DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 3089

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Exploration Assistance

Any action taken to change the type of request for assistance must be promptly reported to the Reports and Records Branch. Use DMA Form 2 for submitting these reports.

Copies to USGS, ~~USBM. 1 cy~~ retained in Reg.

Routing Slip

To:	Code 700, Rm. 4640	Date	6/25/53
To:	Open Com	Date	7-17-53
To:	Code 700	Date	7-20-53
To:	Open Com	Date	10-30-53
To:	Code 700	Date	10/29/53
To:	Open Com	Date	11- -53
To:	700	Date	11-30-53
To:	Op Com	Date	12-11-53
To:	Open Com	Date	12-14-53
To:	700	Date	
To:	Open Com	Date	1-4-53
To:		Date	
To:		Date	
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To:		Date	

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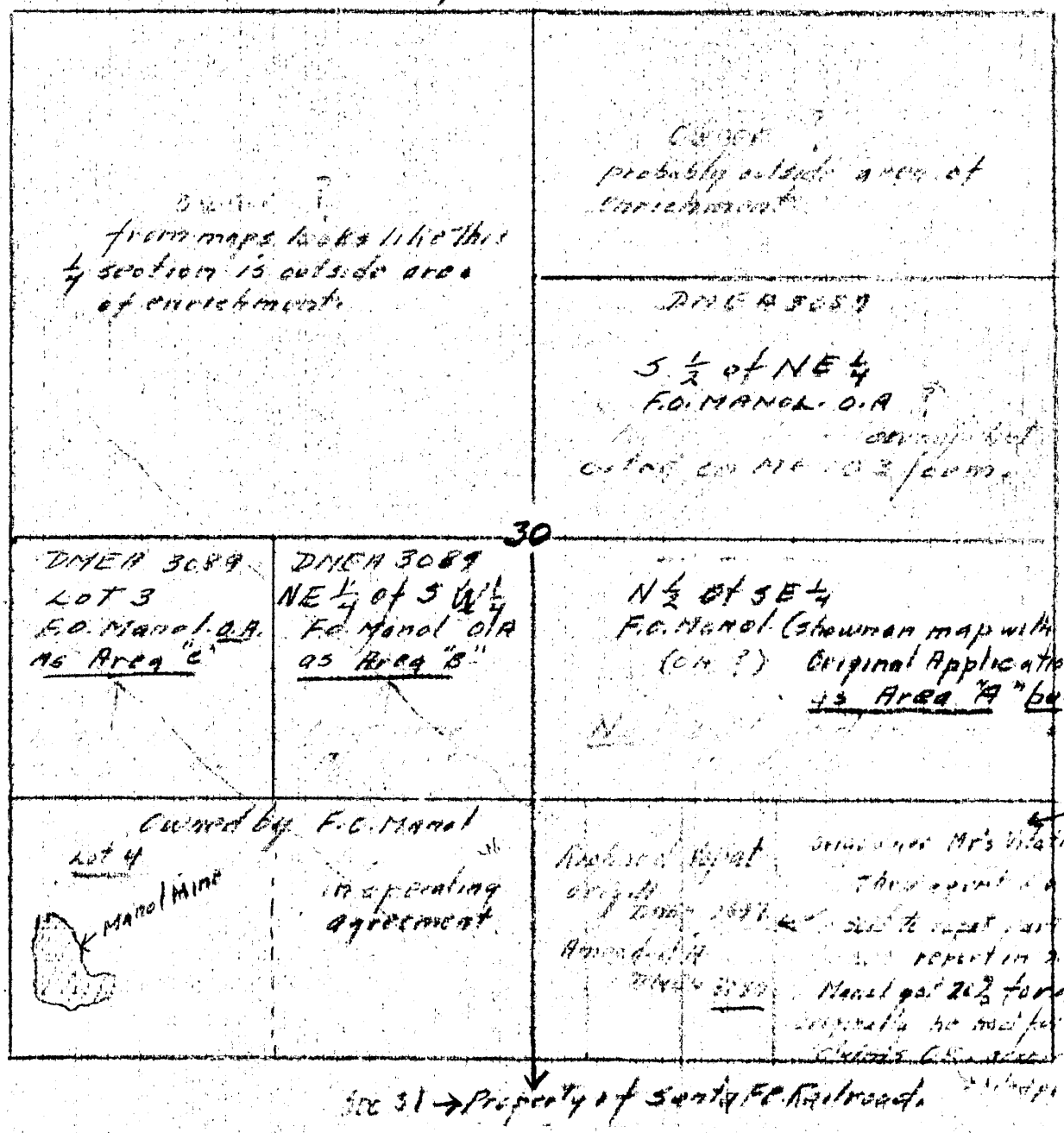
CONTROLLED DOCUMENT

Section 30 T 13N, R 9W
McKinley County, New Mexico



Refers To Applications DMEA

3089 - F.O. Manol and amended (same docket)
2897 - Richard Vopat " " New docket No 317

O.A = Original Application

File this sketch in Docket No. 3089 -

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 10-10-56

REFERRED TO:

1. M&F, 4450
2.
3.
4.

FOR:

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

REMARKS:

Check (X) before the items needing attention.

Initials of sender.

GPO 16—63815-1

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

224 New Customhouse
Denver 2, Colorado

January 12, 1954.

Mr. F. O. Manol
P. O. Box 246
Grants, New Mexico

Re: Docket No. DMEA-3089

Dear Mr. Manol:

This will acknowledge receipt of your letter dated December 21, 1953 in which you enclosed a letter from Tom Harley, Jr.

In order to continue to process an exploration project contract the following is required:

1. The Operating Agreement dated July 1, 1952 does not give you the authority to apply for DMEA aid. If you obtain letters from all of the interest holders similar to the one you received from Tom Harley, Jr., your application would be in order, but you could not administer the contract because it does not grant you authority to do and perform all and every act and thing whatsoever requisite and necessary to be done in and about the premises in connection with said contract including the right to make and sign any amendments to the said contract, make monthly progress reports as provided by said contract, to make the final report as required by said contract, to pay DMEA any royalties that may become due under said contract, the authority to receive any money that may be payable to the interest holders by reason of said contract, and giving and granting such other authority to carry out the full intent and purpose of said contract, to all intents and purposes, as the interest holders might or could do if personally present.

All interest holders should agree on the appointment of an operator to act as agent for them and by Power of Attorney grant him authority to do the various acts noted above. Signed Power of Attorney from each interest holder should be forwarded to this office.

2. We will require either signed copies or photostat copies of all assignments (including intermediate assignments) showing that the interest holders in the lease are those persons who execute Powers of Attorney in accordance with the above paragraph.

3. The present lease expires March 24, 1954. A new lease or an amendment to the present lease which will run, unconditionally, for a sufficient term to allow completion of the exploration work specified in the contract should be obtained. Please forward this office a signed copy of the new lease or amendment.

4. The Operating Agreement dated July 1, 1952 provides that the authority of the operator shall be terminable at any time and without notice. An amendment to this Operating Agreement should be made to provide for a definite operator during the period of the DMEA exploration and until the final report is accepted by the DMEA.

5. It is noted that G. P. Roundy and Clarinda Roundy mortgaged the subject property to Albuquerque Production Credit Association on July 8, 1953. Since the present lease will have to be amended, or a new lease obtained, it will be necessary for an authorized official of the Albuquerque Production Credit Corporation to sign and return to this office six copies of the enclosed Form MF-201, Subordination Agreement.

6. We have Owner's Consent to Lien signed by Golden P. Roundy, Clarinda W. Roundy, and W. A. Greer. Please have Bertha Greer, the other owner of record, sign and return to this office the six enclosed copies of Form MF-203, Owner's Consent to Lien.

If all of the above requested data is received by this office by March 1, 1954, we will continue to process the exploration project contract. If we do not receive this data by March 1, 1954, we will presume that you are no longer interested in the exploration project and will close the docket.

Very truly yours,

W H King

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

Enclosures

cc: Administrator, DMEA
WRStorms
RPFischer
AHKoschmann (2)
Docket
Chron.

Use as basis for div. contract file when contract has executed by Reg. IV is recd.

DEC 1 4 1953

Mr. W. H. King
Executive Officer
AEC Field Team, Region IV
25th New Customhouse Building
Denver 2, Colorado

Re: Contract No. DMA-3009 (Uranium)
V. O. Hazel Mine
Valencia County, New Mexico

Dear Mr. King:

Reference is made to the Field Team's memorandum of December 2, 1953, with attached copy of your letter of the same date to Mr. V. O. Hazel, regarding the subject contract. Our tentative proposal of 152 holes totaling 11,500 feet of drilling was meant to apply to Contract No. DMA-3290 and not to this contract.

In our letter to you of November 27, 1953, we stated: "The drilling proposed by the Field Team for the area mentioned in application Contract No. DMA-3009 seems reasonable, although we would prefer not to include the 60 holes drilled on 25 foot spacing, unless you believe such close drilling is essential to explore this particular area."

In your memorandum of December 2, you agreed that holes should not be drilled on 25 foot centers. You also added the suggestion that holes should not be drilled within 200 feet of the property lines since the Applicant also owns adjoining properties to the North and East which would profit widely from the proposed exploration.

The area covered by the proposed project measures 1320 x 2645 feet. Adhering the spacing to these measurements but using the engineer examiner's methods, we propose that no holes be drilled within 160 feet of the north and south boundaries and none within 160 feet of the east and west boundaries. Stage I would then consist of 78 holes spaced 200 feet apart and Stage II would consist of 60 or less offset holes. Stage III would consist of 98 holes offset where justified at 50 foot intervals.

The contract should, therefore, authorize the drilling of 230 holes totaling 4,360 feet at an over-all unit cost basis of not more than $1.5 per foot of hole drilled. The total estimated cost

should not exceed $13,139.00. The latter figure compares with Applicant's proposed expenditure of $73,559.54 for 900 holes and the engineer examiner's figure of $30,687.80 for 362 holes.

In order to facilitate the processing of this application it is suggested that you draw up and execute the contract as outlined above as soon as the Applicant has met the requirements stated in the Chief Counsel's memorandum of November 20, 1953 to the Chief, Ferro and Miscellaneous Metals Division.

Sincerely yours,

Ernest Wm. Ellis

ACTING

Chairman, Operating Committee

APPROVED:

W. H. Hedges

Member, Bureau of Mines

T. P. Thayer

Member, Geological Survey

HChing/db
12-11-53
cc to: Adm. Reading File
Operating Committee
Docket
Messrs: H. D. Keiser, Jr. 3641
A. P. Butler, Jr., Rm. 3212, GSA
Ellis
Ching

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

November 20, 1953

Memorandum

To: Chief, Rare and Miscellaneous Metals Division

From: Chief Counsel

Subject: F. O. Manol, Docket No. DMEA-3089 (Uranium)

At the request of Mr. Murphy, we have reviewed the application which is identified above, in order to determine whether the Applicant has a sufficient interest in land for the purposes of an exploration project contract.

