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DEC 15 1955

MF-200
(Revised June 1954)

Docket No. DMEA 3655

Commodity Uranium

Contract No. Idm-E 899

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

EXPLORATION PROJECT CONTRACT[1]

It is agreed this NOV 28 1955 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] Melvin C. Bowles and A. L. Heflin, partners, doing business as Bowles-Heflin Mining Company, whose mailing address is 1200 Chester Street Aurora, 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 entitled 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 San Miguel, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] lessee of [5] 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 223, page 102, official records of said County; and assigned to Bowles-Heflin Mng Co. on January 3, 1955.

(2) The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: see (c)

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

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

of the land (lessor, seller, optionor, etc.), are attached, as follows: Owner's Consent to Lien, Subordination Agreement of Sub-Lessees

(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 January 10, 1956, shall commence the work, and on or before May 1, 1956 (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall either have completed the work or shall have incurred allowable costs (see Article 6) in a sum not less than the estimated total allowable cost set forth in Exhibit "A.", except as provided in Exhibit "A" with respect to Stage 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 $19,228.00 The Government shall contribute 75 percent of the allowable costs as they are incurred in a total sum not in excess of $14,421.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

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

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

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

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

CATEGORY (2)—PERSONAL SERVICES.

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

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

Subcategory (c)—Labor.

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

CATEGORY (4)—OPERATING EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 13. *Changes and added provisions.*—
Categories (2) through (7) of Article 6(a) are deleted.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By Frank E. Johnson

ACTING Administrator, Defense Minerals Exploration Administration

MELVIN C. BOWLES and
A. L. HEFLIN

d/b/a BOWLES-HEFLIN MINING COMPANY
(Operator)

By Melvin C. Bowles (Partner)

By A. L. Heflin (Partner)

Indexed 11/22/55
Dunyes
"Appd. Sol. Off."
— Murphy
Ellis
Talbot
Martin

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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EXPLORATION PROJECT CONTRACT
MELVIN C. BOWLES and A. L. HEFLIN, d/b/a
BOWLES-HEFLIN MINING COMPANY

DOCKET NO. DMEA-3655

ANNEX I

The land referred to in Article 2 of the contract is situated as follows:

North half of Northwest quarter (N½ NW¼) and the Southeast quarter of the Northwest quarter (SE¼ NW¼) of Section 26, and the Northeast quarter of the Northeast quarter (NE¼ NE¼) of section 27, all in Township 43 North, Range 19 West, New Mexico Principal Meridian and Base Line, San Miguel County, Colorado

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DEC 15 1955

EXPLORATION PROJECT CONTRACT
MELVIN C. BOWLES and A. L. HEFLIN
d/b/a BOWLES-HEFLIN MINING COMPANY

DOCKET NO. DMEA-3655

EXHIBIT 'A

Description of the Work

The object of this project is to discover uranium ore deposits that might occur in the upper sandstone lens of the Salt Wash member of the Morrison formation which underlie the property described in Annex I. The method of exploration shall consist of core and plug drilling. To penetrate the ore-bearing sandstone lens will require drill holes ranging from 120 feet to 370 feet in depth.

The work shall be performed in two successive stages The Operator shall perform all the work under Stage I and, if in the opinion of the Government the results of the completed work under Stage I warrants further work, shall perform so much of the Stage II as is approved in advance in writing by the Government.

Stage I

The Operator shall bulldoze access roads and prepare nine (9) drill sites. The approximate locations of the drill sites are indicated on the attached map entitled "Figure 2. Map showing proposed hole locations on J. V. Eaverson lease ...." One (1) hole shall be drilled from each drill site. The total footage allowed for drilling under Stage I shall not exceed 1890 feet provided, however, that if the footage allowed under Stage I of this contract is not sufficient to complete the nine (9) holes authorized for Stage I, the Operator may if he first obtains written Government approval, use such part of the footage authorized for Stage II as may be necessary to complete the Stage I drilling.

Not more than 60 chemical analyses shall be made to determine the U_3O_8 and V_2O_5 content of samples procured during Stage I drilling.

Stage II

Stage II shall consist of bulldozing access roads and preparing not in excess of eighteen (18) drill sites in the vicinity of favorable and/or mineralized holes drilled during Stage I. One hole shall be drilled from each of these sites. In this Stage II those

holes drilled as offsets to Stage I holes in the west half of the northwest quarter of section 26 shall not be closer than 50 feet to any other drill hole; however, the offset holes drilled in the northwest quarter of the northwest quarter of section 26 and in the northeast quarter of the northeast quarter of section 27 shall not be drilled closer than 100 feet to any other drill hole. The total footage allowed for drilling under Stage II shall not exceed 3780 feet, provided that if any footage allowed under Stage II is used for Stage I drilling, such footage shall be deducted from the footage allowed for Stage II.

Not in excess of one hundred and twenty (120) chemical analyses shall be made to determine the U_3O_8 and V_2O_5 content of samples procured during Stage II drilling.

General Provisions.

1. No hole drilled in either Stage I or Stage II shall be closer than 100 feet to the outer boundaries of the land described in Annex I of this contract.

2. A supervising geologist or mining engineer and one helper shall be employed full time while work is in progress under this contract.

3. The location of access roads and drill holes, the method of drilling and probing drill holes, and the method of taking and storing samples shall be subject to Government approval.

4. The Government shall not reimburse the Operator for the cost of any uncompleted hole, or any hole that bottoms with less than AX size core.

5. All holes shall be plug drilled to the inferred Brushy Basin-Salt Wash contact, from which horizon the holes shall be cored for a minimum depth of 120 feet, or until they penetrate into the underlying red mudstone which indicates the lower contact of the upper ore-bearing sandstone lens of the Salt Wash member of the Morrison formation.

6. All holes shall be logged geologically and probed for radioactivity. Records of such logging and probing, together with assay certificates shall be submitted to the Government with the Operator's monthly progress report.

7. Mineralized portions of the core shall be split, the Operator using one-half for assay purposes. The other half shall be stored for Government use with the rest of core in boxes properly labeled as to drill hole number. Markers shall be placed at proper places in the sections of core to indicate the depth represented. If feasible, the length of core used for an individual sample should not exceed 12 inches.

8. In Stage II no hole shall be started unless there is sufficient footage remaining in this contract to complete the hole to the above-mentioned target horizon, or unless the Operator agrees in writing to complete such a hole at his own expense.

Estimated Costs of the Project

Stage I

Actual Costs: 1/

Category (1) Independent Contracts

1)	Access roads and drill sites, D-6 bulldozer or equivalent 24 hours work @ $12.50/hr. 2/	$ 300.00
	Moving bulldozer on and off property - $30.00 each way	60.00
2)	Plug-bit (non-core) drilling 670 feet @ $1.75/ft.	1,172.50
3)	Core drilling, AX size or larger, 1220 feet @ $2.73/ft.	3,330.60

Fixed Unit Costs:

4)	Incidental allowance for each foot of drilling completed 1890 feet @ $0.67/ft. 3/	1,266.30
5)	60 Chemical analyses for U_3O_8 and V_2O_5 content of samples @ $5.00/sample	300.00
		$6,429.40

Stage II

Actual Costs: 1/

Cagegory (1) Independent Contracts

1)	Access roads and drill sites, D-6 bulldozer or equivalent 48 hours work @ $12.50/hr. 2/	$ 600.00

	Moving bulldozer on and off property - $30.00 each way	$ 60.00
2)	Plug-bit (non-core) drilling 1340 feet @ $1.75/ft.	2,345.00
3)	Core drilling, AX size or larger, 2440 feet @ $2.73/ft.	6,661.20

Fixed Unit Costs:

4)	Incidental allowance for each foot of drilling completed 3780 feet @ $0.67/ft. 3/	2,532.60
5)	120 Chemical analyses for U_3O_8 and V_2O_5 content of samples @ $5.00/sample	600.00
		$12,798.80

SUMMARY

Total Estimated Cost Stage I	$ 6,429.40
Total Estimated Cost Stage II	12,798.80
Total Estimated Cost of the Project (rounded)	$19,228.00
Government Participation at 75 percent	$14,421.00

Stages I and II

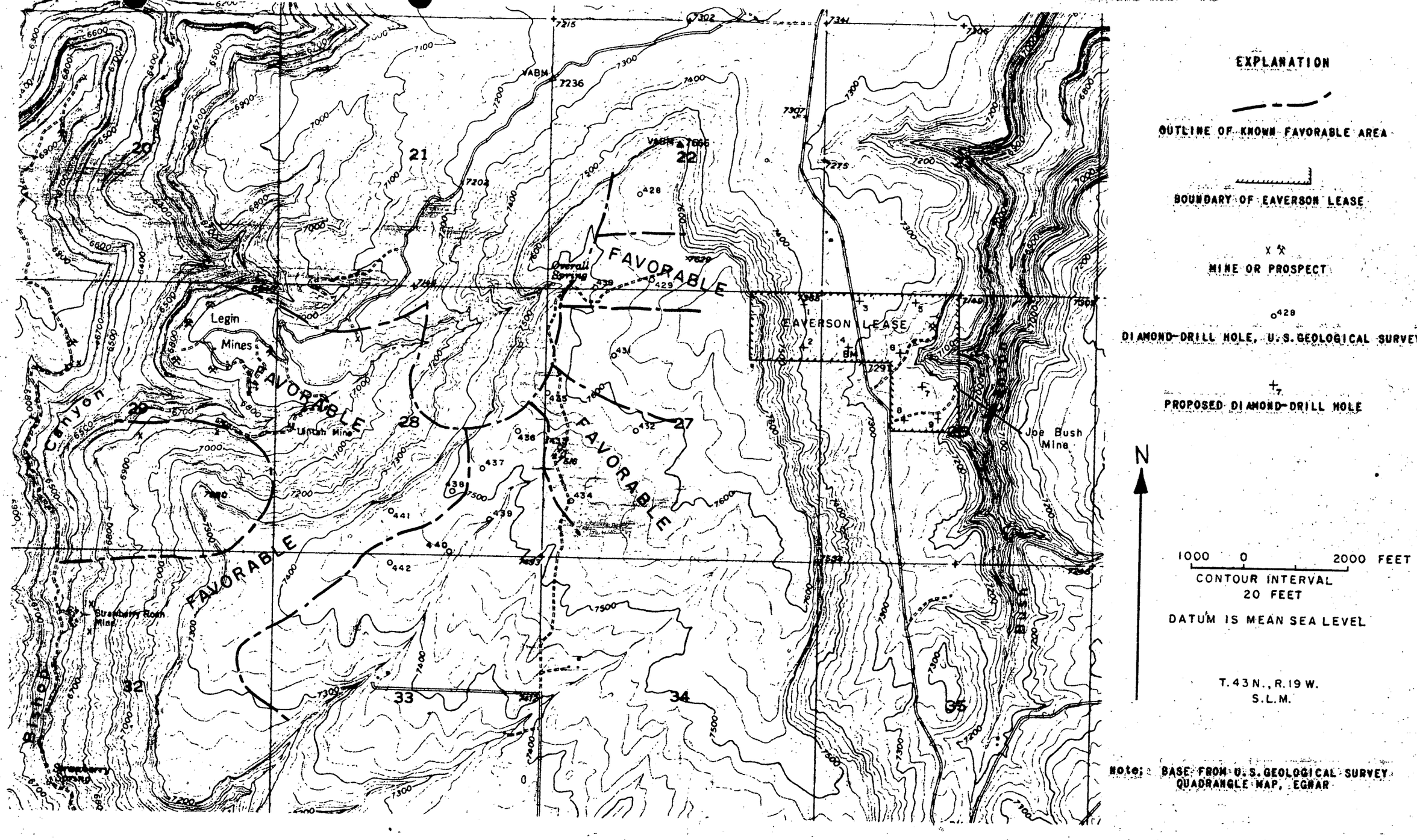
1/ Categories (2) through (7) of Article 6(a) of the contract form do not apply to this contract.

2/ Includes all costs whatsoever applicable to construction of access roads and drill sites.

3/ Includes all costs whatsoever that are not included in the estimates for access roads, drill site preparation, drilling, and the fixed unit cost for analyses, and includes such items as supervision, engineering, sampling, probing drill holes, equipment rental, materials, supplies, etc.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET NO. 3655



Note: BASE FROM U.S. GEOLOGICAL SURVEY QUADRANGLE MAP, EGNAR

Figure 2. MAP SHOWING PROPOSED HOLE LOCATIONS ON J. V. EAVERSON LEASE AND TRENDS OF FAVORABLE GROUND IN VICINITY, BOWLES-HEFLIN MINING CO. SAN MIGUEL COUNTY, COLORADO

RECEIVED

OCT 3 1 1955

MF-201
Revised March 24, 1955

For Government's Use Only
EXPLORATION PROJECT CONTRACT
Operator_____
Docket No. DMEA-_____
Contract No. Idm-E_____
Contract Date_____

SUBORDINATION AGREEMENT

To the United States of America:

Referring to that certain land in the County of SAN MIGUEL, State of COLORADO, described as follows:1/

North one-half of Northwest one-fourth and Southeast one-fourth of the Northwest one-fourth of Section 26, and the Northeast one-fourth of the Northeast one-fourth of Section 27, all in Township 43 North, Range 19 West, New Mexico P. M.

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. Subordinates whatever right, claim, lien or encumbrance the undersigned may have in or against the land to whatever interests, equities, and rights the Government may acquire under the contract (a) with respect to purchased property in or upon the land to the cost of which it has contributed, including the right to dismantle, sever, and remove it from the land; and (b) with respect to a percentage royalty on production from the land and a lien to secure the payment thereof; and

2. Undertakes and agrees (a) neither to commit any act nor assert any claim in conflict with the provisions of this Subordination Agreement; and (b) to give advance notice of this Subordination Agreement to any transferee of the right, claim, lien, or encumbrance hereby subordinated; and

3. Consents to all amendments and assignments of the contract without notice thereof, and agrees that this Subordination Agreement shall extend and apply thereto.

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

(OVER)

X Dated this 30th day of August, 1955.

X John [illegible] [Seal]

X S. M. Sisk [Seal]

[Seal]

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

_____

[Corporate Seal]

MF-203
Revised March 24, 1955

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

CONSENT TO LIEN

RECEIVED
DEC 15 1955

To the United States of America:

Referring to that certain land in the County of SAN MIGUEL, State of COLORADO, described as follows:1/

North one-half of Northwest one-fourth and Southeast one-fourth of the Northwest one-fourth of Section 26, and the Northeast one-fourth of the Northeast one-fourth of Section 27, all in township 43 North, Range 19 West, New Mexico P. M.

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;2/ and represents and undertakes that there are no claims, liens, or encumbrances upon the undersigned's right, title, or interest in the land prior to that hereby granted to the Government other than the following:3/

None

3. Undertakes and agrees neither to commit any act nor assert any claim in conflict with the provisions of this Consent to Lien; and to give advance notice of the Government's rights under this Consent to Lien to any subsequent transferee, mortgagee, encumbrancer, or lessee of any of the undersigned's right, title, or interest in the land; and

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

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

3/ Write "none" if that is the case. Do not leave lines blank.

4. Consents to all amendments and assignments of the contract without notice thereof, and agrees that this Consent to Lien shall extend and apply thereto.

5. Added provision: None

Dated this 25th day of October, 1955.

John Griffin [Seal]

J. W. Earenson [Seal]

[Seal]

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

_____

[Corporate Seal]

Audited

Certified

WORK ANALYSIS SHEET - DMEA PROJECT

Analysis as of 11/5-/56
Incl. Voucher for Feb. 1956

☒ Actual Cost
☐ Agreed Unit Costs

Name Bowles-Heflin Mining Company

Docket No. 3655

State Colorado

Commodity Uranium

Idm-E No. 899

OPERATION	AUTHORIZED Units	AUTHORIZED Cost	COMPLETED Units	COMPLETED Cost	NET COST
Drifting & Crosscutting					
Raising					
Shafts					
Winzes					
Drilling (Specify) Plug	2010	4783.80	905'	1737.59	1737.59
Drilling (Specify) Core	3660	12524.40	1551	5241.91	5241.91
Surface Excavation					
Underground Excavation					
Roads and Trails		1020.00		235.00	235.00
Operating Equipment Purchased					
Surface Rehabilitation & Repairs					
Underground Rehabilitation					
New Building, Improvements, etc.					
Other (Specify) Analyses		900.00		20.00	20.00
Totals		$19228.20		$7234.50	$7234.50

Prepared by J. M. Murphy

71626

November 6, 1956

Project Summary Report

By: F. M. Murphy

1. Docket No. DMEA-3655 (Uranium)
Contract No. Idm-E899

Operator - Melvin C. Boulles and A. L. Haflin, partners,
d/b/a Boulles-Haflin Mining Company,
1200 Chester Street
Aurora, Colorado

Operator's Property Rights -

Leases of: N½ of NW¼ and the SE¼ of the NW¼ of sec. 26, and the NE¼ of the NE¼ of sec. 27, all in T. 43 N., R. 19 W., San Miguel County, Colorado.

2. Contract: Dated November 28, 1955, no amendments.

Work Authorized -

	Stage I (9 holes)		Stage II (18 holes)	
	Units	Cost	Units	Cost
Bulldozer access roads and drill sites @ $12.50/hr.	24 hrs.	$300.00	48 hrs.	$600.00
Moving bulldozer	2 moves	60.00	2 moves	60.00
Plug bit drilling @ $1.75/ft.	670'	1,172.50	1340'	2,345.00
Core drilling @ $2.73/ft.	1220'	3,330.60	2440'	6,661.20
Incidental allowance @ $0.67/ft.	1890	1,266.30	3780	2,532.60
Chemical analyses for U_3O_8 and V_2O_5 @ $5.00	60	300.00	120	600.00
Total Costs		$6,429.40		$12,798.80

Total Estimated Cost of Project $19,228.20
Government Participation @ 75% $14,421.00

Work completed: Stage I only, plus extra drilling footage from Stage II:

	Units	Cost
Bulldozer access roads and drill sites	14	$175.00
Moving bulldozer	2	60.00
Plug bit drilling	705'	1,233.75
Core drilling	1551'	4,234.23
Incidental allowances	2256'	1,511.52
Chemical analyses	4	20.00
Total		$7,234.50

3. Audit Report of Review: Dated June 21, 1956

Total cost as billed by Contractor	$7,234.50
Exceptions: None	---
Total Accepted Cost	$7,234.50
Government Participation @ 75%	$5,425.88

Excerpts from final Field Team report (transmitted October 25, 1956):

The purpose of the project was to explore the top sandstone lens of the Salt Wash member of the Morrison formation.

As it appears on the southern edge of the property, the top Salt Wash sandstone is a single unit 30 to 40 feet thick; but northward it splits into two lenses separated by 10 to 20 feet of mudstone. The two lenses and the intervening mudstone have a maximum thickness of about 70 feet.

The Operator's original proposal was to drill 150 holes in 3 stages of 50 holes each. However, the field examiners recommended a modified program acceptable to theApplicant. The recommendation was based on: (1) favorable trends were thought to extend toward the property; (2) the property is located adjacent to good producing areas; (3) several minor occurrences of ore were noted on the property; and (4) over most of the area the potential ore-bearing sandstone is at a fairly shallow depth.

Only Stage I, consisting of 9 holes was completed. Probing showed weak mineralization in 4 holes. Geologically, the sandstone beds were favorable for uranium deposition, but no indications of significant mineralization were noted in the drill cores.

The drilling program started on January 3 and was completed on February 25, 1956. As a result of the drilling, the Operator felt that further drilling was not warranted and the field examiners and Field Team agreed with this conclusion. The contract was terminated on April 16, 1956, by a "Notice" from the Executive Officer, DMEA Field Team, Region III.

No significant mineralization was found by the DMEA drilling; therefore certification of the project was not recommended by the Field Team.

/s/ F. M. Murphy

F. M. Murphy

FMMurphy/gla
11-6-56
cc to: Docket (original)
Admr.'s Reading File
Code 700
Mr. Murphy

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

NOV - 8 1956

Melvin C. Boulos and A. LaMaffin, partners
d/b/a Boulos-LaMaffin Mining Company
1200 Chester Street
Aurora, Colorado

Re: Docket No. DMEA-3835 (Denton)
Contract No. Ida-[illegible]
J. V. Ravenson Lease
San Miguel County, Colorado

Gentlemen:

Reference is made to your exploration contract with the Government.

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

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

Sincerely yours,

Frank E. Johnson

ACTING Administrator

cc to: John Griffin, Dove Creek, Colorado
S. M. Sisk, Dove Creek, Colorado
J. V. Ravenson, Almont, Colorado

FMMurphy/gla
11-6-56
cc to: Docket
Admr.'s Reading File
Contract Adm. & Audit Division
DMEA Field Team, Region III (2)
Code 700
Mr. Murphy

700

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

NOV - 8 1956

Mr. J. V. Ravenson
Almont, Colorado

Re: Docket No. DMEA-3855 (Uranium)
Contract No. Idu-5899
Melvin C. Bowles and A. L. Heflin, partners,
d/b/a Bowles-Heflin Mining Company
J. V. Ravenson Lease
San Miguel County, Colorado

Dear Mr. Ravenson:

Reference is made to the Consent to Lien which you executed on October 25, 1955, in connection with the DMEA contract for an exploration project on your property located in San Miguel County, Colorado.

For your information, there is enclosed a copy of our letter of this date to Melvin C. Bowles and A. L. Heflin, partners, d/b/a Bowles-Heflin Mining Company, 1200 Chester Street, Aurora, Colorado, advising that the Government retains no claim or lien against the property described in the contract or on any future production therefrom.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

Enclosure
FMMurphy/gla
11-6-56
cc to: Docket
Admr.'s Reading File
Code 700
Mr. Murphy
DMEA Field Team, Region III (2)

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

NOV - 8 1956

Mr. John Griffin
Dove Creek, Colorado

Re: Docket No. DMEA-3655 (Uranium)
Contract No. Ida-2899
Melvin C. Beasley and A. L. Heflin,
partners, d/b/a Beasley-Heflin
Mining Company
J. V. Ravenson Lease
San Miguel County, Colorado

Dear Mr. Griffin:

Reference is made to the Subordination Agreement, dated August 30, 1955, and the Consent to Lien, dated October 25, 1955, which you executed in connection with the DMEA contract for an exploration project on the subject property located in San Miguel County, Colorado.

For your information, there is enclosed a copy of our letter of this date to Melvin C. Beasley and A. L. Heflin, partners, d/b/a Beasley-Heflin Mining Company, 1200 Chester Street, Aurora, Colorado, advising that the Government retains no claim or lien against the property described in the contract or on any future production therefrom.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

Enclosure
FMMurphy/gla
11-6-56
cc to: Docket
Admr.'s Reading File
Code 700
Mr. Murphy
DMEA Field Team, Region III (2)

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

NOV 6 1956

Mr. S. M. Sisk
Dove Creek, Colorado

Re: Docket No. DMEA-3655 (Uranium)
Contract No. Tdm-E899
Melvin C. Bowles and A. L. Heflin,
partners, d/b/a Bowles-Heflin
Mining Company
J. V. Eaverson Lease
San Miguel County, Colorado

Dear Mr. Sisk:

Reference is made to the Subordination Agreement which you executed on August 30, 1955, in connection with the DMEA contract for an exploration project on the subject property.

For your information, there is enclosed a copy of our letter of this date to Melvin C. Bowles and A. L. Heflin, partners, d/b/a Bowles-Heflin Mining Company, 1200 Charter Street, Aurora, Colorado, advising that the Government retains no claim or lien against the property described in the contract or on any future production therefrom.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

Enclosure
FMMurphy/gla
11-6-56
cc to: Admr.'s Reading File
Docket
Code 700
Mr. Murphy
DMEA Field Team, Region III (2)

11/5/56 gla

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

RECEIVED
OCT 29 1956

224 New Customhouse
Denver 2, Colorado

October 25, 1956

Memorandum

To: Chairman, Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Docket No. DMEA 3655 (Uranium), Contract No. IAm-8899, Bowles-Heflin Mining Company (J. V. Ravereen lease), San Miguel County, Colorado - FINAL REPORT

Enclosed are the original and three copies of a joint final engineering and geologic report, dated October 15, 1956, by N. L. Archbold, Geologist, Geological Survey, and H. F. Robertson, Mining Engineer, Bureau of Mines, and transmittal thereof, dated October 16, 1956, from E. H. Barshman and John F. Shaw.

The Operator's narrative report, included with form MF-104, Operator's Monthly Report and Voucher, for the month of February, 1956, was accepted as the Operator's final report.

The contract was terminated by Notice from this office, dated April 16, 1956, at the completion of Stage I, as the results of the work completed under Stage I indicated that participation by the Government in further exploration work under the contract was not warranted.

Final payment to the Operator was processed by this office July 6, 1956, in conformance with the Report of Review of reported project costs by the Contract Administration and Audit Division, dated June 21, 1956.

The exploration work completed consisted of 705 feet of non-core drilling and 1,551 feet of core drilling, at a total accepted cost of $7,234.50, toward which the Government contributed 75%, or an amount of $5,425.88.

Reviewed by
DMEA OPERATING COMMITTEE

(date)

Final Field
Report

The exploration work did not result in the discovery or development of a significant quantity of uranium ore. Therefore, Certification within the prescribed time was not recommended.

DMEA Field Team, Region III

Original signed by
W. M. TRAVER

W. M. Traver

Original signed by
E. N. HARSHMAN

E. N. Harshman

Enclosures

RECEIVED
OCT 2 0 1956

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
October 16, 1956

DMEA
DEPARTMENT OF THE INTERIOR
OCT 18 1956
REGION III
DENVER, COLORADO

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: Final Engineering and Geologic Report, Docket DMEA 3655 (Uranium) Contract Idm-E899, Bowles-Heflin Mining Company, (J. V. Eaverson Lease) San Miguel County, Colorado

Enclosed are the original and nine copies of a final report by H. F. Robertson, mining engineer and N. L. Archbold, geologist, covering work performed under Contract Idm-E899.

The Bowles-Heflin Mining Company applied for DMEA aid in exploring for uranium ore under two land sections in San Miguel County, Colo. The exploration plan was to test the underlying Salt Wash member of the Jurassic Morrison formation, by drilling 27 holes in two stages. The 27 holes required 5,670 feet of drilling and the maximum cost was estimated to be $19,228.00.

Nine holes were drilled as the first stage of the plan. The holes penetrated rock that was considered to be lithologically favorable for the occurrence of uranium ore, but only very weak mineralization was shown. The 9 holes required 705 feet of non-core drilling and 1,551 feet of core drilling, or a total of 2,256 feet. The cost of the project was $7,234.50; the Government's participation being $5,425.92.

In as much as no significant indications of uranium mineralization were found, the operator did not believe further work was warranted. DMEA representative concurred in this belief and recommend termination of the contract without issuance of a certificate of discovery.

Reviewed by
DMEA OPERATING COMMITTEE

E. N. Harshman
Member Field Team

(date)

John F. Shaw
Supervising Mining Engineer

JFS:sh

cc: 9
EN Harshman
Idm-E899
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT FINAL REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

DMEA 3655

CONTRACT Idm-E999

BOBLES-HEYLIN MINING COMPANY

J. V. EAVERSON LEASE

SAN MIGUEL COUNTY, COLORADO

Uranium

Joint Final Engineering and Geologic Report

By

N. L. Archbold
Geologist
Geological Survey

H. F. Robertson
Mining Engineer
Bureau of Mines

October 15, 1956

Reviewed by
DMEA OPERATING COMMITTEE

(date)

DMEA 3655
CONTRACT Idm-E899

RECEIVED
OCT 29 1956

BOWLES-HEFLIN MINING COMPANY
J. V. EAVERSON LEASE
SAN MIGUEL COUNTY, COLORADO

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Joint final engineering and geologic report — Page

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2. Map showing proposed hole locations on J. V. Eaverson Lease and trends of favorable ground in vicinity, Bowles-Heflin Mining Co., San Miguel County, Colorado....8

DMEA 3655
CONTRACT Idm-E399

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OCT 20 1956

BOWLES-HEFLIN MINING COMPANY
J. V. EAVERSON LEASE, SLICK ROCK MINING DISTRICT
SAN MIGUEL COUNTY, COLORADO

INTRODUCTION AND SUMMARY

The Bowles-Heflin Mining Company applied for DMEA assistance in the exploration of their property, known as the Eaverson lease, by drilling 150 holes in three stages, the total drilling to be 25,000 feet. The estimated cost of its proposed project was $43,750.00. The examining team recommended a greatly modified program and a contract was approved for 27 holes, in two stages, requiring 5,670 feet of drilling to cost a maximum of $19,228.00. The purpose of the project was to test for uranium ore deposits that might occur in the upper sandstone lens of the Salt Wash member of the Jurassic Morrison formation which underlies the property.

