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Chung
Ellis
Chamberlin
"not a good form to use for this type of contract"
JL
Ellis 4/2/64

TERMINATION OF EXPLORATION PROJECT CONTRACT BY AGREEMENT
AFTER COMMENCEMENT BUT BEFORE COMPLETION OF THE WORK

It is agreed this 3rd day of March, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government", and a partnership consisting of H. C. Gamblin and J. M. Knowles, hereinafter called the "Operator", parties to that certain Exploration Project Contract Idm-E627, Docket No. DMEA-2959, dated October 21, 1953, that said contract shall be and is hereby terminated at the completion of 610 feet of wagon drilling, which is a part of the work described under Stage I of Exhibit "A" attached thereto and made a part of said contract.

Any work prosecuted or costs incurred by the Operator after the date first above written shall be for the sole account of the Operator, except for (a) such necessary and reasonable costs and expenses as may be incurred in preserving and disposing of any facilities, buildings, fixtures, equipment, or other items, to the cost of which the Government has contributed and in which the Government has an equity, and (b) the costs of any reports, accounts, and winding-up and settlement actions provided for in the contract.

The undersigned Operator hereby releases and agrees to save harmless the Government from all claims and demands under or arising out of said Exploration Project Contract, except as herein expressly otherwise provided.

Witness the following signatures as of the day and year first above written.

GAMBLIN AND KNOWLES

By H C Gamblin
H. C. Gamblin, Partner

By Jas M Knowles
J. M. Knowles, Partner

UNITED STATES OF AMERICA

By W H King
W. H. King, Executive Officer,
DMEA Field Team, Region IV

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 28 1953

MF-200 (A)
(February 1952)

DOCKET NO. DMEA 2959

COMMODITY Uranium

Idm-E627

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

EXPLORATION PROJECT CONTRACT[1]
(Short Form)

IT IS AGREED this 21st day of October, 1953, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] a partnership consisting of
H. C. Gamblin 1307 Colo. Ave., Grand Junction, Colo.
J. M. Knowles 337 North Ave., Grand Junction, Colo.

hereinafter called the "Operator," as follows: and as set forth in Annex I attached hereto and made a part hereof.

ARTICLE 1. *Authority for contract.*—This agreement is entered into under the authority of the Defense Production Act of 1950, as amended, pursuant to DMEA Order 1 entitled "Government Aid in Defense Exploration Projects."

ARTICLE 2. *Operator's property rights.*—With respect to that certain land situated in the State of Colorado, County of San Miguel, described as follows:[3] Two unpatented mining claims recorded in the County Recorder's Office as follows:

Lee Mack Claim Book 176 Page 276
Blue Bell Claim Book 176 Page 277

the Operator represents and undertakes:[4]

~~(a) That the Operator is the owner in possession and entitled to possession, and that the property is subject only to the following [illegible]~~

None

(*b*) That the Operator is a lessee, in possession and entitled to possession, and the Owner's Consent to Lien is attached.

The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof.

ARTICLE 3. *Exploration project.*—The Operator, within (60) sixty days from the date of this contract shall commence work on a project of exploration for[5] Uranium

in or upon the described land; and shall bring the project to completion within a period of Four Months from the date of this contract. The work to be performed is more fully described in Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, are made a part of this contract. The Government will contribute to the cost of this work as hereafter provided. The work shall be performed by the Operator or by independent contractor or contractors efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for workmen's compensation and employers' liability insurance, with suitable and adequate equipment, materials, and labor, to bring the project to completion within the time fixed. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

ARTICLE 4. *Costs of the project.*—The agreed, estimated costs of performing the work, expressed in terms of units of work to be performed (per foot of drifting, per foot of drilling, per cubic yard of material to be moved, etc.) are set forth in Exhibit "A," attached hereto. The Government will pay (90) Ninety percent of these agreed, estimated costs, as they accrue, for units of work actually performed that conform with the description or specifications for the work set forth in this contract, in an aggregate total amount not in excess of $1,159.65, which is (90) Ninety percent of $1,288.50, the agreed, estimated total cost of the project in which the Government will participate: *Provided,* That until the Operator's final report and final accounting have been rendered to the Government and any final check or 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 ten (10) percent of the maximum total which the Government might have been called upon to pay under the terms of the contract. The Government may, as it sees fit, make payments direct to the Operator's independent contractors, if any, for the account of the Operator, rather than to the Operator.

ARTICLE 5. *Reports, accounts, audits.*—(*a*) *Progress reports.* The Operator shall provide the Government with monthly reports of units of work performed under the contract, in quintuplicate (five copies), upon forms provided by the Government. These progress reports shall be certified by the Operator, and shall constitute both the Operator's invoice of units of work performed on the project during the period covered by the report and his voucher for repayment by the Government, unless the Government requires the use of a standard voucher form with invoice attached. Progress reports shall include surface and/or underground engineering-geological maps or sketches showing the progress of the exploration, with assay-reports on samples taken concurrently with the advance in mineralized ground.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property, particularly excluding any land or interest therein to which the Government's lien is not to attach or the production from which is not to be subject to the Government's percentage royalty.
[4] Strike out the provision not applicable.
[5] Name of mineral or minerals.

(*b*) *Final report.*—Upon completion of the exploration work or termination of the contract the Operator shall provide the Government with an adequate geological and engineering report, in quintuplicate (five copies), including an estimate of ore reserves resulting from the exploration work.

(*c*) *Compliance with requirements.*—If, in the opinion of the Government, any of the Operator's reports are insufficient or incomplete, the Government may procure the making or completion of such reports and attachments as an expense of the exploration work; and the Government may withhold approval and payment of any vouchers depending upon insufficient or incomplete reports.

(*d*) *Accounts and audits.*—The Operator shall keep suitable records and accounts of the units of work performed, which the Government may inspect and audit at any time. The Government may at any time require a check of the work performed and an audit of the Operator's records and accounts, by a certified public accountant or otherwise, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract. Upon the completion of the project or termination of the contract the Operator shall render a final account and statement of work performed to accompany his final report.

ARTICLE 6. *Repayment by Operator.*—(*a*) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than 6 months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid or said 10 years have elapsed, whichever occurs first, as follows: **See Annex I substituted for that part of 6(a) preceding the colon.**

(1) One and one-half (1½) percent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) percent of any such net amounts, plus one-half (½) percent of such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such net amounts.

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

(*b*) As here used, "net smelter returns," "net concentrator returns," and "other net amounts realized from the sale or other disposition," mean gross revenue from sales, or if not sold, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be the gross income from mining operations for percentage depletion purposes in income-tax determination.

(*c*) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(*d*) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

ARTICLE 7. *Assignment, transfer, or loss of Operator's interest.*—Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder. The Operator shall not make any voluntary nor permit any involuntary transfer or conveyance of the Operator's rights in the land described in Article 2, without making suitable provision for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof; *Provided,* that mere failure by the Operator to maintain the Operator's rights in the land, without any consideration running to the Operator other than relief from the cost of maintaining such rights (as by surrender of a leasehold, failure to perform assessment work, or failure to exercise an option), coupled with complete abandonment by the Operator of all interest in or operations on the land for a period of 10 years from the date of this contract, shall not constitute such a transfer or conveyance. Should the Operator make or permit any transfer or conveyance in violation of this provision, the Operator shall be and remain liable for payment to the Government of the same amounts, at the same times, as would have been paid under the terms of the percentage royalty on production. If for any reason the net smelter returns, net concentrator returns, or other net amounts realized from the sale or other disposition of such production are not available as a means of measuring the amount of the Operator's liability, the amount thereof shall be estimated as well as may be, and in the event of dispute as to such estimates, the determination thereof by the Administrator of Defense Minerals Exploration Administration or by his successor shall be final and binding upon the Operator.

ARTICLE 8. *Termination and completion.*—The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if, in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worth while discovery and in the opinion of the Government further operations are not justified.

ARTICLE 9. *Changes and added provisions* _____

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

H. C. Gamblin and J. M. Knowles
(Operator)

By H C Gamblin
Jas M Knowles

By W. H. King
W. H. King, Executive Officer
DMEA Field Team, Region IV

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—66329-1

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 28 1953

ANNEX I

The following provisions are in lieu of all of paragraph (a) of Article 6 which precedes the colon:

If the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after a sufficient, complete, final report and final account referred to in the contract 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. The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2, 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 of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for 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. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production (including any bonuses), in whatever form disposed of, including ore, concentrates, or metal, as follows:

MF-203

OWNER'S CONSENT TO LIEN

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 28 1953

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

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

2/ [redacted]

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

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

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

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ [redacted], or ten years have elapsed from the date of the contract.

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

Dated this 10 day of aug, 195 3.

S. M. Sick [Seal]

_____ [Seal]

_____ [Seal]

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

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

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

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

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

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator 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 at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

Minerals Administration
RECEIVED
1953

EXHIBIT A

Description of the Work

The Lee Mack Claim will be explored in two stages by wagon drilling.

Standard sampling equipment must be used and samples taken in all mineralized zones and in all zones where mineralization is likely to be present. Sampling equipment and methods must meet the approval of Defense Mineral Exploration Administration representatives and follow the recognized sampling methods now in use and approved by the Geological Survey and Atomic Energy Commission for wagon drilling on the Colorado Plateau.

STAGE I

Drill two rows of holes on 50-foot centers back from the mine workings identified as 1, 2, 3, and 4 on the attached map. Drill the remaining favorable area with holes on 100-foot centers. The approximate location of all holes and the favorable area is shown on the attached "Sketch map of the Lee Mack and Blue Bell claims" which is made a part of Exhibit A. Two holes will be drilled in the western portion of the claim to check the possible extension of the favorable sand. Approximately 40 holes or 1000 feet of drilling will be required. In addition, approximately 3 hours of bulldozing will be done on the Blue Bell claim at Number 6 pit to further investigate a minor exposure of Uranium mineralization.

STAGE II

500 feet of drilling for offset holes at not less than 25 foot centers will be allowed only with prior written approval of the DMEA representative. The location of these holes to be determined after the completion of Stage I.

Estimated cost of the Project

STAGE I

1/	1000 feet of wagon drilling at $0.859 per foot	$859.00
	Government participation at 90%	$773.10

STAGE II

1/	500 feet of wagon drilling at $0.859 per foot	$429.50
	Government participation at 90%	$386.55
	Total Estimated cost of project	$1288.50
	Total Government participation	$1159.65

1/ Includes bulldozer drill-site preparation and exploration, engineering and geological consultant, sampling and any and all other costs incurred in the completion of the work.

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

DATE: May 3, 1954

Defense Minerals Administration
RECEIVED
MAY 4 - 1954

FROM : Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

SUBJECT: Final Field Team Report, DMEA Docket 2959 (Uranium), Contract Idm-E 627, H. C. Gamblin and J. M. Knowles, Grand Junction, Colorado, contractors; Lee Mack claim, Sec. 1, T. 43 N., R. 19 W., San Miguel County, Colorado

Wagon drilling of 24 holes in Stage I of the contract at a cost of $524, out of a total estimated cost of $1,288 for two stages, failed to find any uranium ore. The contractor requested termination of the contract. In view of the unfavorable results, the Field Team agreed to its termination and no discovery was made. I concur with the Field Team's decision in terminating the contract.

Arthur P. Butler, Jr.

Copies to: E. Wm. Ellis (2)

Sum[illegible]
Doc[illegible] copy

700

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

Ching
Ellis
Chambers
Hosted
Johnson

Mr. H. C. Camblin
1307 Colorado Avenue
Grand Junction, Colorado
and
Mr. J. M. Knowles
337 North Avenue
Grand Junction, Colorado

APR 30 1954

Re: Docket No. DMEA-2959 (Uranium)
Contract No. Idm-2627
Lee Mack-Blue Bell Claims
San Miguel County, Colorado

Gentlemen:

This is with reference to the subject Exploration Contract between you and the Government.

The Auditor's Report of Review of the contract expenditures and the final reports of the Operator and of the Field Team have been received and accepted by this Administration. Of the total amount of $1,288.50 approved under the contract, the sum of $523.99 was expended, 90 percent of which, or $471.59, represented the Government's share. There were no unused materials, supplies or equipment to be disposed of for the joint account of the Operator and the Government. The exploration work was completed in a satisfactory manner.

Because the results of the exploration were unfavorable, it is not our intention to make a certification of discovery or development which would create a lien against the subject property. We are, therefore, closing our books and records with respect to this project. Your attention is called, however, to Article 5 (d) of the Contract which requires the Operator to "keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract".

Your interest in the Exploration Program of the Defense Minerals Exploration Administration and your willingness to participate therein are appreciated.

Sincerely yours,

C. O. Mittendorf
(by ES7)
Administrator

MChing/gla 4-27-54 DMEA FT-IV (2)

Copy to: Mr. J. M. Knowles

cc to: Adm. Reading File
Operating Committee
Docket
Code 700
MChing
APButler, Jr.
JOHosted
HDKeiser

DOCKET COPY

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

Project Summary Review

By: M. Ching April 27, 1954

1. Docket No. DMEA-2959 (Uranium)
Contract No. Idm-E627
Property - Lee Mack-Blue Bell Claims
San Miguel County, Colorado

Operator - H. C. Gamblin and J. M. Knowles
Grand Junction, Colorado

Operator's Property Rights - Lessee of the unpatented Lee Mack and Blue Bell claims. Owner's Consent to Lien dated August 10, 1953, signed by S. M. Sisk

2. Contract dated October 21, 1953

Work authorized (Unit Cost Basis)

Stage I -	Wagon drilling 40 holes, 1,000 ft. at $0.859 per ft.	$ 859.00
Stage II -	Wagon drilling 500 ft. at $0.859 per ft.	429.50
	Total estimated cost of project	$1,288.50
	Government participation at 90%	$1,159.65

Amendments - None

Work completed -

Stage I -	Wagon drilling, 24 holes, 610 ft. at $0.859 per ft.	$ 523.99
Stage II -	No work done	-
	Total	$ 523.99
	Government participation at 90%	$ 471.59

Work commenced the last week of December, 1953, and was terminated in January, 1954.

3. Auditor's Report of Review, dated March 11, 1954.

Total cost as billed by Operator	$ 523.99
Exceptions	None
Total Accepted Cost	$ 523.99
Government participation at 90%	$ 471.59

4. Certification - none

5. Comments -

The project was designed to explore the top sandstone bed of the Salt Wash member of the Jurassic Morrison formation in the eastern and central parts of the Lee Mack claim. The sandstone in this area was considered favorable for ore and consists of beds of light-brown sandstone 12 to 25 feet thick which could be explored by wagon drilling.

Past production from this property was reported as totaling 300 tons of ore containing 2.5 to 3.0% V_2O_5 and an estimated 0.35% U_3O_8. The ore came from four shallow mine workings along the rim.

The subject project provided for drilling two rows of holes on 50-foot centers behind each of the four mine workings, and drilling the remainder of the favorable area on 100-foot centers. If mineralization was encountered offset holes on 25-foot centers could be drilled.

Operator drilled 23 holes, in two rows, on 50-foot centers asoutlined above, and 1 hole about 200 feet from the rim. Visual and Geiger counter examinations of the cuttings failed to show any mineralization; consequently, Operator requested that the project be terminated by mutual consent. The Field Team agreed that further drilling was not justified and the contract was terminated by agreement on March 3, 1954.

The Operator conducted the operation in a satisfactory manner, and the final progress map, drill hole logs and final report submitted were adequate.

Michael Ching

Michael Ching

Copies to: Admr. Reading File
Docket (original)
Code 700 contract file
Mr. Ching

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

224 New Customhouse
Denver 2, Colorado

April 14, 1954

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region IV

Subject: Docket DMEA 2959 (Uranium), Contract Idm-E627, a partnership consisting of H.C. Gamblin and J.M. Knowles, San Miguel County, Colorado

Enclosed are the following final reports pertaining to work under the subject contract:

1. Original and one copy of the operator's final report.

2. Original and two copies of the final geologic report by the U.S. Geological Survey.

3. Original and three copies of the final engineering report by the Bureau of Mines.

Final payment to the operator was processed by this office March 19, 1954, in conformance with the final report of review by the Contract Administration and Audit Division dated March 11, 1954, which was released to this office March 18, 1954.

The contract was terminated by mutual agreement as of March 3, 1954, at the completion of 610 feet of wagon drilling, a portion of the work authorized under Stage I of the contract. The total accepted cost of the work amounted to $523.99 in which the Government participated to the extent of 90 percent or an amount of $471.59.

The results of the 610 feet of wagon drilling indicated that further exploration work was not warranted. No uranium ore was discovered as a result of the exploration work, therefore a certification of discovery or development is not recommended.

W. H. King

W. H. King

A. H. Koschmann

A. H. Koschmann

Encls.

Grand Jct, Colo
3/15/54

Mr W H Kurig
Executive Officer DMEA
Field Station, Region IV

DMEA 2959
Contract Idm-E627

Dear Mr Kurig:

Enclosed find my final report on the above contract. This may not be acceptable in that I am neither an engineer or Geologist. However owing to the simplicity of the findings I am taking the privilege of making the report.

Very Sincerely Yours
J. M. Lucente

Mining Division
Date Rec'd
MAR 16 1954
BUREAU OF MINES
Denver, Colorado

Gamblin & Knowles

Contract Ida E 627
Docket DMEA 2959 (Uranium)

Final Engineering & Geologic Report.

The drill logs showed that the formation in the area covered by this contract was too shallow - too nearly completely eroded - to expect economical ore bodies unless they would be found around the outcrops. All of these outcrops were well spot drill with no ore showings. To drill the intermediate area was not - in the operators opinion - economically feasible - hence the request for a termination of the contract before completion agreement.

There are no ore reserves on the property

Sincerely

Jas M Knowles - Operator.

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

224 New Customhouse
Denver 2, Colorado

April 14, 1954

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region IV

Subject: Docket DMEA 2959 (Uranium), Contract Idm-E627, a partnership consisting of H.C. Gamblin and J.M. Knowles, San Miguel County, Colorado

Enclosed are the following final reports pertaining to work under the subject contract:

1. Original and one copy of the operator's final report.

2. Original and two copies of the final geologic report by the U.S. Geological Survey.

3. Original and three copies of the final engineering report by the Bureau of Mines.

Final payment to the operator was processed by this office March 19, 1954, in conformance with the final report of review by the Contract Administration and Audit Division dated March 11, 1954, which was released to this office March 18, 1954.

The contract was terminated by mutual agreement as of March 3, 1954, at the completion of 610 feet of wagon drilling, a portion of the work authorized under Stage I of the contract. The total accepted cost of the work amounted to $523.99 in which the Government participated to the extent of 90 percent or an amount of $471.59.

The results of the 610 feet of wagon drilling indicated that further exploration work was not warranted. No uranium ore was discovered as a result of the exploration work, therefore a certification of discovery or development is not recommended.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Reviewed by
DMEA OPERATING COMMITTEE

4-23-54
(date)

Encls.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

April 12, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2959, Contract Idm-E627, Lee Mack and Blue Bell claims, San Miguel County, Colorado

Enclosed are 11 copies of the final geologic report by D. R. Shawe of the U. S. Geological Survey covering the above docket.

Termination of the contract was recommended and approved.

A. H. Koschmann

A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

Reviewed by
DMEA OPERATING COMMITTEE
4-23-54
(date)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 360
GRAND JUNCTION, COLO.

April 9, 1954

Memorandum

To: A. H. Koschmann, DMEA Field Team, Region IV

From: R. P. Fischer, Supervisor, Colorado Plateau District

Subject: Final geologic report, DMEA 2959, Idm-E627, Lee Mack and Blue Bell claims, San Miguel County, Colo.