The application is in the name of "F. O. Manol * * * Operator and Agent for group venture of persons named in supplement attached * * *" to the application, and states that the applicant is a lessee of the land. It is not clear from the application whether F. O. Manol is the applicant or whether a "group venture" is contemplated, because although the reference to a "group venture" is made in item 1(a) of the application, a reference is made in item 3(d) to the Applicant's interest in the property being based upon an "Operating Agreement" dated July 1, 1952, between all the lessees and Mr. Manol. There is no copy of the lease from the owner of the property in the docket.

If the lessees are the applicants, their interests in the land are held under the lease and do not depend upon the Operating Agreement. If Mr. Manol is the applicant, he does not have a sufficient interest in the land under the Operating Agreement, for the agreement gives him no interest in the land, but rather grants him certain limited authority to act as agent for the lessees, and, it appears, this agency is terminable at the will of any of the principals, without notice.

Accordingly, we must be informed as to the identity of the applicant and the nature of the entity under which business is to be done. If Mr. Manol is the applicant as an individual, he must demonstrate that he

holds a sufficient interest in the land for the purposes of an exploration project contract. We must have copies of the instrument which gives him this right, a copy of the basic lease, and Owner's Consent to Lien from sublessors as well as from the owner. Similarly, any other applicant must have the same interest in the land.

Albert Kane

for J. L. Hofflund
Chief Counsel

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

November 20, 1953

Memorandum

To: Chief, Rare and Miscellaneous Metals Division

From: Chief Counsel

Subject: F. O. Manol, Docket No. DMEA-3089 (Uranium)

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Accordingly, we must be informed as to the identity of the applicant and the nature of the entity under which business is to be done. If Mr. Manol is the applicant as an individual, he must demonstrate that he

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J. L. Hofflund
Chief Counsel

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

...NT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 13 1953

224 New Customhouse
Denver 2, Colorado

October 13, 1953

Memorandum

To: Secretary to the Operating Committee, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3089 (Uranium), Manol Claims, McKinley County, New Mexico

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

We believe that the DMEA should be exceedingly cautious when approving drilling contracts in this area owing to the lack of surface indications that would serve to delimit the favorable areas. The extremely close drilling required approaches development rather than exploration. The size of the anticipated discoveries seems to require the application of all available methods which offer some chance of reducing the total costs of the exploration.

The applicant proposes to have the drilling performed by the Four Corners Exploration Company, an organization in which the applicant, F. Q Manol, owns a half interest.

The applicant's amended application proposes to confine the exploration work to Lot 3 and the adjoining N 1/2 of the E 1/2 of SW-1/4 Sec. 10. His original application requested $79,819.40 to drill 160 acres and the amended application asks for $73,559.54 to drill only 80 acres.

We believe that the project will disclose a significant amount of uranium, however, the applicant has withdrawn a large area in the amended application. The withdrawn area and the 80 acres adjoining the project on the south, which is also owned by the applicant, will profit by the proposed exploration. Therefore, we do not believe it is in the best interests of the Government to approve this application unless the applicant is willing to subordinate his adjoining holdings.

Reviewed by
DMEA OPERATING COMMITTEE
10-23-53
(date)

If, however, the Commodity Committee believes that this type of program can be justified under the DMEA regulations we recommend that a short form contract be prepared on a unit cost basis of not more than $1.00 per foot of hole drilled.

John F. Shaw
for W. H. King

A. H. Koschmann

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 16 1953

Mining Division
Region IV

October 15, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - DMEA Docket 3089 (Uranium), Manol Claims, McKinley County, New Mexico.

Enclosed are eleven copies of the Engineering Report on the subject docket.

The applicant's original application requested $79,819.40 to drill an area comprising 160 acres. His amended application requests $73,559.54 to drill one half that area or 80 acres. Adjoining ground held by the applicant would be benefited by the proposed exploration but would not be subordinated.

We do not believe it is in the best interests of the Government to approve this application ubless the applicant will subordinate his adjoining ground.

John F. Shaw
John F. Shaw
For W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
10-23-53
(date)

UNITED STATES
Department of the Interior
Geological Survey
P. O. Box 360
Grand Junction, Colo.

October 8, 1953.

Memorandum

To: A. H. Koschmann and W. H. King, Region IV

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

Subject: DMEA 3089, Revised application F. O. Manol, McKinley County, N. M.

The original application was received in early August and a joint field examination was made by J. D. Strobell and Lloyd Farnham on August 11. Strobell's report on this examination was transmitted to Denver on August 21. This report outlined a tentative plan of exploration, subject to review and possible modification after Manol's revised application was received,

The revised application was received in Grand Junction on September 28, along with a copy of Farnham's report regarding the revised application. This was discussed with Strobell during his visit to Grand Junction on October 2. On October 5 a letter was received from Storms, and attached to it was a statement of explanation from Farnham regarding a minor point of confusion in Farnham's report.

After a review of Strobell's report of August 21, and Farnham's report on the revised application, it is my personal opinion that the two reports are sufficiently compatible so that no additional report from Strobell is needed. The exploration proposed by the two reports is identical in general plan. Strobell's report, however, included drilling in the N 1/2, SE 1/4, sec. 30 as well as the N 1/2, SW 1/4, sec. 30; whereas, the revised application requests exploration only in the N 1/2, SW 1/4, sec. 30; thus Strobell's report deals with twice as much ground and equivalent amount of drilling than the revised application.

I will not request Strobell to prepare any addition comments regarding the Manol application unless you request me to do so.

Returned herewith is one copy of Farnham's report on the revised application and the copy of the revised application, both of which were sent to me by Storms with the request that we transmit them to King's office.

/s/ R. P. Fischer
Acting Supervisor
Colorado Plateau District

Enclosures (2)
Farnham's Rpt. and
Revised application to King

Reviewed by
DMEA OPERATING COMMITTEE
10-23-53
(date)

MINING DIVISION
REGION IV

September 25, 1953

Air Mail

Memorandum

To : W. H. King, Chief, Mining Division, Region IV

From : Chief, Mining Methods Br., Mining Div., Region IV

Subject : Report on Docket DMEA-3089, F. O. Manol's Uranium Property, McKinley County, N. Mex.

Enclosed are original and 9 copies of a report on the above property by L. L. Farnham of the Bureau of Mines. One copy was sent to Dick Fischer and he will send it on to you. A separate section on Geology will be submitted by J. D. Strobell of the Geological Survey.

As the chance of discovering a substantial quantity of uranium ore by drilling from the surface seems good, the examiner has recommended that an exploration loan be granted the applicant. I concur with this recommendation.

The original brochure is enclosed. The amended application has been sent to the Geological Survey at Grand Junction, Colo.

Walter R. Storms

Walter R. Storms

CC W. H. King (10)
R. P. Fischer
DMEA-3089
DF

WRSTORMS:frj

Reviewed by
DMEA OPERATING COMMITTEE

10-23-53
(date)

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

August 24, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3089, Manol claims, McKinley County, New Mexico

Enclosed are 10 copies of the geologic report by J. D. Strobell, Jr. of the U. S. Geological Survey covering the above docket.

Because of circumstances, which are briefly explained in this report, final recommendations will have to await receipt of the applicant's revised proposal.

E. N. Hawkman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (10)

Reviewed by
DMEA OPERATING COMMITTEE
10-25-53
(Date)

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

August 21, 1953

Memorandum

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

From: R. P. Fischer
Colorado Plateau District Office

Subject: DMEA 3089, Manol claims, McKinley County, New Mexico

Transmitted herewith are 10 copies of a geologic report on the Manol claims, McKinley County, New Mexico. Mr. Manol has applied for assistance to explore for uranium ore on these claims. The work is estimated to cost $79,819.40.

The attached report was prepared by J. D. Strobell, Jr. and is based on a field examination made jointly on August 11 with Lloyd Farnham, Bureau of Mines. The field examiners also conferred with the applicant and with P. L. Melancon, AEC.

The area seems to offer a good chance of finding uranium deposits by exploration, and it is recommended that the general plan of exploration suggested in this report receive favorable consideration by DMEA. Because of circumstances, which are briefly explained in this report, the applicant will submit a revised proposal, which should be reviewed before final approval and detailed specifications for a contract are prepared.

I concur with the conclusions and recommendations of the report.

R. P. Fischer

R. P. Fischer
Acting District Supervisor

Enclosures 10

Reviewed by
DMEA OPERATING COMMITTEE

10-23-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3089, F. O. Manol's Uranium Property

McKinley County, New Mexico

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

September 1953

Reviewed by
DMEA OPERATING COMMITTEE

(date)

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By L. L. Farnham[1]

Late in July 1953, F. O. Manol applied to the Defense Minerals Exploration Administration, under the Production Act of 1950, as amended, for an exploration loan amounting to $78,819.40. The application was docketed as DMEA-3089. The property was visited by the examiners[2] on August 11, 1953. Early in September 1953, the applicant submitted a revised application in which he requested a loan of $73,559.54 for the purpose of exploring an 80-acre tract for possible uranium deposits by means of 72,360 feet of rotary air drilling. The property is about 16 miles north of the town of Grants, N. Mex.

Uranium mineralization in the Grants district, first detected in 1950, occurs in the Todilto limestone and the Morrison sandstone, both of Jurassic age. The subject property, so far as known, is underlain by the Todilto limestone. Erosion has removed the overlying Morrison formation. In the district Todilto limestone ranges from 8 to 20 feet in thickness and dips about 4° in a northeasterly direction. The uranium ore bodies found in the limestone are irregular tabular masses that vary greatly in size, shape, and grade. On adjoining land, in close proximity to the subject property, 26 ore bodies have been found distributed erratically within an area of about 600 acres. Some of these deposits contain but a few tens of tons of ore and others contain upwards of 10,000 tons. To date, the applicant has mined

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1/ Mining Engineer, U. S. Bureau of Mines

2/ Farnham, L. L., U. S. Bureau of Mines; J. D. Strobell, U. S. Geological Survey.

about 7,500 tons of ore, averaging somewhat more than 0.20 percent U_3O_8, from 3 separate ore bodies found on 60 acres immediately south of the area proposed for exploration. The subject property has not been explored and the ore bearing limestone is completely covered with from 20 to 140 feet of overburden.

In the revised application the applicant proposed to explore an 80-acre tract by 72,360 feet of rotary air drilling in 900 holes spaced from 25 to 200 feet apart. This work was estimated to cost $73,559.54. Over one half of the 900 holes proposed by the applicant was spaced 25 feet apart which would appear more of the nature of development than of exploration. It was the opinion of the examiners that this large amount of proposed drilling was excessive for the purposes of an exploratory project. Consequently an alternative program was recommended which involved 27,000 feet of rotary air drilling in 362 holes spaced from 25 to 200 feet apart. This work was estimated to cost $28,627.

The area proposed for exploration in the revised application appears to offer a favorable chance for the discovery of additional uranium ore. Therefore it is recommended that a loan amounting to not more than $28,627 be approved.