No significant mineralization was found in any of the nine stage I holes completed, and it was concluded that the property does not warrant further exploration.

Certification of discovery is not recommended.

LOCATION AND ACCESSIBILITY

The J. V. Eaverson lease consists of a privately owned tract of land comprising secs. 26 and 27, T. 43 N., R. 19 W., New Mexico principal meridian, San Miguel County, Colorado. It is just west of Bush Canyon and its altitude ranges from 7,000 to 7,600 feet (fig. 1).

Colorado Highway 80 passes through the property at a point 15 miles north of Dove Creek, Colorado (fig. 1).

The climate of the district is semi-arid; the summers are warm and the winters moderate with infrequent periods of extreme cold. There may be heavy storms of short duration throughout the year with some snow accumulating in the winter months. However, surface drilling and underground operations are feasible during the entire year.

PROPERTY

The present owner, J. W. Eaversen, leased the property on January 12, 1954, to John Griffin and S. M. Sisk of Dove Creek, Colo. On February 8, 1954, John Griffin and S. M. Sisk assigned their lease to Alvarado Mining Corporation of Colorado. On December 15, 1954, Alvarado Mining Corporation assigned its lease to Melvin C. Bowles of Aurora, Colorado. The examining engineer verified those transactions by consulting the records at the San Miguel County Recorder's Office. Melvin C. Bowles assigned his lease to the Bowles-Heflin Mining Company on January 3, 1955.

GEOLOGY

The Eaversen lease is on the southwest flank of the Dolores anticline where the sedimentary beds dip approximately 2° to the southwest. The Late Jurassic Morrison formation forms the surface over most of the property, except on the extreme west side where there is a small area covered by the Early Cretaceous Burro Canyon formation. In Bush Canyon immediately to the east of the Eaversen property, the Jurassic, Pre-Morrison Summerville and Entrada formations are exposed. As all exploration was confined to the Morrison formation, it is the only lithologic unit described in detail in this report.

The Morrison formation is composed of two members, the Brushy Basin shale and the underlying Salt Wash sandstone. The Brushy Basin shale member consists of lenticular sandstones of limited extent interbedded with reddish-brown and greenish-gray shales and mudstones. The sandstones are quartzose to sub-arkosic and quite varied in character, ranging from quartzitic to loosely cemented and from conglomeratic to fine grained. Sandstone colors are varied, with reddish-brown and light red, gray , green, or yellow-brown being the most common. The Salt Wash sandstone member is composed of more continuous lenticular sandstones interbedded with reddish-brown shales and mudstones. Sandstones in the Salt Wash are sub-arkosic, moderately cemented and medium to fine grained, generally light reddish-brown or light yellow-brown to gray.

Nearly all ore deposits in the area occur in the top sandstone lenses of the Salt Wash. Locally there has been mineralization in the lower sandstone lenses of the Salt Wash and in the Brushy Basin, but such occurrences are not economically significant.

As it appears on the southern edge of the Emerson property, the top Salt Wash sandstone is a single massive unit 30 to 40 feet thick; but northward it splits into two lenses separated by 10 to 20 feet of mudstone. The two lenses and the intervening mudstone have a maximum thickness of about 70 feet. Either of the two lenses might contain ore deposits and are referred to as the "ore-bearing sandstone".

The U. S. Geological Survey has defined criteria for predicting the favorableness of the ore-bearing sandstone for the occurrence of ore deposits. These criteria are: (1) sandstone 40 or more feet thick; (2) sandstone light gray to light yellow-brown in color; (3) altered

mudstone (greenish-grey rather than reddish-brown) associated with the sandstone, as pebbles and seams within the sandstone and in the underlying mudstone immediately at the base of the sandstone; (4) abundance of carbonaceous material within the sandstone.

THE PROJECT

The Kaversam property was recommended for a limited exploratory drilling program because: (1) favorable trends were thought to extend toward the property; (2) the property is located adjacent to good producing areas; (3) there was mineralization on the property as shown by several minor occurrences of ore; and (4) over most of the area the ore-bearing sandstone is at a fairly shallow depth.

The operator's proposed a first stage program of 50 holes, located on a 200- by 400-foot grid, requiring drilling a total of 10,000 feet. This was to be followed, if favorable results were obtained, by a second stage program of 50 holes, to be drilled on a 100- by 200-foot pattern, totaling 7,500 feet. If stage II drilling gave favorable results, a third stage would follow with holes to be drilled in 50- by 100-foot pattern, totaling 7,500 feet. The estimated total amount of drilling was for 150 holes, or a total of 25,000 feet, at an estimated cost of $43,750.00, with Government participation 75 percent, or $32,812.50. All drilling was to be non-core.

The examining team recommended Government participation in a greatly modified exploration program as follows:

(1) The drilling should be diamond-bit coring rather than non-coring type, because it is difficult to evaluate the favorableness of a sandstone

by examining the cuttings from a churn or rotary drill hole. Such vital information as abundance of carbonaceous material, color of mudstone pebbles and seams within the sandstone, and thickness of altered mudstone at the base of the sandstone is easily lost through non-core drilling. The Brushy Basin member was to be drilled by non-coring methods and the ore-bearing sandstone was to be core drilled.

(2) Only the top Salt Wash sandstone horizon was to be explored. The operator proposed to explore the next lower sandstone horizon because of a mistaken impression that the mines of the Legin Group were producing from that horizon. Actually the Legin mines are producing from the lower lense of the top sandstone horizon where it has been split by an intervening mudstone lense.

(3) The favorableness of the ore-bearing sandstone could be tested with much fewer than 50 holes. Nine holes spaced as shown on figure 2 were believed to be sufficient to determine favorable zones on the Ryerson property. If favorable areas were found, they were to be tested with a second stage of closer-spaced drilling.

Stage I, consisting of 9 drill holes located as shown on figure 2, was completed. The holes were probed in conformance with contract specifications. Very weak mineralization was noted in holes Nos. 1, 4, 5, and 6 as shown on table I. Geologically, the sandstone beds were favorable for uranium deposition, but no indications of significant mineralization were noted in drill hole cores.

The drilling program started on January 3, 1956, and was completed on February 25, 1956. The DMEA Field Team, Region III authorized the operator to transfer 35 feet of non-core drilling and 332 feet of core

drilling from stage II to stage I, to complete two of the holes under stage I of the contract. This was the only change in contract specifications. The transferred footage is taken into account in the contract maximums shown on table II.

SUMMARY OF FACTUAL DATA

Nine holes were completed and consisted of 705 feet of non-core drilling and 1,551 feet of core drilling. Unit costs of the drilling equaled those allowed under the contract. The total cost of the program was $7,234.50 and was fully approved for Government participation in the amount of $5,425.92.

CONCLUSIONS AND RECOMMENDATIONS

Stage I drilling was completed without finding any significant uranium mineralization. The operator did not consider stage II drilling advisable and did not request further work. The DMEA representatives in Grand Junction concurred and recommended termination of the contract without certification of discovery.

Table I -- Probing Results of U. S. G. S. Burnaby Equipment, Bowles-Heflin Mining Company, Barreron Lease, Slick Rock Mining District, San Miguel County, Colorado, DMEA 3655, Idn-8009

Gamma-Ray Log Interpretations

Hole No.	Depth Drilled	Depth Logged *From	To	Anomaly Detected *From	To	Anomaly Thickness	Counts Per Minute	Grade % eU_3O_8
1	375.0	9.5	374.0	188.8	189.5	0.7	250	< 0.010
				190.9	191.6	0.7	480	0.015
				192.0	192.5	0.5	300	< 0.010
				240.2	241.1	0.9	1,000	0.036
				241.1	242.0	0.9	330	< 0.010
2	335.0	9.0	335.0	Barren				
3	273.0	10.0	248.0	Barren				
4	283.0	8.5	283.0	156.6	157.6	1.0	330	< 0.010
				158.2	160.1	1.9	300	< 0.010
5	220	9.0	219.0	160.8	162.1	1.3	260	< 0.005
6	177.5	9.9	172.0	26.6	27.1	0.5	250	< 0.010
7	194.0	9.9	192.0	Barren				
8	235.0	9.0	233.0	Barren				
9	167.0	9.0	165.0	Barren				

* From top to bottom depths

Table II — Summary of Costs, DMEA 3655, Contract Idm-8899, Bowles-Moffin Mining Company, Everson Lease, Slick Rock Mining District, San Miguel County, Colorado

Item	Unit	Allowed Units	Allowed Price	Jan. Operations Claimed and Approved Units	Jan. Operations Claimed and Approved Cost	Feb. Operations Claimed and Approved Units	Feb. Operations Claimed and Approved Cost	Entire Project Claimed and Approved Units	Entire Project Claimed and Approved Cost	Contract Maximums Units	Contract Maximums Cost
Stage I											
Non-core drilling	foot	705	1.75	525	$918.75	180	$315.00	705	$1,233.75	705	$1,233.75
Core drilling	foot	1552	2.73	645	1,760.85	906	2,473.38	1551	4,234.23	1552	4,236.96
Bulldozer work	hour	24	12.50	8	100.00	6	75.00	14	175.00	24	300.00
Moving charge	job	2	30.00	1	30.00	1	30.00	2	60.00	2	60.00
Incidental Allowance	foot	2257	0.67	1170	783.90	1086	727.62	2256	1,511.52	2257	1,512.19
Chemical analyses	each	60	5.00	4	20.00	-	-	4	20.00	60	300.00
TOTAL STAGE I				-	$3,613.50	-	$3,621.00	-	$7,234.50	-	$7,642.90
Stage II											
Non-core drilling	foot	1305	1.75							1305	2,283.75
Core drilling	foot	2108	2.73							2108	5,756.84
Bulldozer work	hour	48	12.50			NO STAGE II WORK				48	600.00
Moving charge	job	2	30.00							2	60.00
Incidental allowance	foot	3413	0.67							3413	2,286.71
Chemical analyses	each	120	5.00							120	600.00
TOTAL STAGE II											$11,585.30
TOTAL FOR CONTRACT					$3,613.50		$3,621.00		$7,234.50		$19,228.20

Government Participation in Approved Costs at 75 percent.....$5,425.92
Average Cost of Non-Core Drilling per foot.....$1.75
Average Cost of Core Drilling per foot.....$2.73
Average Overall Cost of Drilling per foot.....$2.42

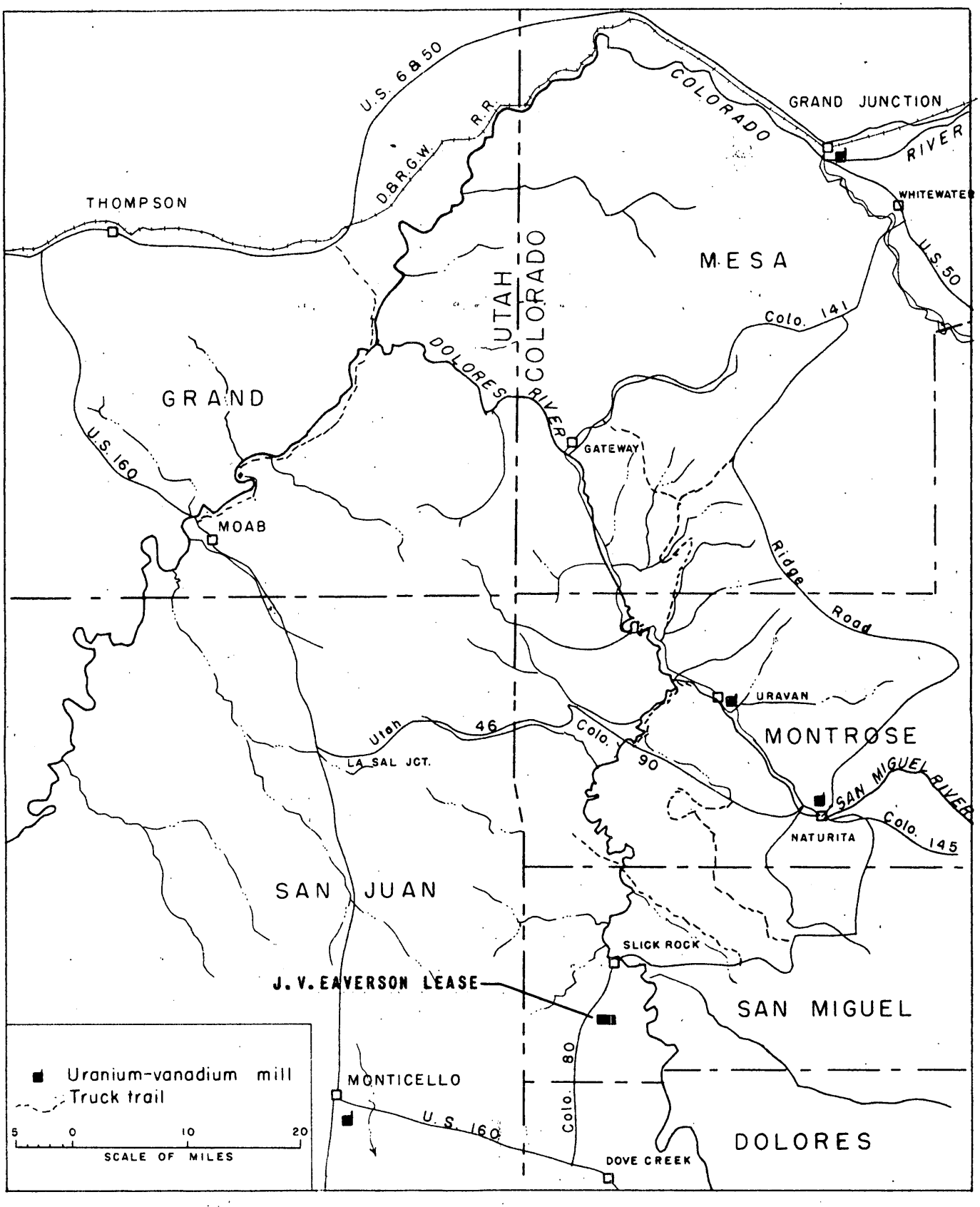
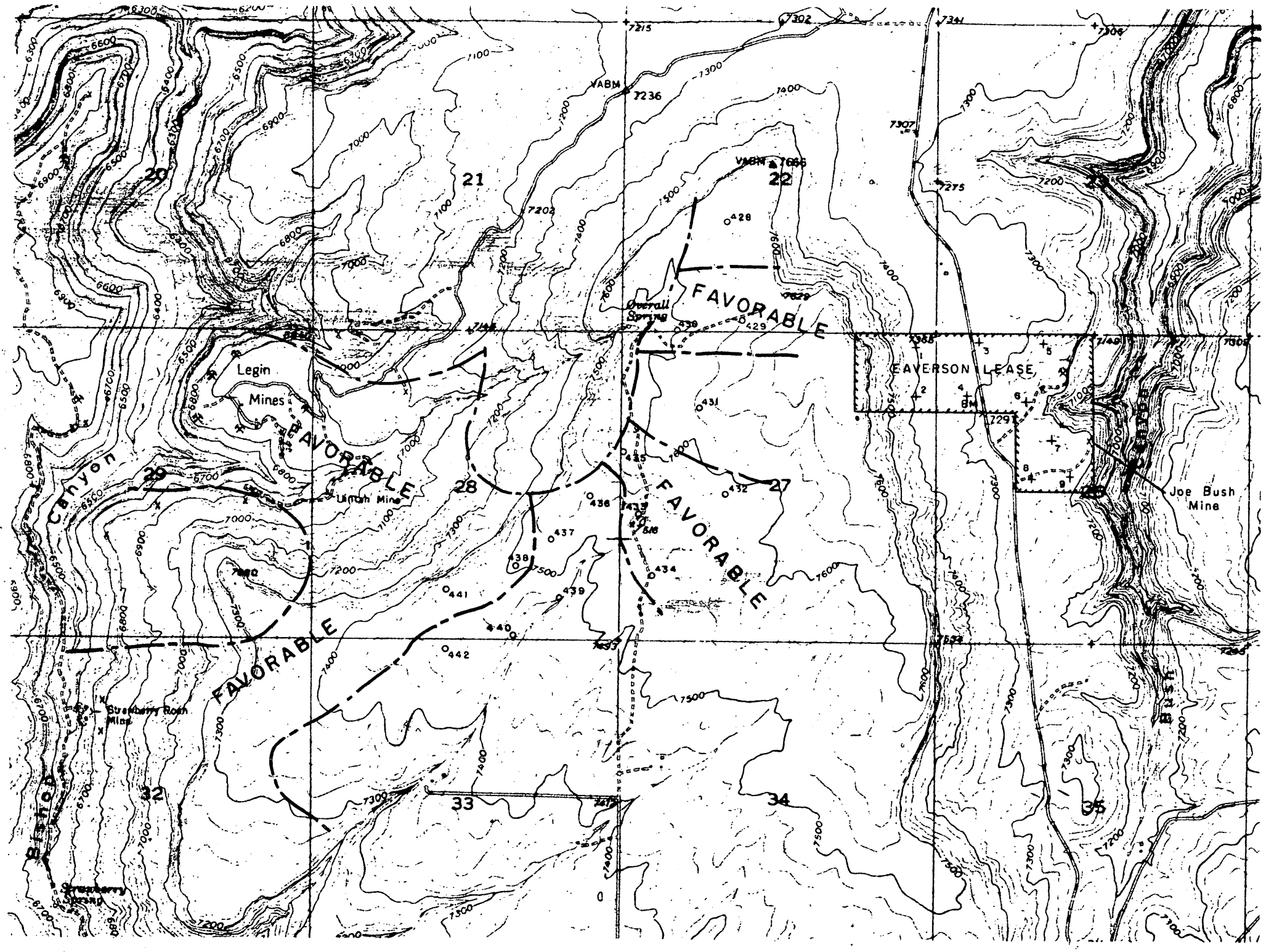


Figure 1. INDEX MAP OF PART OF COLORADO PLATEAU SHOWING LOCATION OF J. V. EAVERSON LEASE, BOWLES-HEFLIN MINING CO., SAN MIGUEL COUNTY COLORADO



EXPLANATION

OUTLINE OF KNOWN FAVORABLE AREA

BOUNDARY OF EAVERSON LEASE

MINE OR PROSPECT

DIAMOND-DRILL HOLE, U.S. GEOLOGICAL SURVEY

PROPOSED DIAMOND-DRILL HOLE

N

1000 0 2000 FEET

CONTOUR INTERVAL
20 FEET

DATUM IS MEAN SEA LEVEL

T. 43 N., R. 19 W.
S.L.M.

Note: BASE FROM U.S. GEOLOGICAL SURVEY QUADRANGLE MAP, EGNAR

Figure 2. MAP SHOWING PROPOSED HOLE LOCATIONS ON J.V. EAVERSON LEASE AND TRENDS OF FAVORABLE GROUND IN VICINITY, BOWLES-HEFLIN MINING CO.
SAN MIGUEL COUNTY, COLORADO

7/23/56

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

RECEIVED
JUL 23 1956

224 New Customhouse
Denver 2, Colorado

July 20, 1956

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3655 (Uranium) Contract Idm-E899, Bowles-Heflin Mining Company, San Miguel County, Colorado. FINAL PAYMENT

Enclosed are two copies of a memorandum to T. A. Christensen, dated July 6, 1956, relative to final payment under the terms of the subject contract.

for W. M. Traver

Enclosures

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

RECEIVED
JUL 23 1956

224 New Customhouse
Denver 2, Colorado

July 6, 1956

Memorandum

To: T. A. Christensen

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3655 (Uranium) Contract Idm-E899, Bowles-Heflin Mining Company, San Miguel County, Colorado - FINAL PAYMENT

Reference is made to the memorandum from this office dated April 19, 1956 whereby we forwarded Form MF-104, Operator's Monthly Report and Voucher, for the month of February, 1956 and instructed you to withhold the amount of $100.00 from reimbursement to the Operator pending release of a Report of Review of contract expenditures by the Contract Administration and Audit Division.

The Operator's Narrative Report, included with Form MF-104 for the month of February, 1956, was accepted as the Operator's final report in compliance with Article 7 (c) of the contract.

We now recommend final payment to the Operator on the following basis which is in conformance with the Report of Review of contract expenditures by the Contract Administration and Audit Division, dated June 21, 1956, which was released to this office July 2, 1956.

Basis for Final Payment

Total Accepted Cost	$7,234.50
Government Participation at 75 Percent	5,425.88
Total Prior Payments	5,325.88
Balance due the Operator	$ 100.00

W. M. TRAVER

W. M. Traver

JWT:jy
cc: MF-104 File E899
Sec. Op. Comm. (2)
Shaw (2)
Towasend
Chron.

7-5-56

[redacted]

REPORT OF REVIEW

RECEIVED
JUN 29 1956

I have reviewed the Monthly Reports of:

Melvin C. Ruffin and A. L. Ruffin
D/B/A Ruffin-Ruffin Mining Company,
1200 Chester Street
Aurora, Colorado

pertaining to Exploration Project Contract No. Ida-2899, Docket No. DMEA-3655, including termination letter April 16, 1956, for the months of January to February, 1956, inclusive, covering a project for the exploration of Uranium on property known as J. V. Emerson Lease, located in San Miguel County, Colorado.

My review included an examination of the Monthly Reports (Forms MF-104) and supporting documents attached thereto, comparison of the costs claimed with the contract and pertinent schedules, consultation with the Executive Officer of the DMEA Field Team, Region III, and a determination of the reasonableness and propriety of the costs.

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

(a) the administrative cost to the Government of an audit would be excessive in relation to the estimated amount of possible disallowances thereunder; and

(b) the Monthly Reports were supported by documentary proof of the costs incurred under the contract; and

(c) a major portion ($5,702.98) of the costs incurred covered work performed at unit rates under independent contract; and

(d) the balance ($1,531.52) of the costs incurred was under a contract provision for payment by the Government on the basis of fixed unit costs of work actually performed.

The review disclosed the following facts in regard to the amount paid or to be paid the contractor:

Total cost as billed by Contractor		$7,234.50
Exceptions:		
By DMEA Finance Officer	0	
Herewith	0	0
Total Accepted Cost		$7,234.50

The contract calls for a 75 percent participation of exploration expenses by the United States Government. Therefore, payment to the contractor by the Government in the amount of Five thousand, four hundred twenty-five and 88/100ths Dollars

** $5,425.88 **

is considered valid and proper, provided that the Regional Executive Officer, the Administrator, or other competent official has accepted or will accept the project as having otherwise met the terms of the contract.

Donald T. Finch

June 21, 1956

Donald T. Finch, Auditor

Final Audit report

~~Murphy~~ Dockett 5/8/56

Recd. 5-7-56

224 New Customhouse
Denver 2, Colorado

May 3, 1956

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Gamma-ray log interpretations-
DMEA-3767, Contract Idm-E877, Uranium Prospector's Company, Ltd. (Jack Rabbit group) Emery County, Utah
DMEA-3555, Contract Idm-E792, W. A. Greer (Operating agreement with Four Corners Exploration Company) (Bachelor claims) San Miguel and Montrose Counties, Colorado
DMEA-3582, Contract Idm-E796, Walter Duncan Mining Company (Red Rock et al. claims) San Juan County, Utah
DMEA-3613, Contract Idm-E860, Chatu Uranium Mining Company, Inc. (Seven Mile property) Grand County, Utah
DMEA-3655, Contract Idm-E899, Bowles-Heflin Mining Company (J. V. Eaverson lease) San Miguel County, Colorado
DMEA-3896, Contract Idm-E910, Hecla Mining Company (Hot Rock et al. claims) San Juan County, Utah

Enclosed are four copies each of gamma-ray log interpretations for holes drilled on the subject properties.

W. M. Traver

Enclosures

C
O
P
Y

Bowles Heflin Mining Company
Eaverson Lease
San Miguel County, Utah

GAMMA-RAY LOG INTERPRETATION AEC DOCKET NO. 3655

Hole No.	Depth Drilled	Depth Cased	Depth Logged From* To	Anomaly Detected From* To	Anomaly Thickness	Counts per minute	CPM Corrected for Casing	CPM Corrected for G-M Tube	Grade $\%_e U_3O_8$	Remarks
# 1	375.0	None	9.5 - 374.0	188.8 - 189.5	0.7	250			<0.010	
				190.9 - 191.6	0.7	480			0.015	
				192.0 - 192.5	0.5	300			<0.010	
				240.2 - 241.1	0.9	1,000			0.036	
				241.1 - 242.0	0.9	330			<0.010	
# 2	335.0	None	9.0-335.0	Barren						
# 3	273.0	None	10.0-248.0	Barren						
# 4	283.0	None	8.5-283.0	156.6 - 157.6	1.0	330			<0.010	
				158.2 - 160.1	1.9	300			<0.010	
# 5	220.0	None	9.0-219.0	160.8 - 162.1	1.3	260			<0.005	
# 6	177.5	None	9.9-172.0	26.6 - 27.1	0.5	250			<0.010	
# 7	194.0	None	9.9-192.0	Barren						
# 8	235.0	None	9.0-233.0	Barren						
# 9	167.0	None	9.0-165.0	Barren						

* From top to bottom depths

Bowles Heflin Mining Company
Eaverson Lease
San Miguel County, Utah

GAMMA-RAY LOG INTERPRETATION AEA DOCKET NO. 3655

Hole No.	Depth Drilled	Depth Cased	Depth Logged From*	Depth Logged To	Anomaly Detected From*	Anomaly Detected To	Anomaly Thickness	Counts per minute	CPM Corrected for Casing	CPM Corrected for G-M Tube	Grade $\%_eU_3O_8$	Remarks
# 1	375.0	None	9.5	374.0	188.8	189.5	0.7	250			<0.010	
					190.9	191.6	0.7	480			0.015	
					192.0	192.5	0.5	300			<0.010	
					240.2	241.1	0.9	1,000			0.036	
					241.1	242.0	0.9	330			<0.010	
# 2	335.0	None	9.0	335.0	Barren							
# 3	273.0	None	10.0	248.0	Barren							
# 4	283.0	None	8.5	283.0	156.6	157.6	1.0	330			<0.010	
					158.2	160.1	1.9	300			<0.010	
# 5	220.0	None	9.0	219.0	160.8	162.1	1.3	260			<0.005	
# 6	177.5	None	9.9	172.0	26.6	27.1	0.5	250			<0.010	
# 7	194.0	None	9.9	192.0	Barren							
# 8	235.0	None	9.0	233.0	Barren							
# 9	167.0	None	9.0	165.0	Barren							

* From top to bottom depths

Schedule No. 56-100
4-25-56

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION III

RECEIVED
APR 25 1956

Administrative Audit Difference Statement

Bowles - Heflin Mining Company
1200 Chester Street,
Aurora, Colorado

Date: April 20, 1956
Payee's Reference: February 1956

DMtA-3655

FINAL DISTRIBUTION
MADE APR 23 1956

Gentlemen:

Upon examination of the above Payee's Reference a difference was found which made it necessary to suspend your account accordingly:

Amount Claimed $ 3,621.00

Difference $

Amount Approved * $ 3,621.00

The reason for the difference was due to:

* Withhold $100.00 pending release of the report of review of contract expenditures.

Any reclaim for deductions made above must be supported by the ORIGINAL of this form.

Very sincerely yours,

RRC

Randel R. Cooper,
Fiscal Officer

R-III-B & F Form No. 4
4-15-52 D

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

RECEIVED
APR 2 1956

224 New Customhouse
Denver 2, Colorado

April 19, 1956

Memorandum

To: T. A. Christensen

From: Executive Officer, DMEA Field Team, Region III

Subject: DMEA Docket 3655 (Uranium) Contract Idm-E899, Bowles-Heflin Mining Company (J. V. Eaverson lease) San Miguel County, Colorado - Operator's Monthly Progress Report for the month of February, 1956

Enclosed are the original and four copies each of Forms MF-104 and MF-104A, Narrative Report, and Engineer's Report for the above period.