Transmitted herewith are eleven copies of the final geologic report on the subject project. This report is prepared by D. R. Shawe.

After 24 holes were drilled of the 40 planned for Stage I drilling, and no mineralized material was cut in these holes, the operator requested that the contract be terminated. Termination was recommended and approved.

No more exploration is recommended on these claims.

R. P. Fischer

R. P. Fischer

RPF/mlr

Enclosures 11

Reviewed by
DMEA OPERATING COMMITTEE
4-23-54
(date)

UNITED STATES DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

FINAL REPORT BY FIELD TEAM
REGION IV

DMEA 2959, Lee Mack and Blue Bell claims

Slick Rock district

San Miguel County, Colorado

Uranium

Final geologic report

By: D. R. Shawe
U. S. Geological Survey

April 9, 1954

Reviewed by
DMEA OPERATING COMMITTEE
4-23-54
(date)

LEE MACK AND BLUE BELL CLAIMS
SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO

INTRODUCTION, SUMMARY, AND RECOMMENDATION

Mr. H. C. Gamblin and Mr. J. M. Knowles, lessees of the Lee Mack and Blue Bell claims, applied (Docket 2959) to the Defense Minerals Exploration Administration for a loan to explore for uranium on the Lee Mack and Blue Bell claims, Slick Rock district, San Miguel County, Colo.

The claims were examined on April 21, 1953, by C. F. Withington, geologist, U. S. Geological Survey, in company with R. R. McLellan, engineer, U. S. Bureau of Mines, and J. M. Knowles, lessee and applicant.

The applicant proposed to do 6,400 feet of wagon drilling and 2,280 feet of diamond drilling and a small amount of bulldozer work to prepare drill sites. Drilling was proposed in three phases, each subsequent phase contingent on results of the previous phase. Total cost was estimated to be $10,770.

As a result of the field examination, some modification of the applicant's proposal was suggested by C. F. Withington. This change was agreed upon by R. R. McLellan and was acceptable to J. M. Knowles. The suggested program, described in this report, consisted of 1,500 feet of wagon drilling, to be done in two stages, and a small amount of work with a bulldozer and other work. The total cost was calculated to be $1,288.50, of which the Government's share would be $1,159.65.

It was concluded that the suggested work might yield some minable ore and, therefore, it was recommended that a contract be prepared and approved.

Under the terms of the contract (Idm-E627), 24 holes of the 40 proposed were drilled. As no ore or mineralized rock was cut in these holes, the operator requested termination of the contract. Following a field examination, D. R. Shawe, geologist, USGS, recommended termination in a memorandum report dated January 15, 1954; the contract was subsequently terminated.

No more work is recommended.

GEOLOGY

The exposed rocks on the Lee Mack and Blue Bell claims consist of the Salt Wash member of the Jurassic Morrison formation. The Salt Wash member here is about 300 feet thick, and consists of three or more massive light-brown and red-brown sandstone beds or lenses, which range from a few feet to more than 30 feet in thickness. These lenses are separated by red-brown mudstone beds up to 40 feet thick. Some gray-green mudstone is present directly under the sandstone lenses. The exposed rocks strike about N. 40° W., and dip 7° to 8° NE.

In the Lee Mack area, only the top sandstone bed of the Salt Wash member contains mineralized material of economic grade and thickness. This bed is called the "ore-bearing sandstone". Some scattered showings of mineralized material, however, are found in the lower sandstone beds.

The ore-bearing sandstone is present only on the Lee Mack claim, as erosion has removed it from the Blue Bell claim. All the ore produced from the Lee Mack claim has come from the ore-bearing sandstone. No ore, apparently, has been produced from the Blue Bell claim, although there are two prospects which contain traces of mineralized material. These showings are in gray-green mudstone associated with a sandstone bed that is about 70 feet stratigraphically below the ore-bearing sandstone. On the basis of outcrop examination, the sandstone in the eastern and central parts of the Lee Mack claim is considered favorable for ore. The sandstone on the western part of the claim is classed as unfavorable. The favorable sandstone consists of beds of light-brown sandstone 12 to 25 feet thick, underlain in places by gray-green mudstone up to 6 inches thick. Some carbonaceous material is present in the sandstone. The unfavorable sandstone consists of beds of light-red sandstone 10 to 12 feet thick, underlain by red-brown mudstone.

ORE DEPOSITS

The deposits on the Lee Mack claim consist of thin tabular bodies which thicken locally to form NE trending "rolls". No fossil logs were noted but some carbonaceous material is present in the deposits. The color of the mudstone underlying the deposits is gray-green. The minerals in the deposits are typical of those of the carnotite deposits of the Colorado Plateau. The mineralized targets on the Lee Mack claim average from 35 to 50 feet in diameter. The sizes of the ore-bodies on the Lee Mack claim are from a few tons to about 100 tons each. They are from about 4 to 25 feet wide, 10 to 50 feet long, and from a foot to 2 feet thick. The grade of the ore is estimated to average about 0.25 percent U_3O_8 and 2.0 percent V_2O_5.

The applicants reported that previous to 1947, the production from the Lee Mack claim had been 125 short tons and that from the Blue Bell claim had been 175 tons. However, there are no workings on the Blue Bell claim from which ore has been mined. The statement probably was made because the applicants had mis-located workings No. 4 (located approximately on the accompanying map), and placed them on the Blue Bell claim. No ore has been produced since that time and no reserves are present in the workings. No record of the grade of the uranium is available, but the grade of the vanadium has been reported to be 2.5 to 3.0 percent V_2O_5. Assuming a ratio of uranium to vanadium of about 1:8, the grade of the uranium is estimated at about 0.35 percent U_3O_8.

The mineralized material on the Blue Bell claim consists of nodules of copper- and uranium-bearing material associated with a gray-green mudstone. No estimate is given for the size of these deposits, though they are probably of no consequence economically.

PROPOSED EXPLORATION

The applicants proposed exploration by both wagon and diamond drilling. Although the proposal was basically sound, some modification was suggested. Only the ore-bearing sandstone in the central and eastern part of the Lee Mack claim warranted exploration, as this sandstone probably contains the only deposits of economic size and grade. This sandstone could be explored by wagon drill.

It was recommended that the exploration program should be divided into two stages. Stage 1 drilling should be completed before Stage 2 starts, as Stage 2 is dependent upon Stage 1.

Stage 1: Wagon drilling should be carried out within the favorable ground in the center and eastern part of the Lee Mack claim. Two rows of holes should be drilled on 50-foot centers behind each of the four workings. The remainder of the ground in the favorable area should be drilled on 100-foot centers (see attached map). Two holes should be drilled in the western part of the Lee Mack claim on the small chance that favorable ground might extend farther west than expected. Stage 1 drilling would require 40 holes.

Stage 2: Holes should be drilled on 25-foot centers to offset any Stage 1 hole that yielded a sample containing more than about 0.02 percent U_3O_8 or 0.2 percent V_2O_5. It was thought that about 20 holes might be required for this stage.

The depths of the 60 holes to be drilled in both Stages 1 and 2 would be from 10 to 40 feet and would average about 25 feet deep. This would require a total of 1,500 feet of drilling. It was recommended that a duclone sample collector be used to collect the samples from the drilling, and a careful log of each hole should be made.

In addition, about 3 hours of bulldozer work was planned to expose the mineralized material showing on the Blue Bell claim. About 5 hours of bulldozer work was planned to prepare the area for drilling.

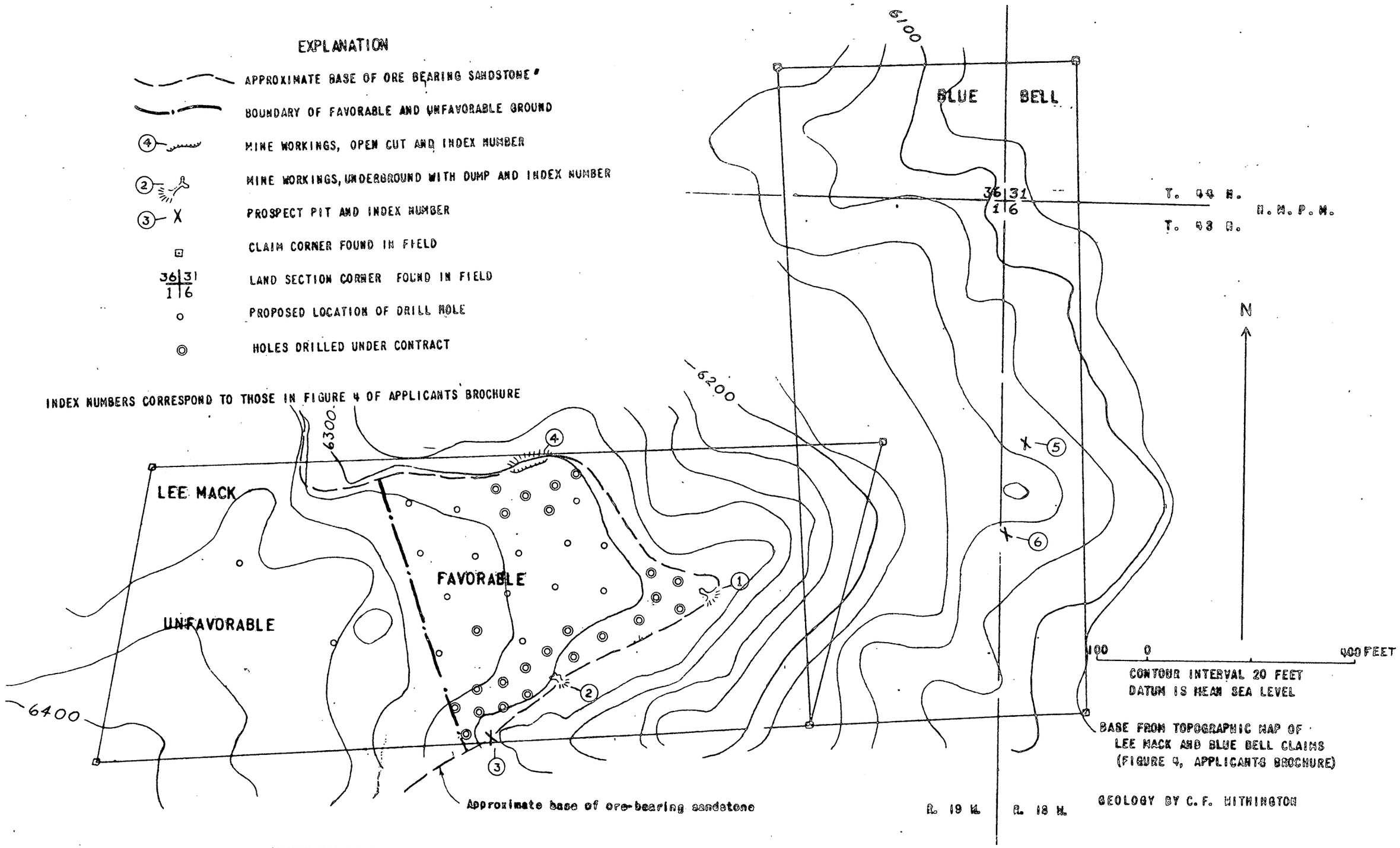
TERMINATION OF CONTRACT

The above-outlined drilling proposal was approved and the applicants commenced the proposed drilling. After drilling 24 holes of the proposed 40 of Stage 1 on the Lee Mack claim, and encountering no mineralized rock, the operators requested that the drilling contract be terminated.

In the company of J. M. Knowles, D. R. Shawe examined the property on January 15, 1954, after the 24 holes had been drilled (see attached map). Drill cuttings from the 24 drilled holes were examined and these indicated that none of the holes cut mineralized rock. In addition, the cuttings showed that the ore-bearing sandstone which crops out on the rim at the south side of the Lee Mack claim thins considerably a few tens of feet north of the rim, and is hence unfavorable for ore. It was thus recommended that the DMEA drilling contract 2959 be terminated in accord with the request of the operators.

The operators' request for termination of the drilling contract DMEA 2959 was subsequently approved.

DMEA DOCKET 2089



SKETCH MAP OF THE LEE MACK AND BLUE BELL CLAIMS, SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO, SHOWING
THE PROPOSED LOCATIONS OF 40 DRILL HOLES FOR STAGE 1 DRILLING
AND THE HOLES DRILLED UNDER CONTRACT Idm-E627
APRIL 1954

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
February 18, 1954

Mining Division
Date Rec'd
FEB 19 1954
BUREAU OF MINES
Denver, Colorado

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 2959, Contract Idm-E627 (Uranium), Gamblin and Knowles (Lee Mack and Blue Bell claims), San Miguel County, Colorado

Transmitted herewith are the original and ten copies of Russell R. McLellan's final engineering report on the above docket.

As a result of unfavorable showings in 24 wagon drill holes totaling 610 feet of the allowed 1,000 feet of drilling authorized under Stage I of the contract, the operator requested termination by agreement after commencement but before completion of the work. McLellan recommends the termination. I concur.

After a Report of Review by an auditor representative of the Contract Administration and Audit Division, the project can be closed in the usual manner.

W. M. Traver

W. M. Traver

enclosure

WMT/kp

cc: 10
E627
Chron

Reviewed by
DMEA OPERATING COMMITTEE

_____
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

FINAL ENGINEERING REPORT

DMEA 2959, Exploration Project Contract Idm-E627

Lee Mack and Blue Bell Claims

Gamblin and Knowles

San Miguel County, Colorado

Uranium

Russell R. McLellan, Mining Engineer
Bureau of Mines

February 17, 1954

Reviewed by
DMEA OPERATING COMMITTEE

_____
(date)

DMEA 2959, Contract Idm-E627

LEE MACK AND BLUE BELL CLAIMS
GAMBLIN AND KNOWLES
SAN MIGUEL COUNTY, COLORADO

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Final Engineering Report	Page
Summary and introduction	1
Location, history, production, ownership	2
Description of deposit	2
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Efficiency of operations	7
Equipment	7
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Recommendations	8

ILLUSTRATIONS

Figure	Follows Page
1. Location map, Lee Mack and Blue Bell claims, San Miguel County, Colo	2
2. Sketch map of Lee Mack and Blue Bell claims, Gamblin and Knowles, San Miguel County, Colo	3

DMEA 2959, Contract Idm-E627

LEE MACK AND BLUE BELL CLAIMS
GAMBLIN AND KNOWLES
SAN MIGUEL COUNTY, COLORADO

FINAL ENGINEERING REPORT

By

Russell R. McLellan

SUMMARY AND INTRODUCTION

On October 21, 1953, H. C. Gamblin and J. M. Knowles of Grand Junction, Colo., entered into an exploration agreement with the Defense Minerals Exploration Administration whereby the applicants would prospect for uranium by wagon drilling on the Lee Mack and Blue Bell claims, San Miguel County, Colo. The contract (Idm-E627) authorized a total of 1,500 feet of wagon drilling to be completed in two Stages at an overall unit cost of $0.859 per foot or a total cost of $1,288.50, Government participation 90 percent or $1,159.65.

At the completion of 24 holes or 610 feet of Stage I drilling in the more favorable areas, the results were so unfavorable that in January 1954 the operator requested permission to terminate the project by mutual agreement. No uranium mineralization was encountered, and the ore-bearing horizon appeared to become less favorable back from the rim exposures. All parties concerned were in agreement that project termination was warranted.

LOCATION, HISTORY, PRODUCTION, OWNERSHIP

The Lee Mack and Blue Bell claims are about 1,000 feet north of Colorado State Highway 80 at a point 1.3 miles southwest of Slick Rock, Colo., sec. 1, T. 43 N., R. 19 W. and sec. 36, T. 44 N., R. 19 W., New Mexico principal meridian, San Miguel County, Colo. (fig. 1).

The Lee Mack and Blue Bell claims were located in 1940 by S. M. Sisk, Edna Sisk, and W. C. Berry of Dove Creek, Colo. It is reported that lessee operations produced a total of 300 tons of ore previous to 1947. Undoubtedly most of the production came from the Lee Mack claim as there is little field evidence to indicate that any production came from the Blue Bell claim.

Both claims are owned by S. M. Sisk of Dove Creek, Colo., and are leased to Gamblin and Knowles.

DESCRIPTION OF DEPOSIT

The ore deposits discovered to date on the Lee Mack claim are in the Salt Wash member of the Morrison formation and are small tabular bodies not exceeding 50 feet in length, 25 feet in width, and 2 feet in thickness. They were mined for the vanadium content only; consequently, no record of uranium content is available. According to Gamblin and Knowles, the V_2O_5 content ranged from 2.5 to 3 percent, and the U_3O_8 content is estimated to have been 0.40 percent. No additional deposits were located as a result of the Defense Minerals Exploration Administration project, and no mineable ore reserve is considered to exist on the claims.

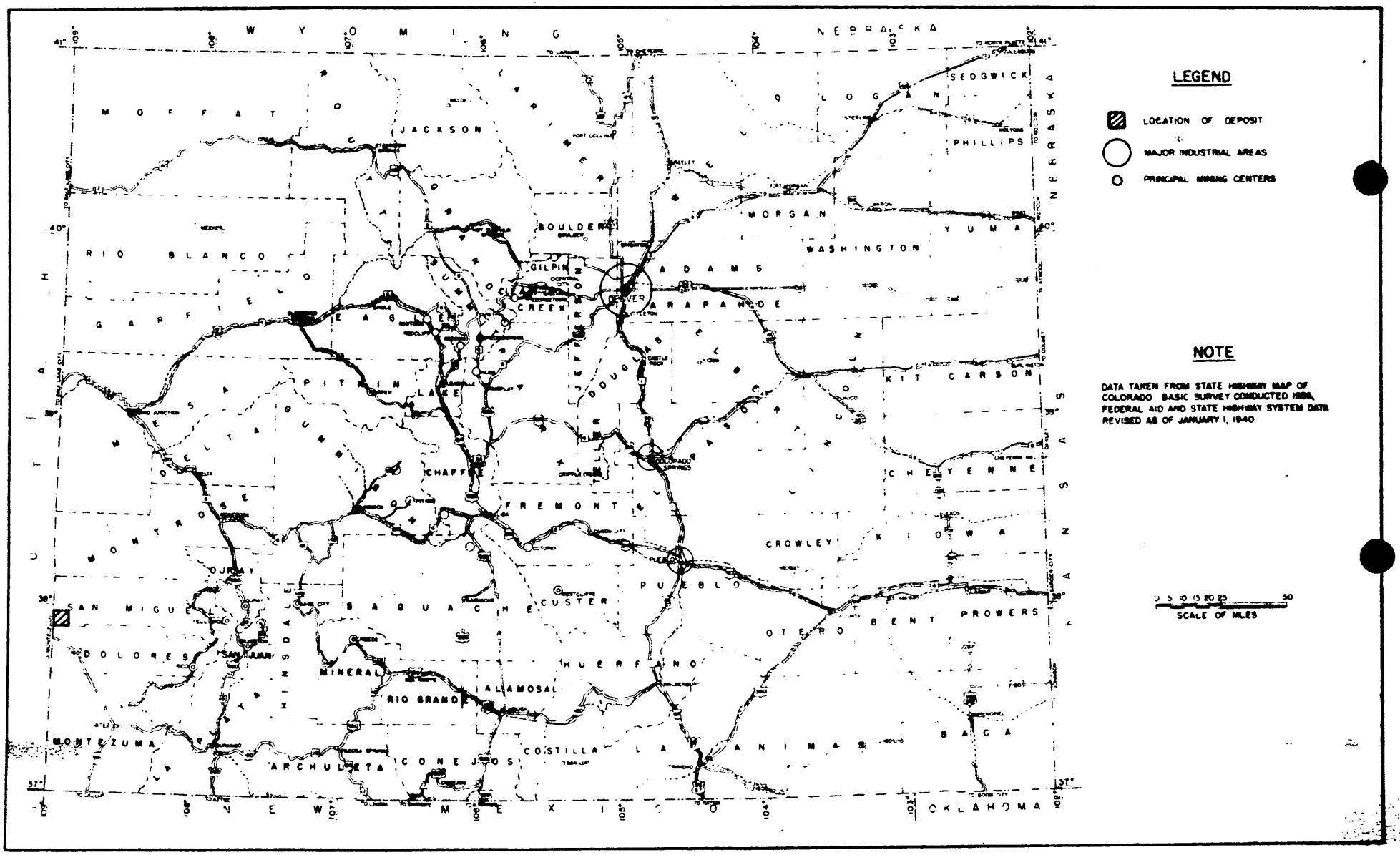

FIGURE 1. - LOCATION MAP, LEE MACK AND BLUE BELL CLAIMS, SAN MIGUEL COUNTY, COLO. (DMEA 2959).
Contract Idm-E627

WORK COMPLETED UNDER CONTRACT

The contract authorized the following two Stages of exploration by wagon drilling:

STAGE I

Drill two rows of holes on 50-foot centers back from the mine workings. Drill the remaining favorable area with holes on 100-foot centers. Drill two holes in the western portion of the Lee Mack claim to check the possible extension of the favorable sand. Utilize approximately 3 hours of bulldozing to investigate a minor exposure of uranium mineralization at pit No. 6 on the Blue Bell claim. Approximately 40 holes or 1,000 feet of drilling will be required at an over-all unit cost of $0.859 per foot or a total of $859.00.