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS MCKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM

REGION IV

DMEA 3098 (Uranium)

F. O. Manol
Sec. 30, T. 13 N., R. 9 W., Grants District
McKinley County, New Mexico

Geologic Report

By

J. D. Strobell, Jr., Geologist
U. S. Geological Survey

August 1953

DMEA DOCKET 3089 (Uranium)

F. O. MANOL Sec. 30, T. 13 N., R. 9 W. GRANTS DISTRICT
MCKINLEY COUNTY, NEW MEXICO

INTRODUCTION AND SUMMARY

Application has been made (DMEA 3089) for government assistance in exploring for uranium on the F. O. Manol property in the Grants District, McKinley County, N. Mex. The proposed work is estimated to cost $79,819.40. The application has been reviewed in Washington, and the property was examined August 11, 1953, by Lloyd Farnham of the Bureau of Mines, Tucson, Ariz., and J. D. Strobell, Jr. of the Geological Survey, Grand Junction, Colo. The examiners also conferred with the applicant and with P. E. Melancon, District Geologist of the U. S. Atomic Energy Commission, Grants, N. Mex.

The applicant and his partners hold under lease in section 30, T. 13 N., R. 9W., the following plots:

S ½ of NE ¼ of Sec. 30
N ½ of NE ¼ " " "
E ½ of SW ¼ " " "
Lots 3 & 4 of SW ¼ of Sec. 30

This area is shown in figure 1. The description given in the application is correct as recorded in the original deed (1923) at Santa Fe, N. Mex., and mineral rights are included in the deed. [1]

---

[1] John X. Combo, AEC, oral communication

The area seems to offer a good chance of finding uranium deposits by exploration, and it is recommended that the general plan of exploration suggested in this report receive favorable consideration by DMEA. Because of circumstances, which are briefly explained in this report, the applicant will submit a revised proposal, which should be reviewed before final approval and detailed specifications for a contract are prepared.

GEOLOGY

In the Grants district, uranium deposits occur in the Todilto limestone and Morrison sandstone beds of Jurassic age and in the overlying Cretaceous rocks. The Manol property is underlain by the Todilto limestone, which the applicant proposes to test by drilling. The Todilto caps cliffs of the underlying Entrada sandstone and forms a broad bench where the overlying Summerville formation has been removed by erosion. The stripping off of the Summerville formation was accompanied or followed by erosion and locally complete removal of the Todilto limestone. The remaining limestone ranges up to 20 or 25 feet in thickness and is covered by a veneer of dune sand and alluvium, which may also locally conceal remnants of the Summerville formation. In the area of proposed exploration, the limestone is entirely covered by 25 to 150 feet of overburden, which thickens eastward across the property. The overburden consists predominantly of wind blown and fluiral sand only slightly indurated, but probably also includes increasing amounts of calcareous silty sandstone of the Summerville formation toward the east.

ORE DEPOSITS

Uraniferous minerals locally coat bedding planes and joint surfaces of the limestone, are disseminated in blebs and crystals in the matrix, and are associated with coarsely crystalline carbonates in veinlets. Such minerals are locally present in sufficient amounts to form ore bodies of irregular plan and thickness without sharply defined limits. Controls of their localization are not well understood. They occur at all positions between the top and bottom of the limestone, and may be present even where the limestone is partly removed by recent erosion. There is evidence of localization along the axial portion of minor folds, and the influence of dominant joint directions is in places apparent, both of which factors tend to produce narrow elongate ore bodies. The ore-bodies range in size from small tabular masses covering a few square feet to large bodies several hundred feet across. The thickness ranges from 1 foot or less up to as much as 14 feet. The largest known bodies contain a couple of hundred thousand tons of ore. The average grade of the ore shipped from the limestone in the district is a little more than .20 percent U_3O_8.

There are 25 or 26 known ore bodies in the immediate vicinity of the area of proposed exploration. Four of these are known from surface exposures; the applicant and the Santa Fe Railroad found the others by drilling. These known bodies are estimated to contain from 25 to 10,000 tons of ore apiece, and the total indicated reserves (before mining) were probably on the order of 80,000 tons.

The applicant has already found about 10,000 tons of ore on his property and has shipped about 6,500 tons averaging between .20 and .25 percent U_3O_8. The property is considered to be favorably situated and to afford a good chance for finding more ore.

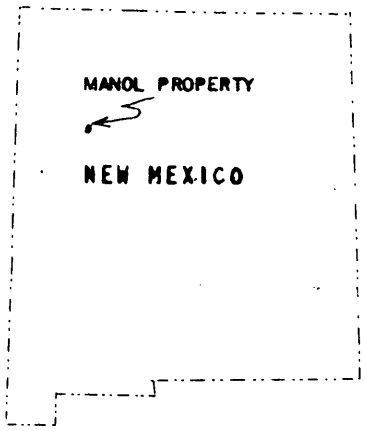
The size and distribution of the known deposits can be considered representative of the deposits expected in the area to be explored. Based on this information, which is largely company-confidential, the average ore-body contains about 3,000 tons, and about eight bodies would be expected in the area to be drilled. It thus appears that the proposed exploration has a favorable chance of finding 20,000 to 30,000 tons of ore.

The known deposits also afford estimates of the size of the target deposits and guides to the spacing of drill holes. They range in size from as little as 25 feet in diameter up to 100 by 800 feet. Most of them exhibit a marked elongation, the length being several times the width. They are, however, surrounded by a zone in which radioactivity is considerably higher than the radiation background of the containing limestone. Such zones of increased radioactivity may extend as much as 100 feet beyond the limits of ore. In order to find the expected ore, primary drilling on 100-foot centers would be necessary. If, however, advantage be taken of the radioactive halo, primary drilling could be done on 200-foot centers. Radiometric logging of the drill-holes would give this advantage. The size of the anticipated discoveries seems to require the application of all available methods which offer some chance of reducing the total costs of the exploration.

PROPOSED EXPLORATION

The applicant proposes to explore only parts of his property with federal assistance at the present time, namely the N½ of the SW¼ and the N½ of the SE¼ of Section 30. (See figure 1.) He is willing to subject only ore found in this area to royalty payments under the necessary lien. It is likely that ore known at present in other parts of the property will be mined out completely before any ore found in this area with government assistance is produced. Control of sales of ore that may result from the proposed drilling can very likely be worked out to the government's satisfaction.

The applicant proposed to rely upon radiometric logging of the wide-spaced drill holes by the Atomic Energy Commission to determine the relative favorability of the ground and to base the location of closely spaced holes upon the Commission's determinations. This practice is strongly advocated by the examiners, but they and the operator were informed by Mr. Melancon of the Commission that his capacity to perform this service is limited. In addition to his committments to Commission projects, he can probably handle only one or possibly two other projects in the district with the equipment and personnel at his disposal. As three other DMEA applicantions for exploration in the district have already been recommended (at least one of which, DMEA 3044, has been approved) the free logging service of the Commission can not definitely be assumed to be available for use in exploring the Manol property.



T. 13 N., R. 9 W. N.M.P.M.

SECTION 30

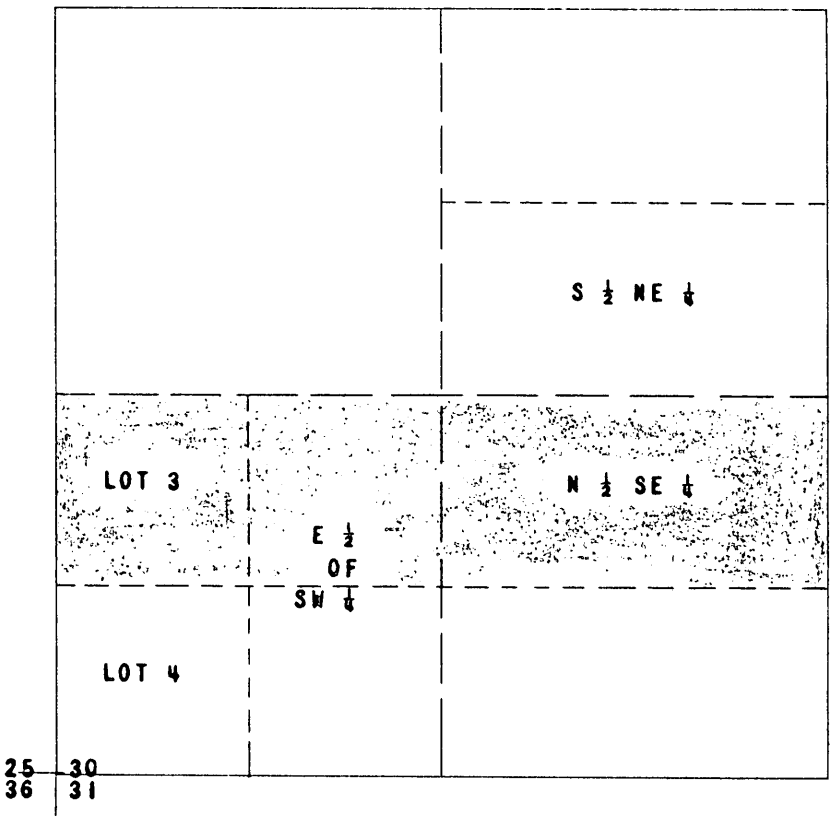


Figure 1. SKETCH MAP OF MANOL PROPERTY; SHADED AREA TO BE EXPLORED.
D.M.E.A. DOCKET 3089

In view of this changed situation, Mr. Manol wishes to revise his proposal and application to include radiometric logging obtained elsewhere, and also to modify to some extent the spacing of holes and the area to be explored. It is his intent to submit a revised application in the immediate future, which is expected to agree closely with the recommendations contained in this report. Until his revised proposal is reviewed, our final recommendations cannot be given.

RECOMMENDED EXPLORATION

Owing to the overburden which covers the ore-bearing limestone in the area to be explored, the sites for the first drill holes must be arbitrarily selected. It is recommended that the initial or primary holes be drilled on 200-foot grid-coordinate intersections and logged by in-hole radiation-detection equipment, which should detect ore deposits or the radioactive halo around deposits. Holes showing abnormally high radiation should be off-set by additional closer-spaced drilling. If no hole-logging device is available, samples for radiometric scanning would have to be collected from each hole, and the costs would be considerably increased.

Two other considerations seem to recommend the wider-spaced initial drilling. (1) There are indications from drilling already done by the applicant that in parts of the area to be explored the Todilto limestone may possibly have been removed by recent erosion. Wide-spaced drilling would indicate broad areas where the limestone is still present and warn of its absence in certain other areas.

(2) In the eastern half of the area, ore would have to be mined by underground methods, and larger reserves would be required to justify mining. In the central part of the area, thick deposits of sand cover the limestone, but underground mining is not possible, so increased stripping costs in this part of the area would also require larger reserves to justify mining.

In as much as the drilling is done in order to obtain a sample of the covered rocks, it seems necessary to require off-set holes to be sampled, because radiometric logging should not be relied on soley to determine grade. Samples should be collected and preserved in 2-foot runs throughout the entire thickness of the limestone in each offset hole. Radiometric logging of the hole and/or radiometric scanning of the samples can be used to select the samples to be assayed chemically for U_3O_8. All potentially ore-grade samples should be assayed.

Because the ore bodies are narrow elongated masses mostly less than 100 feet wide, this primary drilling on 200-foot centers is not very likely to intersect ore-grade material. It should, however, intersect the halo of high radioactivity surrounding an ore body. Subsequent drilling will be required to further outline and test any such favorably radioactive ground and to locate ore-grade material within it. Judging by the distribution of the known deposits on adjacent ground, about 10 percent of the area will merit testing by closely spaced drilling, and 2 or 3 percent may be underlain by ore-grade material.