It is deemed that the Operator has complied with the intent of the contract, and the work for which payment is recommended is acceptable to the Government. Payment is recommended for 75 percent of the amount as reported on Form MF-104, contingent on your verification of the correctness of applicable rates and arithmetical accuracy of computations, except as follows.

The contract is considered to have been completed, therefore withhold an amount of $100.00 pending release of the Report of Review of contract expenditures by the Contract Administration and Audit Division, DMEA, and so advise the Operator by means of the Administrative Audit Difference Statement.

Remarks

Date of Report----------March 22, 1956
Date Received in Field Office---------- March 26, 1956
Date Received in Region Office----------April 11, 1956

W. M. TRAVER

W. M. Traver

Enclosures
JDC:jy
cc: MF-104 File E899
Sec. Op. Comm. (2) Cooper
Shaw (2) Chron.
Townsend w/copy engr's. report

DMEA
Date Rec'd.
APR 2 1956
BUREAU OF MINES
Denver, Colorado

Region III

Building 20
Denver Federal Center
Denver 2, Colorado
March 30, 1956

Memorandum

DMEA
Date Rec'd.
APR 12 1956
BUREAU OF MINES
Denver, Colorado

To: Executive Officer, DMEA Field Team, Region III

From: M. S. Salsbury
Through: John F. Shaw JWA for

Subject: DMEA 3655 (Uranium), Contract Idn E-399, Bowles Buflin Mining Company, (J.V. Ravermum lease), San Miguel County, Colo.--Progress Report for February 1956.

The subject property was visited on March 7, 1956 in company with F. M. Myers of the Geological Survey. There was no one on the property. An attempt was made to contact the operator's representative in Dove Creek, Colorado, but he was not in town.

Stage I drilling had been completed on Feb. 25, 1956 and, all equipment had been removed.

Payment is claimed by the operator for the following items covering holes nos. E-3, E-5, E-7, E-8 and E-9:

Core drilling, 906 feet at $2.73/ft.	$2,473.38
Plug-bit drilling, 180 ft. at $1.75/ft. ...	315.00
Incidental allowance, 1086 ft. at 67¢/ft. ..	727.67
Bulldozing 6 hrs. at $12.50/hr.	75.00
Moving bulldozer off property	30.00
Total claimed in Feb. 1956	$3,621.05
Government participation at 75 percent	$2,715.79

All claims are in accordance with contract terms and within the maximums for Stage I as adjusted by an approval from the DMEA Field Team, Region III dated February 20, 1956, transferring 35 ft. of plug-bit drilling and 332 feet of core drilling from Stage II as provided in the contract. Actual cost items are supported by a signed invoice for drilling and bulldozing. The operator has claimed 3 feet less plug-bit drilling than charged for in the contractor's invoice, so as to keep the claimed footage within the adjusted contract maximum.

Hole No. E-7 had been completed at the time of the inspection of Feb. 10, 1956, and Hole No. E-3 was being drilled. During the Mar. 7 inspection, the sites of holes Nos. E-5, E-8, and E-9 were visited. All holes were found to be at approved locations. Following is a drilling summary:

In the event any additional information is desired please advise us. Thank you.

Sincerely yours,

BOWLES-HEFLIN MINING COMPANY

By Melvin C. Bowles
Melvin C. Bowles

MCB:cls
Enclosures

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

Budget Bureau No. 42-R1036.5

RECEIVED
APR 2 5 1956

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

Month of February, 1956 Docket No. DMEA 3655 Contract No. Idm-E899
Operator's Name Bowles-Heflin Mining Company Minerals Uranium
Address 1200 Chester Street, Aurora, Colorado
Contract Amount, $ 19,228.00 Government Participation: 75 % Amount, $ 14,421.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Contracts: Short Form Drilling — Core	2,473.38	1,760.85	4,234.23			
Plug	315.00	918.75	1,233.75			
Bulldozing	75.00	100.00	175.00			
Moving Dozer on Prop.	30.00	30.00	60.00			
Chem. Analyses	None	20.00	20.00			
Incidental Allowance	727.62	783.90	1,511.52			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify):						
TOTALS	3,621.00	3,613.50	7,234.50	3,621.00	3,613.00	7,234.00

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

Date March 22, 1956 Payee Bowles-Heflin Mining Company

Per Melvin O. Bowles Title Partner

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

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

(Instructions on reverse)

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

$ 2615.75

Signature RPC
(Authorized Certifying Officer)

Date 4-20-56 Vou. No. DMA-56-100
(See other side)

Note: Withhold 100%

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. IdmE899 in accordance with the terms of the contract.

Signature [illegible] Title Mining Engineer Date 3-28-56

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature W. M. Naver Title Executive Officer Date APR 19 1956

MONTHLY REPORT OF OPERATOR

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of February 1956 Docket No. DMEA 3655 Contract No. Idm-E899

Operator's Name Bowles-Heflin Mining Company Minerals Uranium

Address 1200 Chester Street, Aurora, Colorado

OPERATION	Unit	Costs This Month	Units This Month	Costs to Date	Units to Date	Unit Costs to Date	Authorized by Contract: Units	Authorized by Contract: Unit Costs
STAGE I								
Bulldozing	Hr.	75.00	6	175.00	14	12.50	24	12.50
Moving Dozer	Job	30.00	1	60.00	2	30.00	2	30.00
Plug-bit Drilling	Ft.	315.00	180	1,233.75	705	1.75	705	1.75
Core Drilling	Ft.	2,473.38	906	4,234.23	1,551	2.73	1,552	2.73
Incidental Allow.	Ft.	727.62	1,086	1,511.52	2,256	0.67	2,257	0.67
Core Analyses	Ea.	None	0	20.00	4	5.00	60	5.00
STAGE II								
Bulldozing	Hr.						48	12.50
Moving Dozer	Job						2	30.00
Plug-bit Drilling	Ft.						1,305	1.75
Core Drilling	Ft.						2,108	2.73
Incidental Allow.	Ft.						3,413	0.67
Core Analyses	Ea.						120	5.00
Total Distributed Costs		3,621.00		7,234.50				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		3,621.00		7,234.50				

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

Date March 22, 1956 Operator Bowles-Heflin Mining Co.

Per Melvin C. Bowles Title Partner

M. H. Salsbury

Remarks: Note the transfer of 35 feet of plug-bit drilling and 332 feet of core bit drilling from Stage II to Stage I as was authorized per letter dated February 20, 1956.

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

(Instructions on reverse)

(For Government use only)

INSTRUCTIONS

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

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

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

GPO 872894

Bowles-Heflin Mining Company
1200 Chester Street
Aurora 8, Colorado
March 22, 1956

RECEIVED
APR 2 5 1956

Mr. John F. Shaw
U.S. Bureau of Mines
Room 137, Building 20
Denver Federal Center
Denver 2, Colorado

Re: Docket DMEA 3655 (Uranium)
Contract Idm-E899

Narrative Report

Gentlemen:

We completed phase #1 of this project on February 28, 1956. Which consisted of nine (9) holes having a total of 705 feet of plug-bit drilling and 1,551 feet of core drilling.

Holes No. 1, 2, 4 and 6 were completed in the month of January with a total of 525 feet of plug-bit drilling and 645 feet of core drilling.

Holes No. 3, 5, 7, 8 and 9 were completed in the month of February with a total of 180 feet of plug-bit drilling and 906 feet of core drilling.

Early in February when it became evident that it would require additional footage to complete Stage I, we requested and received permission to transfer 35 feet of plug-bit drilling and 332 feet of core drilling from Stage 2 to Stage I, to enable completion of the nine (9) holes in Stage I.

The drilling contractor and all other personnel continued through to the completion of Stage I of this contract. A very poor rate of progress was made on this work due to a combination of circumstances. However, we feel that the work when performed was of good quality and performed with due care and consideration in all ways.

All the holes drilled were completely blank except for the number 1 hole in the northeast corner of the pattern which showed some mineralization. We have discussed this with our geologist Mr. Robert R. Ward and our engineer Mr. Russell Wood and do not feel that considering the formation encountered in this Stage I, drilling and all other factors that it is worthwhile to do additional drilling. Therefore we have decided not to make a request for any Stage II program at all.

(c o p y)

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APR 25 1956

THE FRITZ-ERICKSON MINING CO.

Drilling Contractors

Box 365

Dove Creek, Colorado

February 29, 1956

Bowles-Heflin Mining Co.
1200 Chester Street
Aurora, Colorado

For Drilling on DMEA Project # 3655, Contract IDM-E899,
For Month of February, 1956

For Moving Bulldozer off of property	$30.00
Building Access Roads and Drill Sites 6 Hrs. @ $12.50	75.00
Plug Bit Drilling, 183' @ $1.75	320.00
For Core Drilling, 906' @ $2.73	2,473.38
Total	$2,898.63

The Fritz-Erickson Mining Co.

By Clyde C. Fritz

(c o p y)

Hole No. (K prefix omitted)	Plug depth drilled feet	Cored depth drilled feet	Total depth drilled feet	Footage of bored core	Depths logged by DMEA	Mineralization by DMEA Barnsley Unit	Mineralization reported by operator
3	75	198	273	198	248	Barren	Barren
5	15	205	220	205	219	Barren	Barren
7	30	164	194	164	192	Barren	Barren
8	50	185	235	185	233	Barren	Barren
9	11	156	167	156	165	Barren	Barren
Totals drilled	183	906	1089	906			
" claimed	180	906	1086				
Prev. "	525	645	1170				
Claimed to date	705	1551	2256				
Permitted by contract-Stage I	670	1220	1990				
Authorized by work approval	35	332	367				
Total authorized	705	1552	2257				

The core from holes drilled in February 1956 was stored at the Slick Rock camp of the Geological Survey. It was checked for footage. Holes were logged by the DMEA logging unit and lithologic logs have been made by a Geological Survey geologist. All results check those reported by the operator.

It is noted that the operator does not consider Stage II drilling advisable and is not requesting further work. The DMEA representatives in Grand Junction, Colorado concur, and recommend termination of the contract without certification of discovery or development. The narrative report for February 1956 gives a complete summary of the project, and it is recommended that it be accepted as a final report, if the Operator will furnish the required number of additional copies.

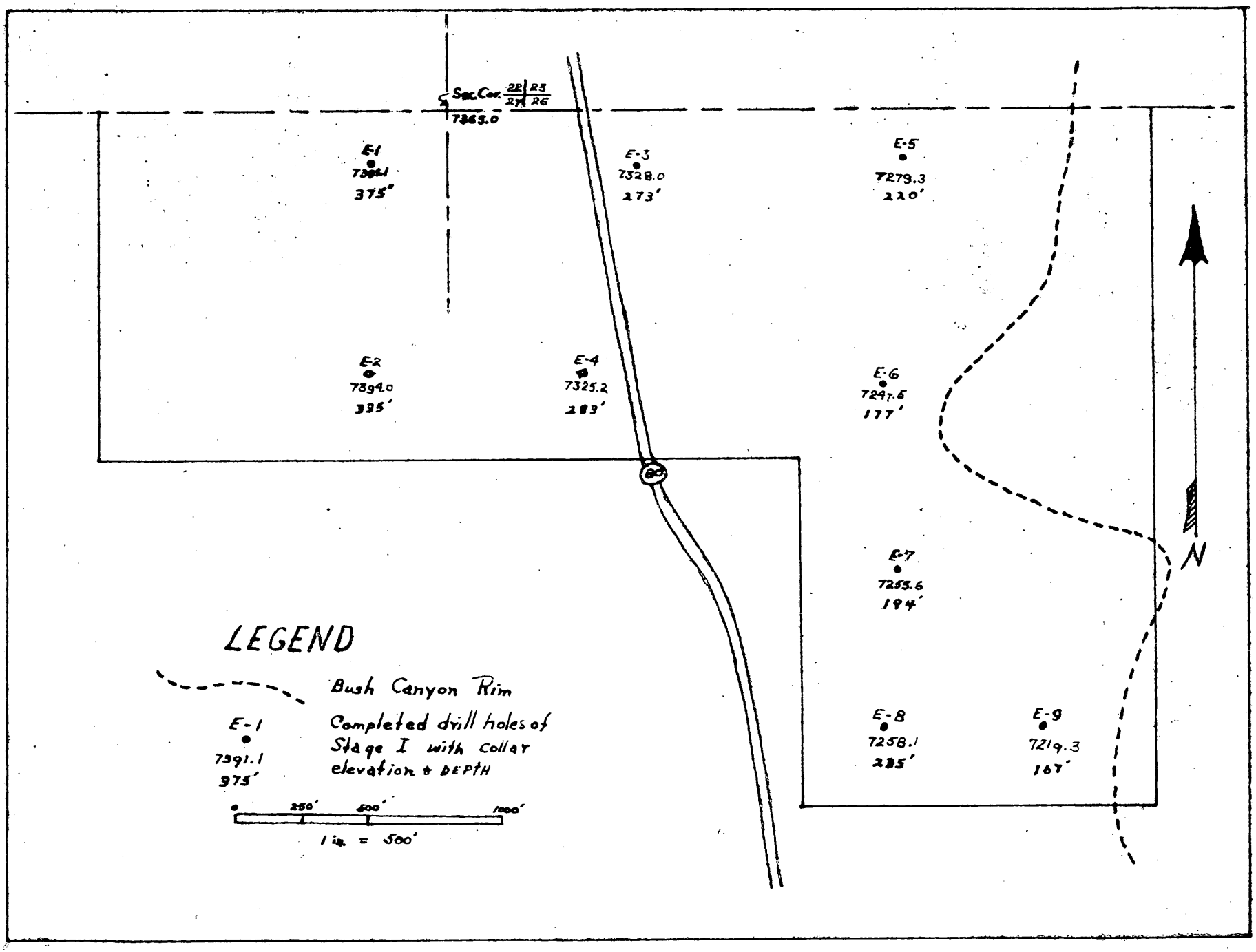
The operator has submitted in quintuplicate for February 1956, a narrative report with map, lithologic logs, results of probing by the operator, MF-104 and MF-104A forms, and 1 copy of the contractor's invoice for drilling and bulldozing. Monthly and cumulative totals on the MF-104 and MF-104A forms are correct, and all material is satisfactory.

It is recommended that $2,715.79 or 75 percent of the amount claimed in February 1956, $3,621.05, be approved for payment.

Scott Hazen h
for M. H. Salisbury
Mining Engineer

cc 6
Lim-8899
Chron.

MHS/eo



Map Showing Location of Completed Drill Holes on J.V. Eaverson Lease, San Miguel County, Colo.
D.M.E.A. Contract Idm E-899 Bowles - Heflin Mining Co.

Drilling on [illegible] Lease under D.M.E.A. Contract 14-E-[illegible]

Drill Hole Number	Footage Plug-Out	Footage Cased	Total Footage	Remarks
E-1	180	195	375	Sur [illegible]
E-2	195	140	335	[illegible]
E-3	75	198	273	[illegible]
E-4	135	148	283	[illegible]
E-5	15	205	220	[illegible]
E-6	15	162	177	[illegible]
E-7	30	164	194	[illegible]
E-8	50	185	235	[illegible]
E-9	13	154	167	[illegible]
Total 9 Holes	708'	1,551'	2,259'	[illegible]
D.M.E.A. Contract	705'	1,551'	2,256'	[illegible]

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APR 2 5 1956

DRILL HOLE LOGS OF HOLES COMPLETED

on

CONTRACT IDM-E899

with

THE BOWLES-HEFLIN MINING COMPANY

during

MONTH OF FEBRUARY, 1956

Drill Holes
E-3
E-5
E-7
E-8
E-9

L. R. Ward,
Geological Engineer

Final Report on the Drilling Program in DMEA Contract E-899

In completing the drilling program set forth under DMEA Contract E-899 on the J.V.Eavenson lease in San Miguel County, Colorado by the Bowles-Heflin Mining Co., a total of 2259 feet of drilling was required to complete the 9 holes in Phase 1. The Contract specified 9 holes with a total footage of 1850 feet and the possibility of additional footage if necessary. When 7 holes totaling 1330 feet were completed, drilling operations were suspended until additional footage was authorized.

Of the 2259 feet drilled, 1170 feet were drilled in January to complete 4 holes which were covered in the monthly progress report for that month. The remaining 5 holes totaling 1089 feet were drilled in February, and are included in this report. a map showing the exact location and collar elevation of all holes is also included herein.

Of the 1089 feet drilled during February, 183 feet was used in plugging from the surface to the Brushy Basin-Salt Wash contact as was specified in the contract, or to the first sandstone horizon encountered in the Salt Wash member of the Morrison formation. The remaining 906 feet was used in coring the potential ore bearing horizons in the Salt Wash member.

In 3 of the 5 holes drilled in February, the various sandstone horizons were so thick and the shale beds separating them were so thin as to make it difficult to separate them and for this reason the holes were drilled to the Summerville formation.

Four of the holes were drilled without water and the other one was finished using water. Core recovery in holes where drilling was done dry was very poor in the shale and mudstone separating the different sandstone horizons, but was very good in the sandstone itself. Core recovery where water was used was very good in both shale and sandstone. A close log was kept on all lithologic changes in drill cuttings and correlated with the core.

All holes were probed shortly after drilling was completed by the USGS using a Barnaby probe and by myself using a 1000-foot portable probe and Babel counter. Nothing of interest was found.

Drill hole E-3 Contract Adm E-399 Bowles-Feflin Mining Co.
Dates: Collared 1/20/[illegible] Finished 2/11/56
Location: 700 ft. East and 200 ft. South of Sec. Cor. 33 | 28 T43N R15W
35 | 36

0	-	2	Topsoil.
2	-	4	Dk. brown clay.
4	-	5.5	Gray shale.
5.5	-	7	Dk. buff, med. grnd. soft ss.
7	-	9.5	Gray shale.
9.5	-	11	Buff colored sandy shale.
11	-	12	Dk. reddish gray shale.
12	-	18	Multicolored shales (gray, green buff, etc.)
13	-	19	Hard, fine grnd. buff colored ss.
19	-	20	Very hard, lt. buff, fine grnd. limey ss. Very nearly a true limestone.
20	-	22	Dk. red shale.
22	-	23	Dk. brown, soft sandy shale.
23	-	23.5	Soft. brownish gray, friable, med. grnd. ss.
23.5	-	24	Gray-green and red shale.
24	-	24.5	Lt. buff, med. grnd. med. hard ss.
24.5	-	25.5	Lt. pink, med. grnd. med. hard ss.
25.5	-	26.5	Buff colored, fine grnd. ss.
26.5	-	29	Gray-green sandy shale.
29	-	30	Dk. red sandy shale.
30	-	33	Dk. gray shale.
33	-	36	Mottled green and gray shale.
36	-	40	Buff to gray, fine grnd. ss.
40	-	60	Soft, med. grnd. buff colored ss.
60	-	63	Soft dk. buff ss.
63	-	66	Soft, lt. buff to white, fine grnd. ss.
66	-	66.5	Gray shale.
66.5	-	73	Dk. red mudstone.
73	-	74.5	Gray sandy shale.
74.5	-	75	Gray, fine grnd., soft, friable ss.
75.0			Started coring.
75.0	-	76.3	Fairly hard, gray limey shale.
76.3	-	79.8	Red and gray mottled, thinly laminated soft mudstone.
79.8	-	80.7	Lt. red, fine grnd., friable ss.
			75.0 - 81.0 5.9 ft. of core.
80.7	-	83.0	Very hard, dk. buff limey ss.
83.0	-	84.9	Soft, red and green mudstone.
84.9	-	96.0	Good hard, dk. buff, med. grnd. x-bedded ss. w/ thin gray shale partings.
96.0	-	113.7	Soft, red mudstone. Very poor core
			81.0 - 103.7 15.5 ft of core.
			103.7 - 113.7 1.3 ft. of core.
113.7	-	123.3	Lt. to dk. buff, friable, fairly porous ss.
123.3	-	124.1	Very hard, reddish gray, fine grnd. limey ss.
1			113.7 - 124.1 10.4 ft. of core.
124.1	-	124.9	Soft red mudstone.
124.9	-	125.8	Lt. red, med. grnd., soft, friable, x-bedded ss.

126.8	-	132.7	Lt. to dk. buff, soft red, grnd. porous ss. showing moderate x-bedding.
132.7	-	133.0	Lt. green mudstone.
133.0	-	136.2	Dk. red mudstone. Good core, w/ a 4'' ss. streak at 133.0' andat 134.5'
			124.1 133.5 3.4 ft. of core.
136.2	-	133.9	Hard, Lt. buff, limey, dendritic ss. w/ minor x-bedding, and a 2" seam of gray shale at 137.4'
139.9	-	139.7	Hard, red, limey, x-bedded ss.
139.7	-	140.9	Med. hard, dk. buff ss.
140.9	-	143.6	Soft, porous, lt. green shaley ss. Loss of 2' of core.
143.6	-	146.3	Hard, dense, gray ss. interbedded w/ thin layers of mudstone and w/ a few clay galls.
			133.3 - 144.2 8.0 ft of core.
146.3	-	149.6	Red and green mottled sandy shale, grading into dk. red mudstone.
149.6	-	15212	Interbedded lt. gray limey shale and dk. red mudstone.
			144.2 - 152.2 6.3 ft. of good core.
152.2	-	175.1	Soft red and gray mudstone w/ a limestone rib at 155.5' to 156.3'.
17.			152.2 - 163.2 9.8 ft. of core.
			163.2 - 174.2 10.6 ft. of good core.
175.1	-	176.4	Hard green, limey shale w/ thin red mudstone partings.
176.4	-	177.3	Red and green mudstone.
177.3	-	178.7	Med. hard, red and green mottled sandy shale.
178.7	-	183.6	Red and gray mottled mudstone. Lost 2.5' of core.
183.6	-	186.0	Med. hard red and gray sandy shale. Lost 1.1' of core.
			174.2 - 184.2 7.5 ft. of core.
186.0	-	187.1	Soft red mudstone.
187.1	-	188.1	Red and gray limey shale.
188.1	-	188.6	Red mudstone.
188.6	-	190.6	Dk. red, fine grnd., limey ss.
190.6	-	191.4	Red mudstone.
191.4	-	192.5	Dk. red, fine grnd. limey ss.
192.5	-	194.2	Red mudstone.
			184.2 - 193.1 3.7 ft. of core.
194.2	-	196.5	Hard, dense red sandy shale.
196.6	-	207.1	Red mudstone.
207.1	-	209.0	Hard, dense, fine grnd., lt. red, dendritic ss.
209.0	-	225.5	Med. soft, porous, med. grnd., x-bedded, lt. pink to buff ss. w/ thin mudstone partings along bedding planes.
			204.0 - 217.5 12.6 ft. of good core.

E-3 cont.

225.5	-	23[illegible]3	Red, green, and [illegible]y mottled mudstone. 217.5 - 228.5 10.4' of good core.
239.3	-	239.6	Hard, gray-green limey shale member. 228.5 - 239.5 7.9' of poor core.
239.6	-	260.3	Red and gray mottled mudstone w/ an occasional 6" streak of green sandy shale. 239.5 - 249.0 7.0' of poor core. 249.0 - 259.5 4.6' of poor core.
260.3	-	272.3	Med. hard, porous, friable, med. grnd. buff ss. w/ minor x-bedding and red mudstone partings along the bedding planes
272.3	-	273.0	Soft, red, mudstone 259.5 - 273.0 11.8' of core.

Drill hole E-5 Contract Idm E-899 Bowles-Haflin Mining Co.
Dates: Collared 1/23/56 Finished 2/4/56
Location: 1000 feet East of drill hole E-3

0	-	4	Topsoil.
4	-	7	Topsoil and dk. red clay mixed.
7	-	8.5	Dk. red clay.
8.5	-	9	Gray shale.
9	-	13.5	Lt. and dk. red mudstone.
13.5	-	14.0	Dk. buff, med. grnd. ss.
14.0	-	15.0	Lt. buff, med. grnd. ss. w/ thin streaks of red and gray mudstone.
15.0	-		Started coring.
15.0	-	17.5	Lt. buff, med to fine grnd., fairly hard, compact ss.
17.5	-	18.7	No core recovery. Cuttings show the formation to be the same as 15.0 to 17.5'
18.7	-	29.0	Soft red mudstone. Very poor core recovery. 15.0 - 23.0 2.5 ft. of very poor core. 23.0 - 29.0 2.8 ft. of very poor core.
29.0	-	30.2	Red and green mudstone. Very poor core.
30.2	-	52.2	Lt. buff, med. grnd., fairly soft, porous, friable, massive ss. 29.0 - 31.0 0.9' badly broken core. 0.8' of good core. 31.0 - 44.0 12.7' of good core.
52.2	-	54.7	Dk. buff, soft, friable, med. grnd. ss. w/ lge. green shale inclusions. x-bedded.
54.7	-	55.0	A mixture of med. grnd., porous, buff ss. and green shale, indicating a shale member to follow. 44.0 - 55.0 10.9' of good core.
55.0	-	57.8	Soft, gray-green and red sandy shale. Lost 1 ft. of core.
57.8	-	58.5	Dk. buff, fine grnd., limey ss. Dendritic and containing thin, calcite filled cracks, and thin gray shale partings.
58.5	-	60.9	Soft red mudstone. 55.0 - 59.0 3 ft. of good core.
60.9	-	64.4	Dk. buff, fine grnd.,limey ss. Dendritic and w/ a calcite filled vrack running lengthwise through the core. 59.0 - 62.0 3.1 ft. of good core.
64.4	-	67.8	Med. soft red, sandy shale.
67.8	-	69.8	Mottled red sandy shale and dk. buff limey ss. and shale w/ red mudstone partings.
69.8	-	70.3	Hard, brown, fine grnd. limey ss.
70.3	-	75.8	Med hard. dk. to lt. red, med. grnd. porous friable ss. w/ red mudstone partings. 62.0 - 75.5 9.6 ft of fair core.
75.8	-	81.0	Lt. buff to white, med. grnd.,porous, friable ss., getting lighter in color, more porous, and containing more green clay w/ depth.

81.0	-	82.9	Dk. brown, limonitic , fine grnd., limey sandstone.
82.9	-	84.0	Dk. red mudstone.
84.0	-	84.8	Gray limey shale.
84.8	-	85.7	Red sandy shale.
85.7	-	94.0	Red mudstone. Loss of 4.7' of core. 75.5 - 85.0 10.7 ft. of good core.
94.0	-	95.4	Gray shale.
95.4	-	97.4	Red an gray mottled mudstone.
97.4	-	100.3	Red and gray mottled sandy shale.
100.3	-	105.8	Red and gray mudstone. 89.0 - 102.5 11.2 ft. of good core.
105.8	-	108.5	Hard, gray limey shale.
108.5	-	111.8	Soft red mudstone.
111.8	-	114.9	Hard, gray limey shale. 102.5 - 113.0 5.9 ft of poor core.
114.9	-	124.3	Med hard, red, limey shale w/ thin mudstone partings.
124.3	-	125.0	Very hard gray limestone.
125.0	-	132.0	Hard red limey shale. fair core. 113.0 - 125.0 9.1 ft of core.
132.0	-	134.0	Hard gray limestone. Very poor, badly shattered core. 125.0 - 134.0 6.7 ft. of fair core.
134.0	-	138.0	Hard red limey shale. Loss of 1.4 ft. of core.
138.0	-	141.0	Hard red and gray sandy shale. Badly shattered core.
141.0	-	144.5	No core recovery. Cuttings of soft red mudstone.
144.5	-	149.0	Soft, lt. red to buff mudstone cuttings. no core recovery. 134.0 - 148.5 5.1 ft of poor core.
149.0	-	164.0	Dk. gray, nearly black, soft, sandy shale. Poor core. 148.5 - 162.0 8.2 ft of good core.
164.0	-	166.7	Lt. buff, sandy shale.
166.7	-	169.0	Salmon pink sandy shale.
169.0	-	170.0	Dk. red mudstone. No core recovery.
170.0	-	173.1	Hard, dense, fine grnd., lt. gray to lt. buff, semi friable ss.
173.1	-	189.5	Soft, med. grnd. porous and friable, lt. buff to white ss. 162.0 - 175.5 7.2 ft. of poor core. 175.5 - 180.5 4.25 ft. of good core.
189.5	-	206.5	Soft dk. and lt. red mudstone. 180.5 - 194.0 12.6 ft. of good core. 194.0 - 196.0 1.8 ft. of good core.
206.5	-	209.0	Fairly hard, med. grnd, lt. pink to white friable quartz ss. Poor core. 196.0 - 209.0 7.6 ft. of poor core.
209.0	-	216.0	Hard, glassey, med. grnd. pink to buff ss.
216.0	-	220.0	Lt. red sandy shale. 209.0 - 220.0 7.4 ft. of fair core.

