." See Annex II

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

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

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

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $ 17,536.00 The Government shall contribute 75 percent of the allowable costs as they are incurred in a total sum not in excess of $ 13,152.00 : *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

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

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

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

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

CATEGORY (2)—PERSONAL SERVICES.

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

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

Subcategory (c)—Labor.

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

CATEGORY (4)—OPERATING EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 13. *Changes and added provisions.*—

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By .....

.....
(Operator)

By .....

.....

I, ..., certify that I am the ..... secretary of the corporation named as Operator herein; that ..... who signed this contract on behalf of the Operator, was then ..... 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.

.....

[CORPORATE SEAL]

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

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ANNEX I

The land referred to in Article 2 of the contract consists of the SE ¼ of the NE ¼ and the NW ¼ of the NE ¼ of sec. 25, and the SW ¼ of the SE ¼ and the NW ¼ of the SE ¼ of sec. 24, in T. 3 S., R. 71 W., 6th P. M. & B., Jefferson County, Colorado. The land is shown on the map entitled, "Figure 2 Geologic and Exploration Map of the Cervi Lease, Jefferson County, Colo.," attached hereto and made a part hereof.

The land was leased by Arthur A. Cervi from Nora R. Buckman and Sam G. Horning by a lease dated March 11, 1957.

ANNEX II

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

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

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

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

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

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

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EXHIBIT "A"

Description of the Work

General Provisions

The work consists of exploration by bulldozer trenching and core drilling to test uranium-bearing shear zones in Precambrian gneiss. The general location of the work is indicated on the map (Figure 2) referred to in Annex I.

All bulldozing shall be done with a D-8 bulldozer or an equivalent unit of other make. A radioactivity survey shall be made of each trench upon completion and radioactive exposures shall be sampled by taking representative channel samples across the exposures.

All drill holes shall be cored BX or larger, and may be drilled vertical or inclined. Drilling depths will be dependent upon geological conditions revealed by the bulldozer ~~xxxxxxxxx~~ trenching, but are expected to range from 170 feet to 300 feet.

All samples from the bulldozer trenches and all core from the drill holes shall be checked for radioactivity and those indicating significant mineralization shall be split; one portion shall be analyzed chemically for uranium and one portion shall be properly labeled and stored for the use of the Government. The unmineralized samples also shall be labeled and stored for inspection by the Government. At the completion of the project, upon Government approval, all stored samples may be disposed of by the Operator.

All drill holes shall be logged geologically and probed radiometrically, and the record of such logging and probing, together with certified copies of all assay certificates shall be submitted with the Operator's monthly progress reports.

No drill hole shall be bottomed closer than 100 feet to the outer boundaries of the land described in Annex I.

No payment shall be made by the Government for incompleted drill holes.

The project shall be supervised at all times by a competent geologist or mining engineer who shall devote full time to the project work.

The location, direction, inclination, and extent of all project work are subject to the approval of the Government.

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

Stage I

Excavate 11 bulldozer trenches of varying lengths, but averaging a minimum of 250 feet, to a minimum depth of 5 feet. The trenches shall be cut at right angles to the breccia reef, or reefs, in areas where the shear zone is widest and where layers of ampibolite are transected by the reefs. The trenches shall be at least 75 feet apart, and shall give clean exposures of the shear zones for purposes of observation,

radiometric testing, and channel sampling.

Stage II

Prepare access roads and drill sites and drill 10 holes, more or less, aggregating not more than 2,350 feet, to explore at depth any mineralized zones exposed by Stage I trenching, and to extend laterally or in depth any trends noted as the drilling progresses. In general, the holes are expected to be drilled on an inclination from the east side of the northeast dripping breccia reefs to intersect the shear zone at depth. The points of intersection shall be at least 75 feet apart laterally or in depth. The location, direction, inclination and depth of the drill holes are subject to the approval of the Government.

Estimated Cost of the Project

Stage I

Actual Costs

Category (1) Independent Contracts		
32 hrs. bulldozing @ $16/hr.	$ 512.00	
Categories (2) through (7)	None	$ 512.00
Fixed Unit Costs (See Annex II)		
35 chemical analyses @ $5.00 each	175.00	
*Incidental allowance for each hour of bulldozer work - 32 hrs. @ $7.00/hr.	224.00	399.00
Estimated total cost of Stage I		$ 911.00

Stage II

Actual Costs

Category (1) Independent Contracts

2,350 feet core drilling	~~$13,536.00~~	
@ $5.76/ft.	$13,536.00	
24 hrs. bulldozing @ $16.00/hr.	384.00	
38 hrs. cementing and stand-by @ $7.50/hr.	285.00	
140 feet reamining and casing @ $2.00/ft.	280.00	$14,485.00

Fixed Unit Costs (See Annex II)

50 chemical analyses @ $5.00 each	250.00	
104 cardboard core boxes @ $1.00 each	104.00	
*Incidental allowance for each foot of hole drilled - 2,350 feet @ $0.76/ft.	1,786.00	2,140.00
Estimated total cost of Stage II		$16,625.00

Summary of Costs

Estimated total cost of Stage I	$ 911.00
" " " " " II	16,625.00
" " " " the project	$17,536.00
Government participation @ 75%	$13,152.00

* Includes all costs that might otherwise be allowable costs of the project under Categories (1) through (7) of Article 6(a), except as otherwise scheduled in Exhibit "A"

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"	Chris	700

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[illegible]
[illegible]
Washington 25, D. C.

Date July 8, 1957

DMEA Project No. 4722
DMEA Contract No.
Commodity Uranium
Name of applicant Arthur A. Cervi
Name of property Cervi Lease
Location of property Jefferson County, Colorado
Estimated cost of project $17,495.00

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee
From: James Paone, Bureau of Mines Member
Uranium Commodity Committee

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

1. Date of project document: 6/25/57 2. Date received by reviewer: 7/5/57

3. Data exists on this property known to reviewer: Yes ☐ No ☐

4. Data exists on nearby properties known to reviewer: Yes ☐ No ☐

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

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

7. Explain items marked yes above:

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

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

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

IN REPLY REFER TO:

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

July 5, 1957
Re: DMEA 4722
Arthur A. Cervi
Buckman Tract
Jefferson County, Colo.
Appl. Est. $51,990
Rec'd Est. $17,495
Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

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

Subject: Review of Field Team Report

The applicant requested assistance in searching for and testing by core drilling, the inferred intersections of westerly trending hornblende gneiss zones or layers and north to northwesterly trending fractures and breccia reefs.

No uranium bearing material has been found on the referenced property, but the examiners consider the environments are favorable, judging by conditions on properties east and northwest of the applicant's tract and recommend a staged work program, consisting of bulldozing and drilling.

The proposed work program appears to be fitted to the possibilities of the property.

I concur with the recommendation of the examiners and the Field Team.

N. E. Nelson

N. E. Nelson

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado

June 27, 1957

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Memorandum

To: Secretary to the Operating Committee, ~~DMEA~~

From: DMEA Field Team, Region III

Subject: Docket DMEA 4722 (Uranium) Arthur A. ~~Cervi~~ (Cervi Lease)
Jefferson County, Colorado - Joint Report of Examination

Enclosed are the original and three copies of the Joint Report of Examination on the subject property by LLoyd M. Greene, USBM, and M. H. Bergendahl, USGS.

The field examiners conclude that the probability for making a significant discovery is sufficiently promising to justify Government participation. Accordingly they recommend that the Applicant's work proposal be approved as modified by them to which the Field Team concurs.

The Field Team notes that the recommended work proposal may be simplified by combining Stages II and III into a single stage of work. Stage I will remain the same.

Also enclosed are nine extra copies of Figure 2 for use in the preparation of the contract.

As agreed, we will appreciate the Legal Section of the Washington Office preparing all necessary Forms MF-205, Consent to Lien, for our forwarding to the proper persons.

W H King
W. H. King
Executive Officer

Reviewed by
DMEA OPERATING COMMITTEE
7-5-57
(date).

ON-SITE EXAM. REPORT

IN REPLY REFER TO:

DMEA

DEPARTMENT OF THE INTERIOR

JUN 26 1957

REGION III

DENVER, COLORADO

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

TRANSMITTED

JUN 27 1957

June 25, 1957

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 4722 (Uranium), Arthur A. Cervi (Cervi lease), Jefferson County, Colorado

Enclosed are the original and nine copies of an examination report by L. M. Greene, U. S. Bureau of Mines, and M. H. Bergendahl, U. S. Geological Survey, covering their examination of the subject property.

The applicant proposed to explore the property by a drilling program comprising 20 holes 300 feet deep. His estimated total cost was $51,990.00.

The examiners conclude that the claims are in an area favorable to uranium deposition and they recommend a three-stage program of bulldozing and diamond-core drilling at a total estimated cost of $17,495.00, Government participation 75 percent or $13,121.25.

I concur with the program proposed by the field examiners.

A simplified contract might result from combining the proposed Stages II and III into a single stage, the prosecution of which would depend on the results of Stage I trenching.