All holes should be drilled completely through the limestone and well into the underlying sandstone to prevent caving from covering up the lower part of the limestone in the hole. Two feet below the base of the limestone may be sufficient in holes less than 50 feet deep, but 5 feet should be allowed in the deeper holes.

CONCLUSIONS

Exploration for uranium on part of the Manol property appears to have a good chance of finding 20,000 to 30,000 tons of ore averaging between .20 and .25 percent U_3O_8. In about 2/3 of the area of expected exploration high mining costs can be anticipated as underground mining or stripping of thick overburden would be required. If exploration is undertaken, primary drill-hole spacing of 200 feet and radiometric logging of the holes is recommended. It would be advantageous to log the off-set holes also, but they must in any event be sampled through the entire thickness of the limestone. Samples of potential ore grade as determined by the logging or radiometric scanning should be assayed chemically.

Final recommendations will have to await receipt of the applicants revised proposal.

DMEA-3089, F. O. MANOL'S URANIUM PROPERTY
McKINLEY COUNTY, N. MEX.

Engineering Report

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

September 1953

Reviewed by
DMEA OPERATING COMMITTEE
10-25-53
(date)

DMEA-3089, F. O. MANOL'S URANIUM PROPERTY
McKINLEY COUNTY, NEW MEXICO

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INTRODUCTION

Late in July 1953, F. O. Manol applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $79,819.40. The application was docketed as DMEA-3089. The funds requested were for the purpose of exploring portions of a 160-acre tract for uranium by means of some 83,000 feet of rotary air drilling. The property was visited by the examiners[1/] on August 11, 1953. Early in September 1953, the applicant revised the original application in which he requested $73,559.54 for the purpose of exploring an 80-acre tract with 900 holes, totaling 72,360 feet of drilling.

ACKNOWLEDGMENTS

Special thanks are due Paul E. Melancon, supervising geologist of the Atomic Energy Commission of Grants, N. Mex., for his cooperation in supplying the examiners with much needed information.

LOCATION AND PHYSICAL FEATURES

The F. O. Manol property is situated about 16 miles northeast of Grants, N. Mex. in the SW$\frac{1}{4}$ of Sec. 30, T. 13 N., R. 9 W., McKinley County, N. Mex. It can be reached from Grants by traveling west on U. S. Highway 66 for 3.2 miles, thence northward on State Highway 53 for 10.8 miles to a branch road running westward. The area proposed for exploration then can be reached by traveling for 1.3 miles westward on this branch road (figure 1).

1/ Farnham, L. L., U. S. Bureau of Mines;
Strobell, J. D., U. S. Geological Survey.

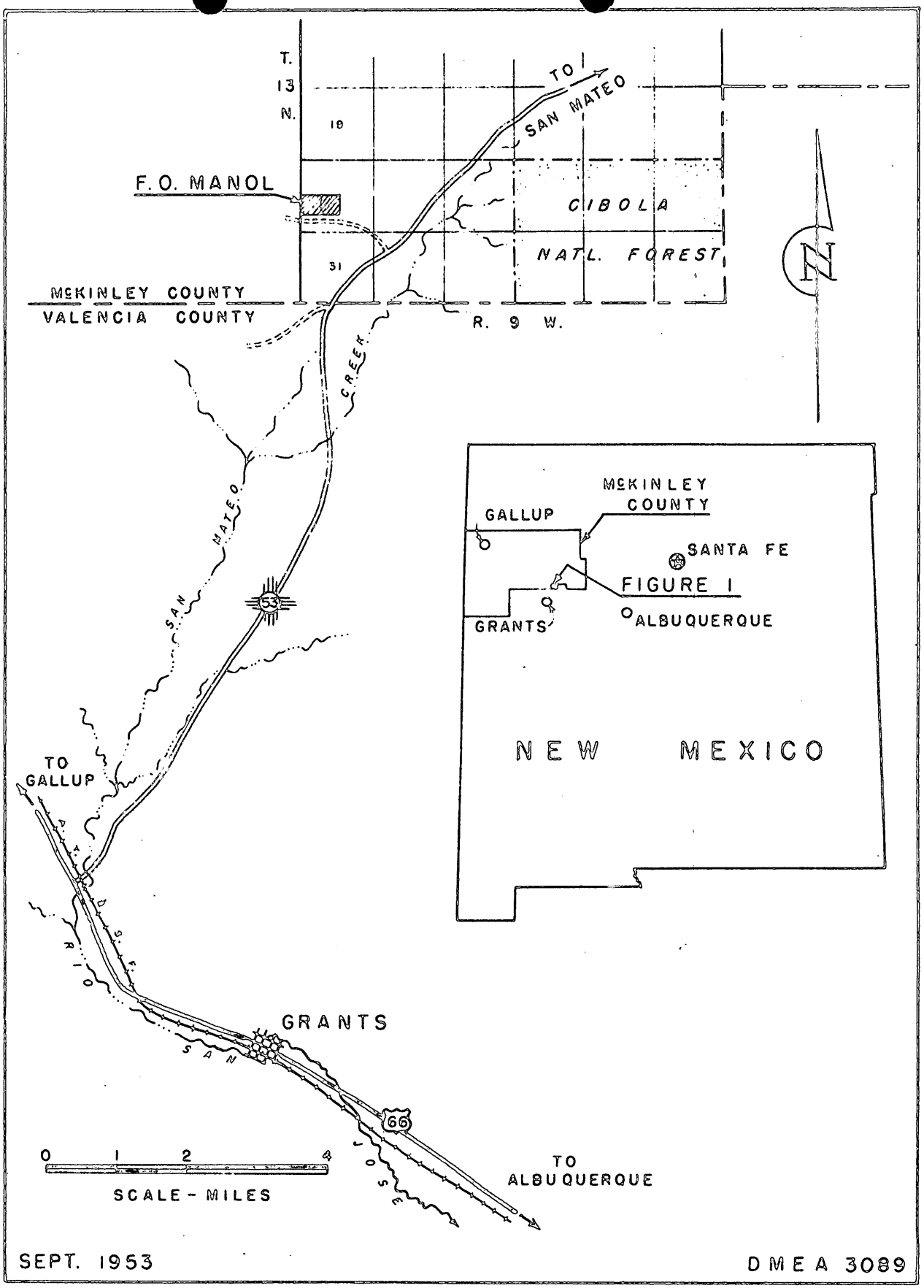


FIGURE 1. - LOCATION MAP - F. O. MANOL LEASE
McKINLEY COUNTY, NEW MEXICO

The project area, covering about 80 acres, lies within a gentle sloping alluvium-covered valley. Altitude above sea level ranges from a maximum of 6,890 feet in the southwest corner of the tract to a low of 6,840 feet on its eastern side (figure 3).

HISTORY AND PRODUCTION

The first mining activity in the area was started in 1950 following the initial discovery of uranium ores in the Grants district. The area covered in this application has not been explored and has had no production. The applicant has mined about 7,500 tons of ore, averaging over 0.20 percent U_3O_8, from 3 ore bodies found on a 60-acre tract adjoining the area of the proposed exploration (figure 2).

OWNERSHIP AND EXTENT

The applicant and his partners hold under lease the following acreage:

S½ of NE¼	of Sec.	30,	T. 13 N.,	R. 9 W.
N½ of NE¼	" "	30,	T. 13 N.,	R. 9 W.
E½ of SW¼	" "		"	"
Lots 3 and 4 2/	"		"	"

In the revised application, Governmental assistance was requested only for Lot 3 and N½ of the E½ of the SW¼ of Sec. 30.

A copy of the applicant's lease was not submitted with the application and nothing is known concerning the ownership of the land nor the terms of the lease agreement.

2/ These lots comprise the W½ of the SW¼ of Sec. 30.