Drill hole E-7 Contract Idm E-899 Bowles-Hefl[illegible]n Mining Co.
Dates: Collared 2/3/56 Finished 2/6/56
Location: 500 feet South of drill hole E-6

0	-	4	Topsoil.
4	-	6	Gray clay.
6	-	7	Gray sandy shale.
7	-	9	Soft, med. grnd., gray to buff ss.
9	-	10	Red mudstone.
10	-	11	Gray sandy shale.
11	-	13	Red mudstone.
13	-	13.5	Buff ss.
13.5	-	16	Red sandy shale.
16	-	17.5	Soft, med. grnd., lt. to dk. buff ss.
17.5	-	21.5	Red mudstone.
21.5	-	22.5	Hard, fine grnd., limey, buff colordd ss. w/ a streak of dk. buff ss. at 22'.
22.5	-	23	Red sandy shale.
23	-	27	Soft, friable red ss. getting harder and lighter in color w/ depth.
27	-	28	Soft red mudstone.
28	-	30	Soft, friable and porous, lt. buff ss. Started coring.
30	-	50.5	Soft, friable, porous, lt. pink, med. grnd. ss. turning lighter to almost white at 35' Minor X-bedding near the bottom. 30.0 - 39.0 8.5 ft. of good core.
50.5	-	51.9	Red mudstone. Loss of 1' of core.
51.9	-	53.0	Lt. to dk. buff colored sandy shale. Med. hard. Good core. 39.0 - 52.5 12.1 ft. of good core.
53.0	-	64.9	Soft, lt. red mudstone. Very poor core recovery. Core badly shattered.
64.9	-	65.6	Hard red sandy shale.
65.6	-	66.0	Very hard, dense, semi friable, fine grnd. red ss. w/ red mudstone partings. 52.5 - 66.0 3.5' of poor core.
66.0	-	79.5	Continuation of 65.6 - 66.0., but ss. getting progressively lighter in color, softer and more friable with depth.
79.5	-	95.0	Continuation of 66.0 - 79.5 but returning to light pink color. Still soft and friable and more strongly x-bedded. 66.0 - 79.5 12.0 ft. of good core. 79.5 - 93.0 11.5 ft. of fair core.
95.0	-	98.0	No core recovery. Cuttings of soft dk. red mudstone.
98.0	-	98.7	Hard, dk. buff colored, fire grnd., limey sandstone.
98.7	-	105.5	Soft, porous, very friable, med. grnd. lt. pink ss.
105.5	-	106.5	Med. hard, semi friable, fine to med. grnd. white ss.
106.5	-	117.5	Med. soft, friable, porous, med. grnd. lt. pink to white ss. 93.0 - 106.5 9.1 ft. of poor core.

117.5	-	1[illegible].7	Soft r d mudstone [illegible]uttings. No core recovery.
118.7	-	128.2	Very soft, friable, med. grnd., lt. pink to buff ss. 106.5 - 120.0 12.8 ft of very good core.
128.2	-	129.5	Soft red mudstone cuttings. No core recovery.
129.5	-	129.8	Soft gray mudstone cuttings. No core.
129.8	-	130.5	Med hard, porous, med. grnd. buff ss. w/ red mudstone partings.
130.5	-	131.3	Soft red mudstone.
131.3	-	132.0	Hard, lt. green limey shale.
132.0	-	135.5	Soft red mudstone. 120.0 - 133.5 10.3 ft. of fair core.
135.5	-	141.1	Med hard red sandy shale w/ an occasional layer of soft red mudstone. Poor core. Loss of 3.4' of core.
141.1	-	142.6	Fairly hard, green and gray sandy shale.
142.6	-	146.2	Soft red mudstone.
146.2	-	149.8	Greenish gray hard limey shale. 133.5 - 147.0 10.1 ft. of fair core. Loss was in the mudstone.
149.8	-	166.6	Med. hard, dk. red and gray mudstone w/ an occasional gray-green limey shale streak. Red mudstone predominant 147.0 - 160.5 10.3 ft. of good core. Poor recovery in the mudstone.
166.6	-	169.0	Hard, dense, fine grnd., gray limey ss.
169.0	-	179.5	Med. hard, friable, med. grnd. lt. red ss. getting softer and lighter in color w/ depth. 160.5 - 174.0 9.1 ft. of fair core except in mudstone at top.
179.5	-	185.7	Med. hard, porous, friable, med. grnd. clean white quartz ss.
185.7	-	187.0	Lt. red mudstone cuttings. No core recovery.
187.0	-	187.5	Very hard, dk. red limestone. 174.0 - 187.5 12.1 ft. of very good core.
187.5	-	194.0	Soft, brick red, fine grnd. ss. interbedded w/ dk. red mudstone (Summerville) 187.5 - 194.0 5.0 ft. of fair core.

Drill hole E-8 Contract Idm E-395 Bowles-Heflin Mining Co.
Dates: Collared 2/20/56 Finished [redacted]/22/56
Location: 600 feet [redacted]outh and 100 feet west of drill hole E-7

0	-	9	Dark red topsoil.
9	-	15	Lt. gray clay and red topsoil mixed.
15	-	17	Gray clay.
17	-	19	Dk. red mudstone.
19	-	20	Gray sandy shale.
20	-	22.5	Dk. red mudstone.
22.5	-	24.5	Hard gray limestone.
24.5	-	26	Red sandy shale.
26	-	27.5	Gray limestone.
27.5	-	34	Red sandy shale.
34	-	35	Thinly laminated green shale.
35	-	41	Red shale.
41	-	42	Gray limestone.
42	-	43	Soft, red, thinly laminated mudstone.
43	-	44	Hard gray limestone.
44	-	48	Soft red mudstone.
48	-	48.5	Soft, lt. green mudstone.
48.5	-	50	Lt. buff, med. grnd. ss.
50			Started coring.
50	-	59.2	Lt. buff, med. to fine grnd., semi-friable, massive ss.
59.2	-	63.5	Lt. green sandy shale. Badly shattered core. 50.0 - 63.5 9.8' of good core.
63.5	-	68.2	Soft red mudstone cuttings. No core recovery.
68.2	-	73.5	Lt. red to buff, med grnd., friable, semi-porous ss. w/ minor x-bedding and a few thin red mudstone partings.
73.5	-	75.0	Dk. buff, fine grnd., massive ss. 63.5 - 74.0 6.3' of core.
75.0	-	96.0	Lt. buff, med. grnd., semi-friable ss. showing minor x-bedding near the top. 74.0 - 87.5 8.1' of good core. 87.5 - 96.0 3.0' of very good core.
96.0	-	110.0	Soft, thin bedded, red and gray mottled mudstone w/ several hard limey shale ribs. Very poor core recovery. 96.0 - 109.5 3.2' of very poor core.
110.0	-	119.5	Soft, friable, fine grnd. red ss. showing some x-bedding and interbedded with an occasional streak of red sandy shale.
119.5	-	122.0	Soft red sandy shale. 109.5 - 122.0 10.5' of good core.
122.0	-	127.0	Fine grnd., red ss. w/ strong x-bedding and w/ thin red shale partings along the bedding planes
127.0	-	140.7	Massive, red, med. grnd. ss. w/ a streak of dk. buff, limey ss. at 135 to 135.5! Getting lighter colored w/ depth. 122.0 - 135.5 11.6' of very good core.
140.7	-	150.0	Massive, med. to fine grnd., very friable, porous, buff colored ss. 135.5 - 148.0 11.3' of good core.
150.0	-	164.4	Lt. red, thin bedded, fine grnd., friable ss. 148.0 - 161.5 13.0' of very good core.

E-8 cont.

164.4	-	173.5	Med. grnd., massive, friable, buff colored ss.
173.8	-	175.0	Hard, dense, lt. gray limestone. 161.5 - 175.0 10.1' of fair core.
175.0	-	182.7	Soft, red mudstone. Poor core recovery.
182.7	-	187.6	Red sandy shale.
187.6	-	188.5	Red and gray mottled sandy shale. 175.0 - 188.5 7.4' of poor core.
188.5	-	191.9	Soft. red and gray mudstone. Very poor core recovery.
191.9	-	198.5	Red and gray mottled sandy shale.
198.5	-	202.0	Red mudstone. 188.5 - 202.0 7.6' of very poor core.
202.0	-	215.5	Massive, lt. red, med. grnd., semi-porous ss. 202.0 - 215.5 9.3' of fair core.
215.5	-	231.0	Med. grnd., very porous and friable, lt. buff to white, clean quartz ss. w/ minor x-bedding. 215.5 - 229.0 12.5' of very good core.
231.0	-	235.0	Med. hard, thin bedded, brick red sandy shale. 229.0 - 235.0 4.1' of fair core.

Drill hole E-9 Contract Idm 1-499 Bowles-Hellin [illegible]
Dates: Collared 2/22/56 Finished 2/25/56
Location: 600 feet South and 500 feet East of drill hole E-7

0	-	3	Dk. red topsoil.
3	-	5	Sticky red clay.
5	-	8	Lt. red, med. grnd. ss.
8	-	9.5	Soft, thinly laminated green shale.
9.5	-	13	Soft, med. grnd. buff colored ss.
13			Started coring.
13	-	25.8	Lt. pink to lt. buff, med. grnd., porous, semi-friable, massive ss.
25.8	-	27.2	Lt. gray, fine grnd., very friable ss. w/ small carbon inclusions.
			13.0 - 24.5 9.8' of good core. Loss of core occured from 21.0 - 24.5' due to a crack in the formation that caused core to shatter.
27.2	-	29.6	Dk. buff, med. grnd., x-bedded, porous ss.
			24.5 - 29.0 3.7' of poor core.
29.6	-	38.6	Lt. buff, med. grnd., very porous and friable massive ss.
			29.0 - 38.0 8.0' of poor core.
38.6	-	41.0	Varicolored shale.
			38.0 - 41.0 2.0' of poor core.
41.0	-	41.8	Hard, med. grnd., dense gray limey ss.
41.8	-	42.5	Soft, gray and green mottled sandy shale.
42.5	-	56.0	Soft, thinly laminated red mudstone, w/ a 6" streak of gray limey shale at 54'.
			41.0 - 51.5 6.0' of very poor core.
56.0	-	65.0	Red and gray mottled mudstone cuttings. No core recovery.
			51.5 - 65.0 No core.
65.0	-	69.0	Soft gray mudstone. Very poor core.
69.0	-	70.5	Red and gray sandy shale.
70.5	-	77.0	Soft, dk. red mudstone. Very poor core.
			65.0 - 77.0 5.0' of poor core.
77.0	-	89.0	Red, med. grnd., shaley ss.
			77.0 - 85.0 6.7' of fair core.
89.0	-	91.5	Lt. buff, med. grnd., porous, massive ss.
91.5	-	93.0	Red, med. grnd., porous ss.
93.0	-	94.0	Red mudstone cuttings. No core.
94.0	-	96.0	Red, med. grnd., ss.
96.0	-	96.5	Soft red mudstone cuttings. No core.
96.5	-	98.0	Dk. red, hard, dense med. grnd., ss.
			85.0 - 98.0 10.5' of fair core.
98.0	-	109.8	Lt. buff to white, fine grnd., dense, massive, limey ss. Very poor core.
			98.0 - 108.5 8.3' of very poor core.
109.8	-	114.3	Soft red mudstone.
114.3	-	118.0	Red and gray mottled sandy shale.
118.0	-	121.7	Hard, lt. gray limey shale.
			108.5 - 120.5 4.0' of very poor core.
121.7	-	134.5	Soft, red and gray mottled mudstone. Very poor core.
			120.5 - 131.5' 5.0' of very poor core.

E-9 cont.

134.5	-	137.0	Green sandy shale.
137.0	-	145.0	Soft red mudstone. Very poor core. 131.5 - 145.0 4.0' of very poor core.
145.0	-	147.3	Red and gray mottled sandy shale w/ thin interbedded layers of soft red mudstone.
147.3	-	149.1	Greenish-yellow shale.
149.1	-	153.5	Dk. red to buff, med. grnd., porous ss. 145.0 - 153.5 3.3' of very poor core.
153.5	-	155.5	Lt. red, fine to med. grnd., semi-friable, ss. w/ minor x-bedding.
155.5	-	165.6	Massive, semi-friable, lt. buff to white ss.
165.6	-	167.0	Brick red hard sandy shale (Summerville).

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 4-18

REFERRED TO:

1. 700
2. Murphy
3. Doherty
4.

FOR:

- ____ Action
- ____ Approval
- ____ Comment
- ____ Conference
- ____ Consideration
- ____ Filing
- ____ Instructions
- ____ Investigation
- ____ Initials
- ____ Mailing
- ____ Previous correspondence
- ____ Recommendation
- ____ Record of ____
- ____ Referring to ____
- ____ Reply for signature of ____
- ____ Rewriting
- ____ Signature
- ____ Suggestions
- ____ Your information

REMARKS: Encl. Audit and Field Team Report

Check (X) before the items needing attention.

Initials of sender.

GPO 16—63815-1

4-18-56

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

[illegible] New Customhouse
Denver 2, Colorado

CERTIFIED MAIL

April 16, 1956

Messrs. Melvin C. Bowles
and A. L. Moflin, Partners,
d.b.a. Bowles-Moflin Mining Company
1800 Chester Street
Aurora, Colorado

Re: Docket DMEA 5655 (Uranium)
Contract [illegible]

Gentlemen:

Because of the unfavorable results of the work performed under Stage I, the Government's approval for performance of the work under Stage II will not be forthcoming. Therefore, the Contract work can be considered as having been completed as of the completion of the work under Stage I on or about February 23, 1956.

Under the circumstances, the narrative report and other data forwarded by you with form DF-104, "Operator's Progress Report and Voucher," for the month of February, 1956, are considered adequate as your final report and satisfies the requirement under Article V(e) of the contract form pertaining to such.

Very truly yours,

DMEA Field Team, Region III

W. M. Weaver
W. M. Weaver

E. M. Harshman
E. M. Harshman

JWT:prl
cc: Chairman, Oper. Comm. (4)
Finance Office, Region III
Amendment file
Harshman
Shaw (2)
Hasler
Townsend
Corres. file
Chron.

Operator's
final report

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA
Date Rec'd.
APR 3 1956
BUREAU OF MINES
Denver, Colorado

P. O. Box 360
Grand Junction, Colorado

March 29, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: John F. Shaw
E. N. Harshman

From: J. W. Hasler
M. H. Salsbury

Subject: DMEA 3655 (Uranium), Bowles-Heflin Mining Company, (J. V. Eaverson lease), San Miguel County, Colorado. Recommendations on contract termination

Stage I of the subject contract has been completed with completely negative results. The operator does not consider further exploration justified and is not requesting any stage II work. We concur in this decision.

The operator's narrative report for February 1956 gives a complete summary of project work and is suitable for his final report. If he will submit the required number of copies for this purpose, we recommend that it be accepted as such.

It is further recommended that contract Idm-E 899 be terminated without certification of discovery or development.

M. H. Salsbury
U. S. Bureau of Mines

J. William Hasler
Geological Survey

MHS/mlr

4-16-56

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APR 13 1956

FINAL DISTRIBUTION
MADE APR 11 1956

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

224 New Customhouse
Denver 2, Colorado

April 4, 1956

Memorandum

To: T. A. Christensen

From: Executive Officer, DMEA Field Team, Region III

Subject: DMEA Docket 3655 (Uranium) Contract Idm-E899, Bowles-Heflin Mining Company, San Miguel County, Colorado. Operator's Monthly Progress Report, for the month of January, 1956

Enclosed are the original and four copies of Form MF-104 and Form MF-104A, Narrative Report, and Engineer's Report for the above period.

Work has been accomplished as authorized in the contract and payment is recommended for 75 percent of the amount as reported on Form MF-104, contingent on your verification of the correctness of applicable rates and arithmetical accuracy of computations.

Remarks

Date of Report----------February 6, 1956
Date Received in Field Office----------March 19, 1956
Date Received in Region Office---------- March 26, 1956

W. M. TRAVER

W. M. Traver

Enclosures
JWT:jy
cc: MF-104 File E899
Sec. Op. Comm. (2)
Shaw (2)
Chron.

RECEIVED
APR 1 3 1956
DMEA
Date Rec'd.
MAR 26 1956
BUREAU OF MINES
Colorado

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
March 23, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: John F. Shaw
Supervising Mining Engineer

From: M. H. Salsbury

Subject: DMEA 3655, Contract Idm-2899 (Uranium) Bowles-Maflin Mining Company, San Miguel County, Colorado - Checking revised MF-104 forms for January, 1956.

The operator under the subject contract has furnished corrected MF-104 and MF-104A forms in quintuplicate to replace those originally submitted with claims for January, 1956 operations.

They are satisfactory and monthly and cumulative totals appear to be correct.

It is recommended that payment be approved on the basis shown in the progress report for January, 1956.

for John F. Shaw
M. H. Salsbury
Mining Engineer

MHS/mr
cc 6
Idm-2899
Chron

RECEIVED
APR 1 3 1956

DMEA
Date Rec'd.
MAR 26 1956
BUREAU OF MINES
Denver, Colorado

Region III

Building 20
Denver Federal Center
Denver 2, Colorado
February 20, 1956

DMEA
Date Rec'd.
FEB 21 1956
BUREAU OF MINES
Denver, Colorado

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: John F. Shaw
Supervising Mining Engineer

From: M. M. Salsbury

Subject: DMEA 3655 (Uranium) Contract Idn N-899, Bowles-Heflin Mining Co., San Miguel County, Colo.-Progress report for January 1956.

Operations under the subject contract were visited on Jan. 5, 1956, and inspected on February 10, 1956 in company with F. M. Myers of the Geological Survey. Vernon Bowles, representing the operator, was present.

Payment is claimed in January 1956 for the following items:

Moving Bulldozer on property	$ 30.00
8 hrs. bulldozing for access roads and drill sites at $12.50 per hr.	100.00
Plug-bit drilling 525 ft. at $1.75/ft.	918.75
Core drilling 645 ft. at $2.73/ft.	1760.85
Incidental allowance on 1170 ft. of drilling at $0.67 per ft.	783.90
4 chemical analyses for U_3O_8 and V_2O_5 at $5.00 each	20.00
Total claimed in January 1956	$3613.50
Government participation at 75 percent	$2710.13

All claims are in accordance with contract terms and within contract maximums and are supported by contractor's invoices and a certified certificate for chemical analyses. A breakdown of incurred expenses, not required, was furnished with the operator's narrative report. Items of expense in this statement which the incidental allowance covers appear to have been adjusted to equal the incidental allowance of $783.90.

At the time of the inspection, holes nos. 1, 2, 4, 5, 6, and 7, as shown on figure 2 with the contract had been drilled, all at specified locations. Hole No. 3 was being drilled. The operator drilled in January 1956 holes no. 1, 2, 4 and 6 (prefixed X on the map with the narrative report). Holes were probed by the operator and by the DMEA Barnaby unit.

Hole No. (X-prefix omitted)	Flng Cored Depth Claimed (feet)	Depth Claimed (feet)	Total Depth Claimed (feet)	Footage of Bonad Core	Depth Logged by DMEA Barnaby unit (ft.)	Mineralization by DMEA Barnaby unit	Mineralization reported by operator
1	180	195	375	195	374	.037% U_3O_8 from 240.2 to 241.1 feet	Negligible
2	195	140	335	140	335	Barren	Barren
4	135	148	283	148	283	<0.010	Barren
6	15	162	177	162.5	172	<0.010	Barren
Totals	525	645	1170				

Examination of the core, which has been stored at the Slick Rock camp of the Geological Survey, checks radiometric results and verifies the footage of coring claimed. Core corresponding to slight mineralization detected at four points in hole no. 1 was split and analyzed chemically for U_3O_8 and V_2O_5 as follows:

Sample No. 1	From (ft.)	To (ft.)	CONTENT Percent U_3O_8	Percent V_2O_5	DMEA Probing result percent eU_3O_8
1	187.2	188.1	0.013	Trace	
2	237.5	238.5	0.017	Trace	
3	238.5	239.5	0.023	Trace	
4	239.5	240.5	0.010	Trace	0.037(240.2-241.1)

The drill holes encountered sandstone thicknesses in excess of the estimated amounts and, for that reason, coring footages have exceeded the 129 foot minimum depth stipulated in the contract. It is possible that some Brushy Basin sandstone has been cored, but it is difficult to differentiate between Brushy Basin and Salt Wash sandstone in this vicinity according to the Geological Survey project chief at Slick Rock.

Not enough footage remains in Stage I to drill holes 8 and 9, and the operator has requested authorization from the DMEA Field Team to transfer footage from Stage II as provided in the contract terms. This has been recommended by the DMEA inspecting team.

The operator has submitted in quintuplicate for January 1956, a narrative report with map, lithologic logs, geologists report of results including probing, MF-104 and MF-104A forms, and 1 copy each of contractor's invoice and certified certificate of chemical analyses.

They are satisfactory except that costs are itemized on an accompanying statement instead of on the MF-104 forms. The breakdown is reproduced in this inspection report. It is recommended that the operator be advised to correct subsequent MF-104 forms.

It is recommended that $2,710.13, or 75 percent of the amount claimed in January 1956, $3,613.50 be approved for payment.

for John F. Shea

M. H. Salsbury
Mining Engineer

cc 6
Idm M-599
Chron.
MHSalsbury

MHS/ch

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

Budget Bureau No. 42-R1036.5

RECEIVED
APR 13 1956

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

Month of January, 1956 Docket No. DMEA 3655 Contract No. Idm-E899
Operator's Name Bowles-Heflin Mining Company Minerals Uranium
Address 1200 Chester Street, Aurora, Colorado
Contract Amount, $ 19,228.00 Government Participation: 75 % Amount, $ 14,421.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts: Drilling (Core	1,760.85					
(Plug	910.75					
Bulldozing	100.00					
Moving Dozer on Prop.	30.00					
Chem. Analyses	20.00					
Incidental Allowance	789.90					
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify):						
TOTALS	3,613.50			3,613.50		3,613.50

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

Date Feb. 6, 1956 *Payee Bowles-Heflin Mining Company

Per Melvin C. Bowles Title Partner

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

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

(Instructions on reverse)

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

$ 2710.13

Signature [illegible]
(Authorized Certifying Officer)

Date 4/5/56 Vou. DMA 56-90
(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. IDM E899 in accordance with the terms of the contract.

Signature M26 Salsbury 2710.13 Title Mining Engineer Date 3-20-56

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature W. M. Lamey Title Executive Officer Date APR 4 1956

MONTHLY REPORT OF OPERATOR

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

RECEIVED
APR 13 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of January 1956 Docket No. DMEA 3655 Contract No. Idm-E899

Operator's Name Bowles-Heflin Mining Company Minerals Uranium

Address 1200 Chester Street, Aurora, Colorado

OPERATION	Units	Costs This Month	Units This Month	Costs to Date	Units to Date	Unit Costs to Date	Authorized by Contract: Units	Authorized by Contract: Unit Costs
STAGE I								
Drifting Bulldozing	Hr.	100.00	8	100.00	8	12.50	24	12.50
Crosscutting Moving Dozer	Job	30.00	1	30.00	1	30.00	2	30.00
Raising Plug-Bit Drilling	ft.	918.75	525	918.75	525	1.75	670	1.75
Shafts Core Drilling	ft.	1,760.85	645	1,760.85	645	2.73	1,220	2.73
Winze Incidental Allow.	ft.	783.90	1,170	783.90	1,170	0.67	1,890	0.67
Drilling-Core Analyses	ea.	20.00	4	20.00	4	5.00	60	5.00
STAGE II								
Drum Auger Bulldozing	Hr.						48	12.50
Stripping-Moving Dozer	Job						2	30.00
Trenching Plug-Bit Drilling	ft.						1,340	1.75
Test-Pits Core Drilling	ft.						2,440	2.73
Roads and Trails Incidental Allow.	ft.						3,780	0.67
Chem. Analyses	ea.						120	5.00
Total Distributed Costs								Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		3,613.50						

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

Date Feb. 6, 1956 Operator Bowles-Heflin Minging Co.

Per Melvin C. Bowles Title Partner

M. H. Lakbury
Remarks:

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

(Instructions on reverse)

(For Government use only)

INSTRUCTIONS

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

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

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

GPO 872894

BOWLES-HEFLIN MINING COMPANY
1200 Chester Street
Aurora 8, Colorado

RECEIVED
APR 13 1956 DMEA
Date Rec'd.

MAR 26 1956

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February 6, 1956

Mr. John F. Shaw
N. S. Bureau of Mines
Room 137, Building 20
Denver Federal Center
Denver 2, Colorado

Re: Docket DMEA 3655 (Uranium)
Contract IDM-E899

Narrative Report

Gentlemen:

We started on this project January 3, 1956. We engaged the services of the Fritz-Erickson Mining Co. to do the drilling on a contract basis. The best rate we were able to get on this work was the maximum allowable under Exhibit A of the contract. The drilling contractor moved and has the following equipment on this job: Two (2) Mayhew 1000 rotary drill rigs, Two (2) 500 C.F.M. Air Compressors, both truck mounted, Two (2) Ford Water trucks, One (1) International crawler type tractor with dozer, one (1) Dodge flat-bed service truck, One (1) Ford pickup and one (1) jeep pickup. He is therefore, fully equipped to do this work and do the drilling, either wet or dry, as the individual hole requires.

We engaged the services of Mr. Russell Wood, Mining Engineer and Mr. Robert Ward, Geological Engineer, both of Dove Creek, Colorado, to take care of and do all logging and mapping of the drill holes, engineering, sampling, probing, etc.

We made arrangements with my brother Mr. Vernon Bowles, also of Dove Creek, Colorado to be on the job at all times as our representative and as supervisor of the project.

I was over the first of January for several days while we were getting started, then again for a couple of days the middle of the month and again most recently the last couple of days of January and the first of February, besides being in contact by telephone with my brother every few days.

Progress on this project during the month of January was very poor due to a combination of circumstances beyond our control, including bad weather, formations encountered, loss of circulation, both air and water, and mechanical failures of

the equipment. It is presently expected that it will not take too much longer to complete State I of this project.

As of February 1, 1956 we had completed only four (4) holes, with two (2) more being drilled at this time. Of the four (4) holes completed only the #1 showed any mineralization. (See attached report by Mr. Robert Ward - Geological Engineer for complete geological and radiometric logs of the drill holes). We had chemical analyses run on four (4) sections of core from the most radioactive zone by Charles O. Parker and Company and a copy of his assay report is included.

Sincerely yours,

BOWLES-HEFLIN MINING CO.

Melvin C. Bowles

By Melvin C. Bowles, Partner

MCB:cls
Enclosure

THE FRITZ-ERICKSON MINING CO.
Drilling Contractors
Box 365
Dove Creek, Colorado

RECEIVED
APR 13 1956

February 1, 1956

For Drilling on DMEA Project #3655, Contract IDM-E899, month of January 1956.

1.	Moving Bulldozer on to property	$30.00
1-A.	Building access roads & drill sites 8 hours @ $12.50	$100.00
2.	Plug Bit Drilling 525 feet @ $1.75	$918.75
3.	Core Drilling 645 feet @ $2.73	$1,760.85
	Total	$2,809.60

(copy of original)

BOWLES - HEFLIN MINING COMPANY
1200 Chester Street
Aurora, Colorado

RECEIVED
APR 13 1956

February 1, 1956

For Drilling on DMEA Project #3655, Contract IDM-E899, during month of January, 1956.

Fixed Unit Costs:

4.	Allowance for 1,170 feet @ $0.67 per foot	783.90
5.	4 Chemical analysis @ $5.00 per sample	20.00
		$803.90

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DRILL HOLE LOGS OF HOLES COMPLETED

on

CONTRACT Idm E-899

with

The BOWLES-HEFLIN MINING CO.