E. N. Harshman
Member, Field Team

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Enclosures (10)
ENHarshman:mp

Reviewed by
DMEA OPERATING COMMITTEE
7-5-57
(Date)

FOR UNITED STATES GOVERNMENT USE ONLY

DMEA
DEPARTMENT OF THE INTERIOR
JUN 26 1957
REGION III
DENVER, COLORADO

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

TRANSMITTED
JUN 27 1957

JOINT REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

DMEA 4722

Arthur A. Cervi

Cervi Lease

Jefferson County, Colorado

RECEIVED
DATE

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Uranium

Reviewed by
DMEA OPERATING COMMITTEE
7-5-57
(date)

Joint Engineering and Geologic Report

by

M. H. Bergendahl, Geologist
Geological Survey

Lloyd M. Greene, Mining Engineer
Bureau of Mines

June 25, 1957

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ILLUSTRATIONS

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2. Geologic and exploration map of the Cervi Lease, Jefferson County, Colo.	13

DMEA 4722

ARTHUR A. CERVI
CERVI LEASE
JEFFERSON COUNTY, COLORADO

INTRODUCTION AND SUMMARY

On April 5, 1957, Arthur A. Cervi, of 979 Miller Street, Lakewood, Colorado, submitted an application for assistance to explore for uranium on 160 acres of fee land in sections 24 and 25, T. 3 S., R. 71 W., 6th P. M., Jefferson County, Colorado. It is leased by Mr. Cervi from Nora R. Buckman and Sam G. Horning of Golden, Colorado.

The applicant proposes to core drill twenty 300-foot holes at a total estimated cost of $51,990.00. The Government's share, at 75 percent, is $38,992.50.

This property was examined on May 22 by Lloyd M. Greene, Bureau of Mines, and M. H. Bergendahl, Geological Survey, in company with Arthur A. Cervi, the applicant.

The rocks in this area are metamorphic, of Precambrian age, and have been complexly folded. Locally, they are cut by fault zones known as "breccia reefs."

No direct evidence of ore was found on the property. However, the Yellow Queen property, which lies to the northwest and has a corner in common with the Cervi property, has produced some uranium ore. The contiguous property on the east is being worked, and the exposed rocks

in the workings are radioactive. The property lies in a mineralized area, and conditions appear favorable for discovering uranium ore.

It is recommended that a revised program be approved which would involve three stages of exploration. The first would consist of trenching with a bulldozer across the indicated fault zone. Each trench would then be traversed with a scintillator to locate any anomalies. Chemical analyses would be made of all material showing radioactivity. The second stage, contingent upon the results obtained during the first stage, would require the core drilling of approximately five holes with a total footage of 850 feet. The third stage is designed to explore any trends of ore or mineralization noted in Stage II. Stage III consists of approximately five holes with a total footage of 1,500 feet.

This would cost $787.00 for the first stage, $6,181.00 for the second stage, and $10,527.00 for the third stage. The total would be $17,495.00, and the Government's share at 75 percent would be $13,121.25.

ACKNOWLEDGMENTS

The writers have drawn freely from reports and maps by J. W. Adams, F. Stugard, and D. M. Sheridan, of the U. S. Geological Survey, who have conducted detailed geologic studies in the Golden Gate Canyon area. D. M. Sheridan was most helpful in supplying some unpublished data on the geology and ore deposits of the area. A paper by Allan G. Bird, "Uranium deposits in Golden Gate Canyon and Ralston Creek area of Jefferson County, Colorado," appearing in the Mines Magazine, March 1957, was noted in preparing this report.

Members of the Denver office of the AEC were consulted regarding the property.

LOCATION, TOPOGRAPHY, AND CLIMATE

The Cervi lease consists of 160 acres of fee land located 2 miles northwest of Golden, Colorado (fig. 1). The property consists of the SE 1/4 of the NE 1/4 and NW 1/4 of the NE 1/4 of section 25 and the SW 1/4 of the SE 1/4 and the NW 1/4 of the SE 1/4 of section 24. Both sections are in T. 3 S., R. 71 W., 6th P. M., Jefferson County, Colorado.

An excellent road, State Highway 58 (the Golden Gate Canyon road), extends northwesterly from Golden, Colorado, a distance of 3-1/2 miles to the property. A railhead of the Colorado and Southern Railroad Company is located at Golden. The nearest ore-buying depot, is Rifle, Colorado.

The area is of moderate relief, the elevations ranging from 6,700 to 7,200 feet. Golden Gate Canyon Creek, an intermittent stream, flows in a southeasterly direction diagonally across the north 60 acres of the property. It will be necessary to drill a well to obtain water to use for mining operations.

Labor and supplies may be obtained from Golden. Timber is sparse on the property and will have to be purchased. Living quarters for the miners are available in Golden or in Denver.

Winters are usually mild. Outside drilling can be carried on without long interruptions during average winters.

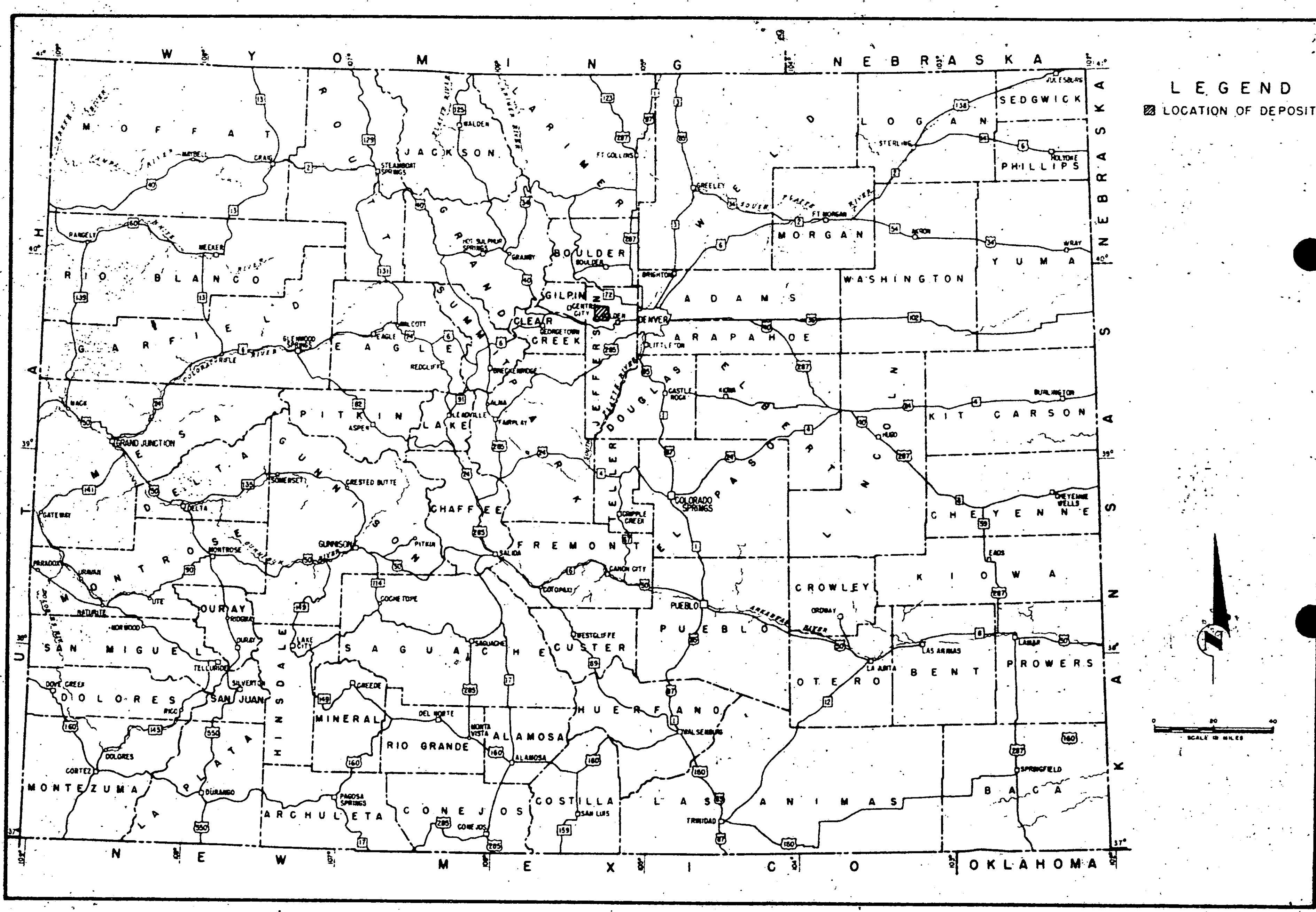

FIGURE 1 - LOCATION MAP, CERVI LEASE, ARTHUR A. CERVI, LEESEE, JEFFERSON COUNTY, COLORADO. DMEA 4722

HISTORY AND PRODUCTION

Uranium minerals were noted in the area as early as 1884, but uranium mining did not start until the Government established a market for the purchase of uranium ore.

Pitchblende and torbernite were discovered in nearby Ralston Creek by Fred Schwartzwalder in 1949, and uranium ores were found to the east of the Cervi lease in 1951 on the Buckman, Union Pacific, and Ladwig leases. In most of the deposits, uranium is associated with copper. Consequently, many of the deposits had been prospected for metals as early as 1894.