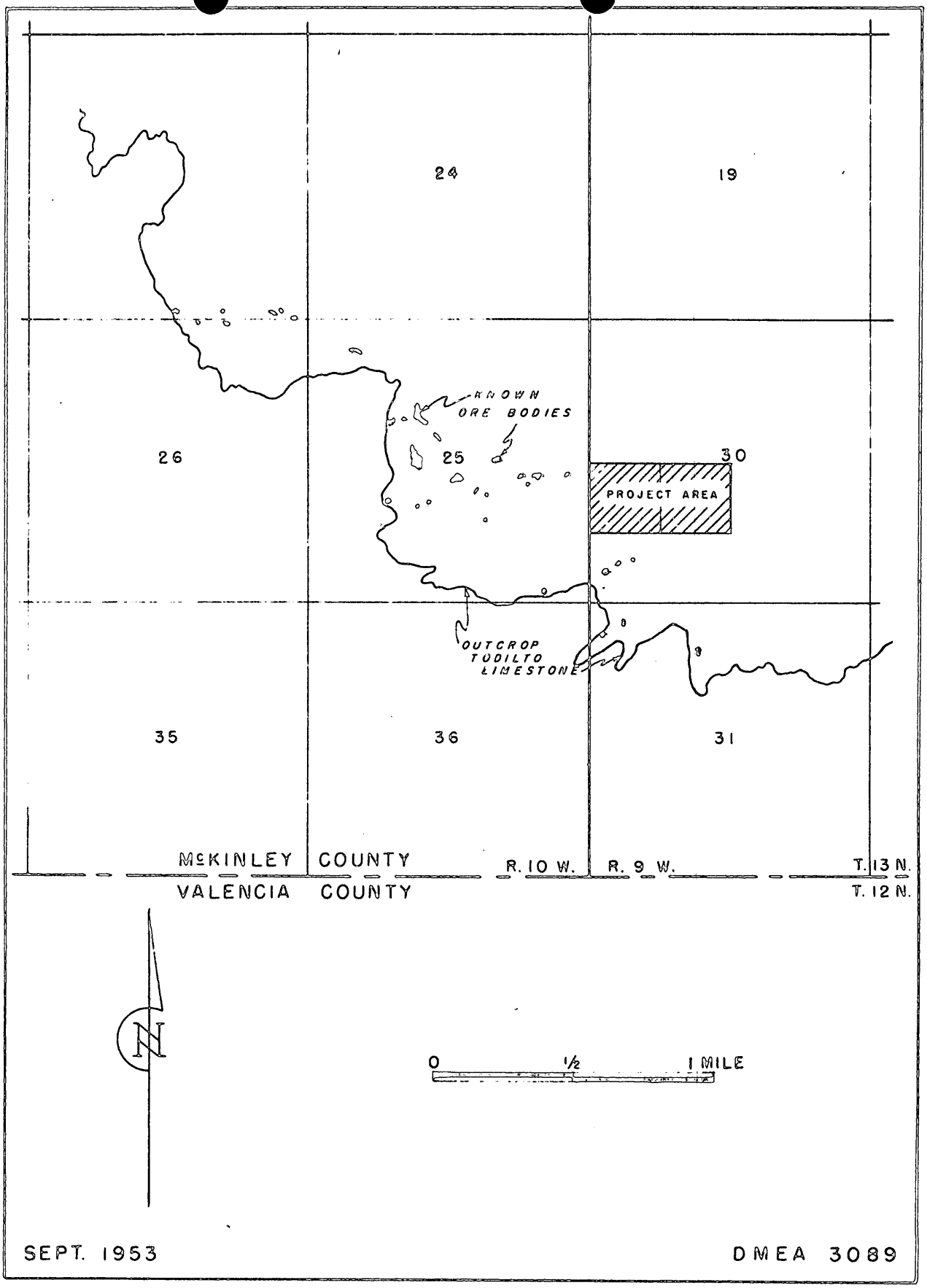
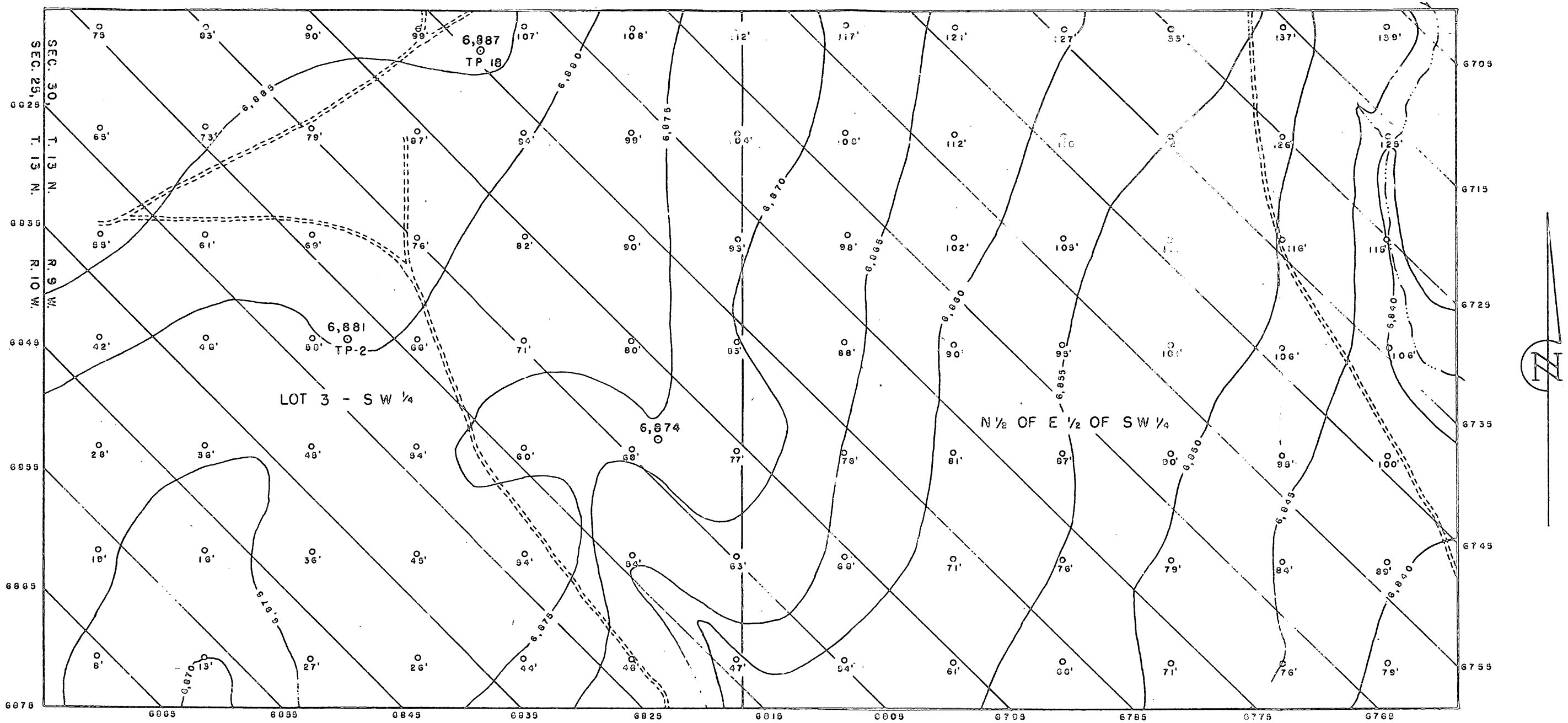


FIGURE 2. - LOCATION OF KNOWN ORE BODIES IN VICINITY OF PROPOSED EXPLORATION (F. O. MANOL)
McKINLEY COUNTY, NEW MEXICO



91 holes.
74.6 ft. average depth
91 x 74.6 = 4789 ft
$\frac{395 \text{ ft. over 100 ft. in depth}}{4789} = 5.52\%$

DATA SUPPLIED BY THE ATOMIC ENERGY COMMISSION

SEPT. 1953

DMEA 3089

FIGURE 3. - TOPOGRAPHIC AND STRUCTURAL CONTOUR MAP
(SHOWING STAGE I OF PROPOSED DRILLING WITH DEPTH OF HOLE TO BASE OF LIMESTONE)
F. O. MANOL LEASE
McKINLEY COUNTY, NEW MEXICO

DESCRIPTION OF THE DEPOSITS

Uranium mineralization in the Grants district occurs in the Todilto limestone and in certain sandstone beds of the Morrison formation. The subject property is underlain by the Todilto limestone which in the area of the proposed drilling is completely covered by 20 to 140 feet of overburden. The productive limestone ranges from 8 to 20 feet in thickness and dips about 4° to the northeast. The ore bodies are irregular tabular masses distributed very erratically within the limestone. They range in thickness from a foot to as much as 14 feet and vary greatly in size, shape and grade.

About 26 separate ore bodies have been found in close proximity to the area proposed for exploration (figure 2). The total ore reserves indicated by these discoveries have been estimated to be of the order of 80,000 tons, or an average of about 3,000 tons per ore body. It was necessary to explore approximately 600 acres in order to outline the 26 ore bodies.

On this basis the 80 acres under consideration could be expected to contain from 3 to 4 ore bodies of 3,000 tons each, or a total of from 10,000 to 12,000 tons of ore. However, because of the great variance in the size of the deposits and their unpredictable distribution, the 80 acres in question could contain much more than 12,000 tons, and likewise could contain very much less.

PROPOSED EXPLORATION

In the revised application it was proposed to confine the work to lot 3 and the adjoining N½ of the E½ of Sec. 30 (figure 3). The proposals, with cost estimates as set forth in the application, are as follows:

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MF-103

Estimate:

(a) Independent Contracts	Quantity	Unit Cost	Total
Drilling Test Holes 0 to 100 ft.	65,448 ft.	$.50	$32,724.00
Drilling Test Holes 101 to 200 ft.	6,912 ft.	1.00	6,912.00
Blowing & Catching Drill Hole Cuttings for Assay Purposes	13,950 ft.	.50	6,975.00
Radiometric Log of Test Holes	45,000 ft.	.15	6,750.00
Radiometric Scan of Test Holes	27,360 ft.	.07	1,915.20
Radiometric Assay Cuttings, this includes collecting, mixing, pulverizing, and assaying.	3,987 ea.	1.00	3,987.00
Contingencies	Lump Sum		2,000.00
Supervision, Geologic Consultation, Mine Evaluation, Surveying and Laying-out Grids, Accounting, and equipment and supplies, etc. incidental to these services.	72,360 ft.	.15	10,854.00
			72,117.20
New Mexico School Tax 2%			1,442.34
Total Maximum Cost of Project			$73,559.54

The applicant proposes to have the above drilling performed by the Four Corners Exploration Co. This is a new organization in which the applicant, F. O. Manol, owns a half interest. The other partner

is a geologist who formerly was employed in the Grant's office of the Atomic Energy Commission. The company has a Failing 1500 Rotary rig and is expecting the delivery of a mobile radiometric hole logging device in the near future.

A copy of the bid for the proposed drilling, submitted by the Four Corners Exploration Co., is given below:

"Utah Colorado
Arizona New Mexico FOUR CORNERS EXPLORATION COMPANY
P. O. Box 101

Irving Rapaport
F. O. Manol

August 31, 1953
Grants, New Mexico

"F. O. Manol and Associates
Box 246
Grants, New Mexico

Gentlemen:

"Below are our prices to your organization for drilling services, supervisory and geologic services, radiometric logging services, and radiometric assay services as per your request.

"Drilling:

1st 100 feet or any part thereof	$.50 per ft.
2nd 100 feet or any part thereof	1.00 per ft.

"Blowing hole clean and catching cuttings every two feet. $.50 per foot extra over regular prices.

"No charge for standby time on your work.

"Radiometric Logging:

Logging hole furnishing original copy of log to you. $.15 per foot.

"Scanning holes with logging unit but no transcript furnished. $.07 per foot.

"With this service you can log just the suspected ore zones and scan for unexpected mineralization in other zones of the drill holes. Substantial savings can be effected in this manner.

"Radiometric Assaying:
Collecting, mixing, pulverizing; sacking, assaying drill hole cuttings. $1.00 each.

"Supervision:
Supervision, geologic consultation, mine evaluation, surveying and laying-out grids, accounting, and equipment and supplies, etc. incidental to these services. $.15 per foot.

"We believe we are the only organization in the uranium exploration business providing a complete package deal exploration service combining all necessary services into one easy to administer contract.

"Very truly yours,

/s/ Irving Rapaport
Irving Rapaport"

The costs per foot of drilling in the above bid are the same as those charged by the W. T. Myers Drilling Co. for similar contract work.

The applicant's project proposals involved the drilling of 900 holes, having an average depth of 80.4, totaling 72,360 feet, and estimated to cost $73,559.54. It appears that the large amount of drilling would not be necessary for the purpose of determining the presence or absence of worthwhile ore bodies within this 80-acre tract.

Based on the experience of other exploratory operations in the district, the examiner recommends the following procedure as an alternative to that proposed by the applicant.

The entire 80 acres should be drilled with holes spaced 200 feet apart. This phase of the program would require 91 holes (figure 3). In all probability this primary stage would eliminate a portion of the area from further consideration. Experience in the district has shown that about 1 out of 6 holes spaced 100 feet apart might indicate sufficient abnormally high radio-activity so as to merit off-set drilling. Based on this ratio, about 30 of these 182 holes would justify off-setting by 4 holes each, spaced 50 feet apart. Thus, this third phase would require an additional 120 holes, and thereby increase the total to 302 holes at this stage of the work. It would seem that an additional 60 holes spaced no closer than 25 feet would be sufficient to outline, for discovery purposes, any ore bodies indicated by the former holes. On this basis, a total of 362 holes would be required. The average depth of these holes as computed by the examiner was 74.6 feet (figure 3). Hence the total for the project would amount to 27,005 feet of drilling. This is only about one-third of the total footage proposed by the applicant. Nevertheless, 362 holes would seem adequate to explore the area to such an

extent as to indicate whether or not significant ore bodies were present. About one half of the holes proposed by the applicant could be considered to be more of the nature of development than of exploration.

SAMPLING

No samples need be collected from the initial 91 holes (spaced 200 feet apart) if they can be logged radiometrically. The balance of the holes (271) should be logged radiometrically and sampled as well. When the holes enter the top of the limestone, the drill cuttings should be blown from the hole at each 2-foot interval and caught in a suitable collector. If the limestone averages 18 feet thick, there would be 9 samples from each hole. These can be scanned with a standardized Geiger Counter and those that appear of ore grade should be retained for further testing. Since most of the ore is seldom more than 6 feet thick, it is probable that not more than 3 samples from each hole would warrant assaying. On this basis there would not be more than 813 samples that would merit assaying.