STAGE II

Five hundred feet of drilling offset holes at not less than 25-foot centers to be allowed only with prior written approval of the Defense Minerals Exploration Administration representative. Stage II holes to be determined after the completion of Stage I. Five hundred feet of wagon drilling at an over-all unit cost of $0.859 per foot or a total cost of $429.50.

The total estimated cost of the project was $1,288.50, Government participation 90 percent or $1,159.65.

As shown on figure 2, the most favorable area for prospecting was believed to be near the existing shallow mine workings along the rim. The operator drilled the two rows of holes on 50-foot centers at the predetermined locations and encountered no trace of uranium or vanadium mineralization. One hole was drilled about 200 feet from the rim, and it also encountered unfavorable ground.

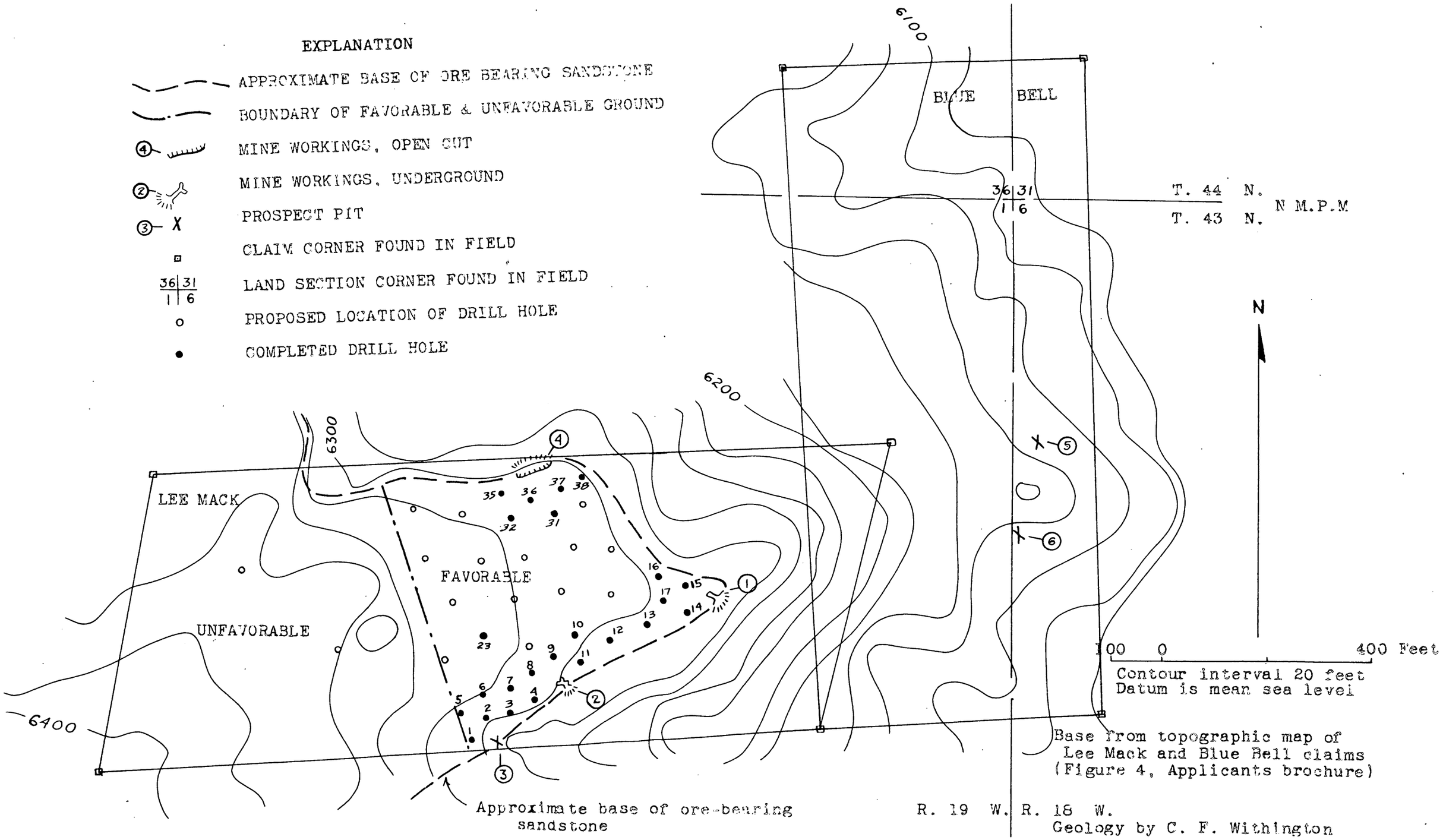

Fig. 2 - Sketch map of Lee Mack and Blue Bell claims, Gamblin & Knowles, San Miguel County, Colorado, DMEA Docket 2959, Contract Idm-E627

The operator completed 24 holes (fig. 2) for a total of 610 feet of drilling in Stage I of the contract. Visual and Geiger counter examinations of the cuttings failed to detect any trace of uranium mineralization. Since the holes were so completely unfavorable, the operators became discouraged and requested that the project be terminated by mutual consent. In reviewing the results of the drilling on 50-foot centers, the Geological Survey field geologist, Dan Shawe, and the writer are in agreement that Gamblin and Knowles are justified in requesting termination of the project.

The operators submitted a single progress map (fig. 2) and single copies of drill hole logs which probably show the major changes of formations fairly accurately. It should be noted that Knowles assigned numbers to all the proposed holes prior to drilling, and since all the holes were not drilled, the log numbers beyond No. 17 are not in consecutive order.

Following are the drill hole logs as submitted by Knowles:

Hole No.	Feet drilled From	Feet drilled To	Description
1	0	8	Sandstone with iron stain
	8	12	Sandstone with iron and manganese stain
	12	16	Blue clay
	16	20	Brown to red sandstone
	20	24	Calcite (limy sandstone?)
	24	25	Red shale with calcite streaks
2	0	13	Brown to pink sandstone
	13	18	Blue to gray clay
	18	20	Red shale
	20	22	Calcite (limy sandstone?)
	22	25	Red shale

Hole No.	Feet drilled From	Feet drilled To	Description
3	0	13	White to brown sandstone with some iron and manganese stain and clay nodules
	13	16	Blue clay
	16	25	Red and gray shale
4	0	13	Sandstone with iron and manganese stain and trace of carbon
	13	18	Blue clay
	18	25	Red and gray shale
5	0	16	Sandstone with iron stain
	16	22	Blue to gray clay
	22	24	Calcite (limy sandstone?)
	24	25	Red and gray shale
6	0	12	Sandstone with iron and manganese stain
	12	18	Blue clay
	18	23	Red shaly sandstone
	23	25	Calcite (limy sandstone?)
	25	26	Red shale
7	0	8	Sandstone with iron stain
	8	26	Shale with calcite streaks
8	0	6	Sandstone with manganese stain
	6	11	Blue clay
	11	20	Sandstone with iron and manganese stain
	20	26	Red and gray shale
9	0	10	Sandstone with iron stain
	10	18	Red and blue shale
	18	21	Brown sandstone with calcite and blue clay
	21	25	Red sandstone with calcite
	25	26	Red shale
10	0	8	Sandstone with iron stain
	8	14	Red shaly sandstone
	14	16	Red and blue clay
	16	20	Blue clay
	20	25	Sandstone grading into red shale
11	0	6	Sandstone with iron stain
	6	12	Red shaly sandstone
	12	17	Blue clay
	17	25	Shale and sandstone with calcite
12	0	10	Sandstone with iron and manganese stain
	10	14	Blue clay
	14	20	Brown sandstone with blue clay
	20	25	Red to brown sandstone and shale with calcite

Hole No.	Feet drilled From	Feet drilled To	Description
13	0	7	Brown sandstone
	7	13	Red sandstone
	13	15	Blue clay
	15	18	Calcite (limy sandstone?)
	18	22	Gray shale
	22	25	Red and gray shale
14	0	12	Sandstone with iron stain
	12	20	Calcite (limy sandstone?)
	20	25	Red and gray shale
15	0	5	Sandstone with iron stain
	5	23	Red, gray, and brown shale with calcite streaks
	23	25	Red shale
16	0	8	Sandstone with iron stain
	8	18	Brown sandstone with gray shale and calcite
	18	23	Blue and brown clay
	23	25	Red shale
17	0	14	Sandstone with iron stain
	14	22	Red to brown sandstone with calcite
	22	25	Blue clay
23	0	18	Sandstone with iron stain
	18	24	Brown and red sandstone with calcite
	24	27	Blue clay
	27	28	Blue clay with calcite
31	0	16	Sandstone with iron and manganese stain
	16	25	Red and gray shale
32	0	18	Sandstone with iron and manganese stain
	18	24	Red and gray shale
	24	26	Blue clay
	26	28	Red and gray shale
35	0	10	Sandstone with iron stain
	10	12	Blue clay
	12	24	Shale and calcite (limy sandstone?)
	24	25	Red shale
36	0	2	Overburden
	2	7	Sandstone with iron stain
	7	8	Blue clay
	8	14	Sandstone with iron stain
	14	18	Blue clay
	18	19	Calcite (limy sandstone?)
	19	25	Blue shaly clay

Hole No.	Feet drilled From	Feet drilled To	Description
37	0	6	Brown and white sandstone
	6	10	Sandstone with iron stain and clay nodules
	10	25	Calcite (limy sandstone?) with blue clay streaks
38	0	10	Sandstone with iron stain
	10	12	Blue clay
	12	24	Calcite (limy sandstone?) and shale
	24	25	Red shale

EXPENDITURES

The operators completed 610 feet of wagon drilling at an over-all unit cost of $0.859 per foot for a total expenditure of $523.99, Government participation 90 percent or $471.59. No other costs were authorized by the short-form contract.

EFFICIENCY OF OPERATIONS

The project, being small, was easily supervised by J. M. Knowles who resided at the property while drilling was in progress. Drilling commenced during the last week of December 1953 and was terminated at the close of the first week of January 1954. The sampling procedure was not particularly efficient; however, adequate cuttings were obtained to permit close visual inspections and Geiger counter testing. Since indications of uranium or vanadium mineralization were not encountered, no chemical assays were made of the cuttings.

EQUIPMENT

Exploration was conducted under a short-form contract; therefore, the Government has no equity in equipment or in materials and supplies.

CONCLUSIONS

It is concluded that sufficient drilling has been completed on the Lee Mack and Blue Bell claims to eliminate the possibility of making a significant discovery.

RECOMMENDATIONS

It is recommended that the project be terminated by agreement after commencement but before completion of the work, in accordance with Defense Minerals Exploration Administration Circular 22. Certification of discovery is not recommended.

/kp

Surname
Docket copy

700

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

Ching
Ellis

MChing/gla 2-24-54

T E L E T Y P E

DMEA - Department of the Interior

14X3923.970 Working Fund, DMEA

Re: Docket No. DMEA-2959 (Uranium)
Contract No. Idm-E627
Gamblin & Knowles

W. H. KING, EXECUTIVE OFFICER
DMEA FIELD TEAM, REGION IV
224 NEW CUSTOMHOUSE BUILDING
DENVER 2, COLORADO

REURTT FEBRUARY 23, DOCKET 2959, GAMBLIN AND KNOWLES YOU AUTHORIZED

PREPARE AND EXECUTE TERMINATION AGREEMENT.

C. O. Mittendorf (for

C. O. MITTENDORF, ADMINISTRATOR

Copies to:

Administrator's Reading File
Docket
Mr. HDKeiser, Rm. 3641
Mr. APButler, Jr. Rm. 3212, GSA
Code 700
Mr. Ching
Confirmation to Region IV

SENT
FEB 25 1954
Clerical Service Section

2-25-54

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

224 New Customhouse
Denver 2, Colorado

March 11, 1954

Memorandum

To: C. O. Mittendorf, Administrator, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA-2959 (Uranium), Contract Idm-E627, Gamblin and Knowles, San Miguel County, Colorado

Enclosed are the original and two copies of "Termination of Exploration Project Contract by Agreement After Commencement But Before Completion of the Work" which we prepared and have had executed in conformance with authorization from you by teletype dated February 25, 1954. Also enclosed are three sets of data relevant to the termination agreement.

Copies of this agreement have been given to the operator, the Fiscal Officer, Region IV, and a copy has been retained for our files.

W. H. King

Enclosures

RECEIVED
MAR 19 1954
GENERAL COUNSEL
DEFENSE MINERALS
ADMINISTRATION

Mr. C. O. Mittendorf
Feb. 23, 1954
3:35 P.M.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 24 1954

BUR MINES DN 235 2-23-54 1-31 PM

C O MITTENDORF

E
REFERENCE DOCKET 2959, CONTRACT IDM-E627, GAMBLIN AND KNOLXXX KNOWLES. RESULTS OF 610 FEET OF WAGON DRILLING INDICATE THAT FURTHER WORK NOT WARRANTED. OPERATOR REQUESTS THAT THE CONTRACT BE TERMINATED BY UXXX MUTUAL AGREEMENT IN WHICH WE CONCUR. PLEASE TELETYPE AUTHORIZATION FOR OUR PREPARATION OF TERMINATION AGREEMENT.

JOHN F SHAW FOR W H KING

Denver, Colo.

FEB 24 8 29 AM '54

BUREAU OF MINES
MAIL ROOM
WASHINGTON D.C.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 360
Grand Junction, Colo.

February 1, 1954

To: DMEA Field Team, Region IV

Through: R. P. Fischer

From: D. R. Shawe, geologist

Subject: Recommendation to terminate DMEA contract 2959

After drilling 24 holes of a proposed 40 on the Lee Mack claim, Slick Rock district, San Miguel County, Colo., and encountering no mineralized rock, the claim owners, J. M. Knowles and H. C. Gamblin of Grand Junction, Colo., have requested that the drilling contract be terminated.

In the company of J. M. Knowles, I examined the property on January 15, 1954, after the 24 holes had been drilled. Drill cuttings from the 24 drilled holes were examined and these indicated that none of the holes cut mineralized rock. In addition, the cuttings show that the ore-bearing sandstone which crops out on the rim at the south side of the Lee Mack claim thins considerably a few tens of feet north of the rim, and is hence unfavorable for ore. It is thus recommended that the DMEA drilling contract 2959 be terminated in accord with the request of the claim owners.

R. P. Fischer

cc: orig. and 5 to W. H. King
A. H. Koschmann, 1
W. M. Traver, 1

A H Koschmann
2/3/54

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
February 2, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 2959, Contract Idm-M627 (Uranium), Gamblin and Knowles (Lee Mack and Blue Bell claims), Slick Rock district, San Miguel County, Colo.

There are enclosed six copies of a request by the operator of the subject contract for termination of the project by agreement after commencement but before completion.

The request accompanied their claim for 610 feet of wagon drilling, and the progress report will be processed as soon as the inspecting engineer, R. R. McLellan, returns from the Plateau. On the date of his inspection in January, the work was virtually completed and he stated that in his opinion contract should be terminated.

W. M. TRAVER

W. M. Traver

enclosure

WMT/kp

cc: w/orig.
M627
Charon

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Received
JAN 4 7 1954

Grand Junction, Colorado
January 4, 1954

Mr. H. E. King, Executive Officer,
Land Office Map Drafting
204 Post Office Bldg.
Denver 2, Colorado

Dear Mr. King:

Reply to the map check on the 160 acre tract
on Land Patent [illegible], I did not execute
the above-said exploration contract by [illegible]
after consulting the Cabro Co. [illegible].

Sincerely yours,

Jas M Thomas

Jas. Thomas, Jr.

Jr/Thomas & Associates

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

Defense Minerals Administration
RECEIVED
NOV 27 1953

November 25, 1953

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4640

From: H. D. Keiser, Bureau of Mines Member
Uranium Commodity Committee

Subject: Field Team Report, DMEA 2959, Contract Idm-E627, Gamblin and Knowles, San Miguel County, Colorado.

I have reviewed the subject report and discussed it with Joseph O. Hosted, representative of the Atomic Energy Commission.

I concur with the action of the Field Team in granting Government assistance for exploration in the Government's proportional share of a total cost of $1,288.50.

The report has been forwarded to the Chief, Minerals Division, Bureau of Mines, in accord with the routing slip attached thereto.

H. D. Keiser

H. D. Keiser

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

DATE: November 19, 1953

Defense Minerals Administration
RECEIVED
NOV 24 1953

FROM : Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

SUBJECT: Field Team Report, DMEA Docket 2959 (Uranium), Contract IDM-E627, J. M. Knowles and H. C. Gamblin, Grand Junction, Colorado, applicants; Lee Mack and Blue Bell Claims, mostly in NE¼ Sec. 1, T. 43 N., R. 19 W., Slick Rock District, San Miguel County, Utah

The Field Team Report recommending Government assistance for exploration at the property identified in the subject above has been reviewed.

Exploration Approved

A modified plan of exploration proposed by the examining members of the Field Team has been approved in Region IV and the contract is in effect.

Drilling will be in two stages as follow:

Stage 1. Two rows of wagon drill holes spaced 50 feet apart back of known mineralized outcrops; holes spaced 100 feet apart within the remainder of favorable ground in east central part of Lee Mack claim; and two holes to verify the westward extent of favorable ground.

Stage 2. Offset holes at distances of 25 feet from stage 1 holes intersecting mineralized rock.

In addition, the extent of mineralized lenses in underlying shale will be determined by a little bulldozer stripping.

About 200 tons of ore have been produced from sandstone of the Salt Wash member of the Morrision formation. Study by the Field Team indicates that the sandstone in the east central part of the Lee Mack claim is favorable for ore bodies, according to criteria developed by the Geological Survey. Although known ore bodies are small, ranging from 4 to 25 feet wide, 10 to 50 feet long, and from 1 to 2 feet thick, the shallow average depth of 25 feet suggests that exploration for even small ore bodies is warranted and may result in finding other minable ore bodies.