Some prospecting has been done on the Cervi lease, but no ore has been shipped.

OWNERSHIP AND EXTENT

This property, which is the SE 1/4 of NE 1/4 and NW 1/4 of the NE 1/4 of section 25, and the SW 1/4 of the SE 1/4 and the NW 1/4 of the SE 1/4 of section 24, T. 3 S., R. 71 W., 6th P. M., Jefferson County, Colorado, was leased on March 11, 1957, by Arthur A. Cervi from Nora R. Buckman and Sam G. Horning.

PRESENT STATUS

Exploration and development

Three test pits have been dug on the property in the search for uranium ore. This is the only exploratory work that has been done to date.

Mining and milling equipment

There is no mining or milling equipment on the property. The applicant stated that he intended to contract all exploratory work.

GEOLOGY

The rocks in the Golden Gate Canyon area are Precambrian in age and consist chiefly of hornblende gneiss, quartz-biotite gneiss, and quartz monzonite gneiss. The various lithologic types are layered and have been subdivided into two major units in this area; the quartz monzonite gneiss and a unit consisting of interlayered amphibolite and biotite-plagioclase-quartz gneiss (fig. 2). The amphibolite layers are relatively thin.

The rocks have all been metamorphosed and complexly folded. In the area of the Cervi lease, the schistosity and layering strike almost east-west and dip steeply to the north. The rocks are cut by northwest-trending zones of faulting, known as breccia reefs. One of these, an extension of the Hurricane Hill breccia reef, passes through the Cervi lease (fig. 2).

The nature of these breccia reefs is of interest because, according to Adams, Stugard, and Sheridan, of the U. S. Geological Survey, the uranium deposits seem to be related to them. In the Cervi lease, the breccia reef is a yellowish-brown zone of shearing, several tens of feet and locally several hundred feet wide (fig. 2). Carbonate and potash feldspar form a groundmass in which larger, partly replaced, rock fragments are cemented, and on a weathered outcrop the more resistant feldspar grains stand out in relief. The uranium deposits consist of accumulations of pitchblende in hydrothermal veins that fill fissures in the reefs. Secondary uranium minerals may be present in minor amounts and may include any of the following: torbernite, metatorbernite, autunite, and uranophane. Base metal sulfides are usually associated with the uranium minerals. The gangue is a mixture of carbonates (chiefly ankerite) and potash feldspar. The known deposits in this area, including those in the Ralston Buttes district about 6 miles to the north, are small in tonnage, but of extremely high grade. The veins are irregular in thickness; locally a thickness of only a few inches of pitchblende is of high enough grade to be minable.

The uranium occurrences in the Golden Gate Canyon district seem to be localized where the northwest-trending breccia reefs transect layers of hornblende-rich rock and also where the main faults split into complex networks of smaller faults. These conditions are present on the Cervi lease (fig. 2).

Several uranium occurrences are adjacent to the subject property. The Yellow Queen mine, to the northwest (fig. 2), is located on a branch of the main breccia reef. Two undeveloped deposits bound the property on the east (fig. 2). Both of these are in veins that fill fissures associated with the Hurricane Hill reef.

Several small radioactivity anomalies have been located on the applicant's lease. These are of very low intensity (about 2 times background) but they may be of significance in that most of the major deposits in this area showed similar low surface radioactivity.

APPLICANT'S ESTIMATED COST OF PROJECT

The applicant gives the following cost estimate for core drilling twenty 300-foot holes:

Independent Contracts:		
6,000 feet of core drilling at $6.50/ft.	$39,000.00	
Cementing and standby - 100 hours at $7.50/hr.	750.00	
400 feet reaming and casing at $2.00/ft.	800.00	
200 assays at $10.00 each	2,000.00	
Bulldozing 4.2 miles roads and 20 drill sites	5,240.00	
6,000 feet probing at $0.20/ft.	1,200.00	
Total Independent Contracts		$48,990.00
Labor and Supervision:		
Engineer 6 months at $500.00/mo.		3,000.00
Operating Materials and Supplies:		None

Operating Equipment:	None
Rehabilitation and Repairs:	None
New Buildings, Improvements, Installations:	None
Miscellaneous:	None
Contingencies:	None
Total Estimated Cost for 6,000 feet of core drilling	$51,990.00
Estimated Cost per foot	$ 8.67

RECOMMENDED PROGRAM AND JUSTIFICATIONS

The field examination showed that the applicant had not prospected his lease adequately, nor had he performed any preliminary exploration, other than three shallow test pits. His proposed exploration was based entirely on hope and assumptions, which the examiners found to be completely erroneous.

Despite the lack of preliminary work, the examiners believe that a modified exploration program is warranted on the Cervi lease for the following reasons:

1) In the Golden Gate Canyon area, uranium deposits are found where reef-like fracture zones transect rocks rich in ferromagnesian minerals--amphibolites, biotite gneiss, etc. Uranium deposits are also found where branches extend from the main shear zones. These favorable geologic conditions are present on the Cervi lease.

2) Some deposits in this area have been found by prospecting weak surface radioactivity anomalies. Several anomalies occur near the fault zone on the Cervi lease.

3) The Yellow Queen mine, a producing uranium mine, is immediately northwest of the subject property (fig. 2). Two smaller undeveloped deposits bound the applicant's property on the east. All of these deposits are situated on minor fractures adjacent to the main shear zone that passes through the Cervi lease.

The examiners recommend the following three-stage exploration program. The applicant was consulted and is agreeable to this revision of his original proposal. Stage II is contingent on the results of Stage I and is not to be started without prior authorization by DMEA. Stage III is dependent on the results of Stage II and will require DMEA authorization.

Stage I - Eleven bulldozer trenches, each 250 to 300 feet in length and at least 5 feet in depth will be cut at right angles to the breccia reef, in areas where layers of amphibolite are transected by the reef and where the shear zone is widest. Radioactive exposures in the trenches shall be sampled. The area in which these trenches are to be cut is shown on figure 2. The trenches should be at least 75 feet apart and should trend between N. 60° E. and N. 70° E. A total of 35 chemical analyses for uranium are recommended for Stage I.

Stage II - If significant mineralization or significant anomalous radioactivity is revealed by the Stage I trenching, DMEA may authorize Stage II.

This stage is to consist of a maximum of 850 feet of diamond core drilling to explore at depth any uraniferous zones encountered in the

Stage I trenching. The position, depth, bearing, and inclination of the holes will be determined by DMEA upon completion of Stage I. It is estimated that five holes may be required for this stage, but the exact number of holes will be determined when this stage is approved.

The breccia reef is believed to dip steeply to the northeast; thus all holes should be drilled from the east side and inclined fairly low angles from the horizontal in order to intercept the fractured zone at a depth of about 100 feet. Stage II holes shall be at least 75 feet apart.

A maximum of 20 chemical analyses for uranium is authorized for this stage.

Stage III - In the event that the Stage II drilling encounters favorable uranium mineralization or ore, Stage III may be authorized to further delineate laterally or in depth any trends noted in Stage II. Stage III consists of a maximum of 1,500 feet of core drilling in approximately five holes. The holes are to be drilled within the area of exploration shown on figure 2. The exact number of holes, the drill sites, the hole location, inclinations, and depths will be determined by DMEA when and if this stage is authorized. No Stage III hole shall intersect the vein closer than 75 feet to any previously drilled hole. A maximum of 30 chemical assays for uranium are authorized for Stage III.

All holes shall be cored AX or larger. Drill holes are to be probed for radioactivity and logs, both lithologic and radioactivity,

are to be prepared. Core should be scanned with a counter and those portions showing significant radioactivity should be split, one-half assayed for U_3O_8 and one-half retained for Government use. All non-radioactive core and the split of the radioactive core should be stored in core boxes.

COST OF RECOMMENDED PROGRAM

Stage I

Estimate 4 days for completion

32 hours D-8 Bulldozer at $16.00 per hour	$ 512.00	
35 Chemical analyses at $5.00 each	175.00	
4 days Supervisor at $25.00 per day	100.00	
Total Stage I		$ 787.00
Government participation Stage I		$ 590.25

Stage II

Estimate 6 weeks for completion

16 hrs. bulldozing roads for drill sites at $16.00 per hour	256.00
850 feet of core-drilling at $6.00 per foot	5,100.00
14 hrs. Cementing and standby at $7.50 per hr.	105.00
50 feet reaming and casing at $2.00 per foot	100.00
Rental, Probing Equipment, 850 feet at $0.10 per foot	85.00
20 Chemical analyses at $5.00 each	100.00
85 Core boxes at $1.00 each	85.00

Consulting Engineer or Geologist (6 days at $50.00 per day)	$ 300.00	
Bookkeeping	50.00	
Total Stage II		$ 6,181.00
Government participation Stage II		$ 4,635.75

Stage III

Estimate 2-1/2 months for completion

12 hrs. bulldozing roads and drill sites at $16.00 per hour	$ 192.00	
1,500 feet of core drilling at $6.00 per foot	9,000.00	
24 hrs. Cementing and standby at $7.50 per hr.	180.00	
90 feet reaming and casing at $2.00 per foot	180.00	
30 chemical analyses at $5.00 each	150.00	
150 core boxes at $1.00 each	150.00	
Rental, probing equipment, 1,500 feet at $0.10 per ft.	150.00	
Consulting engineer or geologist (8 days at $50.00 per day)	400.00	
Bookkeeping	125.00	
Total Stage III		$10,527.00
Government participation Stage III		$ 7,895.25
Total Amount of Contract		$17,495.00
Government's Share of Total Contract at 75%		$13,121.25

CONCLUSIONS AND RECOMMENDATIONS

Although the applicant has presented no evidence that uranium exists on his lease, the examining team feels that exploration is justified. This conclusion is based on the results of detailed work in the Golden Gate Canyon and the Ralston Buttes areas by members of the U. S. Geological Survey, who have noted that uranium deposits occur in and near the intersections of northwest-trending breccia reefs, or faulted zones, with amphibolite layers in the complexly folded Precambrian metamorphic rocks. One of the major breccia reefs, the Hurricane Hill reef, crosses the Cervi lease, and the examiners have proposed exploration where this faulted zone widens and where layers of amphibolite are cut by the reef. Other deposits that adjoin the property on the northwest and on the east, are closely related to this same breccia reef. The recommended exploration is limited to those parts of the Cervi lease where the above-mentioned geologic criteria are known to exist.