January 31, 1956

Drill holes
E-1
E-2
E-4
E-6

R.R. Ward Geol. Engineer

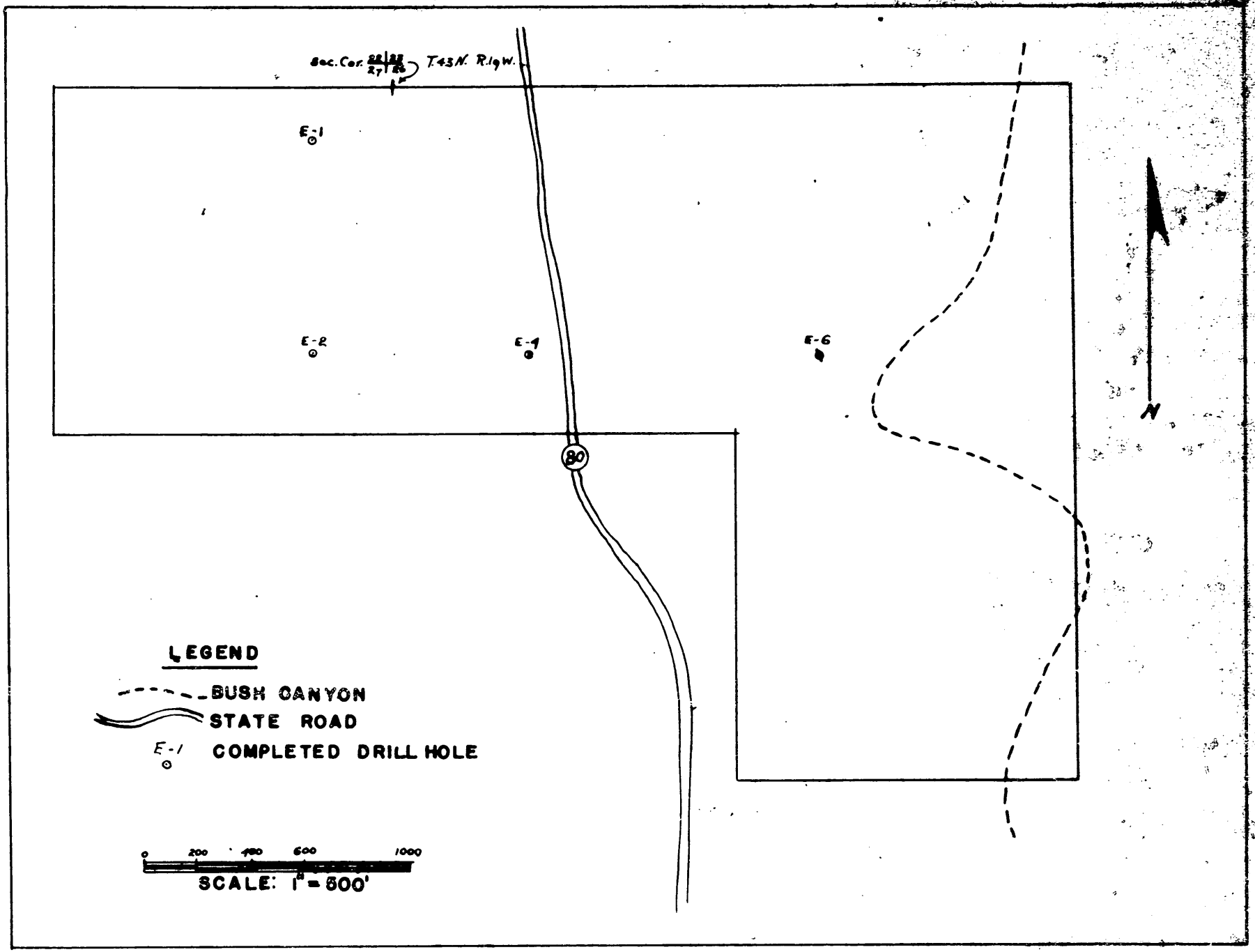
Progress report for January, 1956 on Contract Idm E-899

Of the nine drill holes, totaling 1890 feet, specified in Contract Idm E-899 to be drilled on the J.V. Eaverson lease in San Miguel County, Colorado by the Bowles-Heflin Mining Co., four have been completed having a total depth of 1170 feet. Inclement weather has slowed the drilling operation somewhat, but two of the remaining five holes are nearing completion. Of the 1170 feet drilled in the four completed holes, 525 feet was done in plugging down to the Brushy Basin-Salt Wash contact with a Mayhew 1000 rotary drill. The remaining 645 feet was used in coring through the top four sandstone horizons of the Salt Wash member of the Morrison formation. The same drill was used for coring and delivered a 2-inch core. Core recovery was very satisfactory from all holes.

Due to the amount of topsoil covering the surface of the area it was difficult to determine the exact amount of regional dip of the formations on the property, and therefore some error was encountered in detecting the exact contact between the Brushy Basin and the Salt Wash members. In drill hole E-1, the top sandstone horizon encountered was well above the point at which it was calculated to be, with the result that it was not cored. Since nearly all production in the Morrison in this area comes from the 3rd. and 4th rims it was decided that it was unnecessary to core the top or 5th rim. The hole was probed with a Babbel counter equipped with a 1000-foot probe before hole E-2 was collared and the 5th rim showed no sign of radioactivity.

The error in judging the depth of the Brushy Basin-Salt Wash contact will also have an effect on the total footage of the nine holes specified in Phase I of the contract. With the completion of the two holes being drilled, a total of approximately 1620 feet of the 1890 feet specified will have been used, leaving 450 feet for the three holes yet to be drilled. Since the remaining holes have a total estimated depth of 410 feet, this would ordinarily be enough to complete them. However, the two holes that have been drilled in the lower part of the property near the rim are running approximately one-third deeper than their estimated depths. If this holds true on the remaining three holes, then it will take at least another 100 feet of drilling to complete the nine drill holes in phase I.

Of the four holes completed, only E-1 showed any sign of radioactivity. The showing on a Babbel counter was so low as to be almost negligible. Chemical assays made on half of the core that showed any "count" proved that the rock is not ore. The other holes proved to be blank on the Babbel counter and probe as well as on the Barnaby II probe and recorder used by the U.S.G.S. in this area.



SKETCH MAP SHOWING LOCATION OF COMPLETED DRILL HOLES

J.V. EAVERSON LEASE, BOWLES-HEFLIN MINING CO.

SAN MIGUEL COUNTY, COLO.

Drill hole E-1 Contract Ldm-E899 (Bowles-Heflin Mining Co.)
Dates: Collared 1/3/56 Completed 1/13/56
Location: 300 ft. West and 200 ft. South of Sec. Cor. 28|35 / 27|26 T.43 N. R.19W

0	-	2	Topsoil
2	-	6	Lt. pink to buff colored mudstone
6	-	14	Dk. to Lt. buff, fine grnd. ss.
14	-	18	Lt. pink to red mudstone.
18	-	26	Dk. buff, fine grnd. ss.
26	-	29.5	Soft, wet, multicolored shale.
29.5	-	31	Dk. buff, fine grnd. ss.
31	-	33	Lt. gray to buff sandy shale.
33	-	37	Lt. gray, rubbery shale.
37	-	39	Lt. buff, fine grnd. ss., containing sm. clay
39	-	43	Lt. gray sandy shale.
43	-	45	Lt. gray to buff, fine grnd. ss. w/ sm. clay.
45	-	47	Lt. gray shale.
47	-	50.5	Alternating layers of Dk. buff ss. and Lt. gray shale.
50.5	-	52	Buff to lt. pink sandy shale.
52	-	55.5	Lt to dk. buff, fine grnd. ss.
55.5	-	56.5	Lt. pink mudstone.
56.5	-	78	Lt. pink to buff, fine grnd. ss. w/ a streak of brown ss. from 69.5 to 70.
78	-	81	Lt. gray sandy shale.
81	-	83	Lt. gray to red, rubbery damp shale.
83	-	93	Lt. gray sandy shale.
93	-	96	Med. hard, gray limey shale.
96	-	99	Dk. buff to brown, fine grnd,,ss. mixed w/ gray limey ss.
99	-	104	Red, gray, and green mudstone.
104	-	105	Lt. gray, fine grnd. ss.
105	-	117	Lt. pink to white, fine grnd. ss.
117	-	120.5	Dk. red-gray mudstone.
120.5	-	122	Lt. pink to gray sandy shale.
122	-	125	Dk. red mudstone.
125	-	125.5	Hard, lt. red to buff, limey ss.
125.5	-	129	Lt. pink to white, fine grnd., quartz ss. w/ a streak of red shale at 127.
129	-	131.5	Soft, pale green, sandy shale.
131.5	-	134	Red sandy shale.
134	-	137	Lt. pink to buff, fine grnd. quartz ss. w/ some hard limey, buff colored ss. lenses.
137	-	138.5	Soft, buff colored sandy shale.
138.5	-	139	Dk. buff to brown sandy shale and mudstone.
139	-	152	Red sandy shale and mudstone w/ hard limey ss. lenses from 150 to 152.
152	-	153.5	Hard, buff colored, fine grnd.ss.
153.5	-	160.5	Soft red sandy shale and mudstone.
160.5	-	163	Lt. red, fine grnd. ss.
163	-	165.5	Dk red sandy shale and Mudstone.
165.5	-	168.5	Lt. red fine grnd. ss., grading to buff ss.
168.5	-	171	Dk. red mudstone.

E-1 cont.

171	-	172.5	Lt. red to buff, fine grnd. ss.
172.5	-	173	Dk. red sandy shale and mudstone.
173	-	180	Lt. buff, fine grnd. quartz ss.
180			Started coring.
180	-	182.7	Lt. buff, fine grnd., well cemented, quartz ss
182.7	-	183.2	Lt. gray, dense, fine grnd. ss. w/ a thin layer of green shale at the top. Poor core.
183.2	-	185.4	Green shale grading into red sandy shale w/ thin mudstone partings. Good core.
185.4	-	187.2	Gray green fine grnd. glauconitic ss.
187.2	-	188.1	Dk. gray, dense fine grnd. ss.
188.1	-	191	Lt gray, hard limey ss. w/ shale inclusions. 180 - 191 10.8 ft. of core.
191	-	193	Hard, gray limey ss. cuttings. No core recover
193	-	193.7	Hard gray-green glauconitic ss.
193.7	-	194.1	Green shale.
194.1	-	208	Red sandy shale w/ thick lenses of red and green mudstone 193 - 208 14.5 ft. of core.
208	-	212	Dk buff, med. grnd., friable ss. w/ a thin green shale layer at 210.2 ft.
212	-	234	White to buff, soft, friable, med. grnd. ss. w/ green shale inclusions. Dendritic. Thin layers of red and green clay at 226' 208 - 212 4 ft of core. 212 - 226 14 ft. of core. 226 - 234 8 ft. of core.
234	-	234.5	Blue-gray clay. No core.
234.5	-	237	Buff, med. grnd., friable ss.
237	-	237.6	Buff to green, friable, arenaceous ss.
237.6	-	238.9	Dk. buff, med. grnd. ss. w/ thin layers and inclusions of carbonaceous material.
238.9	-	240.3	Dk. gray, hard quartzose ss. w/ some carbon.
240.3	-	240.7	Dk buff, med. grnd., friable ss. w/ sm. carbon
240.7	-	242.4	Multicolored shale. (green, yellow, brown)
242.4	-	248	Red and gray mottled shale. Thinly laminated, but very good core. 234 - 248 13.8 ft. of core.
248	-	251.5	Hard, gray, fine grnd. limey ss.
251.5	-	255	Red sandy shale grading into soft red mudstone
255	-	258.5	V. hard gray limeston w/ an occassional thin layer of red sandy shale.
258.5	-	258.8	Red mudstone 248-260 10.2 ft. of core.
258.8	-	259.3	Gray sandy shale.
259.3	-	260	Red and gray sandy shale.
260	-	261.4	Hard gray limestone.
261.4	-	263.4	Red mudstone.
263.4		266.6	Reddish-gray and green mottled sandy shale.
266.6	-	269.4	Red mudstone.
269.4	-	270.2	Red and gray mottled sandy shale.
270.2	-	271.6	Hard, greenish-gray limey shale.
271.6	-	272.1	Red mudstone.
272.1	-	272.6	Gray sandy shale.
272.6	-	274.6	Red mudstone. 260 - 274.6 14.6 ft. of core.
274.6	-	277.2	Red and gray mottled ss.

E-1 cont.

277.2	-	280.6	Red mudstone.
280.6	-	281.7	Hard, red and gray limestone.
281.7	-	282.7	Red and gray mudstone.
282.7	-	285.7	Hard, red and gray, dense limey ss.
285.7	-	289	Red mudstone w/ streaks of red, fine grnd. ss.
289	-	304.2	Hard, red, fine grnd., quartz ss. X-bedded. Thin mudstone partings. 274.6 - 289 14.5 ft. of core. 289 - 304 15 ft. of core.
304.2	-	305	Thin alternating bands of red and gray mudstone.
305	-	308.7	Lt. red, med. to fine grnd., friable ss.
308.7	-	313.2	Dk. red mudstone (Loss of .3' of core)
313.2	-	313.8	Gray sandy shale.
313.8	-	314.6	Dk. red mudstone. (loss of .3' of core.
314.6	-	315	Dk. red and gray mottled mudstone.
315	-	316.8	Gray sandy shale.
316.8	-	317.5	Red mudstone. Poor core.
317.5	-	339.6	Gray and red mottled shale 304 - 318 13.6 ft of core. 318 - 332 13.5 ft of core.
339.6	-	344.5	Lt red, fine grnd,, x-bedded, friable ss. w/ a few thin mudstone partings.
344.5	-	345.8	Lt. red, nearly white, med. grnd. quartz ss. Hard. No bedding planes. Porous. 332 - 346 13.9 ft of core.
345.8	-	350.5	Lt red to buff, fine grnd. quartz ss. More compactly cemented. x-bedded.
350.5	-	353.5	Very dense, white to lt. buff, med, grnd. quartz ss. Well cemented 346 - 358 7.3 ft of core. 358 - 365 11.0 ft of core.
353.5	-	357.1	Red and gray mottled mudstone.
357.1	-	357.9	Hard, dense gray limestone.
357.9	-	375.0	Red and gray mudstone w/ an occaissonal streak of gray limestone. 365 - 375 9.2 ft of core.

Radiometric log of drill hole E-1

Ftgs.	MR/HR	Scale	Approx. °/₀ U_3O_8
240.0	8	5	0
239.5	9	5	0
239.0	9	5	0
238.5	10	5	0.007
238.0	28	5	0.017
237.5	36	5	0.023
237.0	30	5	0.020
236.5	14	5	0.010
236.0	8	5	0
235.5	8	5	0
189.5	8	5	0
189.0	9	5	0
188.5	10	5	0.007
188.3	26	5	0.016
188.0	14	5	0.010
187.5	9	5	0
187.0	8	5	0

Drill hole E-2 Contract Idm-E899 (Bowles-Heflin Mining Co.)
Dates: Collared 1/13/56 Completed 1/20/56
Location: 1000 ft. South and 300 ft. West of Sec Cor. 22|23 / 27|26 T.43 N. R.19W.

0	-	2	Topsoil
2	-	12	Lt. to dk. buff sandy shale.
12	-	12.5	Red shale.
12.5	-	13.5	Lt. buff sandy shale.
13.5	-	15	Gray shale. Large damp cuttings.
15	-	20	Buff colored sandy shale.
20	-	25	Lt. pink sandy shale.
25	-	26	Lt. pink, fine grnd., med. hard ss.
26	-	27	Lt. buff sandy shale.
27	-	35	Lt. gray shale. Lge damp cuttings.
35	-	35.5	Lt. red shale.
35.5	-	40	Lt. buff, fine grnd. ss. w/ thin shale partings. Harder and lighter in color and containing less shale with depth.
40	-	43.5	Same hard, fine grnd. quartz ss. w/ a pinkish caste.
43.5	-	44	Dk. red sandy shale.
44	-	68	Lt. to dk. buff, fine grnd. ss. w/ a dk. red shale streak at 66'.
68	-	70	Dk. pink, fine grnd. ss.
70	-	83	Lt. to dk. buff, fine grnd. ss.
83	-	93	Soft gray shale.
93	-	95	Med. hard, lt. buff, fine grnd. ss. w/ some shale mixed.
95	-	96	White, fine grnd. ss. No shale.
96	-	103	Lt. to dk. buff colored ss.
103	-	105	Lt. buff, med. grnd., med. hard ss.
105	-	112	Gray sandy shale.
112	-	115	Hard gray limey shale.
115	-	117	Buff colored limey ss. and gray limey shale.
117	-	119	Dk. reddish gray limey shale and mudstone.
119	-	124	Lt. and dk. gray, hard limey shale.
124	-	126	Lt. green to dk. gray, hard limey shale.
126	-	127	Lt. buff, fine grnd. friable ss.
127	-	131.5	Lt. green sandy shale w/ streaks of hard gray limestone.
131.5	-	134	Lt. buff, very hard , very fine grnd. limey ss.
134	-	135	Pale green sandy shale and mudstone w/ streaks of med. hard gray limey shale.
135	-	137	Soft gray sandy shale.
137	-	139	Red shale and mudstone turning to buff shale.
139	-	141	Dk. to lt. buff, fine grnd. ss.
141	-	146	Dk. brown, med. to fine grnd., damp ss., turning to a lt. red color at 144'.
146	-	154	Lt. red to buff, fine grnd. ss.
154.	-	155	Dk. red mudstone.
155	-	159	Very hard, reddish gray to red, limey shale.
159	-	172	Med. hard, dk. red sandy shale.
172	-	175	Hard gray limey shale.

175	-	176.5	Very hard, gray to buff, limey ss.
176.5	-	178	Soft, red to gray mudstone.
178	-	180	Dk. gray sandy shale.
180	-	183.5	Alternating thin beds of red ss., shale, mudstone, and sandy shale
183.5	-	189	Buff colored sandy shale.
189	-	194	Med. hard, fine grnd. buff colored ss.
194	-	195	Soft, very light pink, fine grnd. ss.
195			Started coring.
195	-	201.1	Lt. pink to lt. buff, med hard, med. grnd. friable ss.
201.1	-	202.1	Dk. red mudstone (Loss of 0.5' of core.)
202.1	-	205.6	Very hard, lt. pink to white, limey ss. w/ small green shale inclusions.
			195 - 205 9.5 ft. of core.
205.6	-	206.6	Red and green mudstone.
206.6	-	210.5	Hard, fine grnd. lt. gray limey ss.
210.5	-	215.5	Soft, friable, med. grnd. lt. pink ss. w/ numerous clay galls.
215.5	-	219.8	Hard, dense, lt. gray limey ss.
219.8	-	226.0	Red mudstone. Very soft. Poor recovery.
226.0	-	232.0	Soft, friable, med. grnd. buff colored ss. Core badly shattered.
			218.5 - 232.0 4 ft. of core.
232.[illegible]	-	248.0	Med. hard, friable, buff colored ss. w/ thin, gray shale partings and clay galls.
			232.0 - 245.5 12.5 ft. of core.
248.0	-	249.0	Soft, gray to brown, thinly laminated mudstone. Very poor core.
			245.5 - 249.5 1.8 ft. of core.
249.0	-	255.3	Soft dk. red mudstone.
255.3	-	257.0	Hard, dk. gray limestone.
			249.5 - 255.0 1.5 ft. of core.
257.0	-	260.7	Dk. red, med hard, limey shale grading into mottled dk. red and green sandy shale.
260.7	-	261.8	Very hard, dense gray limestone.
261.8	-	266.8	Thinly laminated, mottled, red and green mudstone.
266.8	-	268.5	Red and green mottled sandy shale w/ red mudstone partings.
			255.0 - 268.5 13.2 ft. of good core.
268.5	-	270.0	Soft red mudstone. Poor core. Loss of 1'.
270.0	-	271.9	Hard, dk. gray sandy shale.
271.9	-	272.9	Dk. gray shale w/ red mudstone partings.
272.9	-	278.3	Red and green mudstone. Loss if 1' of core.
278.3	-	279.1	Very hard, dense gray limey shale.
279.1	-	282.0	Red and green mottled sandy shale.
282.0	-	287.9	Soft, red mudstone. Poor core. Loss of 1.3' of core.
287.9	-	288.7	Dk. green, hard, limey shale grading to a very hard gray limestone and back to green limey shale.
288.7	-	294.1	Dk. red mudstone getting sandy w/ depth.
294.1	-	295.8	Very hard, gray, limey shale w/ an occasional mudstone parting.
			282.0 - 295.5 11.7 ft. of core.

295.8	-	299.4	Soft red mudstone. Very poor core. Just 0.3 ft recovered from 3.6 ft. run.
299.4	-	301.3	Very hard, dark red limey ss. Has hardness and texture of quartzite.
301.3	-	303.1	Hard, dk. red sandy shale w/ thin mudstone partings.
303.1	-	313.0	Med. hard, fine grnd, red ss. Getting softer and lighter of color w/ depth. 295.5 - 308.0 9.2 ft. of core.
313.0	-	315.5	Lt. pink to buff colored, med. grnd. fairly soft, friabless. w/ clay galls.
315.5	-	324.1	Dk, red, fine grnd. ss. 308.0 - 321.5 13.3 ft. of core.
324.1	-	326.5	Lt. red to buff, softer, more friable, med. grnd. ss.
326.5	-	334.5	Soft, dk. red mudstone w/ a shale streak at 330'.
334.5	-	335.0	Hard limey shale. Red and gray. 321.5 - 335.0 12 ft. of core.

Drill hole E-4 Contract Idm-899 (Bowles-Heflin Mining Co.)
Dates: Collared 1/16/56 Completed 1/20/56
Location: 500 ft. East and 1000 ft. South of Sec Cor. 22 | 28 / 27 | 26 T.43 N. R.19W.

RECEIVED APR 1 2 1956

0	-	7	Topsoil and soft, gray green clay
7	-	16.5	Lt. to dk. buff colored, med. grnd., soft, friable sandstone.
16.5	-	18	Multicolored shale. (reen, gray and buff)
18	-	20	Buff colored ss.
20	-	21	Lt. gray shale.
21	-	21.5	Red shale.
21.5	-	22	Pale pink to buff colored shale.
22	-	25	Lt. buff, sandy shale grading into med.hard, lt. buff ss. w/ thin buff colored limestone partings.
25	-	23	Lt. red shale.
23	-	23.5	Gray shale.
23.5	-	33.5	Lt red shale.
33.5	-	36	Lt.green to buff sandy shale w/ some hard limey shale ribs.
36	-	37	Pale pink, fine grnd.ss. w/ thin limestone partings.
37	-	41	Lt. buff, fine grnd., limey ss.
41	-	45	Dk. red shale.
45	-	52	Dk. buff, fine grnd. ss.
52	-	54	Lt. buff, med. grnd., friable ss. w/ thin shale partings.
54	-	56	Gray-green shale.
56	-	60	Red shale.
60	-	61	Gray shale.
61	-	65	Red shale.
65	-	81	Mottled red and gray shale w/ a hard limestone rib at 79'.
81	-	83	Dk. red shale.
83	-	84.5	Gray, fine grnd. ss. w/ gray shale partings.
84.5	-	86.5	Very hard gray limestone.
86.5	-	87.5	Red shale.
87.5	-	88	Gray shale.
88	-	90	Red and gray mottled sandy shale.
90	-	94	Gray sandy shale.
94	-	102	Red and gray mottled sandy shale w/ an occasional streak of gray ss.
102	-	104.8	Red shale.
104.8	-	105.5	Hard, gray limestone.
105.5	-	106.5	Dk. red shale.
106.5	-	112	Hard, gray , limey ss. turning to buff colored limey ss. at 108' and w/ occasional streak of red sandy shale.
112	-	116	Alternate layers of gray limey, fine grnd. ss. and lt. red ss.
116	-	~~120~~	Pale pink, fine grained ss. grading into lt. buff, very hard, fine grnd. limey ss. Very near a true limestone.
120	-	126.5	Dk. red shale.

E-4 cont.

126.5	-	129	Multicolored sandy shale.
129	-	135	Dk. buff, fine grnd., soft, friable ss. getting lighter in color and harder w/ depth. Started coring.
135.0			
135.0	-	153.4	Hard, fine grnd.. light buff to white ss., showing minor x-bedding. 135.0 - 146.6 11.6 ft. of good core.
153.4	-	157.5	Dk. buff, med. grnd., friable, fairly soft ss. 146.6 - 158.0 9.8 ft of fair core. Loss of core was in last 3' of run.
157.5	-	162.1	Dk. gray mudstone. Very soft. Lost 4' of core.
162.1	-	167.3	Lt. to dk. buff, med. grnd. fairly soft, friable ss.
167.3	-	169.6	Lt. buff to white, hard, fine grnd. ss. 158.0 - 169.6 9.3 ft. of core.
169.6	-	192.7	Hard, light gray, limey shale, grading into soft, dk. red shale. 169.6 - 181.1 11.5 ft of good core.
192.7	-	194.7	Very hard, red limey shale.
194.7	-	196.3	Dk. red sandy shale 181.1 - 195.0 7.9ft. of core.
196.3	-	204.9	Hard, red, fine grnd., x-bedded, limey quartz ss
204.9	-	206.3	Hard red, sandy shale.
206.3	-	212.5	Med. soft red, thinly laminated mudstone.
212.5	-	213.8	Hard gray, limey shale.
213.8	-	218.2	Soft red mudstone. Loss of 1.5' of core. 204.9 - 215.6 10 ft. of core.
218.2	-	223.7	Hard, lt. red, fine grnd. quartz ss. w/ thin red sandy shale partings.
223.7	-	227.2	Soft, friable, med. grnd., white ss. 215.6 - 227.2 9.5 ft. of fair core.
227.2	-	228.9	Soft, friable, porous, fine grnd. ss.
228.9	-	234.2	Soft, red mudstone w/ a 9'' layer of brown limestone at 229'. Loss of 2.7 ft. of core.
234.2	-	237.0	Red sandy shale.
237.0	-	238.6	Gray limey shale. 227.2 - 238.8 9 ft. of core.
238.6	-	241.2	Red and gray mottled shale.
241.2	-	243.7	Red mudstone Loss of 0.5 ft. of core.
243.7	-	247.0	Red and gray sandy shale.
247.0	-	250.6	Red mudstone. Loss of 1.0 ft of core. 238.8 - 250.3 9.5 ft. of core.
250.6	-	257.15	Red and gray mottled sandy shale.
257.15	-	258.15	Gray limey shale.
258.15	-	260.2	Red mudstone. 250.4 - 260.2 9.5 ft of core.
260.2	-	278.8	Lt. pink to lt. buff (nearly white), hard, med. grnd. quartz ss. 260.2 - 271.6 11.3 ft of core.
278.8	-	283.0	Red mudstone 271.6 - 283 10.7 ft. of core.