Conclusion

I concur with the action of the Field Team in granting Government assistance for exploration in the Government's proportionate share of a total cost of $1,288.50.

Arthur P. Butler, Jr.

Copies to: E. Wm. Ellis (2)

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

224 New Customhouse
Denver 2, Colorado

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 28 1953

October 26, 1953

REGISTERED

Memorandum

To: C.O. Mittendorf, Administrator, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket No. DMEA 2959 (Uranium), Contract Idm-E627. H.C. Gamblin and J.M. Knowles, San Miguel County, Colorado

Enclosed are the original and two copies of Contract Idm-E627. Copies of this contract have been given to the operator, the Fiscal Officer, Region IV, and a copy has been retained for our files.

W.H. King

W.H. King

Enclosures

RECEIVED
NOV - 2 1953
GENERAL COUNSEL
DEFENSE MINERALS
ADMINISTRATION

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

224 New Customhouse
Denver 2, Colorado

October 28, 1953

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket No. DMEA 2959 (Uranium), Contract Idm-R527, Gamblin and Knowles, San Miguel County, Colorado

Enclosed are four copies of the examination report on the subject docket. A contract has been prepared and is in effect.

W.H. King
W.H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

July 3, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 8959 (Uranium), Gamblin and Knowles, San Miguel County, Colorado.

Enclosed are ten copies of the final engineering report on the subject docket. The applicant requested $10,770.00 for drilling the Lee Mack and Blue Bell claims.

A modified drilling program costing an estimated $1,888.50 is acceptable to the applicant and is recommended by the examiners.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(Date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
June 17, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 2959 (Uranium), Gamblin and Knowles (Lee Mack and Blue Bell claims), Slick Rock District, San Miguel County, Colorado

Please find enclosed the original and ten copies of the "Summary, Conclusions, and Recommendations," by R. H. McLellan and C. F. Withington and of McLellan's engineering report on the subject docket.

J. M. Knowles and H. C. Gamblin, partners, proposed a program of bulldozer work, wagon drilling, and core drilling on the two claims at an estimated cost of $10,770.00.

McLellan concludes the area covered by the Lee Mack claim is reasonably favorable for the discovery of uranium-vanadium reserves by wagon drilling, and one location on the Blue Bell claim is entitled to a small amount of bulldozer trenching. He recommends 1,500 feet of wagon drilling set up in two stages--the first stage to include 1,000 feet of wagon drilling in approximately forty holes, and the second stage dependent on the results of the first stage to include 500 feet of drilling in twenty holes offsetting the original holes. Three hours of bulldozing is allowed on the Blue Bell claim.

I agree with his conclusions and approve the recommendations.

The modified project is agreeable to the applicants, and McLellan estimates an over-all cost if the 1,500 feet of wagon drilling is completed at $1,288.50--Government participation $1,159.65. He suggests a short-form contract with wagon drilling at $0.859 per foot to cover all costs including bulldozer site preparation and exploration, engineering and geological consultant, and sampling.

The brochure and the copy of the geological report submitted with your memorandum of June 3, 1953, is returned herewith.

W. M. Traver

W. M. Traver

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(date)

enclosures
WMT/pam
cc 10, DMEA 2959, DMEA Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
200 New Customhouse
Denver 2, Colorado

May 27, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2959, Lee Mack and Blue Bell claims, Slick Rock District, San Miguel County, Colorado.

Enclosed are the original and 10 copies of the geological report by Charles F. Withington of the U. S. Geological Survey covering the above docket.

It has been recommended that a loan, in accordance with some modification of the applicants' proposal as described in this report, be approved.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 360
Grand Junction, Colorado

May 26, 1953

Memorandum

To: A. H. Koschmann

From: R. P. Fischer

Subject: DMEA 2959, Lee Mack and Blue Bell claims, Slick Rock district, San Miguel County, Colorado

Enclosed are the original and ten copies of the geological report by C. F. Withington covering DMEA Docket No. 2959. The area was examined by C. F. Withington of the Survey and R. R. McLellan of the Bureau of Mines on April 21, 1953.

The applicants, J. M. Knowles and H. C. Gamblin, propose to explore for uranium ore in the Slick Rock district, San Miguel County, Colorado. The rocks to be explored are those of the Salt Wash member of the Jurassic Morrison formation.

Production from the Lee Mack claim has amounted to about 300 tons, estimated to average 0.35 percent U_3O_8. No reserves are present in the workings.

The applicants requested a loan of $10,770.00 to be used in drilling 2,280 feet of diamond-drill holes, and 6,400 feet of wagon drilling and some bulldozer work, on both the Blue Bell and Lee Mack claims.

Some modification of the applicants' proposal is suggested in this report. The recommendation includes 1,500 feet of wagon drilling and a small amount of bulldozer work. These changes in the applicants' proposal were agreed upon by R. R. McLellan and acceptable to J. M. Knowles. I concur in these recommendations.

RPF

R. P. Fischer
Acting District Supervisor
Colorado Plateau District

CFW/je
Enclosures 11
cc: A. H. Koschmann (10)
G. J. file
Reading file

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 2959, Gamblin and Knowles

Lee Mack and Blue Bell Claims

San Miguel County, Colorado

Uranium

R. R. McLellan
Bureau of Mines

C. F. Withington
Geological Survey

June 16, 1953

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(date)

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLO.

Summary, Conclusions, and Recommendations

By R. R. McLellan
Mining Engineer
Bureau of Mines

C. F. Withington
Geologist
Geological Survey

Approved by
DMEA MANAGEMENT COMMITTEE
11-6-53
(Date)

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By R. R. McLellan and C. F. Withington

J. M. Knowles and H. C. Gamblin, of Grand Junction, Colo., have applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on the Lee Mack and Blue Bell claims, Slick Rock District, San Miguel County, Colo. The applicants proposed to explore two ore horizons by wagon drilling 6,400 feet of holes and by diamond drilling 2,280 feet of holes for a total expenditure of $10,770.00--Government participation 90 percent, or $9,693.00. An examination of the property revealed that the amount of drilling proposed by the applicants is excessive, as the ore-bearing sandstone is present only on the Lee Mack claim. The Blue Bell claim has two prospects which contain traces of mineralized material in gray-green mudstone associated with a sandstone bed of the Salt Wash member of the Jurassic Morrison formation that is about 70 feet stratigraphically below the ore-bearing sandstone. The favorable area on the Lee Mack claim can be explored readily by wagon drilling, and the small exposures on the Blue Bell claim can be investigated by a limited amount of bulldozer work. J. M. Knowles and the examining team agreed upon a modified program of wagon drilling and bulldozing.

The following revised exploration program is recommended for approval:

Stage 1

Explore the favorable ground in the center and eastern part of the Lee Mack claim by wagon drilling two rows of holes on 50-foot centers behind each of the four mine workings. The remaining favorable ground should be drilled on 100-foot centers. Two holes should be drilled in the western part of the Lee Mack claim in the event that favorable ground might extend farther west than expected. Stage 1 will require forty holes or 1,000 feet of drilling.

Stage 2

This stage will be accomplished only if ore or favorable mineralization is encountered in stage 1. Wagon drill holes should be drilled on 25-foot centers to offset any stage 1 hole that yields a sample containing no less than 0.02 percent U_3O_8 or 0.2 percent V_2O_5. About twenty holes may be required or a total of 500 feet of drilling.

Three hour's bulldozer work should be authorized to explore the mine alized material showing on the Blue Bell claim. This work can be accomplished in conjunction with drill-site preparation.

The total cost of the revised program is estimated to be $1,288.50--Government participation 90 percent, or $1,159.65. It is further recommended that the program be prepared as a short-form contract authorizing a unit cost of $0.859 per foot of hole drilled for a total footage of 1,500 feet of wagon drilling.

UNITED STATES DEPARTMENT OF THE INTERIOR

Douglas McKay, Secretary

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 2959, Lee Mack and Blue Bell claims

Slick Rock district

San Miguel County, Colorado

Uranium

Charles F. Withington, Geologist
U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
11-6-53
(date)

May 25, 1953

LEE MACK AND BLUE BELL CLAIMS
SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO

INTRODUCTION AND SUMMARY

Mr. H. G. Gamblin and Mr. J. M. Knowles, lessees of the Lee Mack and Blue Bell claims, have applied (Docket 2959) to the Defense Minerals Exploration Administration for a lean to explore for uranium on the Lee Mack and Blue Bell claims, Slick Rock district, San Miguel County, Colo.

The claims were examined on April 21, 1953, in company with R. R. McLellan, engineer, U. S. Bureau of Mines, and J. M. Knowles, lessee and applicant.

The applicant proposed to do 6,400 feet of wagon drilling and 2,280 feet of diamond drilling and a small amount of bulldozer work to prepare drill sites. Drilling was proposed in three phases, each subsequent phase contingent on results of the previous phase. Total cost was estimated to be $10,770.

As a result of the field examination, some modification of the applicant's proposal is suggested. This change was agreed upon by R. R. McLellan and was acceptable to J. M. Knowles. The suggested program is described in this report. It consists of 1,500 feet of wagon drilling, to be done in two stages, and a small amount of bulldozer and other work. The total cost is calculated to be $1,288.50, of which the Government's share would be $1,159.65.

It is concluded that the suggested work might yield some minable ore and therefore it is recommended that a contract be prepared and approved.

GEOLOGY

The exposed rocks on the Lee Mack and Blue Bell claims consist of the Salt Wash member of the Jurassic Morrison formation. The Salt Wash member here is about 300 feet thick, and consists of three or more massive light-brown and red-brown sandstone beds or lenses, which range from a few feet to more than 30 feet in thickness. These lenses are separated by red-brown mudstone beds up to 40 feet thick. Some gray-green mudstone is present directly under the sandstone lenses. The exposed rocks strike about N. 40° W., and dip 7° to 8° NE.

In the Lee Mack area, only the top sandstone bed of the Salt Wash member contains mineralized material of minable grade and thickness. This bed is called the "ore-bearing sandstone". Some scattered showings of mineralized material, however, do occur in the lower sandstone beds.

The ore-bearing sandstone is present only on the Lee Mack claim, erosion having removed it from the Blue Bell claim. All the ore produced from the Lee Mack claim has come from the ore-bearing sandstone. No ore, apparently, has been produced from the Blue Bell claim, although there are two prospects which contain traces of mineralized material. These showings are in gray-green mudstone associated with a sandstone bed that is about 70 feet stratigraphically below the ore-bearing sandstone.

The ore-bearing sandstone can be classed as either favorable or unfavorable for the occurrence of ore according to the criteria developed by the U. S. Geological Survey_/. On the basis of outcrop

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

---

examination, favorable sandstone lies on the eastern and central parts of the Lee Mack claim. The sandstone on the western part of the claim is classed as unfavorable. The favorable sandstone consists of beds of light-brown sandstone 12 to 25 feet thick, underlain in places by gray-green mudstone up to 6 inches thick. Some carbonaceous material is present in the sandstone. The unfavorable sandstone consists of beds of light-red sandstone 10 to 12 feet thick, underlain by red-brown mudstone.

ORE DEPOSITS

The deposits on the Lee Mack claim consist of thin tabular bodies which thicken locally to form NE trending "rolls". No fossil logs were noted but some carbonaceous material is present in the deposits. The color of the mudstone underlying the deposits is gray-green. The minerals in the deposits are typical of those of the carnotite deposits of the Colorado Plateau. The mineralized targets on the Lee Mack claim average from 35 to 50 feet in diameter. The size of the ore bodies on the Lee Mack claim ranges from a few tons to about 100 tons each. They range from about 4 to 25 feet wide, 10 to 50 feet long, and from a foot to 2 feet thick. The grade of the ore is estimated to average about 0.26 percent U_3O_8 and 2.0 percent V_2O_5.

The applicants report that previous to 1947, the production from the Lee Mack claim has been 125 short tons and that from the Blue Bell claim has been 175 tons. However, there are no workings on the Blue Bell claim from which ore has been mined. The statement probably was made because the applicants had misslocated workings No. 4 (fig. 4, applicants' report), and placed them on the Blue Bell claim. These workings have been located approximately on the accompanying map.

No ore has been produced since that time, and no reserves are present in the workings. No record of the grade of the uranium is available, but the grade of the vanadium has been reported to be 2.5 to 3.0 percent V_2O_5. Assuming a ratio of uranium to vanadium of about 1:8, the grade of the uranium is estimated at about 0.35 percent U_3O_8.

The mineralized material on the Blue Bell claim consists of nodules of copper- and uranium-bearing material associated with a gray-green mudstone. No estimate is given for the size of these deposits, though they are probably of no consequence economically.

PROPOSED EXPLORATION

The applicants have proposed exploration by both wagon- and diamond drilling. Although the proposal is basically sound, some modification is suggested. Only the ore-bearing sandstone in the central and eastern part of the Lee Mack claim need be explored, as this sandstone probably contains the only deposits of minable size and grade. This sandstone can be explored by wagon drill.

The exploration program should be divided into two stages. Stage 1 drilling should be completed before Stage 2 starts, as Stage 2 is dependent upon Stage 1.

Stage 1: Wagon drilling should be carried out within the favorable ground in the center and eastern part of the Lee Mack claim. Two rows of holes should be drilled on 50-foot centers behind each of the four workings. The remainder of the ground in the favorable area should be drilled on 100-foot centers (see attached map). Two holes should be drilled in the western part of the Lee Mack claim on the small chance that favorable ground might extend farther west than expected. Stage 1 drilling will require 40 holes.

Stage 2: Holes should be drilled on 25-foot centers to offset any Stage 1 hole that yielded a sample containing more than about 0.02 percent U_3O_8 or 0.2 percent V_2O_5. About 20 holes may be required for this stage.

The depths of the 60 holes to be drilled in both Stages 1 and 2 will range from 10 to 40 feet and will average about 25 feet deep. This will require a total of 1,500 feet of drilling. A duclone sample collector should be used to collect the samples from the drilling, and a careful log of each hole should be made.

In addition, about 3 hours of bulldozer work should be planned to expose the mineralized material showing on the Blue Bell claim. About 5 hours of bulldozer work should be planned to prepare the area for drilling.

CONCLUSIONS AND RECOMMENDATIONS

The uranium deposits of the Lee Mack claim are in the top sandstone bed of the Salt Wash member of the Jurassic Morrison formation. This bed is called the ore-bearing sandstone. On the Blue Bell claim, the mineralized material is in gray-green mudstone associated with a sandstone bed about 70 feet stratigraphically below the ore-bearing sandstone.

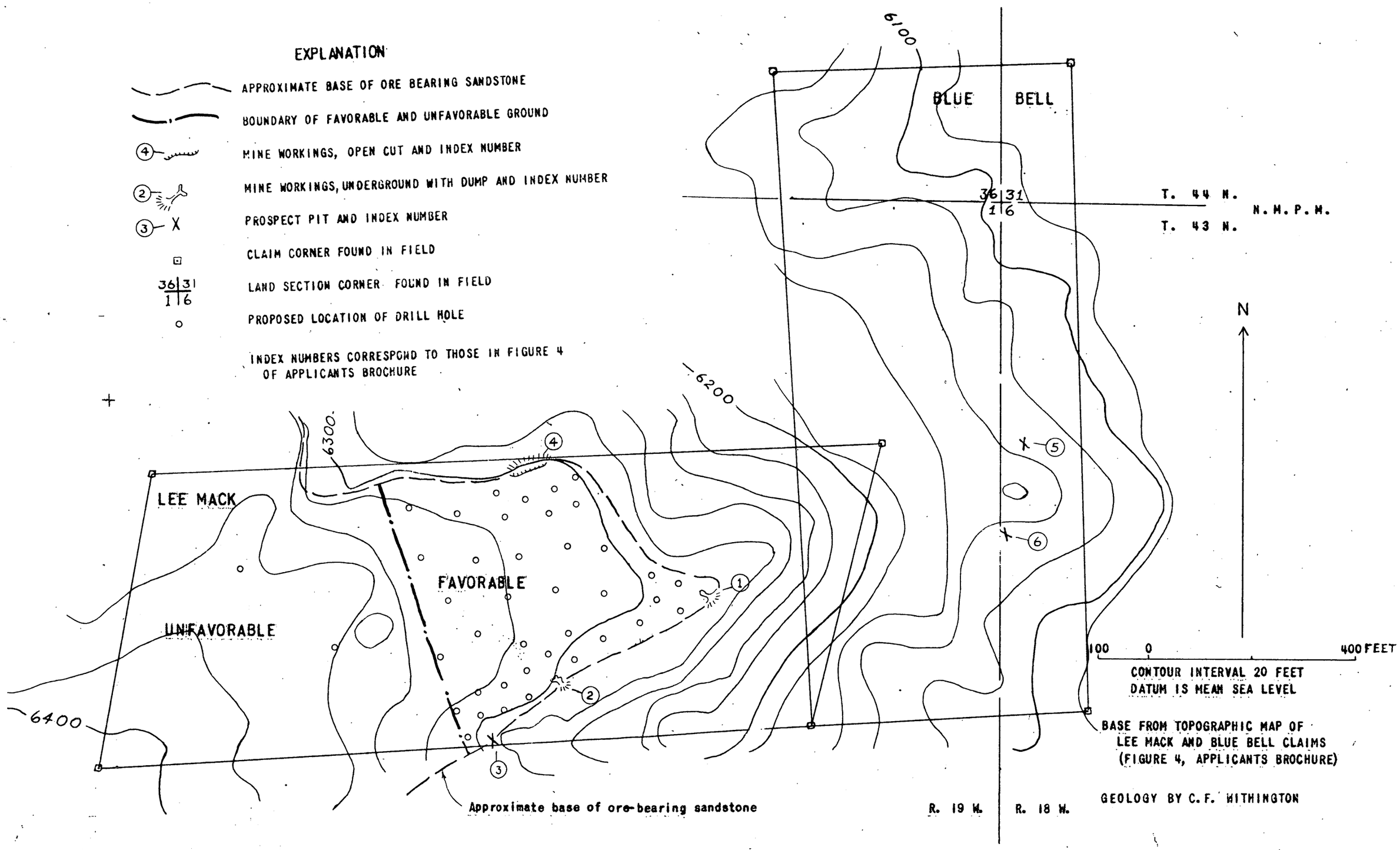
The deposits on the Lee Mack claim consist of generally tabular masses which locally thicken into "rolls". About 300 tons of material have been mined from the area. This material is estimated to average about 0.35 percent U_3O_8 and 2.5 percent to 3.0 percent V_2O_5. All the production has come from the favorable ore-bearing sandstone in the central and eastern part of the Lee Mack claim.

No reserves are present in any of the workings. There is a good chance for the discovery of additional ore bodies in the central and eastern part of the Lee Mack claim. The bodies will probably range from a few tons to more than 75 tons each, and will average about 0.25 percent U_3O_8 and 2.0 percent V_2O_5.

Although the applicants' exploration proposal is basically sound, a modification is suggested. It is recommended that the Government enter into a contract with the applicants to do the proposed exploration as outlined in the geologic report. The Government's share on the basis of a ratio of 90:10 participation would be $1,159.65.

ESTIMATED COST
(compiled by G. F. Withington and R. R. McLellan)

Wagon drilling (60 holes averaging 25 ft)		
1,425 ft at 65¢ per foot	$ 926.25	
75 ft at 75¢ per foot	56.25	$ 982.50
Eight (8) hours bulldozer work at $12 an hour		96.00
Consultant (3 days at $50 per day)		150.00
Sampler (5 days at $350 per month)		60.00
Total cost		$1,288.50
Government's share at a ratio of 90:10		$1,159.65



SKETCH MAP OF THE LEE MACK AND BLUE BELL CLAIMS, SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO, SHOWING THE PROPOSED LOCATIONS OF 40 DRILL HOLES FOR STAGE 1 DRILLING
MAY 1953

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLORADO

Engineering Report

By Russell R. McLellan
Mining Engineer
Bureau of Mines

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLO.