DMEA
DEPARTMENT OF THE INTERIOR
APR 25 1957
REGION III
DENVER, COLORADO

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
April 24, 1957

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: Superintendent, Denver Experiment Station, Region III

Subject: Docket DMEA 4722 (Uranium) Arthur A. Cervi (Cervi Lease, T. 3 S., R. 71 W.) Jefferson County, Colorado

The application for Arthur A. Cervi, Docket DMEA 4722, in the amount of $51,990.00, was received in this office on April 24, 1957.

A field examination will be made and a suitable report prepared by an engineer from the Denver office.

W. H. KING

~~W. H.~~ King

cc: Executive Officer (2)
EWHarshman
JFShaw

OFFICIAL FILE COPY
DMEA
RECEIVED APR 29 1957

DATE	INITIALS	CODE
4/29	C	220
"	[redacted]	700

WO (2)

OFFICIAL FILE COPY
DMEA
RECEIVED APR 25 1957

DATE	INITIALS	CODE
4/25	C	220
~~4/26~~	~~[illegible]~~	~~300~~

224 New Customhouse
Denver 2, Colorado

April 23, 1957

Memorandum

To: W. H. King)
E. N. Harshman) W/enclosures, Items 1-5 Below

From: DMEA Field Team, Region XII

Subject: Docket DMEA 4722 (Uranium) Arthur A. Cervi (Cervi Lease, T. 3 S., R. 71 W.) Jefferson County, Colorado

Enclosed is the following material relating to the subject docket.

1. Copy of application for Government assistance in exploration work under the DMEA program.
2. Memorandum of Review by James Paone, USBM.
3. Memorandum of Review by N. E. Nelson, USGS.
4. Letter of transmittal of the foregoing to this office, dated April 19, 1957, from the Chairman, Operating Committee, DMEA.
5. Routing Control Sheet

A joint report of recommendations based on available information or a joint report of findings and recommendations based on a field examination is requested.

If the field examiners view the work proposal favorably, the Applicant should be informed so that we will require his obtaining Consents To Lien from Nora R. Buckman and Sam G. Horning; likewise, inform this office at once so that the indicated forms may be prepared for signature by the persons concerned.

Twelve extra copies of each map used in the joint report which show the land to be subordinated and the location and extent of recommended work, relative to property boundaries, should be submitted if Government participation is recommended.

The Bureau of Mines' copy of the application should be returned to this office with the joint report of examination. Mr. Harshman will forward the Survey's copy of the application to the Washington office.

Original signed by
E. N. HARSHMAN

By E. N. Harshman
Acting Executive Officer

Enclosures

MRM:eh
cc: Sec. Op. Comm. (2)
King
Docket
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4-17	Ching	700
4-17	Eldy	700
4/18	Selfridge	130
"	Johnson	110
"	Mattenson	100
		JHB
		700
4/22	C	220

APR 19 1957

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Arthur A. Cervi
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Harshman:

The subject application is being referred to you for investigation, a field examination if warranted, and recommendations.

Enclosed for your information are memoranda, dated April 15, 1957, by James Paone, USGS, and N. E. Nelson, USGS, relating to the application. Also enclosed are two copies of the application for the use of the Field Team.

If a contract appears likely, Consents to Lien and Subordination Agreements should be obtained from Nora R. Buckman and Sam G. Horning.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

Enclosures

APPROVED:

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

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

MChing/dlm 4-17-57
cc to: Mr. Ching
Admr.'s Reading File
Operating Committee
THKiilsgaard, Rm. 5224

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4-17	Ching	700
4-17	Eliz	700
4/19	Jeffrey	130
"	Johnson	110
"	Mattenson	100
		220

Lamb
Kilgard

APR 19 1957

Mr. Arthur A. Cervi,
979 Miller Street
Lakewood 15, Colorado

Re: Docket No. DMEA-4722 (Uranium)
Cervi Lease, T. 3 S., R. 71 W.
Jefferson County, Colorado

Dear Mr. Cervi:

The application for assistance in exploring your property, under the captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. It has been referred to:

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

The Regional Office will contact you in regard to your project if additional information is required.

Sincerely yours,

C. O. Mittendorf (fw)

Administrator

MChing/dlm 4-17-57
cc to : Mr. Ching
Admr's Reading File
DMEA Field Team, Region III (2)

8623

IN REPLY REFER TO:

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

OFFICIAL FILE COPY
DMEA
RECEIVED APR 16 1957

DATE	INITIALS	CODE
4/16	C	R20
4/16	~~[illegible]~~	700
	Ching	

Complete

April 15, 1957
Re: DMEA 4722
Arthur A. Cervi
Buckman Tract
Jefferson County, Colorado
$51,990.00 - Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

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

Subject: Review of application

The applicant requests assistance in searching for and testing the intersections of westerly bearing hornblende gneiss zones or reefs and north to northwesterly fractures and breccia reefs by core drilling.

Based on the experience in mines and prospects to the east and west the intersections are likely places to look for uranium mineralization, principally pitchblende. Some of the occurrences have been worth mining. Five or six hornblende gneiss reefs have been traced to the sidelines and into the referenced tract and probably a fault zone or breccia reef has been located. The hillside is steep and opportunities for hand or bulldozer stripping before drilling appear good, but no radioactive locality seems to have been found.

The widest hornblende gneiss reef mapped to date in the project property is about 70 feet wide, which would be the maximum length of an ore shoot in the fault zone. The total width of the 5 reefs to be drilled is about 195-200 feet. Another reef, 35 feet wide, crosses the north end of the property.

Referral of the application to the Field Team is recommended.

N. E. Nelson

N. E. Nelson

OFFICIAL FILE COPY DMEA RECEIVED APR 15 1957		
DATE	INITIALS	CODE
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"	~~Ellis~~	700
	Ching	

[illegible]

Date April 15, 1957

DMEA Report No. 4722
DMEA Contract No.
Commodity Uranium
Name of Applicant Arthur A. Cervi
Name of Property Buckman property
Location of property Jefferson, Colo.
Estimated cost of project $51,990.00

Ernest William Ellis, DMEA Member
Uranium Commodity Committee
James Paone, Bureau of Mines Alternate Member
Uranium Commodity Committee

[illegible] Application

[illegible] (Application, Field Item Report, etc.)

[illegible] 4/11/57. Date received by [illegible] 4/12/57

[illegible] report on this property known to reviewer: Yes [ ] No [ ]

[illegible] reports on nearby properties known to reviewer: Yes [ ] No [ ]

[illegible] action contingent on post production: Yes [ ] No [ ]

[illegible] pertinent factors known to reviewer: Yes [ ] No [ ]

[illegible] items marked yes above:

[illegible] as matters of special consideration:

a. [illegible] [ ]
b. [illegible] [ ]
c. Evidence of [illegible] [X]
d. [illegible] [ ]
e. Proposed exploration method [ ]
f. Alternate exploration method [ ]
g. Costs [ ]
h. _____ [ ]

[illegible] recommend:

a. [illegible] from applicant [ ]
b. Offer to Field Item [X]
c. [illegible] [ ]
d. [illegible] with Field Item [ ]
e. Disagree with Field Item [ ]
f. Suggest alternate plan [ ]
g. Request another opinion [ ]
h. Approval [ ]
i. Consult with Mr. _____ at _____ AEC office.

[illegible] is: (Use back of page if necessary)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
Washington 25, D. C.

April 11, 1957

Mr. Arthur A. Cervi,
979 Miller Street,
Lakewood 15, Colorado.

Subject: DMEA 4722
Re: Exploration Assistance

Dear Mr. Cervi:

Your application for exploration assistance, dated April 5, 1957, submitted to our office at Denver, Colorado, has been assigned Docket Number DMEA 4722 and referred to the Rare & Miscellaneous Metals Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Chief
Operations Control and
Statistics Division

Copy to: Region III.