Drill hole E-6 Contract Idm-899 (Bowles-Heflin Mining Co.)
Dates: Collared 1/23/56 Completed 1/28/56
Location: 1100 ft. East of drill hole E-4

0	-	5	Topsoil.
5	-	7.5	Red and gray clay mixed with topsoil.
7.5	-	8.5	Sandstone and quartz pebbles (wash)
8.5	-	14	Dk. buff, med. grnd., soft, friable ss. w/ a streak of blue shale at 12.5'.
14	-	15	Lt. buff, med. grnd., soft, friable ss. Started coring.
15	-	21.3	Soft, lt. buff (nearly white), friable ss. Minor x-bedding. Good core.
21.3	-	25.1	Very soft, dk. buff, strongly x-bedded, friable, porous ss. w/ green clay galls and considerable carbonaceous material. Fair core.
25.1	-	26.2	White, porous, friable ss. w/ thin shale partings along bedding planes. X-bedded.
26.2	-	27.2	Lt. gray, friable ss. w/ thin shale partings.
27.2	-	28.5	Soft, red and white mottled ss. Very friable Shattered core. Loss of 1' of core. 15.0 - 28.5 12.5 ft. of core.
28.5	-	33.5	Lt pink to white, med. grnd. very porous, friable ss. w/ thin shale partings and green clay galls
33.5	-	40.5	No core recovery, but cuttings indicate a continuation of 29.5 to 38.5.
40.5	-	42.0	Soft green mudstone cuttings. No core recovered. 28.5 - 42.0 10 ft. of fair core.
42.0	-	49.5	Dk. gray, green, and red mudstone. 42.0 - 49.5 2.8 ft. of very poor core.
49.5	-	50.0	No core recovered. Cuttings show it to be a continuation of 42.0 - 49.5.
50.0	-	53.5	Hard, dense gray limestone. 49.5 - 53.5 3.5 ft of good core.
53.5	-	54.5	Hard, fine grnd., gray limey ss.
54.5	-	58.0	soft red mudstone. Poor core.
58.0	-	59.0	Hard gray limey ss. 53.5 - 59.0 2 ft. of very poor core.
59.0	-	73.5	Soft red mudstone 59.0 - 67.0 4.5 ft. of core.
73.5	-	79.3	Hard, dense, gray limey shale w/ interbedded layers of red mudstone 67.0 - 74.0 4.5 ft. of poor core.
79.3	-	84.8	Red and gray mottled mudstone. Loss of 1.7' of core
84.8	-	86.0	Hard red sandy shale.
86.0	-	87.5	Hard graylimey shale, Good core. 74.0 - 87.5 11.6 ft. of fair core.
87.5	-	90.1	No core recovery. Red mudstone cuttings.
90.1	-	93.1	Dk. red, very hard, med. grnd. qtz. ss. w/ lge. inclusions of red mudstone. Sandstone resembles red quartzite in hardness and texture.
93.1	-	101.0	Interbedded layers of hard gray and red limey shale w/ an occasional streak of red mudstone. 87.5 - 101.0 10.9 ft. of good core.
101.0	-	106.0	Med. soft red mudstone. Poor core. Loss of 2.8' of core.
106.0	-	108.0	Hard, red, med. grnd. quartz ss.

E-6 cont.

103	-	109.3	Med. hard red mudstone.
109.3	-	111.3	Hard, red, fine grnd. quartz ss. Almost a sandy shale
111.3	-	114.3	Lt. red to buff, hard med. grnd. quartz ss.
114.3	-	115.2	Hard, dk. red sandy shale. 101.0 - 114.5 10.2 ft. of fair core.
115.2	-	116.0	Very hard, dense gray limestone.
116.0	-	117.0	Soft red and gray mudstone. Poor core
117.0	-	120.3	Hard, red, very fine grnd. ss.
120.0	-	123.0	Soft red and gray mottled mudstone. Loss of 1.9 ft. of core. 113.5 - 123.0 11.1 ft of core.
123.0	-	123.8	Dk. gray, thin bedded, sandy shale.
123.8	-	130.9	Red and gray-green mudstone.
130.9	-	134.0	Hard, dense gray limestone w/ thin gray-green shale partings.
134.0	-	136.5	Soft, gray-green, thinly laminated mudstone. very poor core. Loss of 1' of core.
136.5	-	140.0	Very hard, dense, limey, fine grnd. ss. Dk. and lt. red mottled w/ a lt. green sandy shale streak at 138.7 ft.
140.0	-	141.3	Lt red, med. grnd. ss., getting lighter in color more porous and more friable with depth. 128.0 - 141.5 12.5 ft. of core.
141.3	-	144.5	Pink to buff, med. soft, porous, friable, x-bedded ss. Interbedded w/ thin layers of green mudstone. 141.3 - 144.5 2.5 ft of good core.
144.5	-	150.5	No core recovery. Cuttings were dk. red mudstone.
150.5	-	152.6	Lt. buff colored ss. Soft, friableand porous. Medium grained. Minor x-bedding 144.5 - 150.5 No core.
152.6	-	154.6	Dk. buff ss. Harder and more compact, and showing strong x-bedding.
154.6	-	155.0	Lt. buff (nearly white) fine grained, dense, shaley ss.
155.0	-	155.9	Lt.to dk. buff, med. grnd., soft, porous ss. Minor x-bedding.
155.9	-	156.6	Lt. buff to white, fine grnd., dense, limey ss.
156.6	-	158.3	Coarse grnd., dk. buff, porous, friable ss. Poor core. Strong x-bedding.
158.3	-	159.6	LT. buff, fine grnd., dense limey ss.
159.6	-	161.3	Dk. buff, porous, friable med. grnd. ss. 150.5 - 164.0 13.4 ft of core.
161.3	-	164.0	Dk. red, med. grnd., fairly porous, strongly x-bedded ss.
164.0	-	174.0	Lt. to dk. buff, coarse grnd., porous, friable, x-bedded, qtz. ss. w/ dk. brown streaks along the bedding planes.
174.0	-	177.0	Soft red mudstone. 164.0 - 177.0 13.5 ft. of good core.

2-27-56 [illegible]

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

RECEIVED
FEB 27 1956

224 New Custo mhouse
Denver 2, Colorado

February 23, 1956

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3655 (Uranium), Contract Idm-E899, Bowles-Neflin Mining Company, San Miguel County, Colorado

Enclosed are four copies of authorization by the DMEA Field Team, Region III, to transfer drilling footage from Stage II to Stage I to complete the remaining holes under Stage I.

Also enclosed are four sets of data relative to the matter.

W. M. Traver

Enclosures

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

RECEIVED
FEB 2 7 1956

224 New Customhouse
Denver 2, Colorado

February 20, 1956

Messrs. Melvin C. Bowles
and A. L. Heflin, Partners
d/b/a/ Bowles-Heflin Mining Company
1200 Chester Street
Aurora, Colorado

Re: Docket DMEA 3655 (Uranium)
Contract Idm-E899

Gentlemen:

Consistent with the provisions of the Contract, this constitutes confirmation of verbal approval of February 16, 1956, by the DMEA Field Team, Region III, for you to transfer 35 feet of plug-bit (non-core) drilling and 332 feet of core drilling from Stage II to Stage I, to enable completion of the two remaining holes under Stage I of the Contract.

Nothing in this work approval shall be construed to increase the estimated total cost of the project, the aggregate total amount which the Government may be required to contribute, the fixed unit cost of any item of work, nor any item of allowable cost which is expressly designated "Maximum."

Very truly yours,

DMEA Field Team, Region III

W. M. Traver

E. N. Harshman

JWT:prl
cc: Chairman, Oper. Comm. (4)
Finance Office, Region III
Amendment file
Harshman
Shaw (2)
Hasler
Townsend
Corres. file
Chron.

DMEA
Date Rec'd.

FEB 20 1956

BUREAU OF MINES
Denver, Colorado

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
February 17, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

RECEIVED
FEB 27 1956

From: John F. Shaw

Subject: Request for transfer of drilling footage Contract 16s-2899
Bowles-Raflin Mining Company

Enclosed are the original and 4 copies of a request dated February 14, 1956, from the Bowles-Raflin Mining Company requesting that footage for plug-bit and core drilling be transferred from Stage II to Stage I in order to complete the two holes remaining to be drilled under Stage I.

This transfer of footage has the approval of the field engineer and geologist in Grand Junction, and oral approval was given to Mr. Bowles, February 16th, 1956 to permit drilling the two remaining holes under Stage I.

Please prepare a written authorization for this work as required by the contract.

JOHN F. SHAW

John F. Shaw
Supervising Mining Engineer

JFS/mr
16s-2899
Chron.

DME A
Date Rec'd.
FEB 21 1956

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. BOX 360
GRAND JUNCTION, COLORADO

MINERAL DEPOSITS
DMEA
RECEIVED
FEB 20 1956
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

BUREAU OF MINES
Denver, Colorado

February 14, 1956

Memorandum

RECEIVED
FEB 27 1956

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman
John F. Shaw

From: M. H. Salsbury
J. William Hasler

Subject: DMEA 3655, contract Idm-E 899, Bowles-Heflin Mining Company, San Miguel County, Colorado. Recommendations on transferral of drilling footage from stage II to stage I.

Operations under the subject contract were inspected on February 10, 1956, by a DMEA examining team. Hole Nos. 1, 2, 4, 5, 6, and 7 had been completed (see contract map figure 2) and hole No. 3 was being drilled.

The contract calls for 670 feet of plug bit and 1220 feet of core drilling for a maximum of 1890 feet in stage I. The drilling done to date totals 645 feet of plug drilling and 1194 feet of core drilling (balance of hole No. 3 estimated) for a total of 1839 feet, 51 feet less than the maximum allowed.

The reason for the discrepancy between estimated and actual footage is a sandstone thickness averaging 170 feet encountered as compared with the allowed average coring distance of 135 feet. Average plugging distance in 7 holes has been 92 feet compared to the allowed average of 74 feet.

The drill cores on 7 holes were examined by the DMEA geologist and the sandstone thickness verified. The Geological Survey project chief in the Slick Rock district was consulted and recommended that 150 feet of coring be permitted in each of the two remaining holes in stage I.

While drilling to date has not disclosed anything significant except very slight mineralization in hole No. 1, it is believed that the drilling pattern in stage I should be completed in order to test every possibility of ore occurrence on the property.

It is, therefore, recommended that transferral of a maximum of 300 feet of core drilling and 100 feet of plug drilling from stage II to stage I be authorized to permit drilling of holes Nos. 8 and 9 as shown on figure 2 in the contract.

This memorandum confirms the recommendation made to E. N. Harshman by phone on February 13, 1956.

M. H. Salsbury
M. H. Salsbury
U. S. Bureau of Mines

J. William Hasler
J. William Hasler
U. S. Geological Survey

MHS/mlr

BOWL[illegible]-HEFLIN MINING COMPANY
1200 Chester Street
Aurora 8, Colorado

DMEA
Date Rec'd.
FEB 20 1956
BUREAU OF MINES
Denver, Colorado

February 14, 1956

Mr. John F. Shaw
U. S. Bureau of Mines
Room 137, Building 20
Denver Federal Center
Denver 2, Colorado

RECEIVED
FEB 27 1956

Re: Docket DMEA 3655 (Uranium)
Project Contract IDM-E899

Gentlemen:

We have completed seven (7) of the nine (9) drill holes authorized for Stage I of the drilling project on our J. V. Eavenson lease. We have used up six-hundred and fourty-five feet (645') of the six-hundred and seventy feet (670') of plug-bit (non-core) drilling authorized, and one thousand and two hundred and twelve feet (1,212') of the core drilling authorized.

This leaves us with two (2) more holes to be drilled for the Stage I part of the exploration project, but only twenty-five feet (25') of plug-bit (non-core) drilling and only eight feet (8') of core drilling in the footage authorized for Stage I.

It is presently estimated that it will require, not to exceed an additional thirty-five feet (35') of plug-bit (non-core) drilling, and three-hundred and thirty-two feet (332') of core drilling to complete these two remaining holes in Stage I.

Attached please find sketch map showing location of drill holes completed today, depths and location and estimated depths of two remaining holes to be drilled. All holes completed to-date except number one have proven to be completely blank, number one having a show of mineralization as shown in our January progress report.

We would very much appreciate a reply advising us as early as possible, if this additional footage can be allowed. The drilling contractor is presently standing by until we can find out, providing it does not take too long.

Sincerely yours,

Melvin C. Bowles

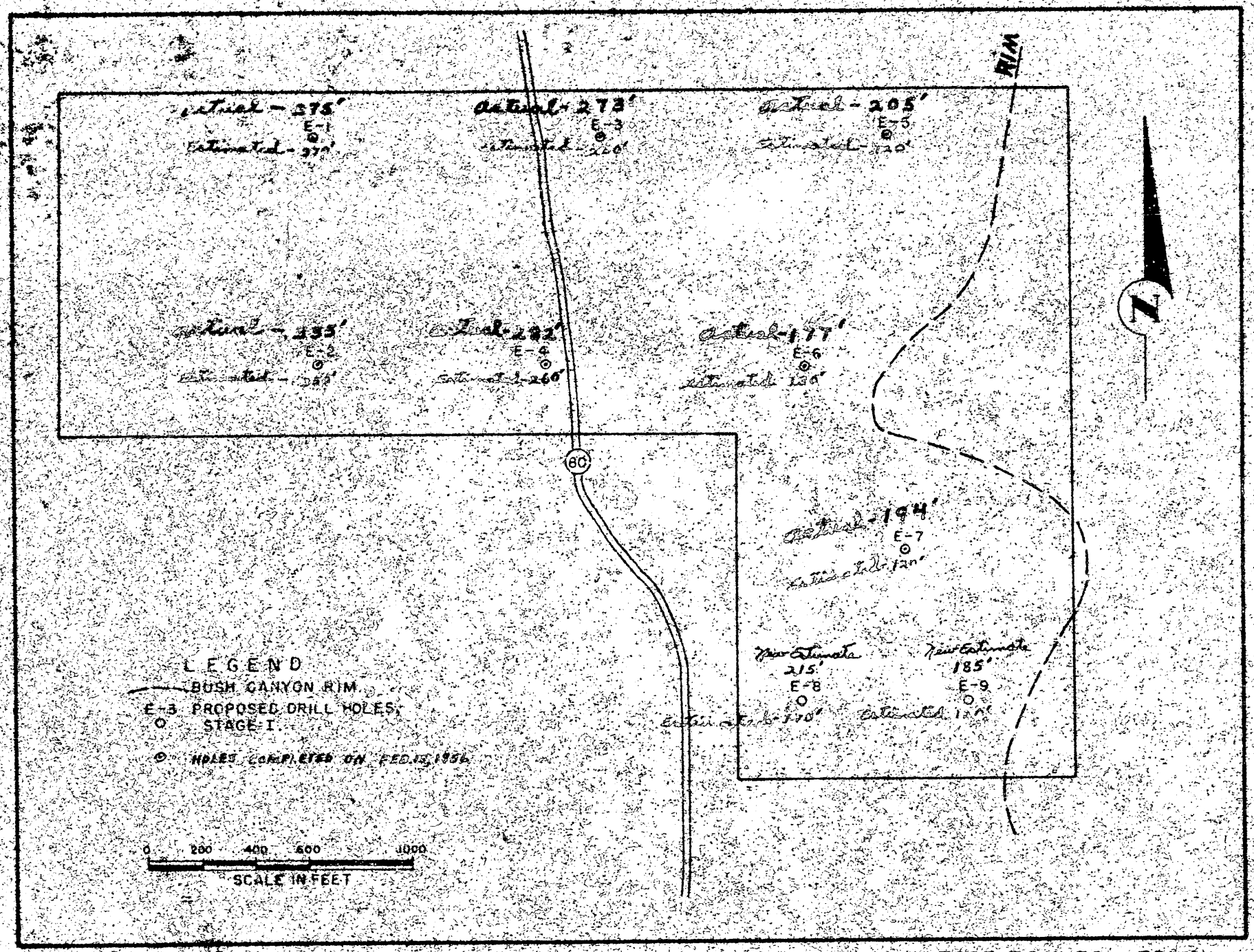
By Melvin C. Bowles, Partner
Bowles-Heflin Mining Company

MCB:cls
Enclosure

Docket DMEA 3655 (Uranium) Project Contract IDK-E897

Footages Drilling on February 14, 1954

Drill Hole Number	Original Estimate	Total Drilled	Footage Barren	Footage Ore
1.	270'	375'	180'	195'
2.	350'	335'	195'	140'
3.	250'	273'	75'	198'
4.	240'	283'	135'	148'
5.	120'	220'	15'	205'
6.	130'	177'	15'	162'
7.	120'	194'	30'	164'
8.	170'	Present Estimated	45	170
9.	120'	Present Estimated	15'	170'
Totals	1,870'	—	670'	1,220'	Original Estimated Footage
"	—	1,657'	649'	1,212'	Yard first (7) Holes
"			60'	340'	Estimated for next (2) Holes
"			705'	1,552'	New Estimated Totals
"			35'	332'	Estimated additional needed



[redacted] - SKETCH MAP SHOWING PROPOSED DRILL HOLES, J.V. EAVERSON LEASE, BOWLES-HEFLIN MINING COMPANY, SAN MIGUEL COUNTY, COLO. DMEA 3655

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
DENVER, COLORADO, REGIONAL OFFICE

For Release December 18, 1955

The Defense Minerals Exploration Administration announced today, through W. M. Traver, its Executive Officer for Region III, that one contract for the exploration of strategic metals and minerals had been executed during the period December 5 through December 16, 1955. The Operator who will conduct this exploration project in the state covered by Region III is shown below.

Colorado

Name of Operator	County	Commodity	Contract Value	Government Participation
Bowles-Heflin Mining Co.	San Miguel	Uranium	$19,228.00	$14,421.00

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

RECEIVED
DEC 15 1955

224 New Customhouse
Denver 2, Colorado

December 12, 1955

Memorandum

To: Chairman, Operating Committee, DMEA

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

Subject: Docket DMEA 3655 (Uranium), Contract Idm-E899, Bowles-Heflin Mining Company, San Miguel County, Colorado

Enclosed are the Governments, Division, and Docket copies of Contract Idm-E899, which was forwarded by your letter of November 28, 1955, for signature by the Operator and initialing of the change on page 2 of Exhibit "A".

Also enclosed are two copies of a letter from this office to the Operator forwarding him his copy of the Contract and providing instructions relative to reporting on the work performed under the Contract.

Copies of the contract have been given to the Finance Office, Region III, and distributed to other personnel concerned.

E. N. Harshman

E. N. Harshman

Enclosures

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

RECEIVED
DEC 15 1955

224 New Customhouse
Denver 2, Colorado

December 9, 1955

Messrs. Melvin C. Bowles and A. L. Heflin, Partners
d/b/a/ Bowles-Heflin Mining Company
1200 Chester Street
Aurora, Colorado

Re: Docket DMEA 3655 (Uranium),
Contract Idm-E899

Gentlemen:

Enclosed herewith is your copy of Exploration Project Contract No. Idm-E899, Docket DMEA-3655.

Also enclosed are six copies of form MF-104, "Operator's Monthly Report and Voucher," and six copies of form MF-104A, "Operator's Unit Cost and Progress Report." At the completion of the first calendar month of operation and monthly thereafter, you are required to submit five copies of the forms to Mr. John F. Shaw, U. S. Bureau of Mines, Room 137, Building 20, Denver Federal Center, Denver 2, Colorado. The sixth form is for your records.

Please note that the monthly accounting report requires a narrative report, which should be accompanied by maps or sketches showing the work performed. The narrative report must be signed by the operator. The monthly report will not be processed for payment unless accompanied by a narrative report. Additional copies of forms MF-104 and MF-104A will be forwarded to you each month on receipt of your completed report for the prior month.

The U. S. Geological Survey and the U. S. Bureau of Mines maintain a field office in the A.E.C. Compound at Grand Junction, Colorado. DMEA representatives of the two Services can be contacted as follows:

J. W. Hasler, U. S. Geological Survey
Telephone Grand Junction 3000, Extension 289

M. H. Salsbury, U. S. Bureau of Mines
Telephone Grand Junction 3000, Extension 274.

Both men can be reached by mail at:

Post Office Box 360, Grand Junction, Colorado.

For your information and in reply to many questions that have been asked, after forms MF-104 and MF-104A are received an engineer will check progress and approve your accounts, after which they will be sent to the Regional Office, Region III, U. S. Bureau of Mines, 224 New Customhouse, Denver 2, Colorado, for auditing and vouchering. If the report is in order, a check will be issued by the Treasury Department for the Government's portion of the costs. If you have any difficulty in completing these forms and the reports, please call on either the field representatives, Mr. Shaw, or this office for assistance.

In the matter of your claim for reimbursement of drilling costs, reimbursement to you under the terms of the contract will be on the basis of a hole or holes completed to the objective. Therefore, your monthly report should include only such holes that are completed. In that respect, your attention is specifically directed to items (4) and (6) of "General Provisions" section of Exhibit "A" attached to the contract.

The contract is prepared on form MF-200 and under the provisions of Exhibit "A", which is a part of the contract, the allowable costs are a combination of actual incurred costs, with an allowable maximum unit cost established for the work under Category (1) on all stages; and fixed unit costs for performing the remaining items of work or service. Under the provisions of the contract, the work under Category (1) is to be performed by subcontract. Your claim for reimbursement for such work must be supported each month by a copy of the billing from the Independent Contractor, or submit for our records a copy of the Subcontract Agreement.

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 obtain written approval from this office prior to commencing any of the work.

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, complete with the same number of maps or other pertinent data.

Your attention is directed to the provision that Stage II work is contingent on the results obtained from Stage I, and performance of the work under Stage II is subject to the prior written approval of the Government.

When Stage I has been completed, you should 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, complete with a map showing the location of the holes drilled under Stage I, the proposed location of holes to be drilled under Stage II, and the results of the work performed under Stage I, including assay returns and any other pertinent data which will be of value to the Government in evaluating the work performed under Stage I.

You should anticipate a suspension of operation between stages of work to enable the Government geologist and engineer to evaluate the results of the work performed and make their 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, with a copy of your letter to Mr. Shaw.

Very truly yours,

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

By JW Tarrant

Enclosures

JWT:prl
cc: Chairman, Oper. Comm. (2)
Amendment file
Harshman
Shaw (2)
Hasler
Townsend
Corres. file
Chron.

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

NOV 28 1955

Mr. L. K. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3655 (Uranium)
Bowles-Heflin Mining Company
J. V. Arverson Lease
San Miguel County, Colorado

Dear Mr. Traver:

Enclosed are the original and five copies of a proposed long-form contract between the Government and Bowles-Heflin Mining Company. Also enclosed are two extra copies of Exhibit "A".

If you and the Operator find the proposed contract in order, please insert in Article 3 of the contract form the date work shall commence; then have an authorized representative of the company sign the original and all copies. Thereafter, kindly distribute the copies in the usual manner.

If any part of this contract does not meet with your or the Operator's approval, then the original and all copies, including the extra copies of Exhibit "A", are to be returned to this office with the proposed changes for consideration.

P.S. Please have Operator when executing the contract initial all copies at line 3 of page 2 of Exhibit "A" to approve the change there.

Sincerely yours,

W. S. Martin
ACTING Chairman, Operating Committee

Enclosures

FMMurphy/izm 11-23-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Code 700
Mr. Murphy
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

APPROVED:

/s/ Robert W. Geehan
Member, Bureau of Mines

N. E. Nelson
Member, Geological Survey

700

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

November 2, 1955

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: F. M. Murphy, Mining Engineer
Rare and Miscellaneous Metals Division

Subject: Docket No. DMEA-3655 (Uranium)
Bowles-Moflin Mining Company
J. V. Ravenson Lease
San Miguel County, Colorado

Will you kindly prepare a long-term contract between the Government and the above-named company, in accordance with the attached draft.

F. M. Murphy

FMMurphy/izm
11/2/55
cc to: Docket
Code 700
Mr. Murphy

Draft
XXXXXXX
JMurphy:am
6-17-55

Division

MF-200
(Revised June 1954)

Docket No. DMEA 3655

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] Bowles - Heflin Mining Company, a partnership consisting of Melvin C. Bowles and A. L. Heflin, whose mailing address is 1200 Chester Street Aurora, 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 entitled 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 San Miguel, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] Lessee of [5] 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: see (c)

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

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

of the land (lessor, seller, optionor, etc.), are attached, as follows: Owner's Consent to Lien, Subordination Agreement of Sub-Lessees

(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 January 1, 1956 (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall either have completed the work or shall have incurred allowable costs (see Article 6) in a sum not less than the estimated total allowable cost set forth in Exhibit "A."

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

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

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

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $ 19,228.00 The Government shall contribute 75 percent of the allowable costs as they are incurred in a total sum not in excess of $ 14,421.00 : *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

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

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

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

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

CATEGORY (2)—PERSONAL SERVICES.

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

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

Subcategory (c)—Labor.

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

CATEGORY (4)—OPERATING EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 13. *Changes and added provisions.*—

Draft
FMurphy:am
6-17-55

EXPLORATION PROJECT CONTRACT

BOWLES-HEFLIN MINING COMPANY

DOCKET NO. DMEA-3655

ANNEX I

The land referred to in Article 2 of the contract is situated as follows:

North half of Northwest quarter (N½ NW¼), Southeast quarter of the Northwest quarter (SE¼ NW¼) of Section 26, and the Northeast quarter of the Northeast quarter (NE¼ NE¼) of section 27, all in Township 43 North, Range 19 West, New Mexico Principal Meridian and Base Line, San Miguel County, Colorado

EXPLORATION PROJECT CONTRACT

BOWLES - HEFLIN MINING COMPANY

DOCKET NO. DMRA-3655

EXHIBIT "A"

Description of the Work

The object of this project is to discover uranium ore deposits that might occur in the upper sandstone lenses of the Salt Wash member of the Morrison formation on the subject property. The method of exploration shall consist of core and plug drilling. To penetrate the ore-bearing sandstone lenses will require drill-holes ranging from 120 feet to 370 feet in depth.

The work shall be performed in two successive stages. The Operator shall perform all the work under Stage I and shall perform so much of the Stage II as is approved in advance in writing by the Government, based upon the results of the completed work under Stage I.

Stage I

Stage I shall consist of bulldozing access roads and preparing nine (9) drill sites. The approximate locations of the drill sites are indicated on the attached map entitled "Figure 2. Map showing proposed hole locations on J. V. Haverson lease..... ." From each of these sites one (1) hole shall be drilled. Spacing of the holes may range from 700 to 1,100 feet.

Chemical analyses shall be made to determine the U_3O_8 and V_2O_5 content of samples procured during Stage I drilling.

Stage II

Stage II shall consist of bulldozing access roads and preparing

not in excess of eighteen (18) drill sites in the vicinity of favorable and/or mineralized holes drilled during Stage I. From these sites not in excess of eighteen (18) holes shall be drilled. In this Stage II those holes drilled as offsets to Stage I holes in the west half of the northwest quarter of section 26 shall not be closer than 50 feet to any other drill-hole. Furthermore, the offset holes drilled in the northwest quarter of the northwest quarter of section 26 and in the northeast quarter of the northeast quarter of section 27 shall not be drilled closer than 100 feet to any other drill-hole.

Not in excess of one hundred and twenty (120) chemical analyses shall be made to determine the U_3O_8 and V_2O_5 content of samples procured during Stage II drilling.

General Provisions

1. No hole drilled in either Stage I or Stage II shall be closer than 100 feet to the outer boundaries of the land described in Annex I of this contract.

2. A supervising geologist or mining engineer and one helper shall be employed full time while work is in progress under this contract.

3. The location of access roads and drill holes, the method of drilling and probing drill-holes, and the method of taking and storing samples shall be subject to Government approval.

4. The Government shall not reimburse the Operator for the cost of any uncompleted hole, and/or a hole that bottoms with less than AX size core.

5. All holes shall be plug-drilled to the inferred Brushy Basin-Salt Wash contract, from this horizon the holes shall be cored for a minimum 120 feet, or until they penetrate into the underlying red mudstone which indicates the lower contact of the upper ore-bearing sandstone lenses of the Salt Wash member of the Morrison formation.

6. All holes shall be logged geologically and probed for radioactivity. Records of such logging and probing, together with assay certificates shall be submitted to the Government with the Operator's monthly progress report.

7. Mineralized portions of the core shall be split, the Operator using one-half for assay purposes. The other half shall be stored for Government use with the rest of core in boxes properly labeled as to drill hole number. Markers shall be placed at proper places in the sections of core to indicate the depth represented. If feasable, the length of core used for an individual sample should not exceed 12 inches.

8. If the footage allowed under Stage I of this contract is not sufficient to complete the nine (9) holes authorized for this stage, then with previous written Government approval, a part of the footage authorized for Stage II may be used to complete the Stage I drilling.

9. In Stage II no hole shall be started unless there is sufficient footage remaining in this contract to complete the hole to the above-mentioned target horizon, or unless the Operator agrees in writing to complete such a hole at his own expense.

ESTIMATED COSTS OF THE PROJECT

Stage II Cont'd

2) Plug-bit (non-core) drilling 1,340 feet @ $1.75/ft.	$2,345.00
3) Core-drilling, AX size or larger, 2,440 feet @ $2.73/ft.	6,661.20

Fixed Unit Costs:

4) Incidental allowance for each foot of drilling completed .....3,780 feet @ $0.67/ft. 3/	2,532.60
5) 120 Chemical analyses for U_3O_8 and V_2O_5 content of samples @ $5.00/sample	600.00
	$12,798.80

SUMMARY

Total Estimated Cost Stage I	$6,429.40
Total Estimated Cost Stage II	$12,798.00
Total Estimated Cost of the Project(rounded)	$19,228.00
Government participation at 75 percent	$14,421.00

Stages I and II

1/ Categories (2) through (7) of the contract form do not apply to this contract.