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Present status	3
Exploration and development	3
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Summary of costs	6
Conclusions	6
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ILLUSTRATIONS

Figure	Follows Page
1. Location map, Lee Mack and Blue Bell claims, San Miguel County, Colo.	2
Sketch map of the Lee Mack and Blue Bell claims, Slick Rock District, San Miguel County, Colorado, showing the proposed locations of 40 drill holes for stage 1 drilling	*

*See figure following geologic report

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS

ENGINEERING REPORT

By Russell R. McLellan

INTRODUCTION

H. C. Gamblin and J. M. Knowles, of Grand Junction, Colo., have applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on the Lee Mack and Blue Bell claims, San Miguel County, Colo. The applicants proposed a program consisting of 6,400 feet of wagon drilling and 2,280 feet of diamond drilling at a total cost of $10,770.00--Government participation $9,693.00, or 90 percent.

The proposal was investigated in the field on April 21, 1953, by a Defense Minerals Exploration Administration examining team, and it was concluded that approximately 1,500 feet of wagon drilling and 8 hours of bulldozer work would explore the claims sufficiently.

The cost of the modified program is estimated at $1,288.50--Government participation 90 percent, or $1,159.65--and was acceptable to the applicants.

ACKNOWLEDGMENTS

The examining team was accompanied in the field by J. M. Knowles, one of the two applicants.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Lee Mack and Blue Bell claims are approximately 1,000 feet north of Colorado State Highway 80 at a point 1.3 miles southwest

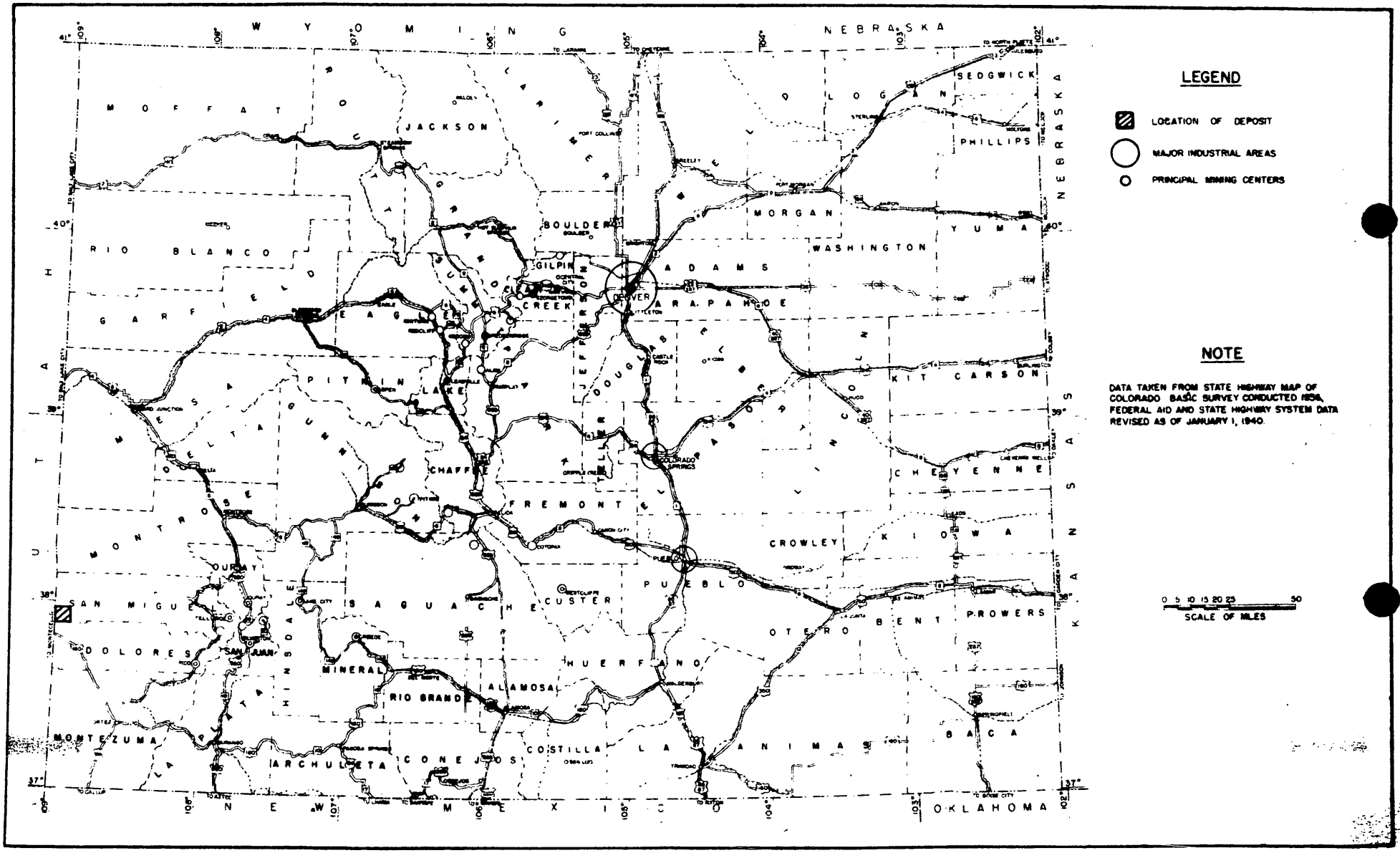

FIGURE 1. - LOCATION MAP, LEE MACK AND BLUE BELL CLAIMS, SAN MIGUEL COUNTY, COLO. (DMEA 2959).

of Slick Rock, Colo., in sec. 1, T. 43 N., R. 19 W. and sec. 36, T. 44 N., R. 19 W., New Mexico principal meridian, San Miguel, County (fig. 1). Although the claims are in rugged, semiarid country typical of the Colorado Plateau, they are readily accessible throughout the year. A camp was established by the applicants at the nearby Red mine. Water is available from springs in the area and from the Dolores River about 1 mile northeast of the property. Materials and supplies may be obtained at Dove Creek, Colo., a distance of 16 miles, or at Cortez, Colo., a distance of 53 miles. The wagon-drill contractor will supply all equipment and labor with respect to the drilling. Milling facilities are available at Uravan, Colo., a distance of 61 miles.

HISTORY AND PRODUCTION

The Lee Mack and Blue Bell claims were located in 1940 by S. M. Sisk, Edna Sisk, and W. C. Berry, of Dove Creek, Colo. According to the applicants, lessees produced a total of 300 tons of ore previous to 1947. After inspecting the workings, it is believed that the applicants mislocated one of the workings on their map by placing it on the Blue Bell claim rather than on the Lee Mack claim; therefore, it is probable that the entire production of 300 tons came from the Lee Mack claim. There is very little field evidence to indicate that any production has come from the Blue Bell claim.

OWNERSHIP

The Lee Mack and Blue Bell claims are owned by S. M. Sisk, of Dove Creek, Colo., and are leased to Gamblin and Knowles. A copy of the lease dated June 26, 1952, is included with the application.

DESCRIPTION OF THE DEPOSIT

The ore deposits located to date on the Lee Mack claim have been small tabular bodies not exceeding 25 feet in width, 50 feet in length, and 2 feet in thickness. They were mined entirely for vanadium; consequently, an average grade for the uranium content is not available. According to the applicants, the V_2O_5 content varied from 2.5 to 3 percent, and the U_3O_8 content is estimated to have averaged 0.40 percent. Actually, the U_3O_8 content probably will not exceed 0.35 percent. There is little evidence to indicate that exploration will disclose larger ore deposits than were mined during past operations.

On the Blue Bell claim traces of uranium mineralization were noted in a mudstone approximately 70 feet below the ore sand that is exposed on the Lee Mack claim. It is doubtful that these showings will prove to be of economic importance.

MINEABLE ORE RESERVES

Only traces of ore remain in the cuts and in a single adit on the Lee Mack claim; therefore, no reserve can be estimated.

PRESENT STATUS

Exploration and Development

The claims have been developed by several open-cuts and by one adit from which approximately 40 feet of drifting was accomplished. No wagon or core drilling has been attempted. A few jackhammer holes were drilled, but logs are not available.

Mining and Milling Equipment and Other Facilities

There was no mining or milling equipment or other facilities on the property at the date of the examination. Any ore produced would be transported by truck to a custom mill at Uravan, Colo.

PROJECT PROPOSALS, WITH COSTS

The applicantsoriginally proposed to spend approximately $10,770.00 for 6,400 feet of wagon drilling and 2,280 feet of diamond drilling. They later agreed that a revised program to consist only of wagon drilling would explore the area sufficiently. The recommended program is divided into two stages of wagon drilling. Stage 2 of the program will be dependent upon the findings of stage 1 and should be attempted only if ore or indications of ore are encountered in stage 1.

Stage 1

Wagon drilling should be confined mostly to the eastern and central portions of the Lee Mack claim, which portions are classified as favorable for the occurrence of ore according to the criteria developed by the U. S. Geological Survey. Two rows of holes should be drilled on 50-foot centers behind each of the four workings. The remainder of the favorable area should be drilled on 100-foot centers. Two holes should be drilled in the western portion of the claim to check for any possible westward extension of the favorable ground. Stage 1 will require forty wagon drill holes with an average depth of 25 feet or a total of 1,000 feet. The location of the wagon drill holes with respect to the open-cuts and adit are shown on a sketch map accompanying the geological report.

Stage 2

Allow 500 feet for offset wagon drill holes in the event any stage 1 hole yields samples containing 0.02 percent or more U_3O_8 or 0.2 percent or more V_2O_5. Twenty holes drilled on 25-foot centers probably will be sufficient.

Approximately 5 hours of bulldozer work will be necessary to clear drilling sites, and an additional 3 hours of bulldozer work should be allowed to further expose the mineralized mudstone on the Blue Bell claim, shown on the sketch map with the geological report, at prospect pit number 6.

The estimated costs are as follows:

Contract wagon drilling (Sixty holes averaging 25 feet)		
1,425 feet at $0.65 per foot	$926.25	
75 feet at $0.75 per foot	56.25	$ 982.50
Bulldozer work		
8 hours at $12.00 per hour		96.00
Consulting engineer-geologist		
3 days at $50.00 per day		150.00
Sampler		
5 days at $12.00 per day		60.00
Total cost		$1,288.50
Over-all cost per foot of drilling		0.859

All other costs incidental to the program will be met by the applicants. The duration of the drilling, including bulldozing, probably should not exceed 2 weeks. All drilling equipment, supplies, and labor will be furnished by the drill contractor. Bulldozing at $12.00 per hour will include operator and all incidental costs.

Summary of Costs

Contract wagon drilling 1,500 feet at average cost of $0.655 per foot	$ 982.50
Bulldozer work 8 hours at $12.00 per hour	96.00
Engineer-geologist 3 days at $50.00 per day	150.00
Sampler 5 days at $12.00 per day	60.00
Total cost	$1,288.50
Government participation	$1,159.65
Over-all cost per foot of drilling	$ 0.859

CONCLUSIONS

Several small tabular deposits of ore have been mined from a favorable sandstone in the central and eastern portion of the Lee Mack claim. Exploration of this sandstone by wagon drilling probably will result in the discovery of additional ore. Although the favorable ore-bearing sandstone has been eroded from the Blue Bell claim, a minor showing of uranium mineralization in a mudstone probably justifies a limited amount of bulldozer work.

The claims are readily accessible, and the ore sand is near the surface; therefore, a limited program of wagon drilling could be accomplished quickly and economically.

RECOMMENDATIONS

It is recommended that the following revised program be approved:

1. Explore the Lee Mack claim in two stages of wagon drilling.

Stage 1

Drill two rows of holes on 50-foot centers back from the four workings on the Lee Mack claim. Drill the remaining favorable area with holes on 100-foot centers. Drill two holes in the western portion of the claim to check for any possible extension of the favorable sand. The holes shall be located as shown on the sketch map accompanying the geological report. Approximately forty holes or 1,000 feet of drilling will be required.

Stage 2

Allow approximately twenty holes or 500 feet of drilling for offset holes in the event any holes of stage 1 show ore or favorable mineralization. These holes should be drilled on 25-foot centers and only with prior approval of a Defense Minerals Exploration Administration representative.

In addition, about 3 hours of bulldozing exploration should be allowed to further investigate a minor exposure of uranium mineralization at the location of prospect pit number 6 on the sketch map accompanying the geological report. The bulldozing can be accomplished in conjunction with the drill site preparation.

It is further recommended that the program be prepared on a short-form contract authorizing 1,500 feet of wagon drilling at an over-all cost of $0.859 per foot for a total cost of $1,288.50, including bulldozer drill-site preparation and exploration, engineering and geological consultant, and sampling. The Government participation will be 90 percent, or $1,159.65.

pam

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

224 New Customhouse
Denver 2, Colorado

October 28, 1953

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket No. DMEA 2959 (Uranium), Contract Idm-E627, Gamblin and Knowles, San Miguel County, Colorado

Enclosed are four copies of the examination report on the subject docket. A contract has been prepared and is in effect.

W.H. King

W.H. King

Enclosures

EXECUTED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

July 3, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, MMA Docket 2979 (Uranium), Gamblin and Knowles, San Miguel County, Colorado.

Enclosed are ten copies of the final engineering report on the subject docket. The applicant requested $10,770.00 for drilling the Lee Mack and Blue Bell claims.

A modified drilling program costing an estimated $1,888.50 is acceptable to the applicant and is recommended by the examiners.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
June 17, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 2959 (Uranium), Gamblin and Knowles (Lee Mack and Blue Bell claims), Slick Rock District, San Miguel County, Colorado

Please find enclosed the original and ten copies of the "Summary, Conclusions, and Recommendations," by R. R. McLellan and C. F. Withington and of McLellan's engineering report on the subject docket.

J. M. Knowles and H. C. Gamblin, partners, proposed a program of bulldozer work, wagon drilling, and core drilling on the two claims at an estimated cost of $10,770.00.

McLellan concludes the area covered by the Lee Mack claim is reasonably favorable for the discovery of uranium-vanadium reserves by wagon drilling, and one location on the Blue Bell claim is entitled to a small amount of bulldozer trenching. He recommends 1,500 feet of wagon drilling set up in two stages--the first stage to include 1,000 feet of wagon drilling in approximately forty holes, and the second stage dependent on the results of the first stage to include 500 feet of drilling in twenty holes offsetting the original holes. Three hours of bulldozing is allowed on the Blue Bell claim.

I agree with his conclusions and approve the recommendations.

The modified project is agreeable to the applicants, and McLellan estimates an over-all cost if the 1,500 feet of wagon drilling is completed at $1,288.50--Government participation $1,159.65. He suggests a short-form contract with wagon drilling at $0.859 per foot to cover all costs including bulldozer site preparation and exploration, engineering and geological consultant, and sampling.

The brochure and the copy of the geological report submitted with your memorandum of June 3, 1953, is returned herewith.

W. M. Traver

W. M. Traver

enclosures
WMT/pam
cc 10, DMEA 2959, DMEA Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
200 New Customhouse
Denver 2, Colorado

May 27, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2959, Lee Mack and Blue Bell claims, Slick Rock District, San Miguel County, Colorado.

Enclosed are the original and 10 copies of the geological report by Charles F. Withington of the U. S. Geological Survey covering the above docket.

It has been recommended that a loan, in accordance with some modification of the applicants' proposal as described in this report, be approved.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 360
Grand Junction, Colorado

May 26, 1953

Memorandum

To: A. H. Koschmann

From: R. P. Fischer

Subject: DMEA 2959, Lee Mack and Blue Bell claims, Slick Rock district, San Miguel County, Colorado

Enclosed are the original and ten copies of the geological report by C. F. Withington covering DMEA Docket No. 2959. The area was examined by C. F. Withington of the Survey and R. R. McLellan of the Bureau of Mines on April 21, 1953.

The applicants, J. M. Knowles and H. C. Gamblin, propose to explore for uranium ore in the Slick Rock district, San Miguel County, Colorado. The rocks to be explored are those of the Salt Wash member of the Jurassic Morrison formation.

Production from the Lee Mack claim has amounted to about 300 tons, estimated to average 0.35 percent U_3O_8. No reserves are present in the workings.

The applicants requested a loan of $10,770.00 to be used in drilling 2,280 feet of diamond-drill holes, and 6,400 feet of wagon drilling and some bulldozer work, on both the Blue Bell and Lee Mack claims.

Some modification of the applicants' proposal is suggested in this report. The recommendation includes 1,500 feet of wagon drilling and a small amount of bulldozer work. These changes in the applicants' proposal were agreed upon by R. R. McLellan and acceptable to J. M. Knowles. I concur in these recommendations.

RPF

R. P. Fischer
Acting District Supervisor
Colorado Plateau District

Enclosures 11
CFW/je
cc: A. H. Koschmann (10)
G. J. file
Reading file

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 2959, Gamblin and Knowles

Lee Mack and Blue Bell Claims

San Miguel County, Colorado

Uranium

R. R. McLellan
Bureau of Mines

C. F. Withington
Geological Survey

June 17, 1953

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLO.

Summary, Conclusions, and Recommendations

By R. R. McLellan
Mining Engineer
Bureau of Mines

C. F. Withington
Geologist
Geological Survey

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By R. R. McLellan and C. F. Withington

J. M. Knowles and H. C. Gamblin, of Grand Junction, Colo., have applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on the Lee Mack and Blue Bell claims, Slick Rock District, San Miguel County, Colo. The applicants proposed to explore two ore horizons by wagon drilling 6,400 feet of holes and by diamond drilling 2,280 feet of holes for a total expenditure of $10,770.00--Government participation 90 percent, or $9,693.00. An examination of the property revealed that the amount of drilling proposed by the applicants is excessive, as the ore-bearing sandstone is present only on the Lee Mack claim. The Blue Bell claim has two prospects which contain traces of mineralized material in gray-green mudstone associated with a sandstone bed of the Salt Wash member of the Jurassic Morrison formation that is about 70 feet stratigraphically below the ore-bearing sandstone. The favorable area on the Lee Mack claim can be explored readily by wagon drilling, and the small exposures on the Blue Bell claim can be investigated by a limited amount of bulldozer work. J. M. Knowles and the examining team agreed upon a modified program of wagon drilling and bulldozing.

The following revised exploration program is recommended for approval:

Stage 1

Explore the favorable ground in the center and eastern part of the Lee Mack claim by wagon drilling two rows of holes on 50-foot centers behind each of the four mine workings. The remaining favorable ground should be drilled on 100-foot centers. Two holes should be drilled in the western part of the Lee Mack claim in the event that favorable ground might extend farther west than expected. Stage 1 will require forty holes or 1,000 feet of drilling.

Stage 2

This stage will be accomplished only if ore or favorable mineralization is encountered in stage 1. Wagon drill holes should be drilled on 25-foot centers to offset any stage 1 hole that yields a sample containing no less than 0.02 percent U_3O_8 or 0.2 percent V_2O_5. About twenty holes may be required or a total of 500 feet of drilling.

Three hour's bulldozer work should be authorized to explore the mineralized material showing on the Blue Bell claim. This work can be accomplished in conjunction with drill-site preparation.

The total cost of the revised program is estimated to be $1,288.50--Government participation 90 percent, or $1,159.65. It is further recommended that the program be prepared as a short-form contract authorizing a unit cost of $0.859 per foot of hole drilled for a total footage of 1,500 feet of wagon drilling.