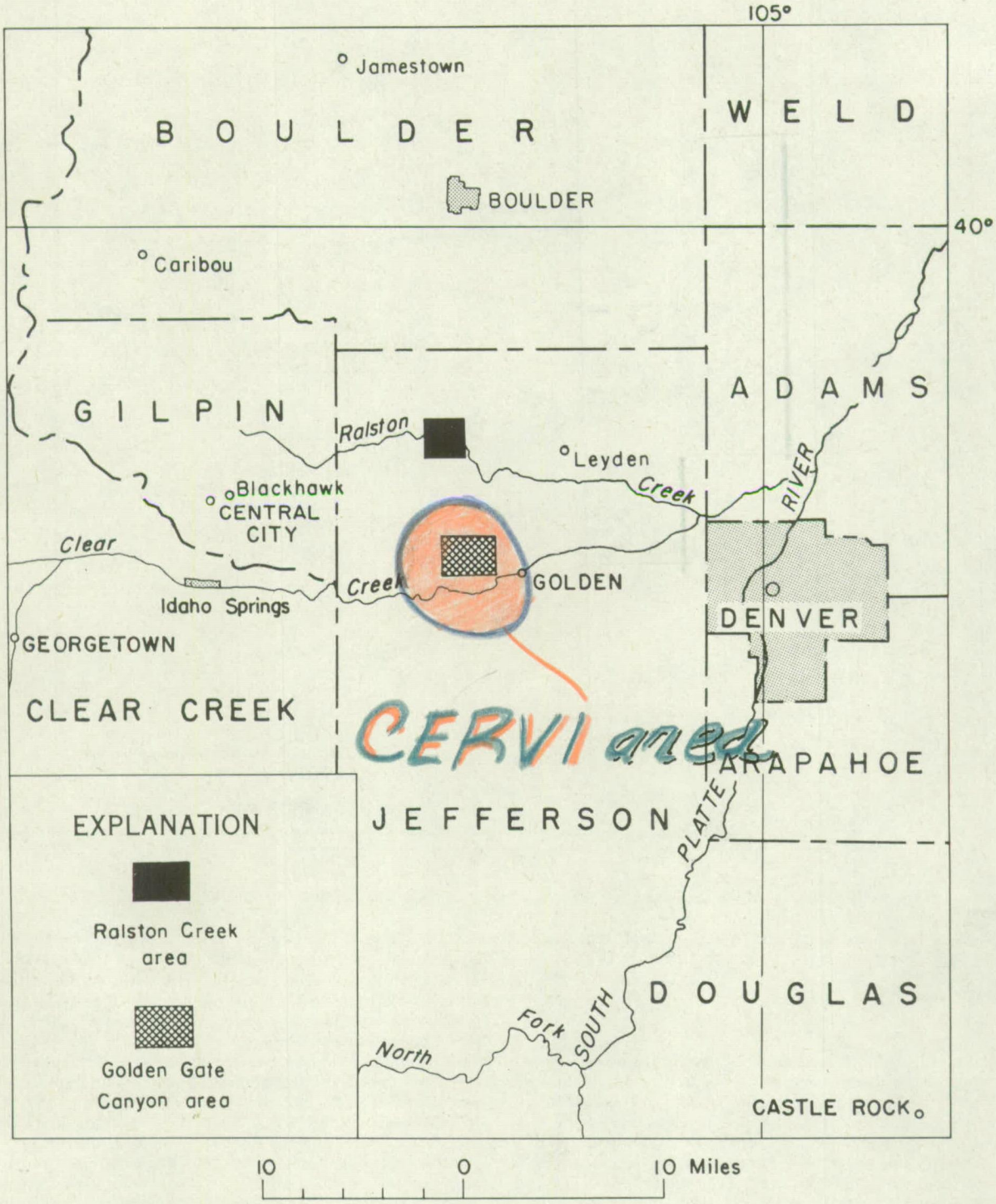


Figure 1.—Index map of central Colorado showing location of Golden Gate Canyon and Ralston Creek areas.

17

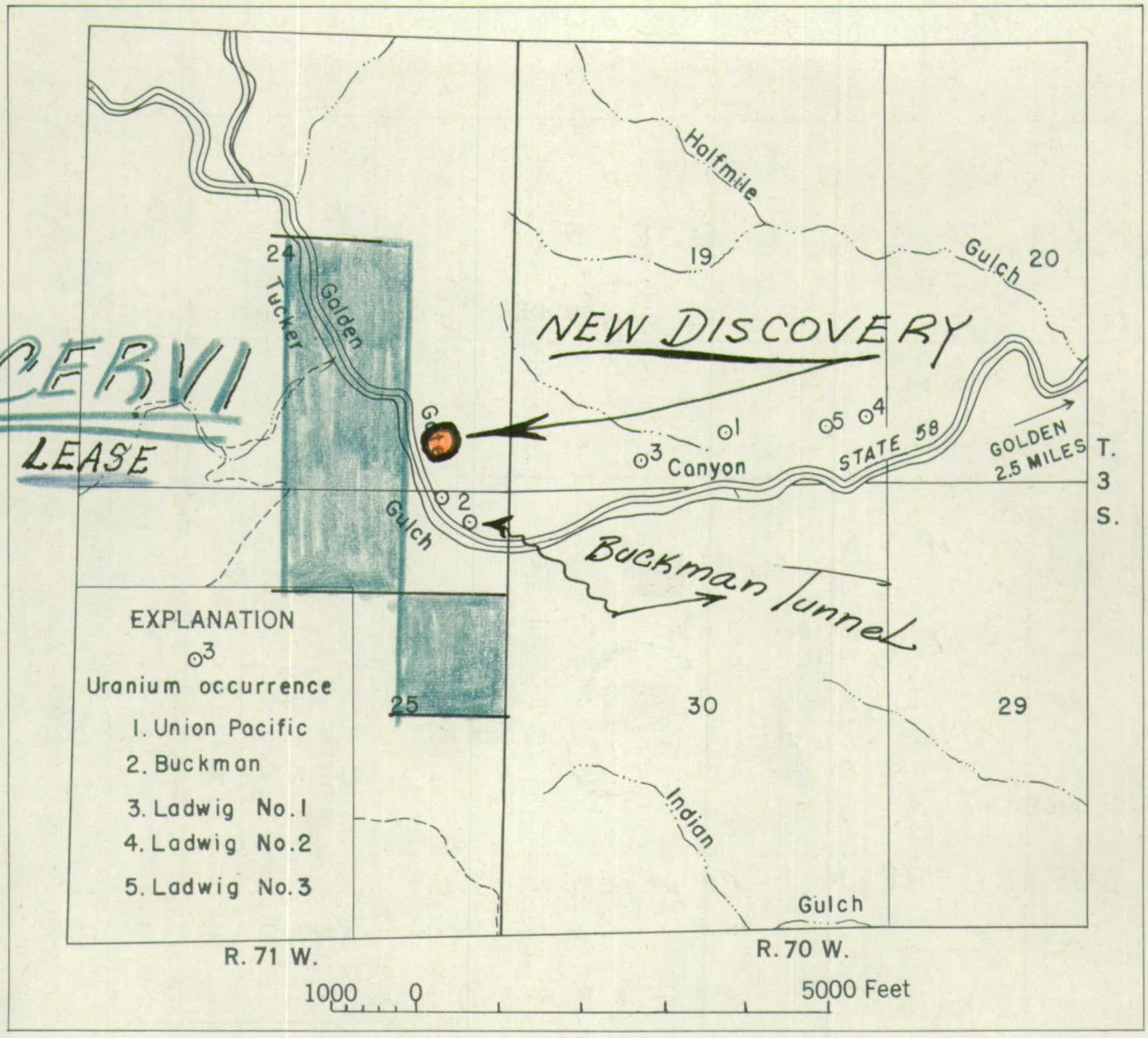


Figure 2.—Index map showing known uranium occurrences in Golden Gate Canyon area, Jefferson County, Colorado.

been observed at these localities. Analyses of samples from the Golden Gate Canyon area are shown in table 1.

Union Pacific prospect

Uranium in the Golden Gate Canyon area was discovered at the Union Pacific prospect (fig. 2), which is on land owned by John Pearce and Thomas Pearce of Golden, Colo. Mineral rights to the property are held by the Union Pacific Railroad Company. The deposit was at one time prospected, presumably for copper, by an inclined shaft, 57 feet deep, from which a short drift extends a few feet into the right wall at the 30-foot level. In December 1951 the shaft was dewatered by the Union Pacific Railroad Company for examination by their geological staff. At that time, samples were collected and the walls of the shaft were mapped by the Geological Survey.

Pitchblende and copper minerals occur along the hanging wall of a 10- to 15-foot fault zone that strikes N. 15°-20° W. and dips about 35° NE. The strike of the fault zone is approximately at right angles to the foliation of the enclosing hornblende gneiss and biotite schist. The fault consists of hanging-wall and footwall zones of sheared and bleached rock and a central unit of wholly or partly cemented breccia. The cemented breccia is composed essentially of small bleached fragments of gneiss in a fine-grained groundmass of ankerite and minor quantities of an unidentified potash feldspar. The ankerite-rich breccia is a dense, light-gray rock that oxidizes readily to an earthy limonitic gossan. The gossan is well exposed along the south wall of the opencut, where it appears as the dark band in the lower part of the breccia zone.