The applicant proposed assaying the samples radiometrically, rather than chemically. The examiners discussed this matter with the manager of the Anaconda Copper Mining Co. and the chief mining engineer of the Atchison, Topeka & Santa Fe Railroad Co. Both of those gentlemen were of the opinion that radiometric assaying results on the limestone ores would check very closely with the U_3O_8 content

as determined chemically. In view of this information, it appears that for the purposes of exploration, the radiometric assaying of the drill hole samples would be satisfactory and should be adopted in the case of limestone ores. Radiometric assaying is not satisfactory for the sandstone ores of the district.

ESTIMATED COST OF PROJECT

The depth of the proposed holes averaged 74.6 feet which included 5 feet of drilling below the bottom of the limestone. This extra 5 feet of hole would allow space for any caving that might occur before the hole could be logged radiometrically. The data used by the examiner for computing the depth of the holes was based on information furnished by the Atomic Energy Commission.

A summary of the amount of drilling follows:

Stage 1 and 2 -	182 holes @ 74.6 ft.	13,577 feet
Stage 3	120 holes @ 74.6 ft.	8,952 "
Stage 4	60 holes @ 74.6 ft.	4,476
Total	362 Holes	27,005 feet

Figure 3 indicates that about two thirds of the holes would be less than 100 feet deep and the balance would exceed 100 feet. Thus the drilling cost under the bid of the Four Corners Exploration Co. would be as follows:

18,000 feet @ $0.50	$9,000
9,000 " @ 1.00	9,000
Catching samples - 4,878 ft. @ $0.50	2,439
Radiometric logs, 27,000 ft. @ $0.10 3/	2,700
Radiometric assaying, 800 @ $1.00	800
Total cost for 27,000 feet	$23,939
Cost per foot	$0.89

Drilling with this rotary type of equipment, the contractor expects to average between 250 and 300 feet a shift. Thus working 25 shifts a month the work could be completed in about 4.5 months. The other costs of the project based on 4.5 months are given below:

1 Supervisor, 4.5 mos. @ $500	$2,250
1 Sampler, 4.5 mos. @ $300	1,350
Compensation insurance, taxes, etc., 13%	468
Allowance for use of pickup truck @ $60	270
Bookkeeping and office supplies	250
Sample sacks and incidentals	100
	$4,688

Summary of Total Estimated Costs

Contract drilling	$23,939
Supervision and sampling	4,068
Miscellaneous	620
Total for 27,000 feet	$28,627
Total per foot	$1.06

PROPOSED FINANCING

The project as estimated by the writer would cost $28,627 of which the applicant would furnish one tenth, or $2,862.70, and the Government would provide $25,764.30.

The value of the ore produced by the applicant from the tract immediately south of subject area has averaged about $23 a ton. With ore of this value, at 5 percent royalty, the area proposed for

3/ Based on $0.15 a foot for logging and $0.07 a foot for scanning only.

exploration would have to produce some 22,000 tons of ore in order to repay the Government loan. Tonnage of this order is not too far out of line with the potential of the area as judged by the results of former exploration in the vicinity.

CONCLUSIONS AND RECOMMENDATIONS

Important uranium deposits have been found immediately to the south and west of the area which the applicant has proposed for exploration. There is no evident reason why similar deposits are not likely to be found on the subject property. One disadvantageous feature of the area proposed for exploration is the amount of cover overlying the productive limestone bed. Over a large portion of this tract, the overburden may be of such thickness as to preclude open pit mining. In such cases much more costly underground methods would be necessary which could result in making some of the smaller or lower grade bodies noneconomic.

The applicant, who will no doubt supervise the operation, has had 2 years of experience in the exploration and mining of uranium ores in the Grants district. If the contract drilling is performed by the Four Corners Exploration Co., Irving Rapaport will supervise the drilling and attend to the technical features of the project. Both Manol and Rapaport are considered to be competent in their respective capacities. The fact that the applicant will be financially interested in the drilling contract may have certain

disadvantages as well as advantages.

As there appears to be a reasonable chance of finding ore on the subject property, it is recommended that a loan amounting to $28,627 be approved. A short form contract is suggested specifying a maximum of 27,000 feet of drilling at a price of $1.06 a foot.

Government's copy

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN - 7 1955

MF-200A
(Revised June 1954)

Docket No. DMEA - 3075

Commodity Copper

Contract No. Idm-E - 729

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
EXPLORATION PROJECT CONTRACT[1]
(Short Form)

It is agreed this 19th day of October, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] J. & M. Leasing Company, a partnership comprised of McMurrin Wulfenstein of 446 West 400 North, St. George, Utah, and James E. Wulfenstein of 172 East 300 South, St. George, Utah, whose mailing address is 446 West 400 North St. George, Utah, hereinafter called the "Operator," as follows:

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

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

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

(b) The Operator represents and undertakes that:

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

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

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title of the land (lessor, seller, optionor, etc.), are attached, as follows: Subordination Agreement of the sublessors and Owner's Consent to Lien of the lessors.

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

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 7, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 7(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of copper. The work to be performed is described in Exhibit "A." The Operator on or before 90 days from date* shall commence the work, and on or before 18 months from date* (unless the Operator's obligation to complete the work is terminated—see Article 8) shall complete the work.

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

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

ARTICLE 5. *Contribution by the Government.*—A fixed cost for each unit of work to be performed (per foot of drifting, per foot of drilling, per hour of operations, etc.) is hereby agreed upon, and is set forth in Exhibit "A" in connection with the estimated total cost of the project in the sum of $27,060.00. The Government will contribute 50 percent of the fixed unit costs as work is performed, in a total sum not in excess of $13,530.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 6(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. To the extent that excesses over fixed unit costs or any excess over the estimated total cost may be necessary for the performance of the work, the Operator shall incur and pay such excesses for his own account without contribution by the Government. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the units of work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing a detailed statement of units of work performed during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and the fixed unit costs incurred for each type of work; and (3) a Narrative Report of the work

*The word "date" means the date of the contract.

performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

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

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

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

ARTICLE 7. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 6) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

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

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

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

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

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½) percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

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

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

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

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

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

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

ARTICLE 8. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon the Government shall be free of all obligation to pay on account of units of work not then performed, and the Operator shall be free of all further obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

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

(c) The giving of any notice by the Government under the provisions of this Article 8 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 9. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 10. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 11. *Changes and added provisions.*—

Executed in sextuplicate the day and year first above written.

J. & M. LEASING COMPANY
(Operator)

By ..... (Partner)

..... (Partner)

THE UNITED STATES OF AMERICA

By O. Phillips Theodore
Administrator, Defense
Minerals Exploration
Administration

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—70618-1

EXPLORATION PROJECT CONTRACT
J. & M. LEASING COMPANY
DOCKET NO. DMEA-3075

ANNEX I

The land referred to in Article 2 of the contract consists of the following unpatented mining claims which were leased (three-fourths interest) by Mary Etta Cox, V. Loraine Cox, Anna C. Cox, Kenneth Cox, and Anna F. Cox, to Lorin Whitmore, L. O. Whitmore, and Gale Whitmore by an instrument dated February 2, 1949, and subleased by the Whitmores to the Operator by an instrument dated June 29, 1952:

Cox and Ross Mine Claim, recorded on page 285 of Book 3-U;

Cox and Ross Mine Claim No. 1, recorded on page 286 of Book 3-U;

and also the following unpatented mining claims which are owned by the Operator:

Copper Mountain No. 1, recorded on page 53 in Book 4-D;

Copper Mountain No. 2, recorded on page 54 in Book 4-D;

Copper Mountain No. 5, recorded on page 57 in Book 4-D;

Copper Mountain No. 6, recorded on page 58 in Book 4-D.

All of the cited unpatented mining claims, are recorded in the Office of the County Recorder of Mohave County, at Kingman, Arizona. Such claims are shown on the attached map entitled "Claim Map, Copper Mountain Mine, Mohave County, Arizona."

EXPLORATION PROJECT CONTRACT
J. & M. LEASING COMPANY
DOCKET NO. DMEA-3075

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for copper ores. The work is to consist of approximately 900 feet of drifting and crosscutting to intersect and explore the vein. Such work is roughly indicated on the attached map entitled "Topographic map Compiled by A.E.C. Copper Mt. Mine, Mohave County, Arizona." The exact location of the work is subject to the advance approval of the Government.

Fixed Unit Costs

900 feet of crosscutting and drifting @ $30.00/ft.	$27,000.00	
40 assays @ $1.50/each	60.00	
Estimated Total Cost of Project		$27,060.00
Government's Participation @ 50%		$13,530.00

MF-201
(Revised February 1953)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

Sublessors under a lease dated June 29, 1952, between Leland O. Whitmore, Gale S. Whitmore, and Lorin B. Whitmore, by Sidney R. Whitmore their Attorney-in-Fact and James E., and M. Wulfenstein upon that certain parcel of ground described in a proposed Exploration Project Contract

between James E., and McMurrin Wulfenstein

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

The undersigned agrees to commit no act nor assert any right, title, or interest under said mortgage, claim, lien, or encumbrance that might contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 23d day of July, 1953.

Sidney R. Whitmore [SEAL]
Sidney R. Whitmore, Attorney-in-Fact
and by Powers of Attorney, [SEAL]
for and in behalf of the lessors

I, _____, certify that I am the _____

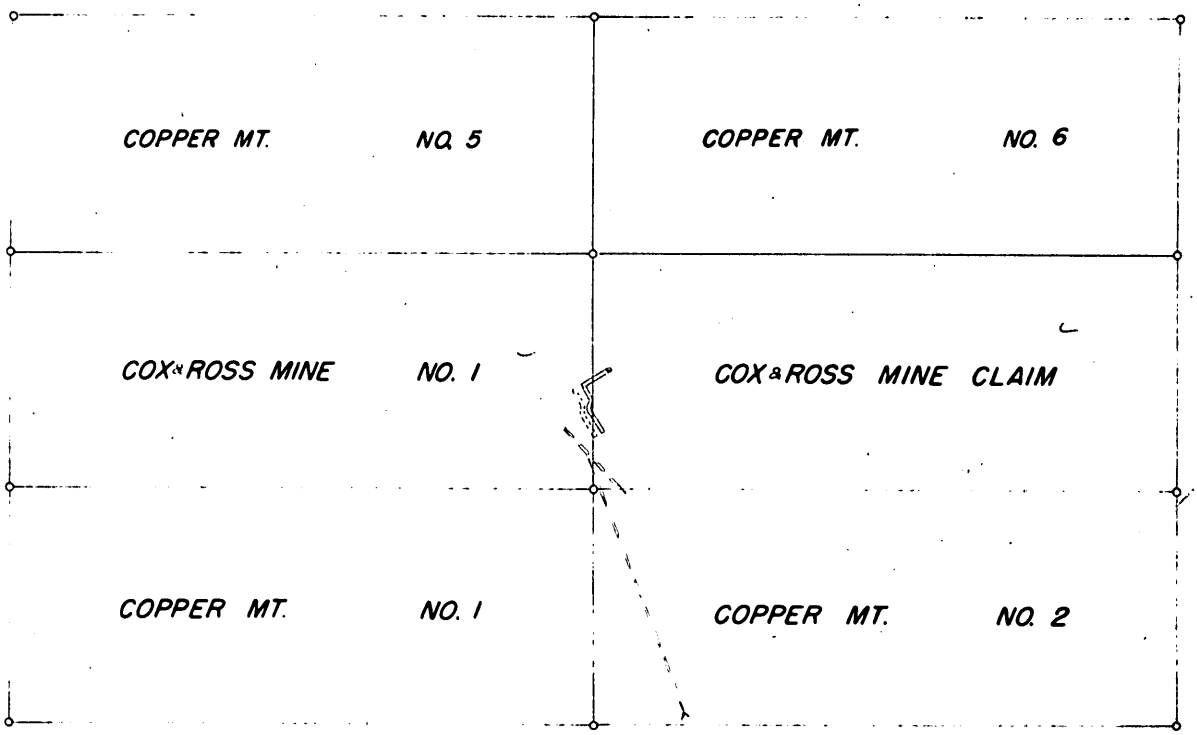
(Secretary, etc.) of the corporation named herein; that _____

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

_____
[CORPORATE SEAL]

*Include date of the instrument, and if recorded, book, page, and county of record.