UNITED STATES DEPARTMENT OF THE INTERIOR
Douglas McKay, Secretary

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 2959, Lee Mack and Blue Bell claims

Slick Rock district

San Miguel County, Colorado

Uranium

Charles F. Withington, Geologist
U. S. Geological Survey

May 25, 1953

LEE MACK AND BLUE BELL CLAIMS
SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO

INTRODUCTION AND SUMMARY

Mr. H. C. Gamblin and Mr. J. M. Knowles, lessees of the Lee Mack and Blue Bell claims, have applied (Docket 2959) to the Defense Minerals Exploration Administration for a loan to explore for uranium on the Lee Mack and Blue Bell claims, Slick Rock district, San Miguel County, Colo.

The claims were examined on April 21, 1953, in company with R. R. McLellan, engineer, U. S. Bureau of Mines, and J. M. Knowles, lessee and applicant.

The applicant proposed to do 6,400 feet of wagon drilling and 2,280 feet of diamond drilling and a small amount of bulldozer work to prepare drill sites. Drilling was proposed in three phases, each subsequent phase contingent on results of the previous phase. Total cost was estimated to be $10,770.

As a result of the field examination, some modification of the applicant's proposal is suggested. This change was agreed upon by R. R. McLellan and was acceptable to J. M. Knowles. The suggested program is described in this report. It consists of 1,500 feet of wagon drilling, to be done in two stages, and a small amount of bulldozer and other work. The total cost is calculated to be $1,288.50, of which the Government's share would be $1,159.65.

It is concluded that the suggested work might yield some minable ore and therefore it is recommended that a contract be prepared and approved.

GEOLOGY

The exposed rocks on the Lee Mack and Blue Bell claims consist of the Salt Wash member of the Jurassic Morrison formation. The Salt Wash member here is about 300 feet thick, and consists of three or more massive light-brown and red-brown sandstone beds or lenses, which range from a few feet to more than 30 feet in thickness. These lenses are separated by red-brown mudstone beds up to 40 feet thick. Some gray-green mudstone is present directly under the sandstone lenses. The exposed rocks strike about N. 40° W., and dip 7° to 8° NE.

In the Lee Mack area, only the top sandstone bed of the Salt Wash member contains mineralized material of minable grade and thickness. This bed is called the "ore-bearing sandstone". Some scattered showings of mineralized material, however, do occur in the lower sandstone beds.

The ore-bearing sandstone is present only on the Lee Mack claim, erosion having removed it from the Blue Bell claim. All the ore produced from the Lee Mack claim has come from the ore-bearing sandstone. No ore, apparently, has been produced from the Blue Bell claim, although there are two prospects which contain traces of mineralized material. These showings are in gray-green mudstone associated with a sandstone bed that is about 70 feet stratigraphically below the ore-bearing sandstone.

The ore-bearing sandstone can be classed as either favorable or unfavorable for the occurrence of ore according to the criteria developed by the U. S. Geological Survey[1]. On the basis of outcrop

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

examination, favorable sandstone lies on the eastern and central parts of the Lee Mack claim. The sandstone on the western part of the claim is classed as unfavorable. The favorable sandstone consists of beds of light-brown sandstone 12 to 25 feet thick, underlain in places by gray-green mudstone up to 6 inches thick. Some carbonaceous material is present in the sandstone. The unfavorable sandstone consists of beds of light-red sandstone 10 to 12 feet thick, underlain by red-brown mudstone.

ORE DEPOSITS

The deposits on the Lee Mack claim consist of thin tabular bodies which thicken locally to form NE trending "rolls". No fossil logs were noted but some carbonaceous material is present in the deposits. The color of the mudstone underlying the deposits is gray-green. The minerals in the deposits are typical of those of the carnotite deposits of the Colorado Plateau. The mineralized targets on the Lee Mack claim average from 35 to 50 feet in diameter. The size of the ore-bodies on the Lee Mack claim ranges from a few tons to about 100 tons each. They range from about 4 to 25 feet wide, 10 to 50 feet long, and from a foot to 2 feet thick. The grade of the ore is estimated to average about 0.25 percent U_3O_8 and 2.0 percent V_2O_5.

The applicants report that previous to 1947, the production from the Lee Mack claim has been 125 short tons and that from the Blue Bell claim has been 175 tons. However, there are no workings on the Blue Bell claim from which ore has been mined. The statement probably was made because the applicants had misslocated workings No. 4 (fig. 4, applicants' report), and placed them on the Blue Bell claim. These workings have been located approximately on the accompanying map.

No ore has been produced since that time and no reserves are present in the workings. No record of the grade of the uranium is available, but the grade of the vanadium has been reported to be 2.5 to 3.0 percent V_2O_5. Assuming a ratio of uranium to vanadium of about 1:8, the grade of the uranium is estimated at about 0.35 percent U_3O_8.

The mineralized material on the Blue Bell claim consists of nodules of copper- and uranium-bearing material associated with a gray-green mudstone. No estimate is given for the size of these deposits, though they are probably of no consequence economically.

PROPOSED EXPLORATION

The applicants have proposed exploration by both wagon and diamond drilling. Although the proposal is basically sound, some modification is suggested. Only the ore-bearing sandstone in the central and eastern part of the Lee Mack claim need be explored, as this sandstone probably contains the only deposits of minable size and grade. This sandstone can be explored by wagon drill.

The exploration program should be divided into two stages. Stage 1 drilling should be completed before Stage 2 starts, as Stage 2 is dependent upon Stage 1.

Stage 1: Wagon drilling should be carried out within the favorable ground in the center and eastern part of the Lee Mack claim. Two rows of holes should be drilled on 50-foot centers behind each of the four workings. The remainder of the ground in the favorable area should be drilled on 100-foot centers (see attached map). Two holes should be drilled in the western part of the Lee Mack claim on the small chance that favorable ground might extend farther west than expected. Stage 1 drilling will require 40 holes.

Stage 2: Holes should be drilled on 25-foot centers to offset any Stage 1 hole that yielded a sample containing more than about 0.02 percent U_3O_8 or 0.2 percent V_2O_5. About 20 holes may be required for this stage.

The depths of the 60 holes to be drilled in both Stages 1 and 2 will range from 10 to 40 feet and will average about 25 feet deep. This will require a total of 1,500 feet of drilling. A duclone sample collector should be used to collect the samples from the drilling, and a careful log of each hole should be made.

In addition, about 3 hours of bulldozer work should be planned to expose the mineralized material showing on the Blue Bell claim. About 5 hours of bulldozer work should be planned to prepare the area for drilling.

CONCLUSIONS AND RECOMMENDATIONS

The uranium deposits of the Lee Mack claim are in the top sandstone bed of the Salt Wash member of the Jurassic Morrison formation. This bed is called the ore-bearing sandstone. On the Blue Bell claim, the mineralized material is in gray-green mudstone associated with a sandstone bed about 70 feet stratigraphically below the ore-bearing sandstone.

The deposits on the Lee Mack claim consist of generally tabular masses which locally thicken into "rolls". About 300 tons of material have been mined from the area. This material is estimated to average about 0.35 percent U_3O_8 and 2.5 percent to 3.0 percent V_2O_5. All the production has come from the favorable ore-bearing sandstone in the central and eastern part of the Lee Mack claim.

No reserves are present in any of the workings. There is a good chance for the discovery of additional ore bodies in the central and eastern part of the Lee Mack claim. The bodies will probably range from a few tons to more than 75 tons each, and will average about 0 25 percent U_3O_8 and 2.0 percent V_2O_5.

Although the applicants' exploration proposal is basically sound, a modification is suggested. It is recommended that the Government enter into a contract with the applicants to do the proposed exploration as outlined in the geologic report. The Government's share on the basis of a ratio of 90:10 participation would be $1,159.65.

ESTIMATED COST
(compiled by C. F. Withington and R. R. McLellan)

Wagon drilling (60 holes averaging 25 ft)		
1,425 ft at 65¢ per foot	$ 926.25	
75 ft at 75¢ per foot	56.25	$ 982.50
Eight (8) hours bulldozer work at $12 an hour		96.00
Consultant (3 days at $50 per day)		150.00
Sampler (5 days at $350 per month)		60.00
Total cost		$1,288.50
Government's share at a ratio of 90:10		$1,159.65

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLORADO

Engineering Report

By Russell R. McLellan
Mining Engineer
Bureau of Mines

DMEA 2959

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS
SAN MIGUEL COUNTY, COLO.

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ILLUSTRATIONS

Figure	Follows Page
1. Location map, Lee Mack and Blue Bell claims, San Miguel County, Colo.	2
Sketch map of the Lee Mack and Blue Bell claims, Slick Rock District, San Miguel County, Colorado, showing the proposed locations of 40 drill holes for stage 1 drilling	*

*See figure following geologic report

GAMBLIN AND KNOWLES
LEE MACK AND BLUE BELL CLAIMS

ENGINEERING REPORT

By Russell R. McLellan

INTRODUCTION

H. C. Gamblin and J. M. Knowles, of Grand Junction, Colo., have applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on the Lee Mack and Blue Bell claims, San Miguel County, Colo. The applicants proposed a program consisting of 6,400 feet of wagon drilling and 2,280 feet of diamond drilling at a total cost of $10,770.00--Government participation $9,693.00, or 90 percent.

The proposal was investigated in the field on April 21, 1953, by a Defense Minerals Exploration Administration examining team, and it was concluded that approximately 1,500 feet of wagon drilling and 8 hours of bulldozer work would explore the claims sufficiently.

The cost of the modified program is estimated at $1,288.50--Government participation 90 percent, or $1,159.65--and was acceptable to the applicants.

ACKNOWLEDGMENTS

The examining team was accompanied in the field by J. M. Knowles, one of the two applicants.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Lee Mack and Blue Bell claims are approximately 1,000 feet north of Colorado State Highway 80 at a point 1.3 miles southwest

of Slick Rock, Colo., in sec. 1, T. 43 N., R. 19 W. and sec. 36, T. 44 N., R. 19 W., New Mexico principal meridian, San Miguel, County (fig. 1). Although the claims are in rugged, semiarid country typical of the Colorado Plateau, they are readily accessible throughout the year. A camp was established by the applicants at the nearby Ned mine. Water is available from springs in the area and from the Dolores River about 1 mile northeast of the property. Materials and supplies may be obtained at Dove Creek, Colo., a distance of 16 miles, or at Cortez, Colo., a distance of 53 miles. The wagon-drill contractor will supply all equipment and labor with respect to the drilling. Milling facilities are available at Uravan, Colo., a distance of 61 miles.

HISTORY AND PRODUCTION

The Lee Mack and Blue Bell claims were located in 1940 by S. M. Sisk, Edna Sisk, and W. C. Berry, of Dove Creek, Colo. According to the applicants, lessees produced a total of 300 tons of ore previous to 1947. After inspecting the workings, it is believed that the applicants mislocated one of the workings on their map by placing it on the Blue Bell claim rather than on the Lee Mack claim; therefore, it is probable that the entire production of 300 tons came from the Lee Mack claim. There is very little field evidence to indicate that any production has come from the Blue Bell claim.

OWNERSHIP

The Lee Mack and Blue Bell claims are owned by S. M. Sisk, of Dove Creek, Colo., and are leased to Gamblin and Knowles. A copy of the lease dated June 26, 1952, is included with the application.

DESCRIPTION OF THE DEPOSIT

The ore deposits located to date on the Lee Mack claim have been small tabular bodies not exceeding 25 feet in width, 50 feet in length, and 2 feet in thickness. They were mined entirely for vanadium; consequently, an average grade for the uranium content is not available. According to the applicants, the V_2O_5 content varied from 2.5 to 3 percent, and the U_3O_8 content is estimated to have averaged 0.40 percent. Actually, the U_3O_8 content probably will not exceed 0.35 percent. There is little evidence to indicate that exploration will disclose larger ore deposits than were mined during past operations.

On the Blue Bell claim traces of uranium mineralization were noted in a mudstone approximately 70 feet below the ore sand that is exposed on the Lee Mack claim. It is doubtful that these showings will prove to be of economic importance.

MINEABLE ORE RESERVES

Only traces of ore remain in the cuts and in a single adit on the Lee Mack claim; therefore, no reserve can be estimated.

PRESENT STATUS

Exploration and Development

The claims have been developed by several open-cuts and by one adit from which approximately 40 feet of drifting was accomplished. No wagon or core drilling has been attempted. A few jackhammer holes were drilled, but logs are not available.

Mining and Milling Equipment and Other Facilities

There was no mining or milling equipment or other facilities on the property at the date of the examination. Any ore produced would be transported by truck to a custom mill at Uravan, Colo.

PROJECT PROPOSALS, WITH COSTS

The applicants originally proposed to spend approximately $10,770.00 for 6,400 feet of wagon drilling and 2,280 feet of diamond drilling. They later agreed that a revised program to consist only of wagon drilling would explore the area sufficiently. The recommended program is divided into two stages of wagon drilling. Stage 2 of the program will be dependent upon the findings of stage 1 and should be attempted only if ore or indications of ore are encountered in stage 1.

Stage 1

Wagon drilling should be confined mostly to the eastern and central portions of the Lee Mack claim, which portions are classified as favorable for the occurrence of ore according to the criteria developed by the U. S. Geological Survey. Two rows of holes should be drilled on 50-foot centers behind each of the four workings. The remainder of the favorable area should be drilled on 100-foot centers. Two holes should be drilled in the western portion of the claim to check for any possible westward extension of the favorable ground. Stage 1 will require forty wagon drill holes with an average depth of 25 feet or a total of 1,000 feet. The location of the wagon drill holes with respect to the open-cuts and adit are shown on a sketch map accompanying the geological report.

Stage 2

Allow 500 feet for offset wagon drill holes in the event any stage 1 hole yields samples containing 0.02 percent or more U_3O_8 or 0.2 percent or more V_2O_5. Twenty holes drilled on 25-foot centers probably will be sufficient.

Approximately 5 hours of bulldozer work will be necessary to clear drilling sites, and an additional 3 hours of bulldozer work should be allowed to farther expose the mineralized mudstone on the Blue Bell claim, shown on the sketch map with the geological report, at prospect pit number 6.

The estimated costs are as follows:

Contract wagon drilling (Sixty holes averaging 25 feet)		
1,425 feet at $0.65 per foot	$926.25	
75 feet at $0.75 per foot	56.25	$ 982.50
Bulldozer work		
8 hours at $12.00 per hour		96.00
Consulting engineer-geologist		
3 days at $50.00 per day		150.00
Sampler		
5 days at $12.00 per day		60.00
Total cost		$1,288.50
Over-all cost per foot of drilling		0.859

All other costs incidental to the program will be met by the applicants. The duration of the drilling, including bulldozing, probably should not exceed 2 weeks. All drilling equipment, supplies, and labor will be furnished by the drill contractor. Bulldozing at $12.00 per hour will include operator and all incidental costs.

Summary of Costs

Contract wagon drilling 1,500 feet at average cost of $0.655 per foot	$ 982.50
Bulldozer work 8 hours at $12.00 per hour	96.00
Engineer-geologist 3 days at $50.00 per day	150.00
Sampler 5 days at $12.00 per day	60.00
Total cost	$1,288.50
Government participation	$1,159.65
Over-all cost per foot of drilling	$ 0.859

CONCLUSIONS

Several small tabular deposits of ore have been mined from a favorable sandstone in the central and eastern portion of the Lee Mack claim. Exploration of this sandstone by wagon drilling probably will result in the discovery of additional ore. Although the favorable ore-bearing sandstone has been eroded from the Blue Bell claim, a minor showing of uranium mineralization in a mudstone probably justifies a limited amount of bulldozer work.

The claims are readily accessible, and the ore sand is near the surface; therefore, a limited program of wagon drilling could be accomplished quickly and economically.

RECOMMENDATIONS

It is recommended that the following revised program be approved:

1. Explore the Lee Mack claim in two stages of wagon drilling.

Stage 1

Drill two rows of holes on 50-foot centers back from the four workings on the Lee Mack claim. Drill the remaining favorable area with holes on 100-foot centers. Drill two holes in the western portion of the claim to check for any possible extension of the favorable sand. The holes shall be located as shown on the sketch map accompanying the geological report. Approximately forty holes or 1,000 feet of drilling will be required.

Stage 2

Allow approximately twenty holes or 500 feet of drilling for offset holes in the event any holes of stage 1 show ore or favorable mineralization. These holes should be drilled on 25-foot centers and only with prior approval of a Defense Minerals Exploration Administration representative.

In addition, about 3 hours of bulldozing exploration should be allowed to further investigate a minor exposure of uranium mineralization at the location of prospect pit number 6 on the sketch map accompanying the geological report. The bulldozing can be accomplished in conjunction with the drill site preparation.

It is further recommended that the program be prepared on a short-form contract authorizing 1,500 feet of wagon drilling at an over-all cost of $0.859 per foot for a total cost of $1,288.50, including bulldozer drill-site preparation and exploration, engineering and geological consultant, and sampling. The Government participation will be 90 percent, or $1,159.65.

pam

SURNAME COPY

Defense Minerals Exploration Administration
Robert E. Adams
Ext. 2627

14X3923.970, Working Fund, Interior, DMEA
October 21, 1953
3:30 p.m.

To: [illegible] King, Executive Officer, Region IV, 224 New Customhouse Bldg., Denver 2, Colorado

Subject: Assignment of Contract Number

Reference:

[illegible] 10-21-53, [illegible] 2959, [illegible] C. GARRIN, [illegible] J. [illegible],

[illegible] IN [illegible] COUNTY, COLORADO, [illegible]. CONTRACT

NUMBER IT-1627 ASSIGNED THIS CONTRACT. Frank E. Johnson (fw)

AUTHORIZED: ACTING ADMINISTRATOR

REAdams/meb
cc to: Adm.Reading File
Mails & Files Br.
Bu. of Mines, Audits Div., Rm. 2509
Miss Curtin

R.C. 10-21-53

Mr. C. O. Mittendorf
10-21-53
12:40 PM. JB

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 21 1953

DN 235 BUREAU MINES 10-21-53 9-58 AM

C O MITTENDORF

PLEASE ASSIGN A NUMBER TO CONTRACT COVERING DOCKET NO. DMEA 2959, A PARTNERSHIP CITY CONSISTING OF H. C. GAMBLIN, 1307 COLORADO AVENUE, GRAND JUNCTION, COLORADO, AND J. M. KNOWLES, 337 NORTH AVE., GRAND JUNCTION, COLORADO . PROPERTY LOCATED IN SAN MIGUEL COUNTY, COLORADO. COMMODITY URANIUM. CONTRACT DATED OCTOBER 21,1953. AMOUNT OF CONTRACT $1288.50, GOVERNMENT,S PARTICIPATION $1159.65.

JOHN F SHAW FOR W H KING

Nenner, Colo.

DME 627- 9040

OCT 21 1 26 PM '53

BUREAU OF MINES
MAIL ROOM
WASHINGTON, D. C.

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

224 New Customhouse
Denver 2, Colorado

July 3, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 2959 (Uranium), Gamblin and Knowles, San Miguel County, Colorado.

Exploration aid in the amount of $1,288.50 has been approved and the contract will be prepared by this office. Four copies of the final report will be forwarded you when the contract is executed. Two copies of Form 3b are attached.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

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

224 New Customhouse
Denver 2, Colorado

July 3, 1953.

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To: Administrator, Defense Minerals Exploration Administration
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W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

W.H.K.