Except within the limits of the opencut, the fault is concealed in the mapped area, and its position outside the opencut can only be inferred (fig. 3). However,

18

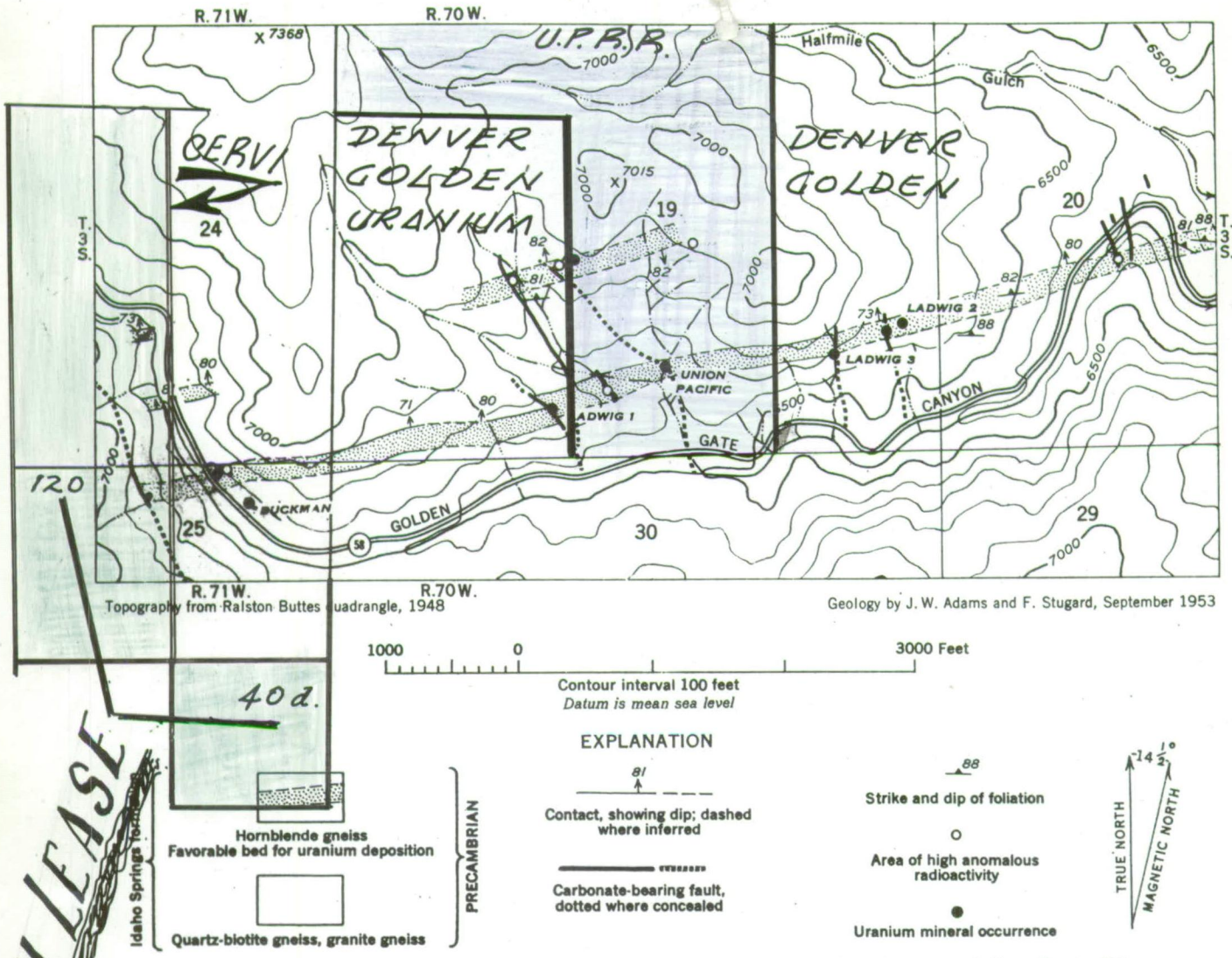


FIGURE 14.—Geologic sketch map showing distribution of uranium occurrences in the Golden Gate Canyon area, Jefferson County, Colo.

pitchblende and hematite have been noted coating crystals of potash feldspar that have grown from the walls of fractures. The deposition of potash feldspar, pitchblende, hematite, and ankerite was followed by the introduction of sulfides which in turn gave way to a final carbonate stage.

The first process in the formation of the ore is thought to have been propylitization of the hornblende gneiss. This resulted in the partial conversion of hornblende to chlorite and some sericitization of plagioclase. The sulfide ion concentration of the solutions was probably low as very little pyrite was formed from the breakdown of the iron-bearing minerals, thus permitting any excess iron to deposit as hematite.

Following or perhaps during propylitization, solutions were introduced that raised the potash content of the gneiss from less than 1 to slightly more than 3 percent (fig. 16). The added potash is in part contained in small clear crystals of orthoclase that line fractures in the rock, but as much or more potash may have replaced the soda of the original plagioclase. This feldspathization of the plagioclase is supported by the distribution of potassium as shown by staining and also by the decreased soda content of the gneiss after alteration (fig. 16).

The precipitation of uranium followed potassic alteration and coincided with the beginning of a carbonate phase. This is shown by the deposition of pitchblende on orthoclase crystals and its intergrowth with ankerite. The precipitation of uranium is thought to have been caused by the reduction of U^{+6} ions to U^{+4} by the Fe^{+2} ions released by the breakdown of hornblende and chlorite. J. W. Gruner (1952) has experimentally produced pitchblende and hematite by reduction of U^{+6} by Fe^{+2}; hematite formed only when the pitchblende was synthesized in an H_2S-free environment. In the ore deposit pitchblende and hematite (later ankerite) were deposited at essentially the same time, before the