16—68181-1 U. S. GOVERNMENT PRINTING OFFICE



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

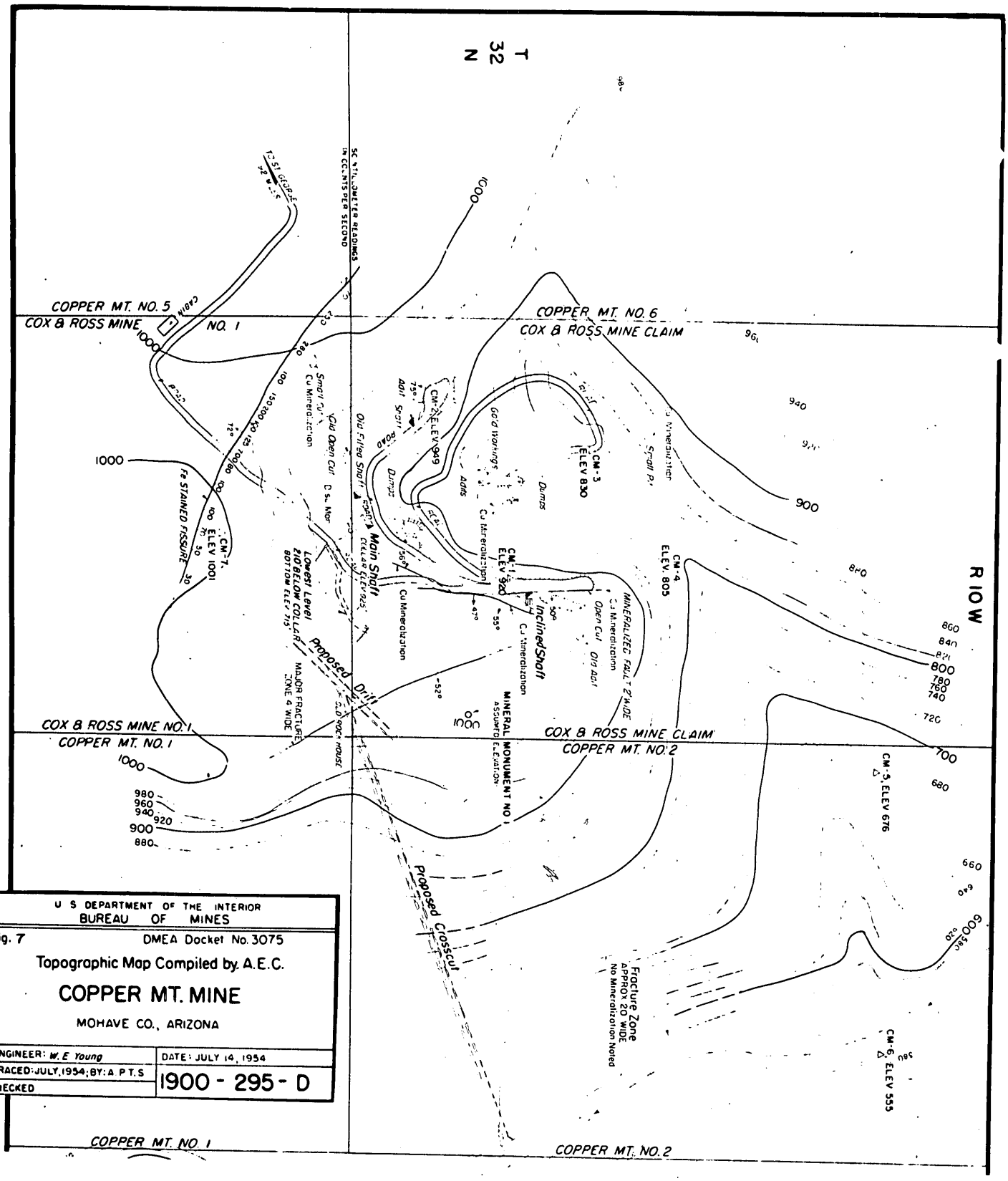
Fig. [redacted] DMEA Docket No. 3075

Claim Map

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JAN. 31, 1954
DRAWN: JAN., 1954; BY: A. P. T. S.	1900 - 277 - D
CHECKED:	



U S DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 7 DMEA Docket No. 3075

Topographic Map Compiled by. A.E.C.

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JULY 14, 1954
TRACED: JULY, 1954; BY: A P T.S	1900 - 295 - D
CHECKED	

Operator's copy

MF-200A
(Revised June 1954)

Docket No. DMEA - 3075

Commodity Copper

Contract No. Idm-E - 729

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
EXPLORATION PROJECT CONTRACT[1]
(Short Form)

It is agreed this 19th day of October, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] J. & M. Leasing Company, a partnership comprised of McMurrin Wulfenstein of 446 West 400 North, St. George, Utah, and James E. Wulfenstein of 172 East 300 South, St. George, Utah, whose mailing address is 446 West 400 North St. George, Utah, hereinafter called the "Operator," as follows:

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

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

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

(b) The Operator represents and undertakes that:

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

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

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title of the land (lessor, seller, optionor, etc.), are attached, as follows: Subordination Agreement of the sublessors and Owner's Consent to Lien of the lessors.

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

16—70618-1

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 7, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 7(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of copper. The work to be performed is described in Exhibit "A." The Operator on or before 90 days from date* shall commence the work, and on or before 18 months from date* (unless the Operator's obligation to complete the work is terminated—see Article 8) shall complete the work.

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

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

ARTICLE 5. *Contribution by the Government.*—A fixed cost for each unit of work to be performed (per foot of drifting, per foot of drilling, per hour of operations, etc.) is hereby agreed upon, and is set forth in Exhibit "A" in connection with the estimated total cost of the project in the sum of $27,060.00. The Government will contribute 50 percent of the fixed unit costs as work is performed, in a total sum not in excess of $13,530.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 6(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. To the extent that excesses over fixed unit costs or any excess over the estimated total cost may be necessary for the performance of the work, the Operator shall incur and pay such excesses for his own account without contribution by the Government. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the units of work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing a detailed statement of units of work performed during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and the fixed unit costs incurred for each type of work; and (3) a Narrative Report of the work

* The word "date" means the date of the contract.

performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

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

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

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

ARTICLE 7. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 6) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

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

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

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

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

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½) percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

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

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

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

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

(c) The giving of any notice by the Government under the provisions of this Article 8 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 9. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 10. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 11. *Changes and added provisions.*—

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

J. & M. LEASING COMPANY
(Operator)

By O. Mitkevich
Administrator, Defense
Minerals Exploration
Administration

By (Partner)

(Partner)

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—70618-1

EXPLORATION PROJECT CONTRACT
J. & M. LEASING COMPANY
DOCKET NO. DMRA-3075

ANNEX I

The land referred to in Article 2 of the contract consists of the following unpatented mining claims which were leased (three-fourths interest) by Mary Etta Cox, V. Lorraine Cox, Anna C. Cox, Kenneth Cox, and Anna F. Cox, to Lorin Whitmore, L. C. Whitmore, and Gale Whitmore by an instrument dated February 2, 1949, and subleased by the Whitmores to the Operator by an instrument dated June 29, 1952:

Cox and Ross Mine Claim, recorded on page 285 of Book 3-U;

Cox and Ross Mine Claim No. 1, recorded on page 286 of Book 3-U;

and also the following unpatented mining claims which are owned by the Operator:

Copper Mountain No. 1, recorded on page 53 in Book 4-D;

Copper Mountain No. 2, recorded on page 54 in Book 4-D;

Copper Mountain No. 5, recorded on page 57 in Book 4-D;

Copper Mountain No. 6, recorded on page 58 in Book 4-D.

All of the cited unpatented mining claims, are recorded in the Office of the County Recorder of Mohave County, at Kingman, Arizona. Such claims are shown on the attached map entitled "Claim Map, Copper Mountain Mine, Mohave County, Arizona."

EXPLORATION PROJECT CONTRACT
J. & M LEASING COMPANY
DOCKET NO. DMEA-3075

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for copper ores. The work is to consist of approximately 900 feet of drifting and crosscutting to intersect and explore the vein. Such work is roughly indicated on the attached map entitled "Topographic map Compiled by A.E.C. Copper Mt. Mine, Mohave County, Arizona." The exact location of the work is subject to the advance approval of the Government.

Fixed Unit Costs

900 feet of crosscutting and drifting @ $30.00/ft.	$27,000.00	
40 assays @ $1.50/each	60.00	
Estimated Total Cost of Project		$27,060.00
Government's Participation @ 50%		$13,530.00

MF-201
(Revised February 1953)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

Sublessors under a lease dated June 29, 1952, between Leland O. Whitmore, Gale S. Whitmore, and Lorin B. Whitmore, by Sidney R. Whitmore their Attorney-in-Fact and James E., and M. Wulfenstein upon that certain parcel of ground described in a proposed Exploration Project Contract

between James E., and McMurrin Wulfenstein

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

The undersigned agrees to commit no act nor assert any right, title, or interest under said mortgage, claim, lien, or encumbrance that might contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 23d day of July, 1953.