Enclosures

DMEA Form 3b
(Revised)

DEFENSE MINERALS EXPLORATION ADMINISTRATION

CONTROLLED DOCUMENT
Revised Abstract

DMEA Docket No. 2959

Name of Applicant _____

Change:	From		To	
	III 1	[ ]	III 1	[x] 7-1-53
	III 2	[ ]	III 2	[ ]
	III 3	[ ]	III 3	[ ]
	III 4	[x]	III 4	[ ]
	III 5	[ ]	III 5	[ ]
			III 6	[ ]
			III 7	[ ]

Add:

II 7 $ 10,770.00

II 8 $ 1,288.50

II 8a % 90

II 9 $ _____

Remarks:

Initials of person preparing sheet HMC

Date sheet prepared 7-1-53

33978

DMEA Form 3b
(Revised)

DEFENSE MINERALS EXPLORATION ADMINISTRATION

CONTROLLED DOCUMENT
Revised Abstract

DMEA Docket No. 2959

Name of Applicant _____

Change:	From		To	
	III 1	☐	III 1	☒ 7-1-53
	III 2	☐	III 2	☐
	III 3	☐	III 3	☐
	III 4	☒	III 4	☐
	III 5	☐	III 5	☐
			III 6	☐
			III 7	☐

Add:		
	II 7	$ 10,770.00
	II 8	$ 1,288.50
	II 8a	% 90
	II 9	$

Remarks:

Initials of person preparing sheet BMC

Date sheet prepared 7-1-53

33978

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAR 30 1953

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

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

Not to be filled in by applicant

Docket No. DMEA-2959
Metal or Mineral
Date Received 3-30-53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: H. G. Conklin, 1227 Colorado Ave., Grand Jct., Colo. (Partnership)
J. H. Hanlon, 2112 North Ave., Grand Jct., Colo.

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract

(*b*) State any mine name by which the property is known. Too Hot and Dino Doll

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

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

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

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

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

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

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

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. 43 miles to Monticello, 70 miles to Moab, 80 to Moturia, 160 to Grand Jct.

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

5. *The exploration project.*—(*a*) State the mineral or minerals for which you will explore ---
See attached sheets

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

(*c*) The work will start within 15 days and be completed within 12 months from the date of an exploration project contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated November 19, 1952

H. C. Gamblin Jas M. Graves
H. C. GAMBLIN (Applicant) JAS. M. GRAVES

By ---

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

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

GAMBLIN AND KNOWLES
327 North Avenue
Grand Junction, Colorado

FORM MF-103

1. See attached Form MF-103.

2. See attached Form MF-103.

3. (a) Lee Mack Mining Claim described (taken from county records) as follows: 100 lineal feet running eastwardly. 1400 lineal feet running westardly together with 300 lineal feet on each side of this discovery cut.

Blue Bell Mining Claim divided as follows: sixteen hundred feet in length by six hundred feet in width on this, lode, vein or deposit, bearing gold, silver and other precious metals, situated in Lower San Miguel County, Colorado. Lower San Miguel Mining District in San Miguel County, State of Colorado and described and marked on the ground as follows, to wit:

750 feet running north eastardly 750 feet running southwardly together with 300 feet on each side of this cut.

(b) Blue Bell, Lee Mack or Lenac or LeMac.

(c) Lessee

(d) Lease attached

(e) None

(f) Lee Mack Claim. Book 176, Page 276

Blue Bell Claim, Book 176, Page 277

4. (a) See attached report. Mines open and dry.

(b) See attached report. Mines open and dry.

(c) See attached report. Mines open and dry.

(d) See attached report. Mines open and dry.

5. (a) Uranium

GAMBLIN AND ASSOCIATES
777 North Avenue
Grand Junction, Colorado

FORM RM-103

(continued)

(b) See attached report

(c) See Form RM-103

(d) Applicant, J. L. Knowles

1928-1930	Independent. Casa Grande, Arizona	Development & prospecting for copper
1933-1934	Independent. Doleville, Colorado	Prospecting for gold on Razor Creek
1949-1951	General Manager Mammoth Mining Co. Grand Junction, Colorado	Supervising mining & exploration of uranium on Tenderfoot Mesa.
1951	Independent Grand Junction, Colorado	Prospecting & mining uranium on Colorado Plateau

Applicant, W. C. Gamblin

1926-1933	Colorado Coal Co. Alamo, Colorado	Stationary engineer
1937-1941	Pressure Coal Co. Sunnyside, Colorado	Outside Foreman
1945 to present	Independent Grand Junction, Colorado	Prospecting & owner-operator of mining & drilling ventures.

Consultant, John I. Schumacher

1943	Phelps-Dodge Corporation	Test Engineer (Milling)
1943	U. S. Bureau of Mines	Mining Engineer-Development Drilling Project-Colorado Plateau
1944-1946	Army (U.S.)	Ordnance Officer (Heavy & light equipment maintenance)
1946-1948	U.S. Bureau of Mines	Project engineer Development of phosphate, lead, zinc, and other metallics-Colorado Field Office

GAGLIN AND MORRIS
337 North Avenue
Grand Junction, Colorado

FORM MF-103

(continued 5-d)

1948-1950	U.S. Geological Survey	Project Chief Engineer Exploration drilling throughout Colorado Plateau
1951	Strategic Minerals Exploration Company	Managing Partner-Exploration, consulting, and diamond drilling for uranium and vanadium

6. (a) (1) Drilling (contract)

6400 feet wagon drilling @ $0.75/ft.	$ 4800.00
2280 feet diamond drilling @ $2.25/ft.	5130.00
(2) Bulldozing	
20 hours @ $13.00/hr.	240.00
[illegible]	$ 10170.00

(b) (1) Consultant

5 days @ $50.00 per day (accounting, transit rental, map reproduction, typing and travel included)	250.00
(2) Sampler	
1 month @ $250.00/mo.	250.00
[illegible]	$ 500.00

(c) None

(d) (1) Mileage depreciation and operating expense

1000 miles @ $0.10 per mile	$ 100.00
[illegible]	~~10870.00~~ 10770.00

(e) None

(f) None

(g) None

[illegible] AND [illegible]
[illegible] North Avenue
Grand Junction, Colorado

Form [illegible]-103

6. (h) None

7. (a) Yes

   (b) Money and sampler salaries

1[illegible] [illegible] Avenue
Grand Junction, Colorado
November 1[illegible], 19[illegible]

[illegible], Inc.
[illegible]
[illegible] Petroleum Building
Denver, Colorado

Dear Sir:

Enclosed herein are four copies of an application for [illegible] exploration lease from Mr. [illegible] Caudill and Mr. [illegible] of Grand Junction, Colorado.

Also included are four copies of report on the property along with copies of the plat showing lease and site for proposed drilling.

The consent to drill from the owner has not yet been returned to me, however, I expect it in a few days and will forward it on to you immediately.

If you should require any additional information regarding this application, please write to me.

Sincerely,

[illegible] [illegible]

COPY

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

C O P Y

[illegible] have executed this lease the day and year first above written.

(Signed) [illegible]
Lessor

(Signed) J. [illegible]

(Signed) H. G. Tomblin
Lessees

[illegible] agreed between the parties hereto that in consideration of the above lease, [illegible] further agreed that the lessees shall work not less than [illegible] eight [illegible] of labor per month on the above [illegible] mining property [illegible] the term of this lease. [illegible] it is further agreed that this provision [illegible] shall be a part of the lease set out above. [illegible]

(Signed) [illegible]
Lessor

(Signed) J. [illegible] Knowles

(Signed) H. G. Tomblin
Lessees

October 13, 1952
1040 Hill Street
Grand Junction, Colorado

Gamblin & Knowles
337 North Avenue
Grand Junction, Colorado

Dear Sirs:

Listed below are the prices per foot of wagon drilling for various depths per your request:

0 - 35 feet	$ .65
35 - 50 feet	.75
50 - 100 feet	1.00

I understand that the requirements for this drilling will be similar to the specifications set up at the A.E.C. and U.S. Geological Survey and that the contractor will be required to have a Du-Clone or Rotoclone Dust Collector for catching the samples.

This price includes the food and living facilities for my own men.

My equipment consists of one wagon drill with 18 foot change of steel and 210 cubic foot compressor, similar to those used on Government contracts.

Very truly yours,

I. W. Andrews Jr.

REPORT OF EXAMINATION OF THE LEE PACK AND BLUE BELL CLAIMS, SLICK ROCK, SAN MIGUEL COUNTY, COLORADO

INTRODUCTION

This report covers an examination on the Lee Pack and Blue Bell Claims located in the Slick Rock Hill Region, San Miguel County, Colorado. These claims comprising approximately 80 acres, lie in Township 42 and 43 North, Range 18 and 19 West, New Mexico Principal Meredian. The Sections are 1, 6, 31, and 36.

These claims were located in April 1940 by S. M. Sisk, Edna Sisk, and H. C. Berry of Dove Creek, Colorado. They are held at present by J. F. Knowles and H. C. Camblin at Grand Junction, Colorado by lease agreement.

LOCATION AND PHYSIOGRAPHY

The above listed claims are located one mile west of the Slick Rock bridge, overlapping but principally on the north side of Colorado Highway 90. This area is approximately 80 air miles and 180 road miles from Grand Junction, Colorado. The nearest town, Dove Creek, Colorado is 31 miles west.

The area is typical of the Colorado Plateau "rim rock" country. Sage brush, Pinon and Juniper grow on the benches and slopes which are separated by well-exposed sandstone cliffs. The elevation in the area ranges from 7000 to 5500 feet and has an annual average rainfall of about 12 inches. Travel over the State Highway, which crosses the corner of the Blue Bell will not be interrupted by any bad weather.

GEOLOGY

Formations exposed in the area range from Entrada of Jurassic Age to Mancos of Cretaceous Age. The Entrada is exposed in Summit Canyon to the

northwest and the Kancos about 5 miles to the southeast in Disappointment Valley. The ore-bearing Morrison formation is separated from the Kancos by the Dakota and from the Entrada by the Summerville.

In this area all the beds dip to the northeast by as much as 8 degrees. This structure is the result of the Disappointment Valley syncline which lies to the northeast.

The carnotite ores on these claims are found in two distinct sandstone horizons and one showing has been discovered in a mudstone which may possibly be part of a slump block. The secondary carnotite has been transported by ground-water solutions and localized in the sandstone by structural and lithologic trapping conditions and also concentrated around carbonaceous material. Cross-bedding and lensing of the sandstone between mudstone splits provides the proper lithologic traps, while sandstone horizon provides the proper structural trap on these claims. An abundance of mineralized carbonaceous material is evident in several workings.

These claims are located near the geographic center of the Slick Rock Mining Region which leads the writer to conclude that these claims are favorably situated due to the large flowage of mineralized solutions that must have traveled down the flank of Disappointment syncline to deposit the surrounding ore bodies.

HISTORY AND PRODUCTION

The claim owners report that previous to 1967 the Joe Jack Claim produced 125 tons and the Blue Bell Claim produced 175 tons. No uranium was being bought at that time but the vanadium grade was from 2% to 3%. Present mining in the area produces ore with a 1 to 7 uranium-vanadium ratio indicating that in the past production may have maintained 0.60% uranium grade.

[illegible]

The present [illegible] report [illegible] to [illegible] feet [illegible] assistance was discontinued. No accurate drill logs were kept on this drilling.

[illegible]

The development work consists of the [illegible] and approximately [illegible] square feet of open cut.

The ore [illegible] in these workings has [illegible] recent development work [illegible].

The samples were taken during the exploration. These samples do not [illegible], and represent a [illegible] to be found. The results are as follows:

	Fe_2O_3	TiO_2
Samples No. 1	0.21%	1.76%
Sample No. 2	0.21	6.51%

EXPLORATION [illegible]

Wagon drilling is suitable for part of the exploration work. However, should the wagon drilling on the lower horizon prove successful, then further testing of this horizon would require diamond drilling, where the upper rim covers the lower horizon. Wagon drilling can be used successfully up to about eighty feet.

First Phase Drilling

Holes on the upper horizon should be drilled on a grid pattern and spaced on 100 foot centers. This would require 48 holes at an average depth of 75 feet. The lower horizon (shown on

[illegible] would re-
[illegible] would require a total of [illegible] feet.

[illegible]

[illegible] drilling in similar areas indicate that about one half of the upper horizon would be estimated as unfavorable. Favorable areas should be drilled. Use of a closer spaced pattern of 20 centers and this would require approximately 20 holes averaging 20 feet in depth.

If the lower ore horizon proves favorable, one line of diamond drill holes spaced at 100 foot intervals should be drilled the length of the [illegible] to show the distribution of the ore as it is covered by the upper ore. This could be done only if the initial drilling indicates it. These nine holes would average 150 feet deep for a total of 1350 feet of diamond drilling. Jaspar drilling in this phase would total 1750 feet.

Third phase drilling

This phase would consist of blocking out the ore indicated found in the first and second phase. It is estimated that an additional 20 upper drill holes and an average 15 diamond drill holes will be needed to complete this phase.

The total drilling recommended would be 6000 upper drilling and 4350 feet diamond drilling. Emphasis should be put on the last two as diamond drilling would be done unless it is determined that it is economically and geologically feasible by the ore below found on the lower horizon in the first stage of drilling.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

The State Highway through the area is kept open at all times. The applicants will have the road access open to facilitate other mining operations in the area.

About 20 hours bulldozer work will be necessary to clear drill sites and to minor road work in the area.

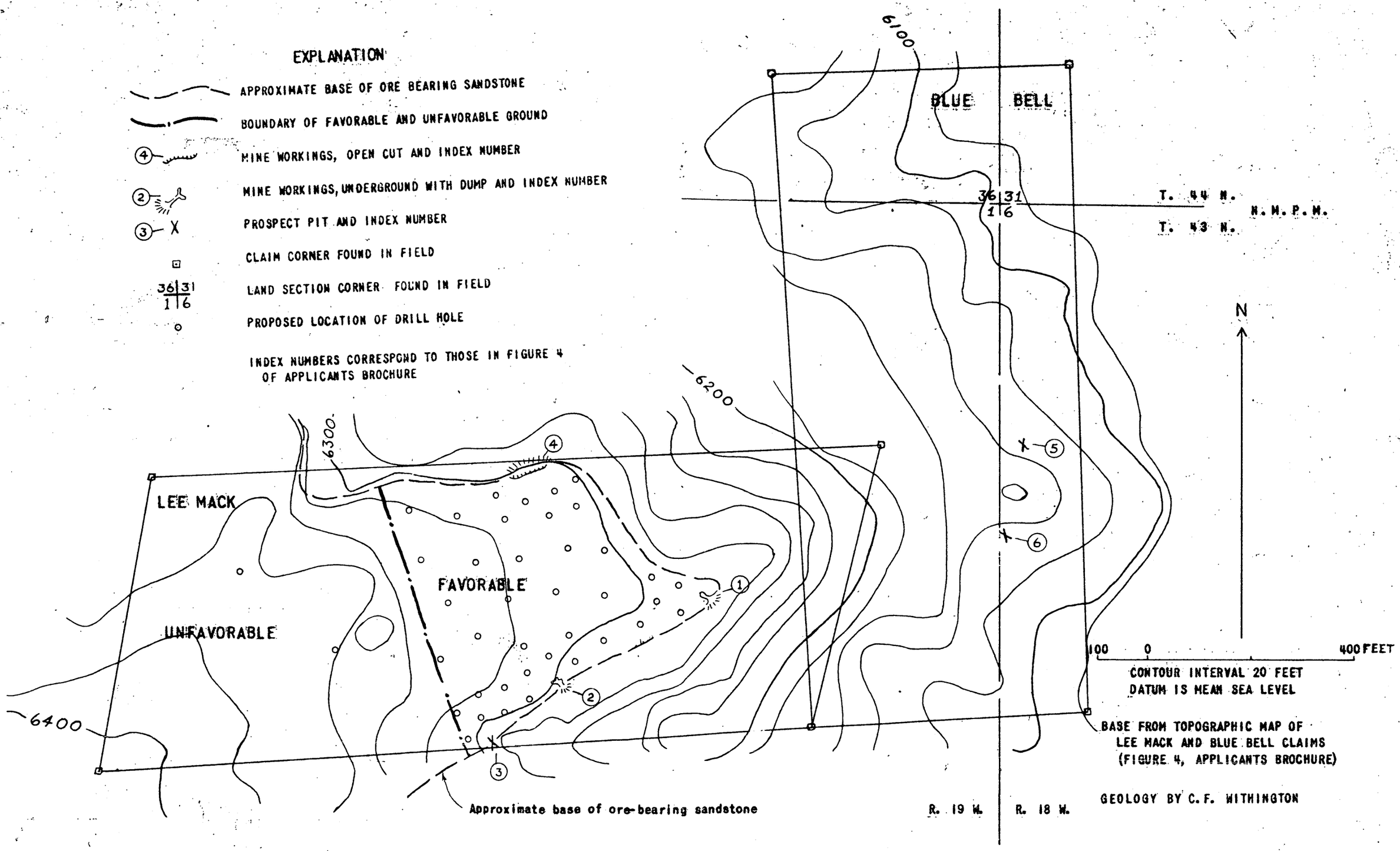
[illegible]

The mineralization and favorable geologic criteria in this area indicates that these claims can justify a profitable exploration project. The adjoining property, a government owned claim, [illegible], has been converted for the past four months by the applicant and produced about [illegible] tons per month averaging better than 0.[illegible] U3O8 and 1.70 V2O5. The exploration plan as outlined is comparable to those used by government agencies and private companies in their exploration of uranium on the Colorado Plateau.

The applicants are capable of carrying out the exploration program satisfactorily at a minimum cost to the government. I strongly recommend this exploration program as outlined.