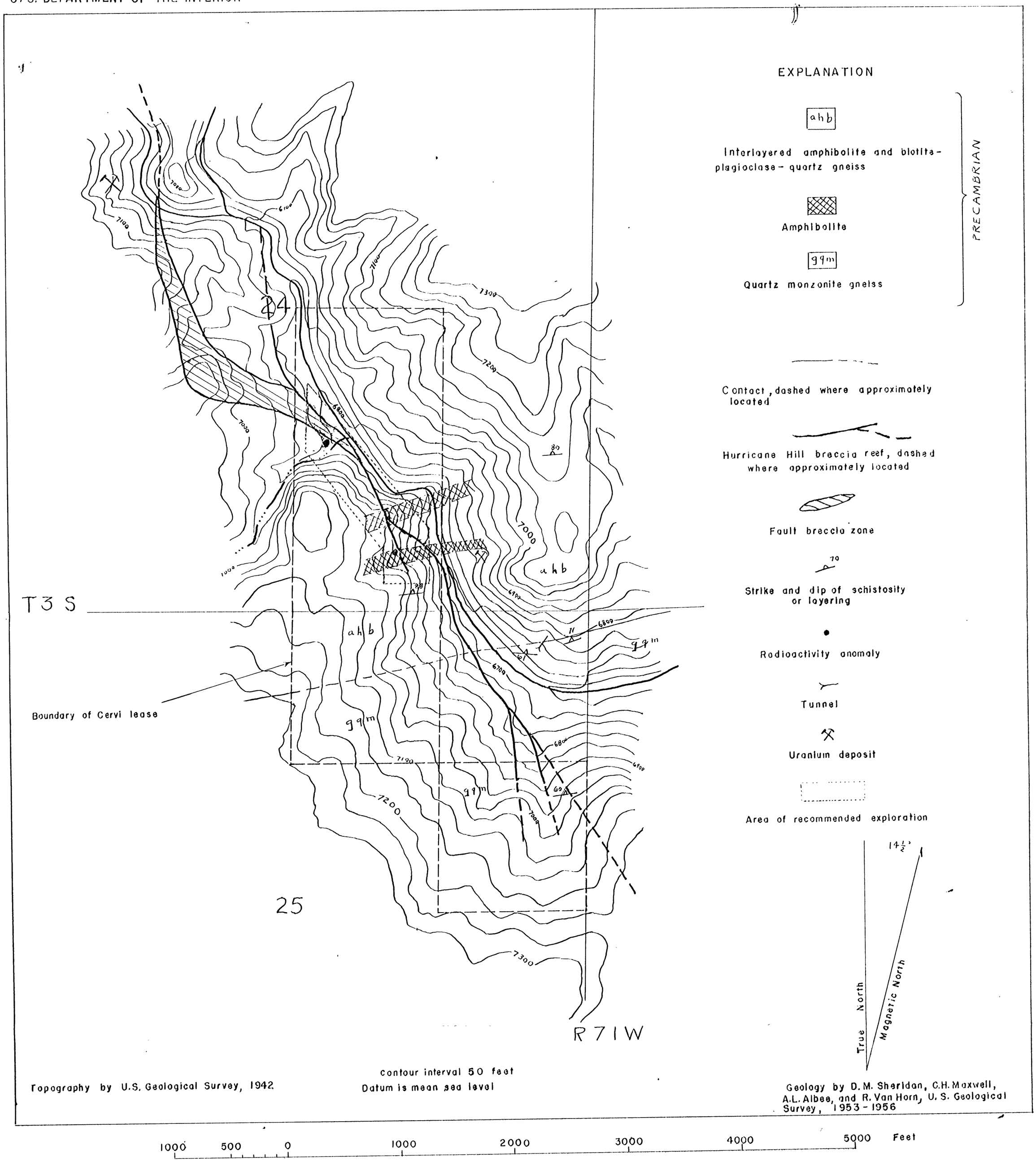
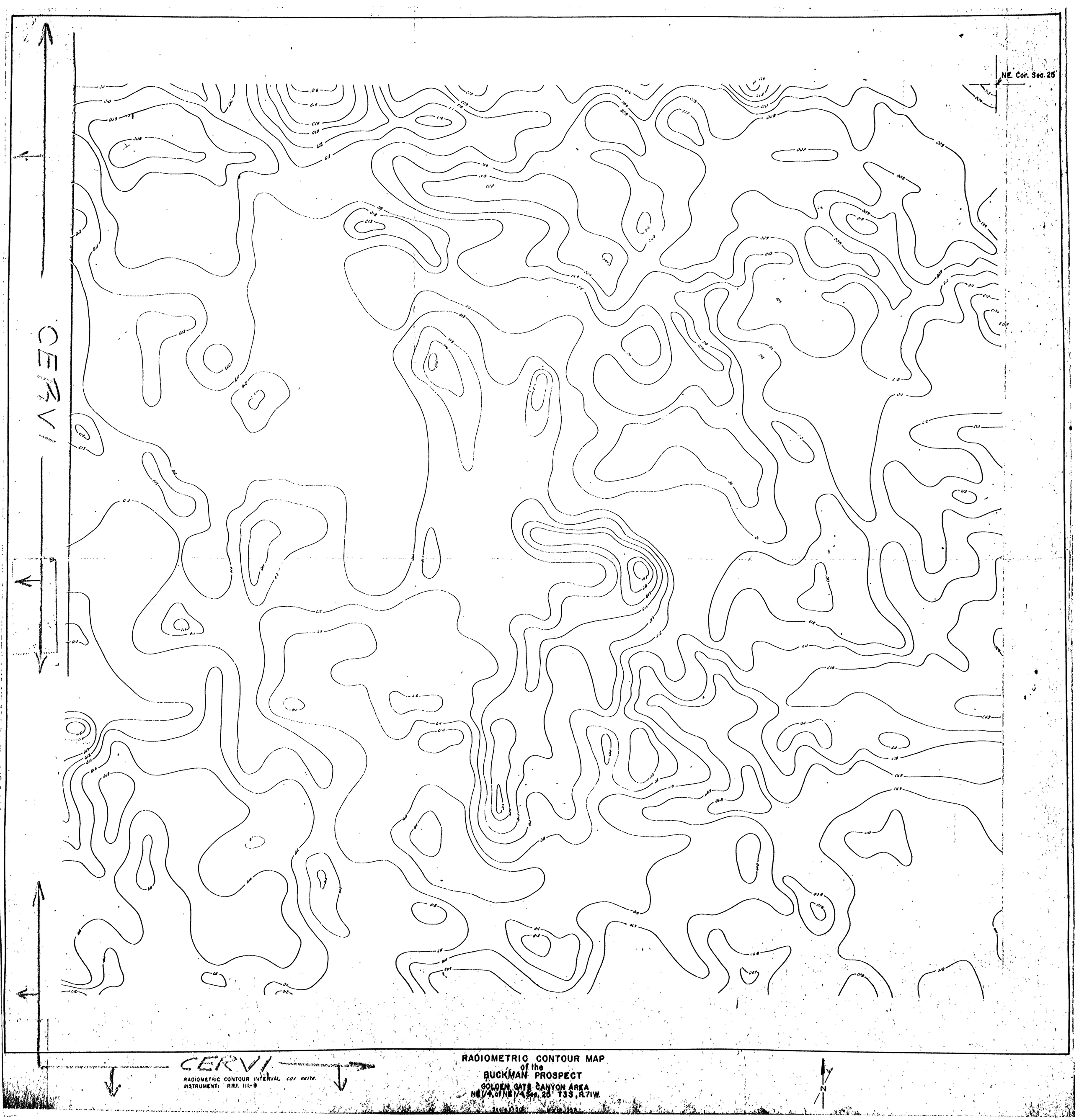


FIGURE 2 GEOLOGIC AND EXPLORATION MAP OF THE CERVI LEASE, JEFFERSON COUNTY, COLO.


NE. Cor. Sec. 25
CERVI
RADIOMETRIC CONTOUR INTERVAL .001 mr/hr.
INSTRUMENT: R.R.I. III-B
RADIOMETRIC CONTOUR MAP
of the
BUCKMAN PROSPECT
GOLDEN GATE CANYON AREA
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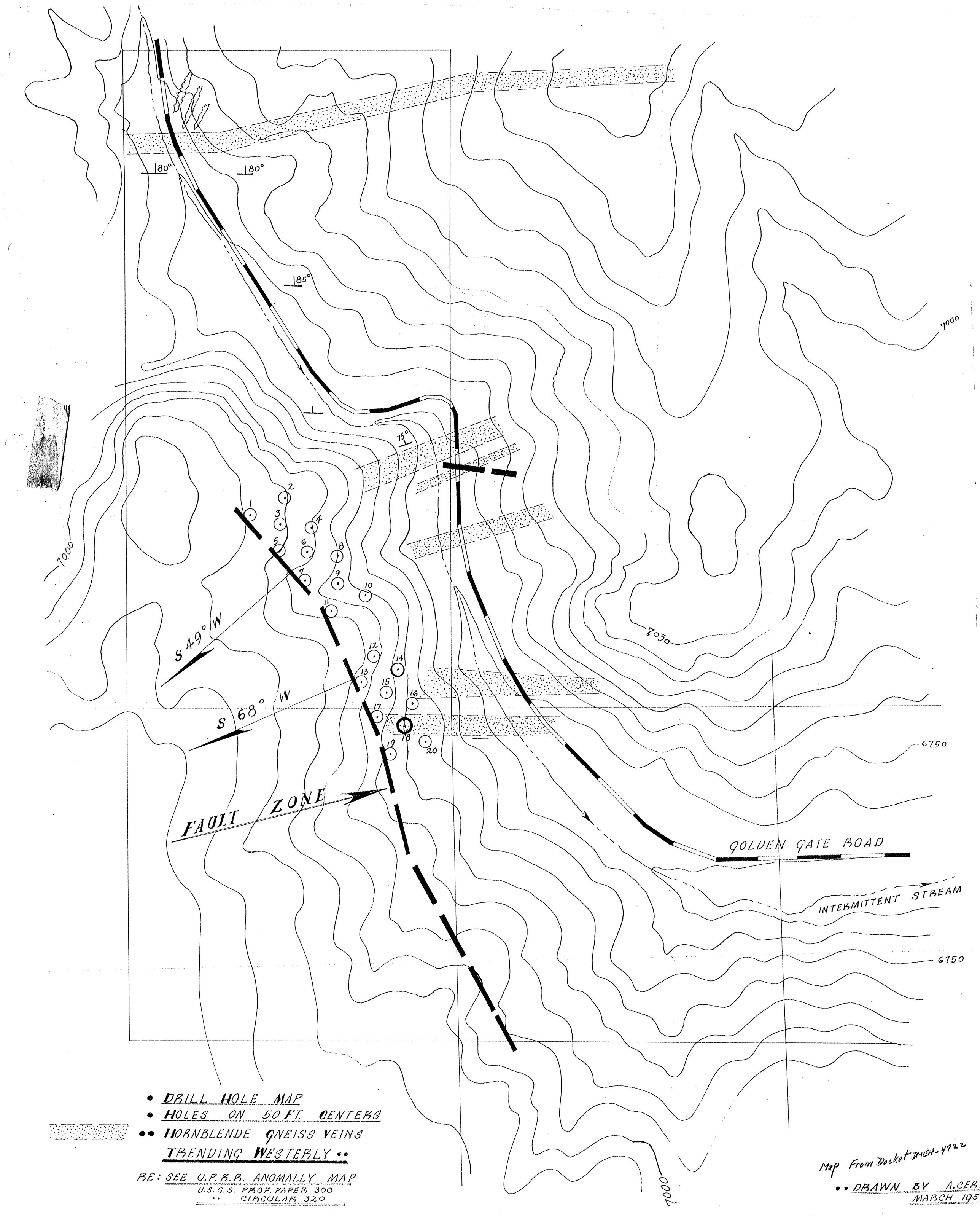
80°
80°
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7000
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6750
6750
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S 49° W
S 68° W
FAULT ZONE
GOLDEN GATE ROAD
INTERMITTENT STREAM
1
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• DRILL HOLE MAP
• HOLES ON 50 FT. CENTERS
•• HORNBLENDE GNEISS VEINS TRENDING WESTERLY ••
RE: SEE U.P.B.B. ANOMALLY MAP
U.S.G.S. PROF. PAPER 300
•• CIRCULAR 320
Map From Docket IMSA-4922
•• DRAWN BY A.CER.
MARCH 195