2/ Includes all costs whatsoever applicable to construction of access roads and drill-sites.

3/ Includes all costs whatsoever that are not included in the estimates for access roads, drill site preparation, drilling, and the fixed unit cost for analyses, and includes such items as supervision, engineering, sampling, probing drill holes, equipment rental, materials, supplies, etc.

WORK SHEET

COSTS

Stage I

Independent Contracts

Bulldozer - Access Roads and drill sites	
24 hours @ $12.50/hr.	$300.00
Bulldozer - Moving on and off property.	60.00
Plug-drill 670' @ $1.75/ft.	1,172.50
Core-drill 1,220' @ $2.73/ft.	3,330.60
Incidentals	
1,890' @ $0.67/ft.	1,266.30

Eng. $600.00
helper 350.00
Materials 120.00
Rental equip. 125.00
Ins. and Taxes 82.27 (8.66%)
Total $1,277.27

Chemical analyses of 60 samples @ $5.00 each	300.00
	6,429.40

Stage II

Costs (18 holes - 3780') 2 month

Independent Contracts

Bulldozer - 48 hours @ $12.50	600.00
Bulldozer - move on and off property	60.00
Plug-drill 1,340' @ $1.75/ft.	2,345.00
Core " 2,440' @ $2.73/ft.	6,661.20
Incidentals	
3,780' $0.67/ft.	2,532.60
120 Analyses @ $5/each sample	600.00
	$12,798.80
$19,228.00*	
	6,429.40
*Rounded	$19,228.20

75% - $14,421.00

Mr. W. M. Irever
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

JUL 11 1955

AIR MAIL

Re: Docket No. DMEA-3655 (Uranium)
Beulah Baflin Mining Company
J. V. Zavenson Lease
San Miguel County, Colorado

Dear Mr. Irever:

This is to acknowledge receipt of your letter dated June 17, 1955, and the attached copy of the Applicant's letter to you of June 13, 1955, suggesting an amendment to the application.

In your letter of June 6, 1955, transmitting the Field Team's report, it is noted that you recommend a careful review of the merits of the proposed exploration by the Washington Defense Minerals Exploration Administration staff.

Enclosed are copies of memoranda from H. E. Nelson, dated June 21, and J. Z. Crawford, dated June 23, 1955, members of the Uranium Commodity Committee.

Please note that Mr. Crawford agrees with the field examiners that the outlined two-stage drilling program should be approved by DMEA. However, Mr. Nelson does not concur with the extent and location of the proposed first stage drill holes and therefore recommends further consideration.

The Rare and Miscellaneous Metals Division has completed a review of the Field Team's report of examination and also of the Commodity Members' memoranda in regard to the proposed exploration of the subject property. Geological support for a project in this instance appears weak. In general, DMEA feels that for proposals of this type, projects should only be approved in areas indicated as "Favorable" by the USGS or adjacent to the open end of any such area. When the property is some distance from these "Favorable" areas, as in this case, the proposed work, or at least the first stage, is primarily to obtain geological information so as to determine if the project property is favorable and, hence, would meet the criterion "geological probability of making a significant discovery" on which DMEA projects are based. Of course, there

may be exceptions where other data might make a proposal more attractive, therefore, a careful analysis of all the data available has been made in this case. However, before making a decision, possibly you can furnish additional data that would be helpful.

The Field Team's report of examination mentions a 100-foot adit from which an 8-inch sample was taken that assayed 1.80 percent U_3O_8 and 5.32 percent V_2O_5. Also, a short incline and four open cuts and a few shallow wagon drill holes were mentioned in the report. Are there any indications shown by this work that the mineralization or favorable structure might extend to the west in the property?

If the proposed exploration work is based on mineralization or favorable structure indicated by the above exploratory work, then it appears that the proposed or a modified first stage drilling program might be warranted. However, if the proposed work is based only on favorable structure indicated by two drill holes, the nearest one a mile west of the subject property, then the project does not appear to us as being very attractive. Has any ore or mineralization been found in the holes drilled in the areas between the known productive mines to the west and the Applicant's property?

We would appreciate your comments on the above questions in order to assist us in reaching a decision in regard to the subject application.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Enclosures:

F. Murphy: FJohnson:Ela:mm
7-6-55:7-8-55:7-11-55

APPROVED:

/s/ Robert W. Geehan

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

cc to: Admr. Reading File
Operating Committee
Docket

Messrs. J. A. Crawford, Rm.3641
T. H. Kiilsgaard, Rm.5222
J. O. Hearted, Rm.3210, GSA
Code 700
Mr. Murphy

Mr. [illegible] W. Turner
Executive Officer
RMA Field Team, Region III
[illegible] Curtis Building
Denver 2, Colorado

Re: Project No. RMA-[illegible] (Uranium)
Vanadium-Radium Mining Company
J. L. Swanson Lease
San Miguel County, Colorado

Dear Mr. Turner:

This is to acknowledge the Field Team's report, dated June 5, recommending a contract to explore the captioned property.

Enclosed are copies of memoranda from R. L. Nelson, dated June 21, and J. R. Crawford, dated June 22, 1955, members of the Uranium Committee.

You will note that Mr. Crawford agrees with the field examiners that the outlined two-stage drilling program should be approved by RMA. However, Mr. Nelson does not agree with the extent and location of the proposed first stage drill holes and therefore recommends further consideration.

The Bureau and Vanadium Metals Division has completed a review of the Field Team's report of examination and also of the Committee members' memoranda in regard to the proposed exploration of the subject property. Geological support for a project in this instance appears weak. In general, RMA feels that for projects of this type, projects should only be approved in areas indicated as favorable by the USGS or adjacent to the open end of any such area. When the property is some distance from these favorable areas, as in this case, the proposed work, or at least the first stage, is primarily to obtain geological information so as to determine if the project property is favorable and, hence, would meet the criterion "geological probability of making a significant discovery" on which RMA projects are based. Of course, there may be occasions where other data might give the proposed area attraction, therefore, a complete analysis of all the data available should be made in each case before making a decision. Possibly you can furnish additional data to support a favorable recommendation.

The Field Team's report of examination mentions a 100-foot adit from which an 8-inch sample was taken that assayed 1.0 percent U3O8 and 5.0 percent V2O5. Also, a short incline and four open cuts and a few shallow auger drill holes were mentioned in the report.

If the proposed exploration work is based on favorable structure indicated by the above exploratory work, then it appears that the proposed or a modified first stage drilling program might be warranted. However, if the drilling is based on favorable structure indicated by two drill holes, the nearest one a mile west of the subject property, then the application, in our opinion, should be denied.

We would appreciate your comments on the above questions in order to assist us in reaching a decision in regard to the subject application.

Sincerely yours,

Chairman, Operating Committee

Enclosures

APPROVED:

Member, Bureau of Mines

Member, Geological Survey

FMurphy:lmam
7-6-55:7-8-55
cc to: Admr. Reading File
Operating Committee
Docket
Messrs. J. E. Crawford, Rm. 3641
T. H. Killegaard, Rm. 5222
J. O. Hosted, Rm. 3210, GSA
Code 700
Mr. Murphy

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

Airmail

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3655 (Uranium)
Bowles-Heflin Mining Company
J. V. Eavenson Lease
San Miguel County, Colorado

Dear Mr. Traver:

This is to acknowledge receipt of your letter dated June 17, 1955 ~~the Field Team's report, dated June 8, recommending a contract to explore the captioned property,~~ and the attached copy of the applicant's letter to you of June 13, 1955 suggesting

Enclosed are copies of memoranda from N. E. Nelson, dated June 21, and J. E. Crawford, dated June 23, 1955, members of the Uranium Commodity Committee.

~~You will~~ Please note that Mr. Crawford agrees with the field examiners that the outlined two-stage drilling program should be approved by DMEA. However, Mr. Nelson does not concur with the extent and location of the proposed first stage drill holes and therefore recommends further consideration.

The Rare and Miscellaneous Metals Division has completed a review of the Field Team's report of examination and also of the Commodity Members' memoranda in regard to the proposed exploration of the subject property. Geological support for a project in this instance appears weak. In general, DMEA feels that for proposals of this type, projects should only be approved in areas indicated as favorable by the USGS or adjacent to the open end of any such area. When the property is some distance from these favorable areas, as in this case, the proposed work, or at least the first stage, is primarily to obtain geological information so as to determine if the project property is favorable and, hence, would meet the criterion "geological probability of making a significant discovery" on which DMEA projects are based. Of course, there may be exceptions where other data might make the proposal more attractive, therefore, a careful analysis of all the data available ~~should be~~ has been made in ~~each~~ this case ~~before making a decision~~ prior to arriving at a decision. Possibly you can furnish additional data ~~to support a favorable recommendation~~. That would be helpful.

The Field Team's report of examination mentions a 100-foot adit from which an 8-inch sample was taken that assayed 1.80 percent U_3O_8 and 5.32 percent V_2O_5. Also, a short incline and four open cuts and a few shallow wagon drill holes were mentioned in the report. Is there any indications shown by this work that the mineralization or favorable structure might lead to the work in the property?

In your letter of June 8, is FJ there recommendation, by the Field Team, that you recommend a contract to explore the property, if so another letter from your regional office, by the Washington D.M.E.A. office

If the proposed exploration work is based on favorable structure indicated by the above exploratory work, then it appears that the proposed or a modified first stage drilling program might be warranted. However, if the ~~drilling~~ is based on favorable structure indicated by two drill holes, the nearest one a mile west of the subject property, then the ~~application, in our opinion, should be denied~~.

We would appreciate your comments on the above questions in order to assist us in reaching a decision in regard to the subject application.

Sincerely yours,

Chairman, Operating Committee

Enclosures

APPROVED:

Member, Bureau of Mines

Member, Geological Survey

6/13/55 gla

RECEIVED JUN 13 1955

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

224 New Customhouse
Denver 2, Colorado

June 8, 1955

Memorandum

To: Chairman of the Operating Committee, DMEA

From: Field Team, Region III

Subject: Report of Examination, Docket DMEA-3655 (Uranium), Bowles-Heflin Mining Co., Eaverson lease, San Miguel County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

The field examiners recommend a modified two stage exploration program. We recommend a careful review of the merits of the proposed exploration by the Washington DMEA staff.

The engineering report states that the assignment of the lease from Melvin C. Bowles to the Bowles-Heflin Mining Company is in process, but the assignment has not been received by this office. We have not requested Owner's Consent to Lien.

Nine copies of Figure 2 are enclosed for possible use in a contract. If a contract is recommended by your office, please advise and we will request the assignment of the lease and the Owner's Consent to Lien from the applicant.

Sub. agreements

Also.

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

Enclosures

DMEA
Date Rec'd
JUN 3 1955
BUREAU OF MINES
Denver, Colorado

TRANSMITTED

JUN 8 1955

Region III

Building 20, Room 130
Denver Federal Center
Denver 2, Colorado
June 2, 1955

RECEIVED
JUN 1 3 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: John F. Shaw

Subject: Engineering Report, DMEA 3655, J. V. Emerson lease, Bowles-Heflin Mining Company, Slick Rock Mining District, San Miguel County, Colorado

Enclosed are the original and eleven copies of an engineering report by W. D. McMillan, covering docket DMEA 3655.

The Bowles-Heflin Mining Company applied for Defense Minerals Exploration Administration assistance in the amount of $43,750.00 to explore the J. V. Emerson lease by rotary drilling 150 holes in three stages with a total depth of 25,000 feet. A field examination was made on March 22, 1955, by an examining team consisting of a Bureau of Mines engineer and a geologist from the Geological Survey. The examining team agreed on a revised plug bit and core drilling program.

It is recommended that the Government enter into a contract with the applicant to explore the J. V. Emerson lease by 2,010 feet of plug drilling and 3,660 feet of core drilling at an estimated cost of $20,022.60. The amount of Government participation would be $15,016.95.

JOHN F. SHAW

John F. Shaw
Supervising Mining Engineer

Enclosures

cc 11
DMEA 3655
Chron

JFS/em

RECEIVED
JUN 13 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 3655, J. V. Emerson Lease

Boyles-Heflin Mining Company

Slick Rock Mining District

San Miguel County, Colorado

Uranium

W. D. McMillan, Mining Engineer
Bureau of Mines

N. L. Archbold, Geologist
Geological Survey

May 31, 1955

DMEA 3655

J. V. EAVERSON LEASE
BOWLES-HEFLIN MINING COMPANY
SLICK ROCK MINING DISTRICT
SAN MIGUEL COUNTY, COLORADO

TRANSMITTED
JUN 8 1955

RECEIVED
JUN 13 1955

Summary, Conclusions and Recommendations

By W. D. McMillan
Mining Engineer
Bureau of Mines

N. L. Armbold
Geologist
Geological Survey

DMEA 3655

J. V. EAVERSON LEASE
BOWLES-HEFLIN MINING COMPANY
SLICK ROCK MINING DISTRICT
SAN MIGUEL COUNTY, COLORADO

RECEIVED
JUN 13 1955

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By W. D. McMillan and N. L. Archbold

An application has been made to the Defense Minerals Exploration Administration for Government assistance in the exploration for uranium on a property in San Miguel County, Colo., leased to the applicant on December 15, 1954. The applicant proposed rotary drilling of 150 holes in three stages with a total depth of 25,000 feet at an estimated cost of $43,750.00, Government participation at 75 percent, or $32,812.50.

A field examination was made on March 22, 1955.

The property is on a mesa bounded on the east by Bush Canyon and on the west by a ridge that reaches an elevation of 7,600 feet, 500 feet above the canyon rim.

The Brushy Basin and Salt Wash members of the Jurassic Morrison formation outcrop on the property in the western and eastern parts respectively.

In the Slick Rock Mining District, most of the ore is in 2 to 3 sandstone beds in the upper part of the Salt Wash member. Small amounts of ore have been found in these beds on the Eaverson property. Important ore deposits have been mined on nearby claims and projection of known ore trends suggest the Eaverson lease merits exploration.

A revised plug bit and core drilling program has been submitted by the applicant as the result of a field conference and the examining team recommends approval of a short-form contract specifying 2,010 feet of plug drilling and 3,660 feet of core drilling at an estimated cost of $20,022.60. Government participation will be $15,016.95.

DMEA 3655

J. V. EAVERSON LEASE
BOWLES-HEFLIN MINING COMPANY
SLICK ROCK MINING DISTRICT
SAN MIGUEL COUNTY, COLORADO

RECEIVED
JUN 13 1955

Engineering Report

By W. D. McMillan
Mining Engineer
Bureau of Mines

DMRA 3655

J. V. EAVERSON LEASE
BOWLES-HEFLIN MINING COMPANY
SLICK ROCK MINING DISTRICT
SAN MIGUEL COUNTY, COLORADO

RECEIVED
JUN 13 1955

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ILLUSTRATIONS

Figure — Follows page

1. Index map of part of Colorado Plateau showing location of J. V. Eaverson lease, Bowles-Heflin Mining Company, San Miguel County, Colorado..... 2
2. Sketch map showing proposed drill holes, J. V. Eaverson lease, Bowles-Heflin Mining Company, San Miguel County, Colorado..... 6

DMEA 3655

J. V. EAVERSON LEASE
BOWLES-HEFLIN MINING COMPANY
SLICK ROCK MINING DISTRICT
SAN MIGUEL COUNTY, COLORADO

RECEIVED
JUN 13 1955

ENGINEERING REPORT

By W. D. McMillan

INTRODUCTION

Bowles-Heflin Mining Company applied for Defense Minerals Exploration Administration assistance for exploration by rotary drilling of their J. V. Eaverson lease in the Slick Rock mining district of San Miguel County, Colorado.

Their proposal was for a first stage of 50 holes on a 200- by 400-foot grid with a total depth of 10,000 feet, this to be followed if favorable results were obtained by a second stage of 50 holes on a 100- by 200-foot pattern totaling 7,500 feet, this in turn according to results by a third stage on a 50- by 100-foot pattern of 50 holes totaling 7,500 feet. The estimated total amount of drilling was 150 holes or a total of 25,000 feet at an estimated cost of $43,750.00, Government participation 75 percent, or $32,812.50.

An examination by a DMEA Region III examination team consisting of W. D. McMillan of the U.S. Bureau of Mines and Norbert L. Archbold of the U.S. Geological Survey, accompanied by Melvin Bowles, Vernon Bowles and A. L. Heflin, was made on March 22, 1955.

A greatly modified program in two stages of 9 and 13 holes respectively with a total footage of 5,670 feet at an estimated cost of $20,022.60 was proposed by the examining team, which was acceptable to the applicants.

ACKNOWLEDGMENTS

Data pertaining to the J. V. Emerson lease were obtained from personal observations, from experience of the Geological Survey member of the team in surrounding properties, and from the Bowles brothers, who had been working there for the past 8 months.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The J. V. Emerson lease consists of a privately owned 160-acre tract of land in section 26 and 27, T. 43 N., R. 19 W., New Mexico principal meridian, in the north central part of the U.S. Geological Survey Egnar Quadrangle. The property boundaries have a reverse ell shape with the short leg in Bush Canyon at elevation 7,100 feet, and the long leg extending from east to west to an elevation of 7,600 feet. From the rim of Bush Canyon for 3,000 feet to the west the terrain has a gentle slope with a rise of about 200 feet.

The property is readily accessible throughout the year as Colorado Highway 80 crosses the center about 15 miles north of Dove Creek. Dove Creek and Monticello, 38 miles from the property, are the nearest sources of supplies.

Vegetation consists of scattered sage brush and junipers, which permits preparation of drill sites and the construction of truck-trails at reasonable cost. (Fig. 1).

The climate of the district is arid, with warm to cool summers and moderate winters, with infrequent periods of extreme cold. There may be heavy storms of short duration throughout the year, and some snow accumulates for short periods in the winter months, with 3- to 5-foot drifts in timbered areas. Surface drilling and underground operations are feasible throughout the year.

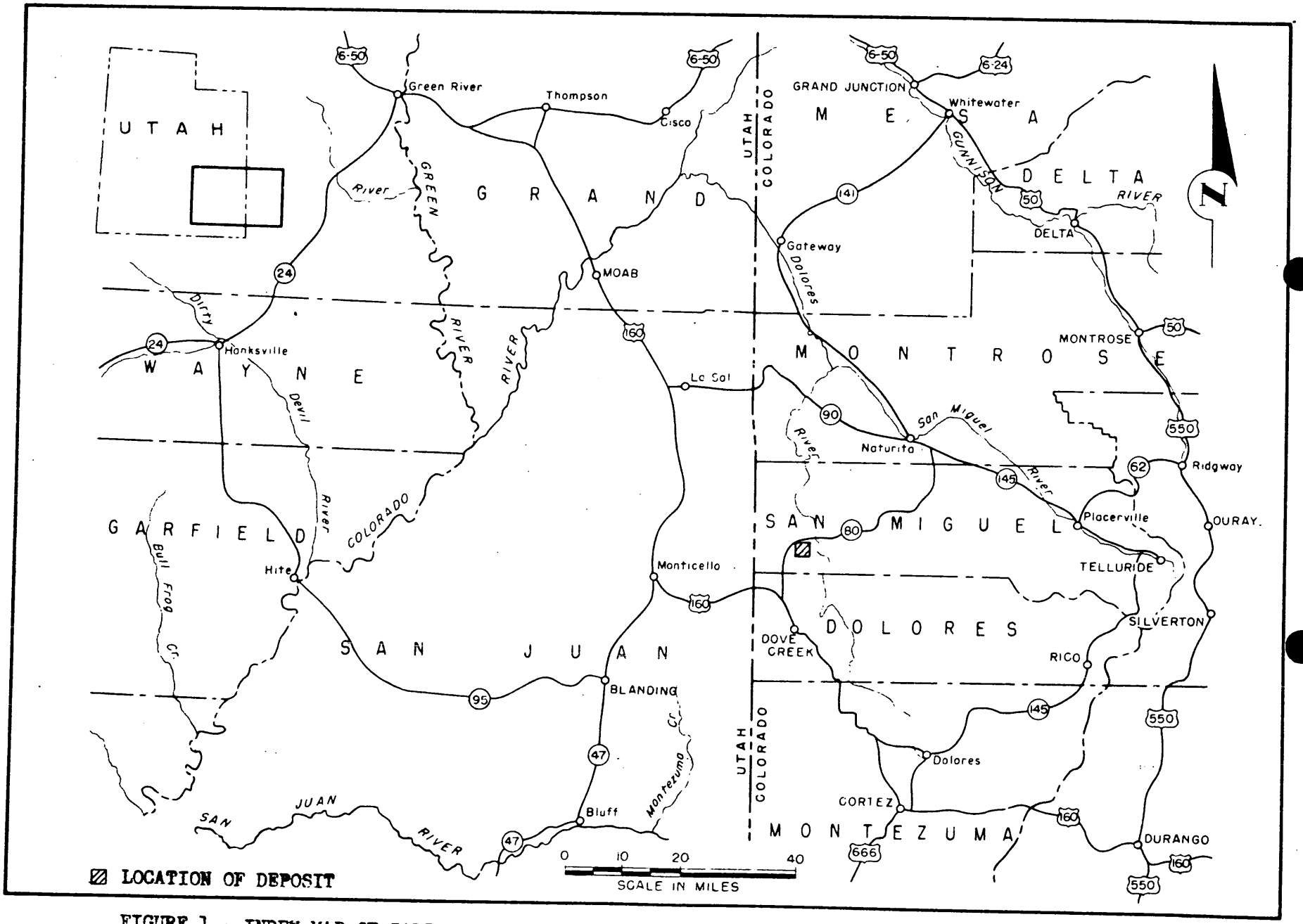

FIGURE 1 - INDEX MAP OF PART OF COLORADO PLATEAU SHOWING LOCATION OF J. V. EAVERSON LEASE, BOWLES-HEFLIN MINING COMPANY, SAN MIGUEL COUNTY, COLO. DMEA 3655

The nearest markets for uranium ores are the receiving stations and processing plants at Monticello, 38 miles, and Naturita, 52 miles.

Mining timber and lumber are available at local saw mills, and there is an ample supply of domestic fuel on the property. Power requirements must be met by gasoline or diesel-powered units. Water for drilling and domestic purposes must be hauled 7 miles from the Dolores River or pumped from wells in the plateau 2 miles north of the property.

LABOR AND LIVING CONDITIONS

The demand for mine labor in the area is comparatively heavy. Wage rates for semi-skilled labor at remote locations are about $2.00 per hour. House trailers are usually provided for exploration personnel, although, there is one hotel and one auto court at Dove Creek. The proposed project would be executed by a drilling contractor who would furnish all the necessary labor.

HISTORY, PRODUCTION, AND OWNERSHIP

The mining history of adjacent mines dates back to exploration for vanadium after World War 1. Recent increased activity for uranium dates from the early 1950's.

Records of total production are not available, but a settlement sheet indicated 24 tons of ore settled for 0.19 percent uranium oxide and 1.69 percent vanadium oxide, and there were probably other small lots mined by the Alvarado Mining Company, which was the lessor from February 8, 1954, until December 15, 1954, when Bowles-Haflin Mining Company purchased the lease.

The original owner, J. V. Haverson, leased the property in January 12, 1954, to John Griffin and S. M. Sisk of Dove Creek, Colo. On February 8, 1954, John Griffin and S. M. Sisk assigned their lease to Alvarado Mining Corporation of Colorado. On December 15, 1954, Alvarado Mining Corporation assigned their lease to Melvin C. Bowles of Aurora, Colorado.

These transactions were verified and found correct at the San Miguel County recorders office on March 23, 1955. According to Melvin C. Bowles, the assignment of his lease to the Bowles-Haflin Mining Company is being processed.

MINABLE ORE RESERVES

There are no minable reserves at present, although on the south wall of the adit 20 feet east of the face an 8-inch sample in carbonaceous sandstone assayed 1.80 percent U_3O_8 and 5.32 percent V_2O_5.

PRESENT STATUS

Exploration and Development

These consist of a few shallow wagon drill holes and a 100-foot adit, a short incline, and four open cuts. Since December 1954, the Bowles-Haflin Mining Company rehabilitated and extended the exploration adit a short distance, from which about 15 tons of milling grade ore was stockpiled at the portal.

Mining Equipment and Other Facilities

These consist of the following:

1 Sullivan Wagon Drill
1 85-c.f.m. Le Roi Compressor

1 205-c.f.m. Denver Gardner Compressor
1 315-c.f.m. Denver Gardner Compressor
2 Denver Gardner Pneumatic Drills
1 diesel-driven Shuttle Car
1 Army 6x6 truck
1 Ford 1-1/2-ton truck
1 Willys 1-ton 4-wheel drive pickup truck
1 Wisconsin gasoline-powered hoist

DESCRIPTION OF THE DEPOSITS

The entire property is overlain by the Salt Wash member of the Jurassic Morrison formation, which in this area has a possible thickness of over 350 feet, and consists of fine to coarse grain sandstones, which in places are crossbedded with rolls due to fluviatile action. The sandstone contains considerable carbonized organic material.

The rim of Bush Canyon is within the eastern part of the property for from 50 feet to 200 feet.

Uranium ore outcrops at several places along the rim. In this region the ore horizon is generally found in the middle section of the Salt Wash member, and apparently this rim represents the top part of the ore horizon.

Known production from the property is small and nearby productive mines are as follows:

Golden Rod mines - 2 miles north
Legion mines - 2 miles west
Vintah mines - 2 miles west
Frankie and Hawk mines - 2 miles northwest

PROJECT PROPOSALS WITH COSTS

The applicants proposed rotary drilling in the most favorable and accessible parts of the property in three stages. The first stage was for 6-E-W rows of holes, with spacing on the rows of 200 feet and

400 feet between the rows, with a total of 52 holes ranging in depth from 130 to 330 feet, this to be followed by two stages of 50 offset holes each. The total program was for 150 holes with a maximum of 25,000 feet at an estimated cost of $43,750.00--Government participation at 75 percent $32,812.50.

This program was appreciably modified by the examining team and the applicants to a total of 27 holes in two stages, with estimated total drilling of 7,425 feet. Plug and core drilling was substituted for rotary drilling, and the estimated total cost of the project was reduced to $22,022.60, Government participation at 75 percent $15,016.95.

Stage I consists of 9 holes located as shown in figure 2, with an average depth of 210 feet and total depth of 1,890 feet as shown in Table No. 1. Hole spacing is from 700 to 1,100 feet. Drilling will be done with a standard diamond core drill, using plug bits in the upper part of the Salt Wash member of the Morrison formation.

Stage II drilling would consist of holes spaced 50 to 200 feet apart, located to explore uranium mineralized ground found in Stage I drilling after evaluation by the Region III examination team. An additional 18 holes, with a total depth of 3,780 feet is allowed for this stage.