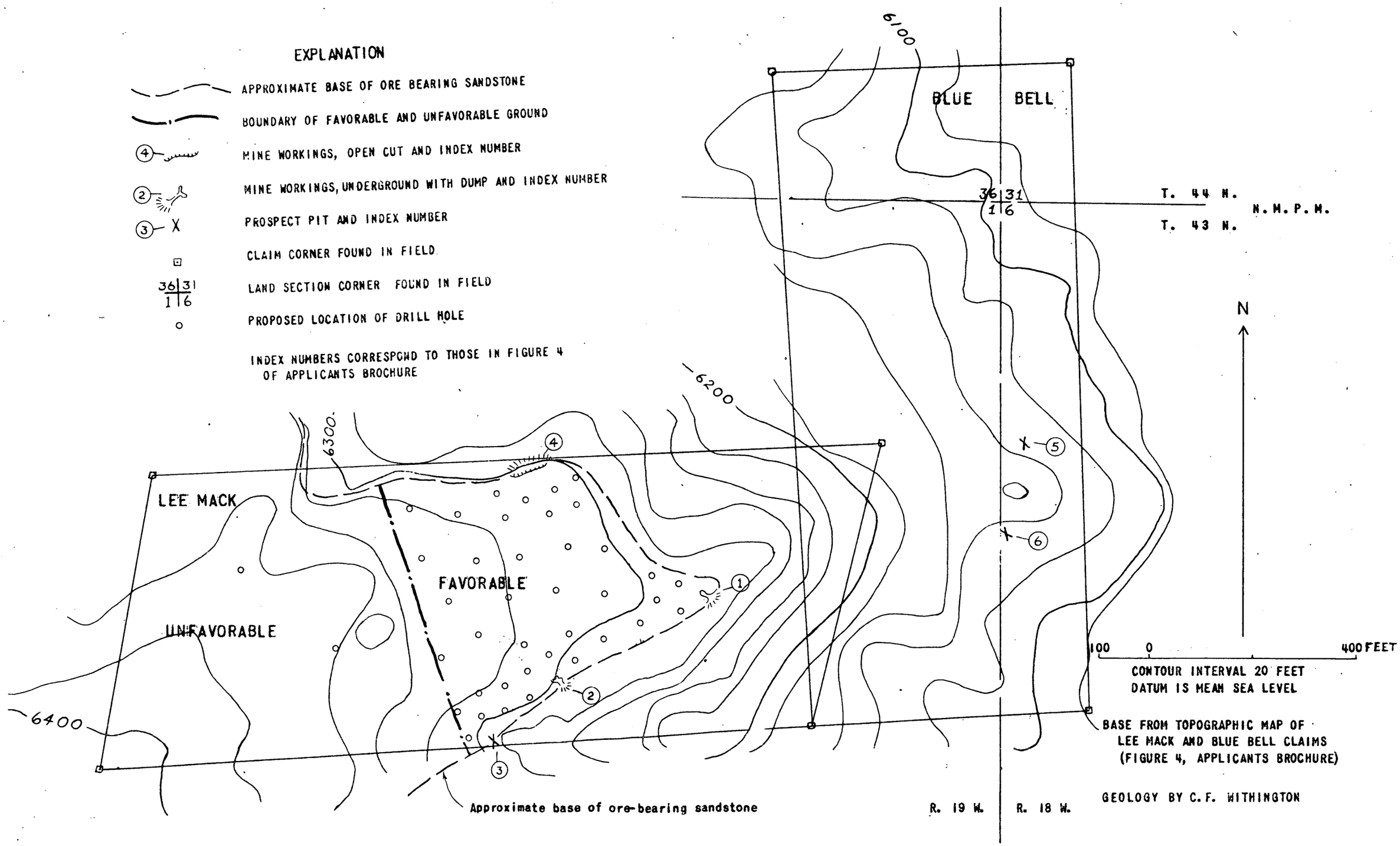
Richard Blum
Richard Blum
Strategic Minerals Exploration
Mining Consultants

November 18, 1[illegible]



SKETCH MAP OF THE LEE MACK AND BLUE BELL CLAIMS, SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO, SHOWING THE PROPOSED LOCATIONS OF 40 DRILL HOLES FOR STAGE 1 DRILLING

MAY 1953



SKETCH MAP OF THE LEE MACK AND BLUE BELL CLAIMS, SLICK ROCK DISTRICT, SAN MIGUEL COUNTY, COLORADO, SHOWING THE PROPOSED LOCATIONS OF 40 DRILL HOLES FOR STAGE 1 DRILLING

MAY 1953

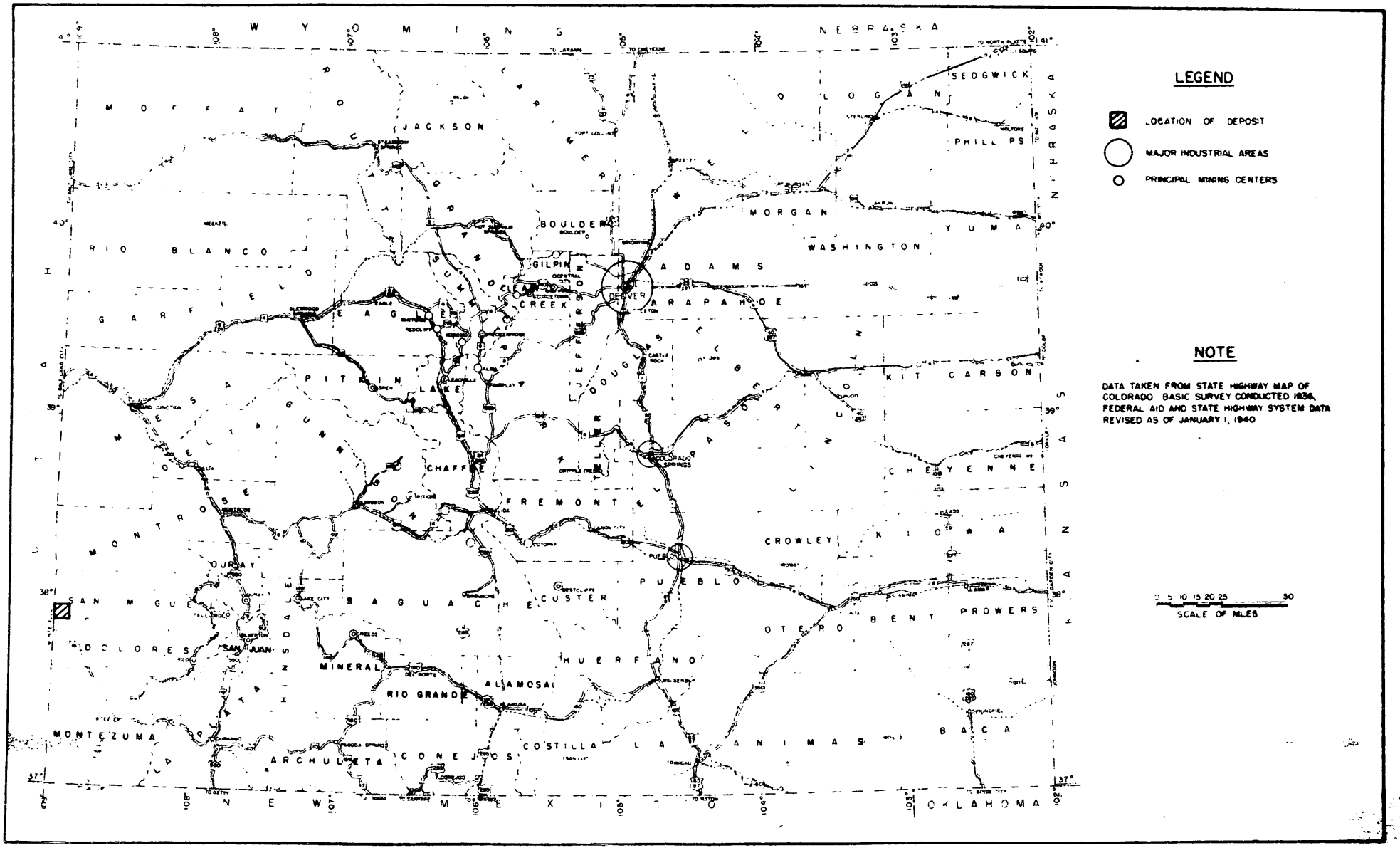
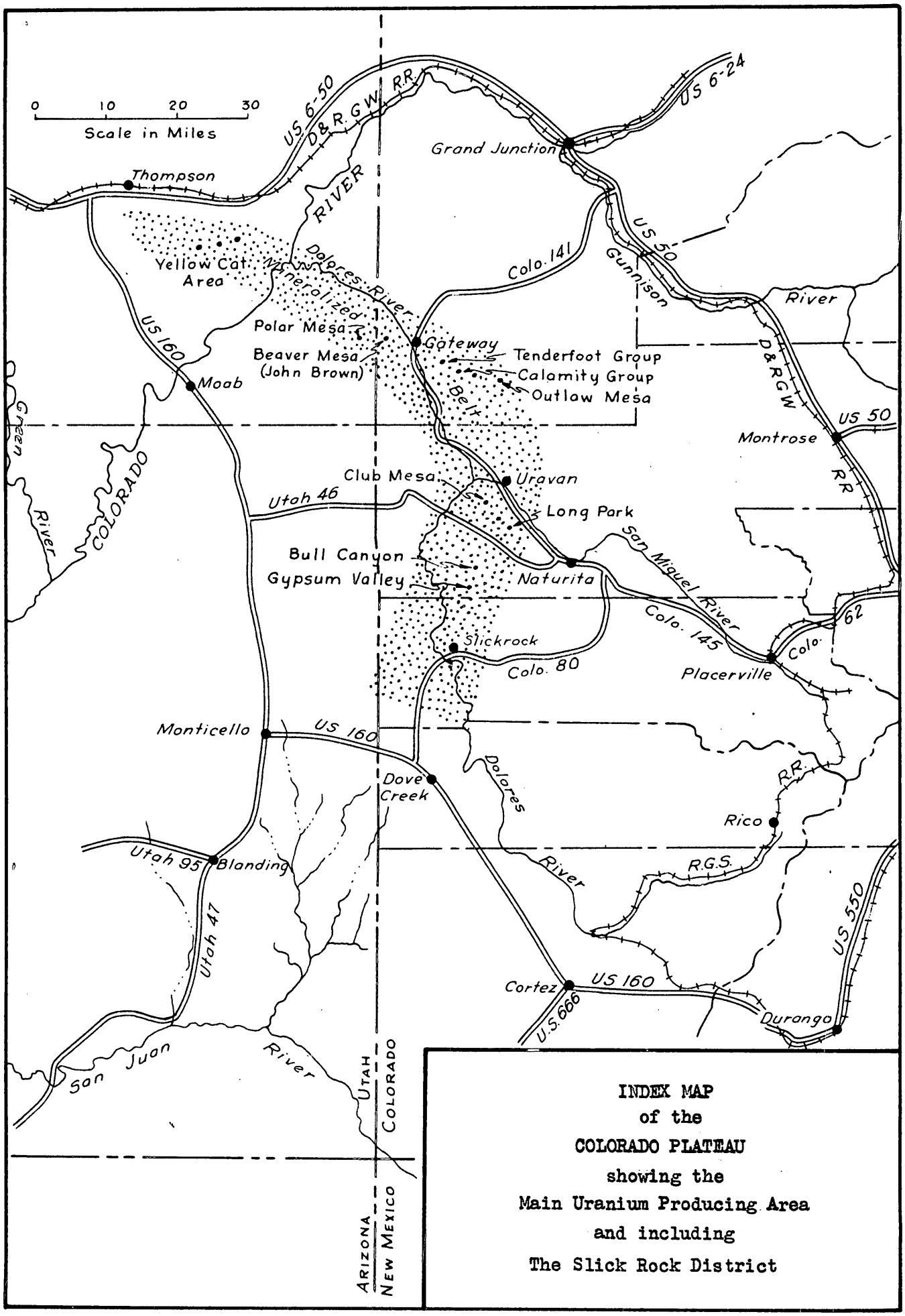
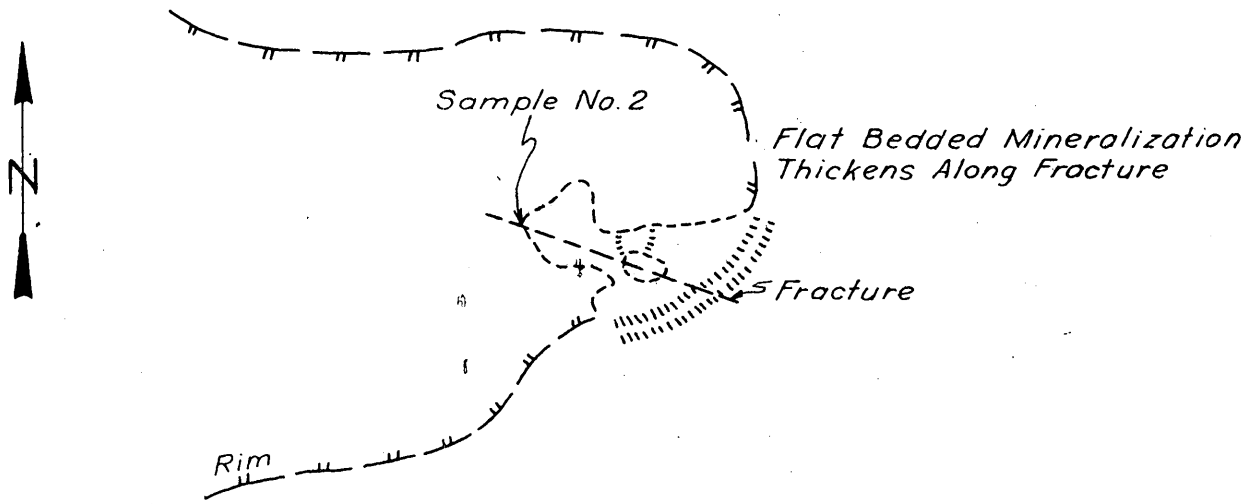


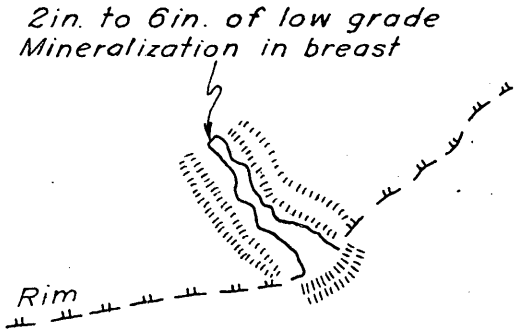
FIGURE 1. - LOCATION MAP, LEE MACK AND BLUE BELL CLAIMS, SAN MIGUEL COUNTY, COLO. (DMEA 2959).



INDEX MAP
of the
COLORADO PLATEAU
showing the
Main Uranium Producing Area
and including
The Slick Rock District



NO. 1 WORKINGS - LEE MACK



NO. 3 WORKINGS - LEE MACK

LEGEND

Underground Workings

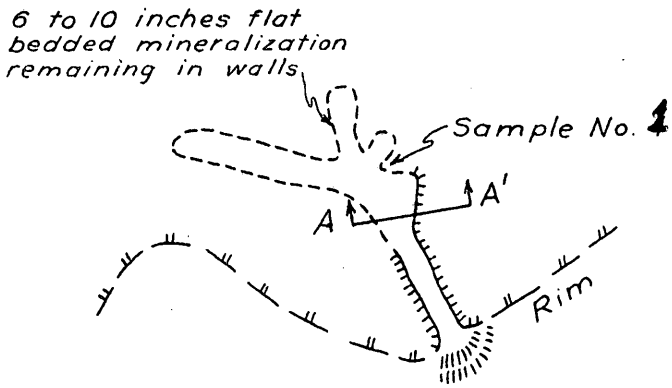
Rim

Dump

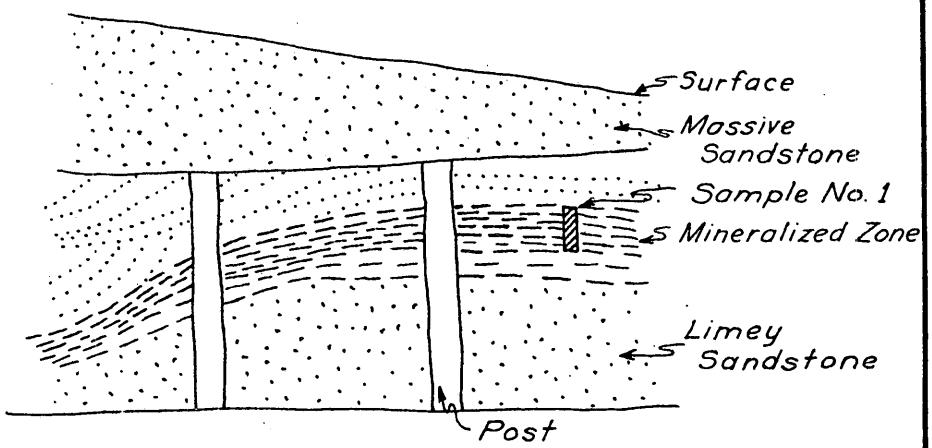
Mineralization

FIGURE NO. 3A

LEE MACK WORKINGS



No. 2 WORKINGS - LEE MACK



SECTION A - A'

FIGURE NO. 38

WORKINGS AND SECTION ON LEE MACK NO. 2

DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

424 NEW CUSTOMHOUSE
DENVER 2, COLORADO

OFFICIAL BUSINESS

Defense Minerals Exploration Administration

Interior Building

Washington 25, D. C.

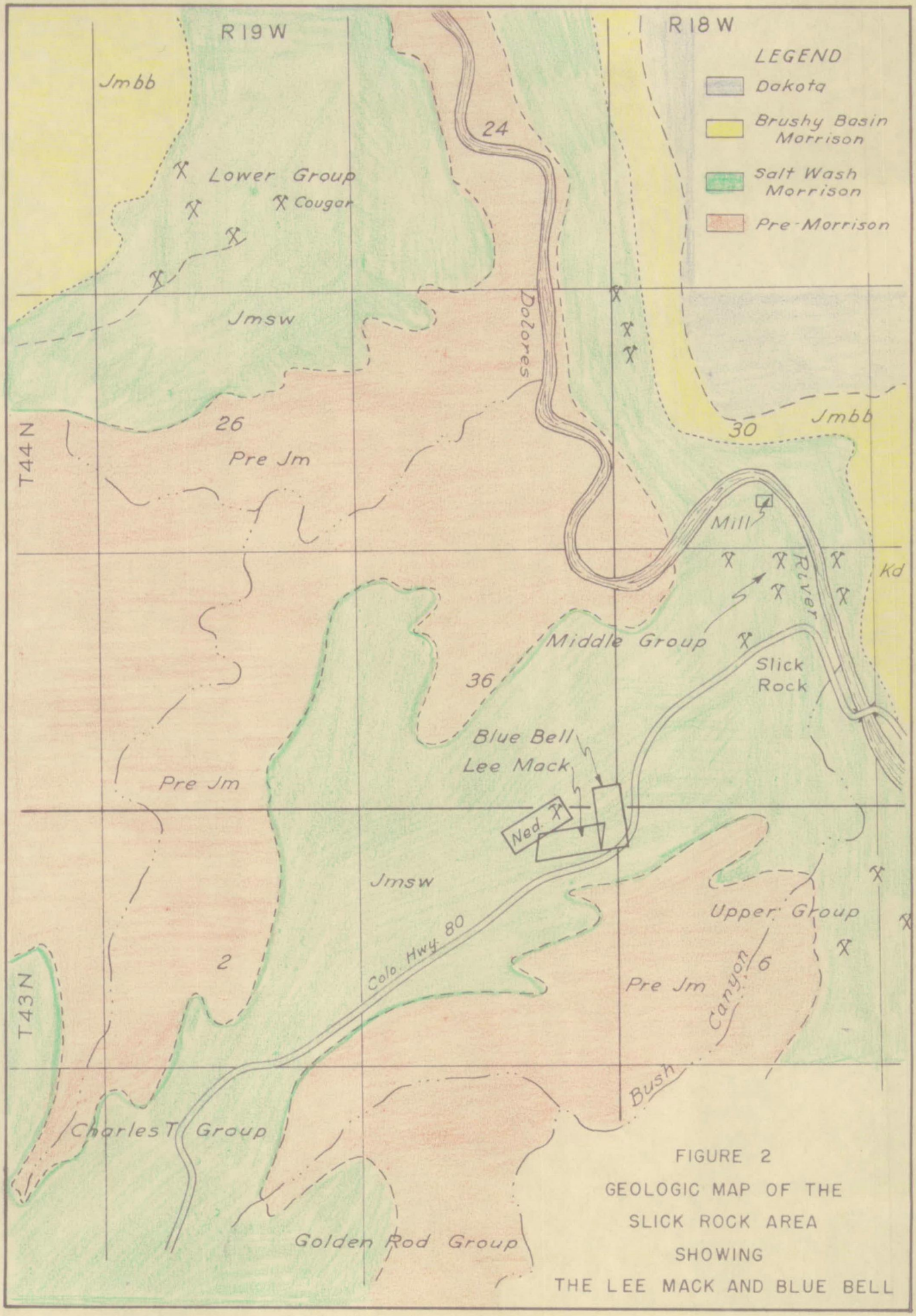


FIGURE 2
GEOLOGIC MAP OF THE
SLICK ROCK AREA
SHOWING
THE LEE MACK AND BLUE BELL