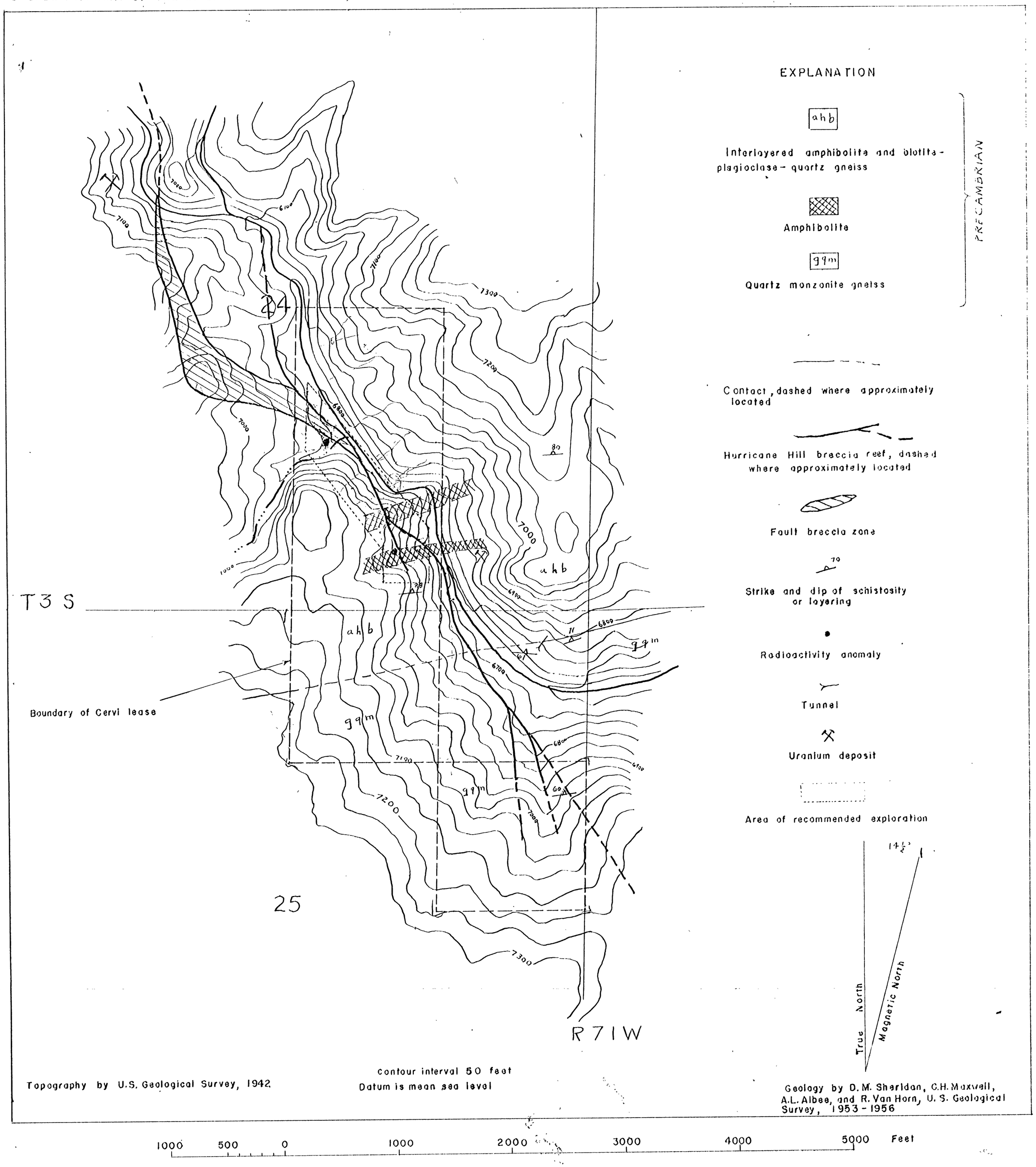
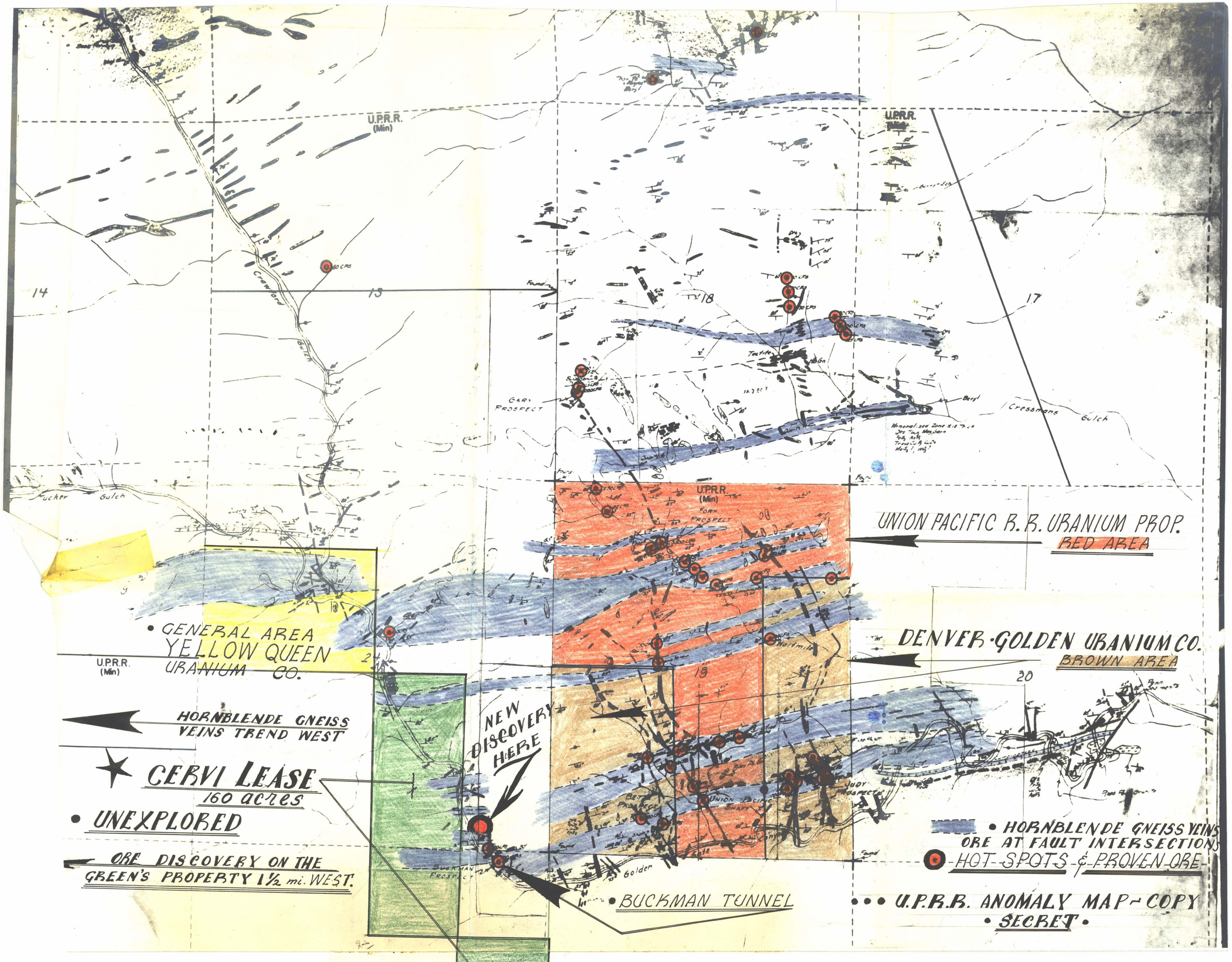


FIGURE 2 GEOLOGIC AND EXPLORATION MAP OF THE CERVI LEASE, JEFFERSON COUNTY, COLO.


U.P.R.R. (Min)
U.P.R.R.
14
13
18
17
Crawford Gulch
Tucker Gulch
GARY PROSPECT
Crossmans Gulch
U.P.R.R. (Min)
FORM PROSPECT
20
UNION PACIFIC R.R. URANIUM PROP.
RED AREA
• GENERAL AREA
YELLOW QUEEN
URANIUM CO.
U.P.R.R. (Min)
DENVER-GOLDEN URANIUM CO.
BROWN AREA
19
20
HORNBLENDE GNEISS
VEINS TREND WEST
NEW DISCOVERY HERE
CERVI LEASE
160 acres
• UNEXPLORED
ORE DISCOVERY ON THE
GREEN'S PROPERTY 1½ mi. WEST.
BUCKMAN PROSPECT
Golden
• BUCKMAN TUNNEL
• HORNBLENDE GNEISS VEINS
ORE AT FAULT INTERSECTIONS
HOT-SPOTS & PROVEN ORE
• • • U.P.R.R. ANOMALY MAP - COPY
• SECRET •