Table 1.--Estimated collar elevations of the holes in Stage I, with estimated plug bit, core bit, and total depths

Hole No.	Collar Elevation Feet	Plug Bit Depth Feet	Core Bit Depth Feet	Total Depth Feet
E-1	7,400	190	160	350
E-2	7,395	220	150	370
E-3	7,325	110	140	250
E-4	7,320	100	160	260

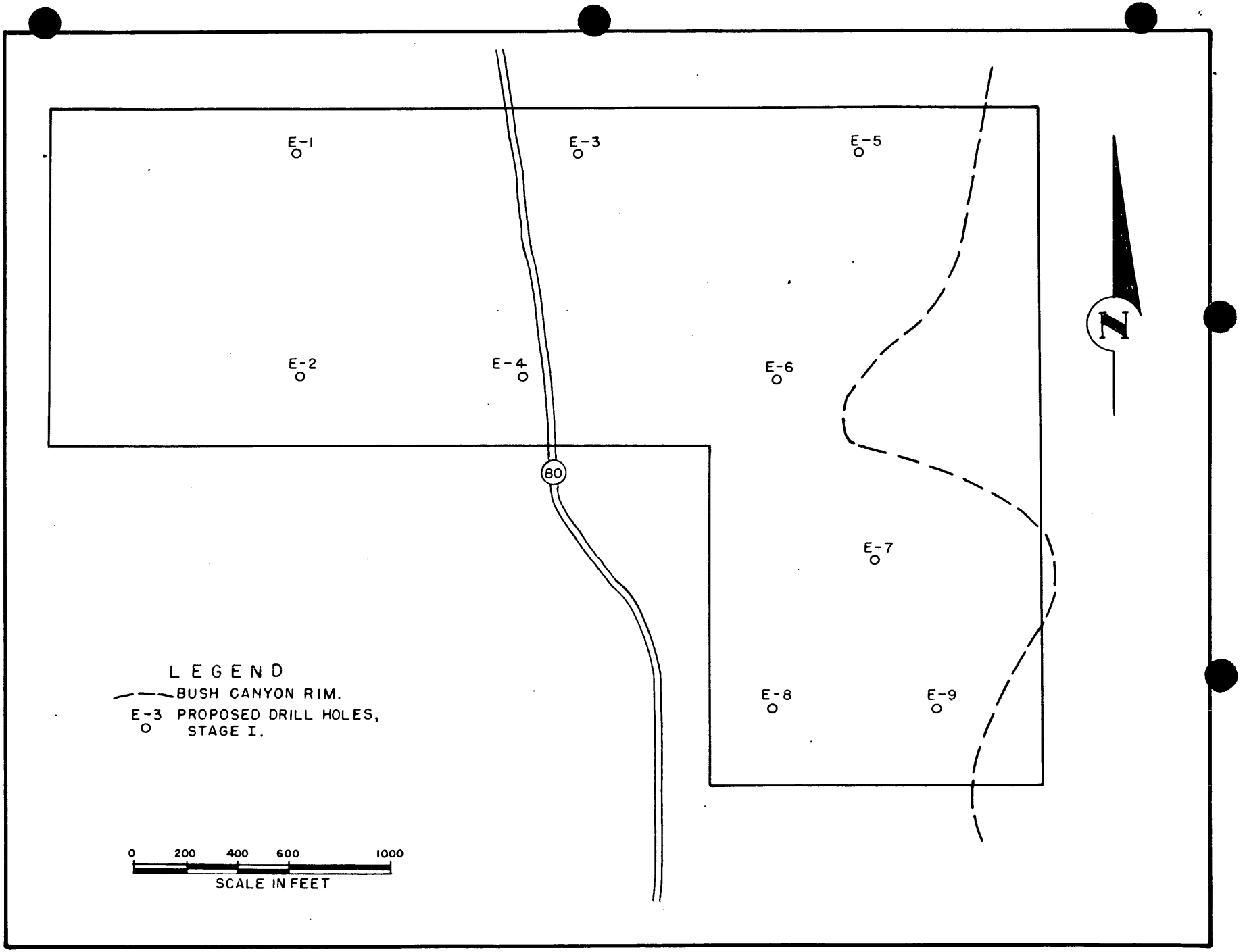

FIGURE 2 - SKETCH MAP SHOWING PROPOSED DRILL HOLES, J.V. EAVERSON LEASE, BOWLES-HEFLIN MINING COMPANY, SAN MIGUEL COUNTY, COLO. DMEA 3655

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Table 1.--Estimated collar elevations of the holes in Stage I, with estimated plug bit, core bit, and total depths (Cont.)

Hole No.	Collar Elevation Feet	Plug Bit Depth Feet	Core Bit Depth Feet	Total Depth Feet
E-5	7,265	0	120	120
E-6	7,240	0	130	130
E-7	7,230	0	120	120
E-8	7,260	50	120	170
E-9	7,210	0	120	120
	Totals	670	1,220	1,890

The following drilling cost estimates are based on the bid prices of the contracting firm, Johnson and Youvan, who have worked on other DMEA contracts. The proposal of the applicant was for rotary drilling at a unit cost per feet of $1.75, which included all necessary equipment, material, supplies, expenses of drilling, supervision, spotting of holes, logging of cuttings, ore sampling, probing of holes, mapping and related work. In view of the change in the program from rotary drilling to plug and core drilling, some of these services are estimated separately in the following cost estimates.

COST ESTIMATES

Stage I
Estimated time for completion - 10 months

(1) Independent contracts:

Bulldozing to prepare 9 drill sites, estimated time 3 days at $120.00 per day	$ 360.00	
Plug drilling 9 holes with a maximum of 670 feet at $1.75 per foot	1,172.50	
Core drilling 9 holes with a maximum of 1,220 feet of drilling at $2.73	3,330.60	
Total independent contracts		$4,863.10

1 day

(2) Labor and supervision:

Supervising engineer 1.0 months at $600.00 per month	$600.00	
Draftsman - 48 hours at $3.00 per hour	144.00	
Stenographer - 24 hours at $2.00 per hour	48.00	
Sampler and field assistant 1 month at $350.00 per month	350.00	
Total labor and supervision		$1,142.00

(3) Operating supplies:

Office - $100.00 per month	100.00	
Field - $20.00 per month	20.00	
Total operating supplies		120.00

(4) Operating equipment:

1 house trailer at $25.00 per month	25.00	
1 Bubbel hole probing unit $100.00 per month	100.00	
Total operating equipment		125.00

(5) Miscellaneous:

Accounting expense - $75.00 per month	75.00	
Insurance and payroll taxes - $53.00 per month	53.00	
Sampling and analyses 60 samples at $5.00 each	300.00	
Total miscellaneous		428.00
Total cost Stage I		$6,678.10

Estimated over-all cost per foot - $\frac{\$6,678.10}{1890} = \$3.53$

Estimated cost per foot, less sample analyses $\frac{\$6,378.10}{1890} = \$3.37$

Stage II

Estimated time for completion - 2.0 months

(1) Independent contracts:

Bulldozing to prepare 18 drill sites estimated time 6 days at $120.00 per day	$720.00	
Plug drilling 18 holes with a maximum of 1,340 feet at $1.75 per feet	2,345.00	
Core drilling 18 holes with a maximum of 2,440 feet at $2.73	6,661.20	
Total independent contracts		9,726.20

(2) Labor and supervision

Supervising engineer		
2 months at $600.00 per month	$1,200.00	
Draftsman - 96 hours at $3.00 per hour	288.00	
Stenographer - 48 hours at $2.00 per hour	96.00	
Sampler and field assistant		
2 months at $350.00 per month	700.00	
Total labor and supervision		$2,284.00

(3) Operating supplies:

Office - 2 months at $100.00 per month	200.00	
Field - 2 months at $20.00 per month	40.00	
Total operating supplies		240.00

(4) Operating equipment:

1 house trailer - 2 months at $25.00 per month	50.00	
1 Rabbel hole probing unit - 2 months at $100.00 per month	200.00	
Total operating equipment		250.00

(5) Miscellaneous:

Accounting expense - $75.00 per month	150.00	
Insurance and payroll taxes - $53.00 per month	106.00	
Sampling and analyses - 120 samples at $5.00 each	600.00	
Total miscellaneous		856.00
Total cost Stage II		$13,356.20

Estimated over-all cost per foot - $\frac{\$13,356.20}{3780} = \$3.53$

Estimated cost per foot, less sample analyses $\frac{\$12,756.20}{3780} = \$3.37$

SUMMARY COST OF PROJECT

(Plug and core drilling costs segregated)

	Stage I		Stage II	
	Plug Drilling 670 feet	Core Drilling 1,220 feet	Plug Drilling 1,340 feet	Core Drilling 2,440 feet
(1) Independent contracts	$1,299.94	$3,563.16	$2,599.88	$7,126.32
(2) Labor, supervision, and technical services	404.27	737.73	808.54	1,475.46
(3) Operating supplies	42.48	77.52	84.96	155.04
(4) Operating equipment	44.25	80.75	88.50	161.50
(5) Miscellaneous less sample analyses	45.31	82.69	90.62	165.38
Totals	$1,836.25	$4,541.85	$3,672.50	$9,083.70

Total per stage	$6,378.10	$12,756.20
Cost of sample analyses	300.00	600.00
	$6,678.10	$13,356.20

Estimated total cost of project -		$19,934.30		
Calculated over-all cost per foot, less analyses	$2.74	$3.72	$2.74	$3.72

Cost Figures for Contract Use

Stage I		
670 feet of plug drilling at $2.74 per foot -	$1,835.80	
1,220 feet of core drilling at $3.72 per foot -	4,538.40	
60 samples at $5.00 each -	300.00	
Total Stage I		$6,674.20
Stage II		
1,340 feet of plug drilling at $2.74 per foot -	$3,671.60	
2,440 feet of core drilling at $3.72 per foot -	9,076.80	
120 analyses at $5.00 each	600.00	
Total Stage II		$13,348.40
Total estimated cost of project		$20,022.60
Government participation at 75 percent		$15,016.95

CONCLUSIONS

The nine holes shown on figure 2 for Stage I are considered sufficient to determine the uranium mineralized sandstone under the J. V. Emerson property. Should these holes fail to encounter uranium ore, the project should be terminated.

The second stage of 18 holes, with spacing of 50 to 200 feet apart, would be placed to explore the uranium mineralized areas after evaluation by the Region III examining team. Only the top of the Salt Wash member of the Morrison formation is ore bearing in the district and requires core drilling. It is probable that after two or three holes have been core drilled to the estimated total depth, a marker will be found at the bottom of the ore bearing sandstone, and that the footage of core drilling will be somewhat less than the estimated footages in this report.

RECOMMENDATIONS

It is recommended that a short-form contract at unit costs per foot of drilling exploration at a cost of $20,022.60--Government participation at 75 percent or $15,016.95--be approved.

Holes are to be drilled at the locations designated on figure 2, and are to be plug drilled to the top of the ore bearing sandstones of the Salt Wash member of the Morrison formation, and core drilled through the top of this member. The minimum size hole acceptable is AX.

The contract should provide that Stage II funds be made available for Stage I if necessary and approved by the field team.

/cm

IN REPLY REFER TO:

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

TRANSMITTED
JUN 8 1955

May 10, 1955

RECEIVED
JUN 13 1955

Memorandum

To: Field Team, Region III

From: E. W. Zarnhamer

Subject: DMEA Docket 3655 (Uranium), The Rowles-Merlin Mining Co., Faverson Lease, San Miguel County, Colorado

Enclosed are 10 copies of a geologic report by W. L. Archbold, U. S. Geological Survey, covering his examination of the subject property.

Although Archbold recommends a limited program of exploration on the property and Williams concurs with this recommendation, I believe that the proposed program is at best extremely long-shot exploration, perhaps even prospecting. The following considerations are pertinent in evaluating the proposed program:

1) Of the two favorable trends found by Survey drilling west of the property, shown on figure 2 accompanying the Archbold report, one appears to project south of the subject property, the other may or may not reach the property.

2) Exposures of the ore-bearing salt wash sands in Bush Canyon along the eastern boundary of the claims is classified as only semi-favorable by Archbold and the few ore deposits found in that area have been small and low grade.

3) The first stage of the proposed program appears to be an attempt to determine if favorable ground is present under the Faverson lease rather than to explore for ore in ground that is considered to be favorable.

4) The presence of producing mines at distances of 2 to 2-1/2 miles from the subject property is by no means indicative of the presence of ore on that property.

It is with some reluctance that I concur with the recommendations for exploration on the Faverson lease (DMEA Docket 3655). I

suggest a careful review of the merits of the proposed exploration program by the Washington DMEA staff.

Nine extra copies of the figures accompanying the report are enclosed.

E. M. Harshman

E. M. Harshman
Member, Field Team

(Enclosures - 28)

EMHarshman:arh

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COLORADO PLATEAU DISTRICT
P. O. BOX 360
GRAND JUNCTION, COLORADO

RECEIVED
JUN 13 1955

April 15, 1955

Memorandum

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

From: W. P. Williams

Subject: DMEA 3655, The Bowles-Heflin Mining Co., Eaverson lease, San Miguel County, Colorado

Enclosed are 11 copies of a geologic report by N. L. Archbold covering the Eaverson lease, 9 extra copies of the maps, and the brochure.

After field examination Archbold recommends a modified program to explore the Eaverson lease. Archbold believes exploration is warranted as: 1) favorable trends are known to extend toward the property, 2) the property is adjacent to good producing areas, 3) several minor occurrences of ore are known on the property, and 4) drilling depths are fairly shallow. The program recommended by Archbold consists of 9 Stage 1 holes to be followed by Stage II holes in favorable areas.

I concur with Archbold's recommendation.

The application was brought to the attention of the Grand Junction Atomic Energy Commission office, and the Commission was asked for advice on the application.

W P Williams

W. P. Williams
Geologist

Enclosures

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JUN 13 1955

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 3655, The Bowles-Heflin Mining Co., Eaverson lease, San Miguel County, Colorado

Uranium

Geologic Report

by

N. L. Archbold
U. S. Geological Survey

April 13, 1955

DMEA 3655

INTRODUCTION

The Bowles-Heflin Mining Co. has applied for DMEA assistance to explore for uranium on the Eaverson lease, sections 26 and 27, T. 43 N., R. 19 W., San Miguel County, Colorado (fig. 1). I examined this property on March 22, 1955 with W. D. McMillan from the U. S. Bureau of Mines and M. C. Bowles and A. L. Heflin, applicants for the DMEA loan. This report concerns the results of the examination and the ensuing recommendations for modifications of the applicants' proposed exploration program.

GEOLOGY AND ORE DEPOSITS

The Eaverson lease is on the southwest flank of the Dolores anticline where the sedimentary beds dip approximately 2° to the southwest. The Late Jurassic Morrison formation forms the surface over most of the property except on the extreme west side where there is a small area covered by the Early Cretaceous Burro Canyon formation. In Bush Canyon immediately to the east of the Eaverson property, the Jurassic, Pre-Morrison Summerville and Entrada formations are exposed. Since all exploration and drilling would be confined to the Morrison formation, it is the only lithologic unit of which a detailed description is given in this report.

The continental Morrison formation is composed of two members, the Brushy Basin shale and the underlying Salt Wash sandstone. The Brushy Basin shale member consists of lenticular sandstones of limited extent interbedded with reddish-brown and greenish-gray shales and mudstones. The sandstones are quartzose to sub-arkosic and quite varied in character, ranging from quartzitic to loosely cemented and from conglomeratic to fine-grained. Sandstone colors are also varied with reddish-brown and light red, gray, green or yellow-brown being the most common. The Salt Wash sandstone member is composed of more continuous lenticular sandstones interbedded with reddish-brown shales and mudstones. Sandstones in the Salt Wash are sub-arkosic, moderately cemented and medium to fine grained; generally with a light reddish-brown or light yellow-brown to gray color.

Nearly all ore deposits in the area occur in the top sandstone lenses of the Salt Wash. Locally there has been mineralization in the lower sandstone lenses of the Salt Wash and in the Brushy Basin, but these occurrences are not economically significant.

Apparently on the southern edge of the Eaverson property the top Salt Wash sandstone is a single massive unit 30 to 40 feet thick, but northward it splits into two lenses separated by 10 to 20 feet of mudstone. The two lenses and the intervening mudstone have a

maximum total thickness of about 70 feet. Either of the two lenses may contain ore deposits. These top sandstone lenses are referred to as the "ore-bearing sandstone".

The U. S. Geological Survey has defined criteria for predicting the favorableness of the ore-bearing sandstone for the occurrence of ore deposits.1/ These criteria of favorableness are 1) sandstone 40 or more feet thick, 2) sandstone light gray to light yellow-brown in color, 3) altered mudstone (greenish-gray in color rather than reddish-brown) associated with the sandstone as pebbles and seams within the sandstone and in the underlying mudstone immediately at the base of the sandstone, 4) abundance of carbonaceous material within the sandstone.

Recent drilling by the Geological Survey has disclosed two favorable trends immediately to the west of the Eaverson property (fig. 2). It is not known whether or not these trends extend onto the property. The ore-bearing sandstone is poorly exposed in Bush Canyon on the east side of the Eaverson lease. The sandstone is of a favorable color and at the one place where the base is exposed there is about two feet of altered basal mudstone. Generally the exposure along the east side of the property looks only semi-favorable.

1/ Weir, D. B., Geologic guides to prospecting for carnotite deposits on Colorado Plateau; U. S. Geol. Survey Bull. 988-B, 1952.

PRODUCTION

There has been a little production from several small mines and open-cuts along the eastern edge of the Eaverson lease. The largest of these mines is the Joe Bush?, which apparently contained from 1 to 3 feet of low grade, bedded type uranium-vanadium ore. Total production for the Eaverson lease is not available but certainly is not over 200 tons.

About 2 miles to the west of the Eaverson property is the Legin Group of mines (fig. 2). To date total production from mines in this group is in excess of 23,000 tons and production is continuing at the present time. The Spud Patch area is about 2½ miles to the southeast of the Eaverson property (fig. 2). Production to date in this area is over 5,000 tons and several mines are still being operated. Other mines in the vicinity of the Eaverson lease have had significant production, but are somewhat smaller than those in the Spud Patch and Legin areas.

PROPOSED EXPLORATION

The applicants' propose to drill a maximum of 150 holes or 25,000 feet with an initial grid pattern of 50 holes spaced 400 feet apart in a north-south direction and 200 feet apart in an east-west direction. These holes would be drilled by a non-coring type drill rig and would penetrate both the ore-bearing

sandstone and the next lower lenticular sandstone horizon. The estimated cost of all drilling is $43,750.00

CONCLUSIONS AND RECOMMENDATIONS

The Eaverson property is recommended for a limited exploratory drilling program because 1) favorable trends are known to extend toward the property, 2) the property is located adjacent to good producing areas, 3) there has been mineralization on the property as shown by several minor occurrences of ore, 4) over most of the property the ore-bearing sandstone is at a fairly shallow depth.

Three major modifications of the applicants' proposed drilling program are recommended. First, the drilling should be diamond coring rather than of a non-coring type since an evaluation of sandstone favorableness is difficult with only cuttings from a churn or rotary drill. Such vital information as abundance of carbonaceous material, color of mudstone pebbles and seams within the sandstone, and thickness of altered mudstone at the base of the sandstone are easily lost with non-core type drilling. To cut drilling costs the Brushy Basin member can be drilled by non-coring methods and only the ore-bearing sandstone need be cored.

Second, only the top Salt Wash sandstone horizon need be cored. The applicants propose to explore the next lower sandstone

horizon because of a mistaken impression that the mines of the Legin Group are producing from that horizon. Actually the Legin mines are producing from the lower lense of the top sandstone horizon where it has been split by an intervening mudstone lense just as on the Eaverson property.

Third, the favorableness of the ore-bearing sandstone could be tested with much fewer than 50 holes. Nine holes spaced as shown in figure 3 are sufficient to determine if favorable zones extend onto the Eaverson property. If favorable areas are found, a second stage of closer spaced drilling could be undertaken to test only the favorable areas. The estimated depth of each first stage hole along with the depth to which it can be drilled by non-coring methods is given in table 1. The total cost of the nine proposed first stage holes should not be in excess of $6,000 if they are drilled by a private contractor.

Hole No.	Estimated Collar Elev.	Non-Core Depth	Estimated Total Depth
1	7400	190	350
2	7395	220	370
3	7325	110	250
4	7320	100	260
5	7265	0	120
6	7240	0	130
7	7230	0	120 ✓
8	7260	50	170
9	7210	0	120
		670	1890

Table 1

The second stage of drilling should consist of holes spaced 50 to 200 feet apart, placed to explore favorable zones found in stage one drilling and to outline discovered mineralized areas. This second stage of drilling will utilize an estimated 30 holes ?, averaging about 210 feet in depth for a total of 6300 feet. Locations and exact depth of these holes will depend upon the information obtained from stage one drilling. Probably about one-third of this total footage will be diamond cored.

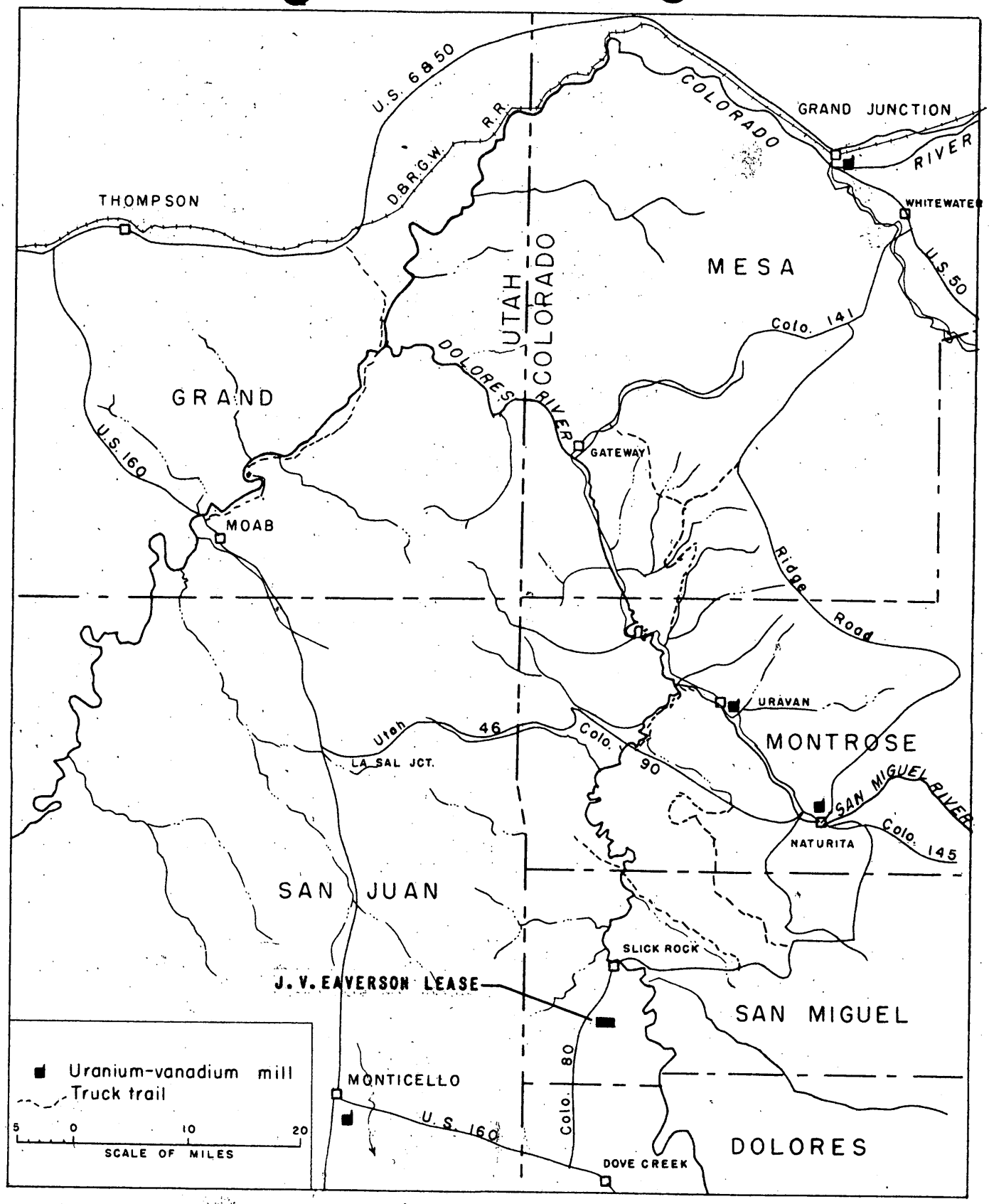

Figure 1. INDEX MAP OF PART OF COLORADO PLATEAU SHOWING LOCATION OF J. V. EAVERSON LEASE, BOWLES-HEFLIN MINING CO., SAN MIGUEL COUNTY COLORADO

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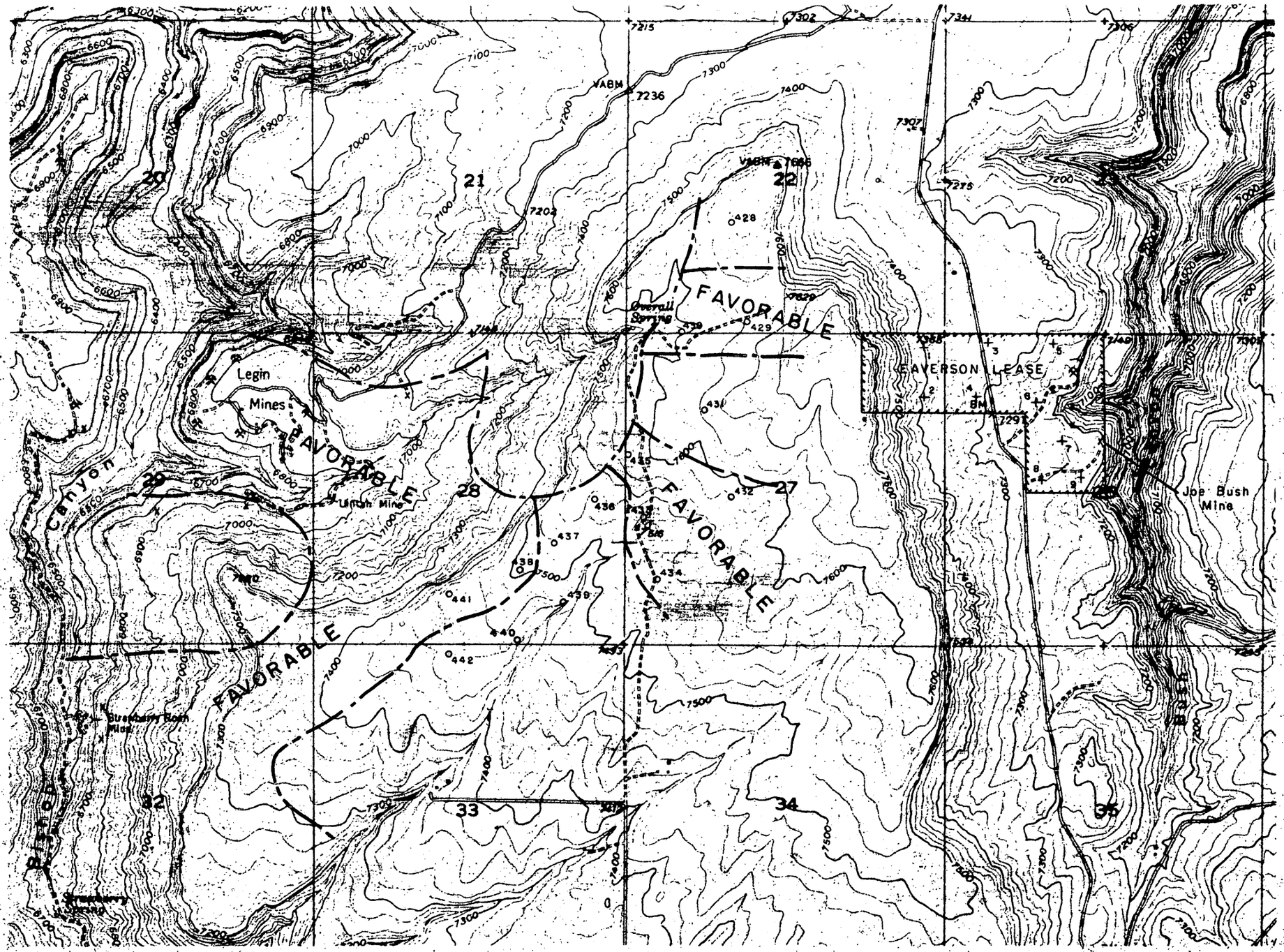

EXPLANATION

OUTLINE OF KNOWN FAVORABLE AREA

BOUNDARY OF EAVERSON LEASE

MINE OR PROSPECT

DIAMOND-DRILL HOLE, U.S. GEOLOGICAL SURVEY

PROPOSED DIAMOND-DRILL HOLE

N

1000 0 2000 FEET

CONTOUR INTERVAL
20 FEET

DATUM IS MEAN SEA LEVEL

T. 43 N., R. 19 W.
S.L.M.

Note: BASE FROM U.S. GEOLOGICAL SURVEY QUADRANGLE MAP, EGNAR

Figure 2. MAP SHOWING PROPOSED HOLE LOCATIONS ON J.V. EAVERSON LEASE AND TRENDS OF FAVORABLE GROUND IN VICINITY, BOWLES-HEFLIN MINING CO.
SAN MIGUEL COUNTY, COLORADO

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