Sidney R. Whitmore [SEAL]
Sidney R. Whitmore, Attorney-in-Fact
and by Powers of Attorney, ~~[SEAL]~~
for and in behalf of the lessors

I, _____, certify that I am the _____

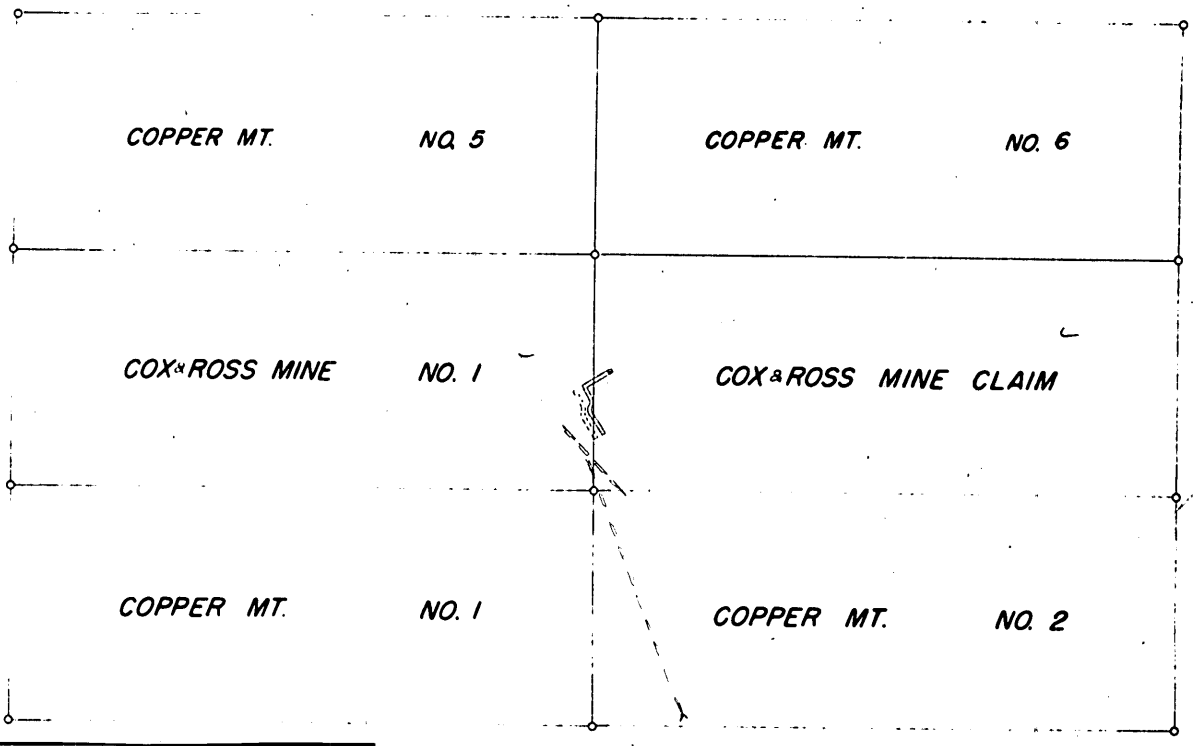
(Secretary, etc.) of the corporation named herein; that _____

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

_____
[CORPORATE SEAL]

*Include date of the instrument, and if recorded, book, page, and county of record.

16—68181-1 U. S. GOVERNMENT PRINTING OFFICE



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

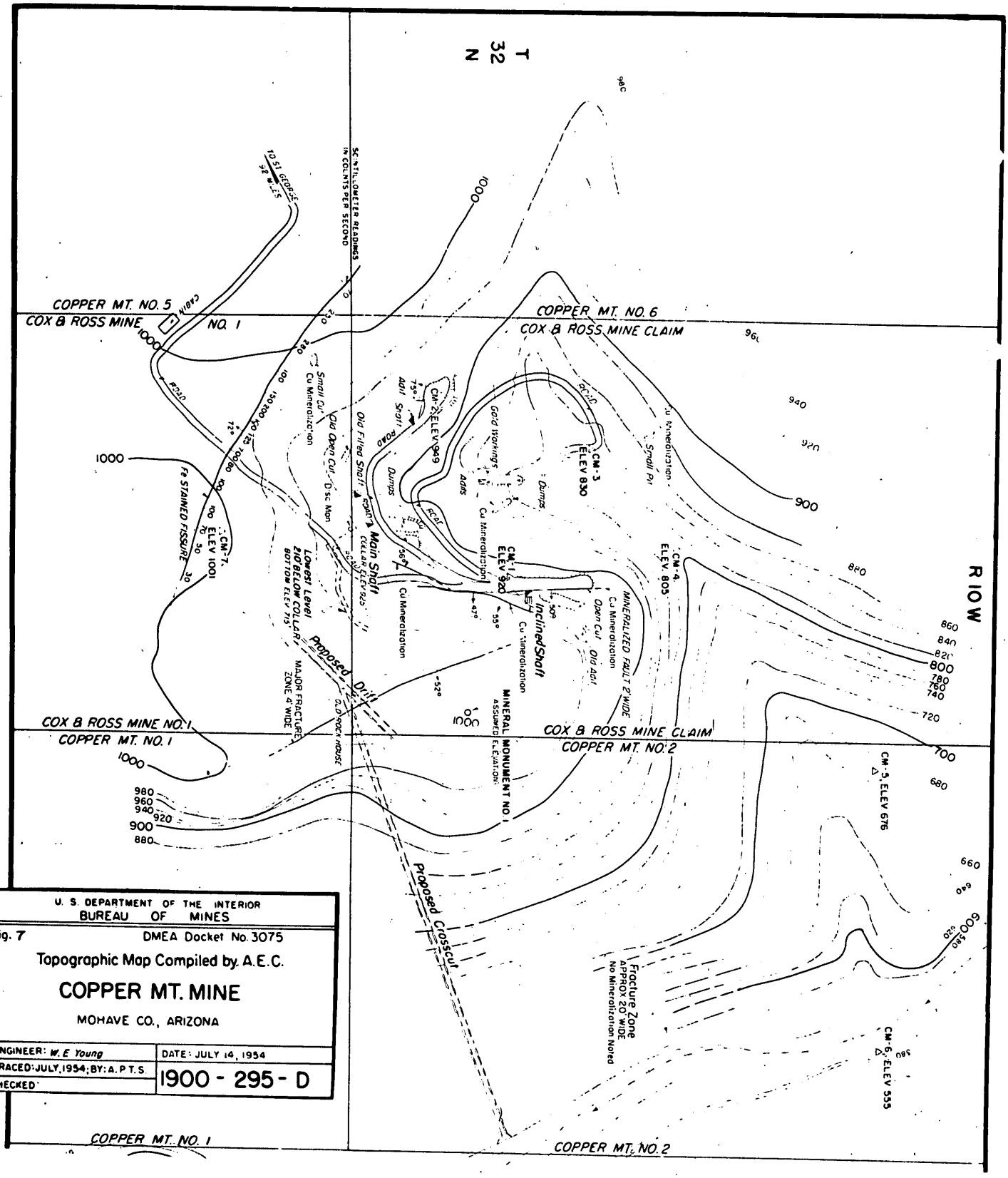
Fig. [redacted] DMEA Docket No. 3075

Claim Map

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JAN. 31, 1954
DRAWN: JAN., 1954; BY: A. P. T. S.	1900 - 277 - D
CHECKED:	



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 7 DMEA Docket No. 3075

Topographic Map Compiled by. A.E.C.

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JULY 14, 1954
TRACED: JULY, 1954; BY: A. P. T. S.	1900 - 295 - D
CHECKED:	

Finance Office copy

MF-200A
(Revised June 1954)

Docket No. DMEA - 3075

Commodity Copper

Contract No. Idm-E - 729

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
EXPLORATION PROJECT CONTRACT[1]
(Short Form)

It is agreed this 19th day of October, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] J. & M. Leasing Company, a partnership comprised of McMurrin Wulfenstein of 446 West 400 North, St. George, Utah, and James K. Wulfenstein of 172 East 300 South, St. George, Utah, whose mailing address is 446 West 400 North St. George, Utah, hereinafter called the "Operator," as follows:

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

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

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

(b) The Operator represents and undertakes that:

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

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

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title of the land (lessor, seller, optionor, etc.), are attached, as follows: Subordination Agreement of the sublessors and Owner's Consent to Lien of the lessors.

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

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 7, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 7(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of copper. The work to be performed is described in Exhibit "A." The Operator on or before 90 days from date* shall commence the work, and on or before 18 months from date* (unless the Operator's obligation to complete the work is terminated—see Article 8) shall complete the work.

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

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

ARTICLE 5. *Contribution by the Government.*—A fixed cost for each unit of work to be performed (per foot of drifting, per foot of drilling, per hour of operations, etc.) is hereby agreed upon, and is set forth in Exhibit "A" in connection with the estimated total cost of the project in the sum of $27,060.00. The Government will contribute 50 percent of the fixed unit costs as work is performed, in a total sum not in excess of $13,530.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 6(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. To the extent that excesses over fixed unit costs or any excess over the estimated total cost may be necessary for the performance of the work, the Operator shall incur and pay such excesses for his own account without contribution by the Government. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the units of work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing a detailed statement of units of work performed during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and the fixed unit costs incurred for each type of work; and (3) a Narrative Report of the work

* The word "date" means the date of the contract.

performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

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

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

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

ARTICLE 7. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 6) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

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

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

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

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

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½) percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

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

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

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

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

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

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

ARTICLE 8. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon the Government shall be free of all obligation to pay on account of units of work not then performed, and the Operator shall be free of all further obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

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

(c) The giving of any notice by the Government under the provisions of this Article 8 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 9. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 10. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 11. *Changes and added provisions.*—

Executed in sextuplicate the day and year first above written.

J. & M. LEASING COMPANY

(Operator)

THE UNITED STATES OF AMERICA

By Administrator, Defense Minerals Exploration Administration

By (Partner)

(Partner)

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—70618-1

EXPLORATION PROJECT CONTRACT
J. & M. LEASING COMPANY
DOCKET NO. DMSA-3075

ANNEX I

The land referred to in Article 2 of the contract consists of the following unpatented mining claims which were leased (three-fourths interest) by Mary Etta Cox, V. Loraine Cox, Anna C. Cox, Kenneth Cox, and Anna F. Cox, to Lorin Whitmore, L. O. Whitmore, and Gale Whitmore by an instrument dated February 2, 1949, and subleased by the Whitmores to the Operator by an instrument dated June 29, 1952:

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Cox and Ross Mine Claim No. 1, recorded on page 286 of Book 3-U;

and also the following unpatented mining claims which are owned by the Operator:

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Copper Mountain No. 2, recorded on page 54 in Book 4-D;

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All of the cited unpatented mining claims, are recorded in the Office of the County Recorder of Mohave County, at Kingman, Arizona. Such claims are shown on the attached map entitled "Claim Map, Copper Mountain Mine, Mohave County, Arizona."

EXPLORATION PROJECT CONTRACT
J. & M LEASING COMPANY
DOCKET NO. DMEA-3075

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for copper ores. The work is to consist of approximately 900 feet of drifting and crosscutting to intersect and explore the vein. Such work is roughly indicated on the attached map entitled "Topographic map Compiled by A.E.C. Copper Mt. Mine, Mohave County, Arizona." The exact location of the work is subject to the advance approval of the Government.

Fixed Unit Costs

900 feet of crosscutting and drifting @ $30.00/ft.	$27,000.00	
40 assays @ $1.50/each	60.00	
Estimated Total Cost of Project		$27,060.00
Government's Participation @ 50%		$13,530.00

MF-201
(Revised February 1953)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

Sublessors under a lease dated June 29, 1952, between Leland O. Whitmore, Gale S. Whitmore, and Lorin B. Whitmore, by Sidney R. Whitmore their Attorney-in-Fact and James E., and M. Wulfenstein upon that certain parcel of ground described in a proposed Exploration Project Contract

between James E., and McMurrin Wulfenstein

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

The undersigned agrees to commit no act nor assert any right, title, or interest under said mortgage, claim, lien, or encumbrance that might contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 23rd day of July, 1953

Sidney R. Whitmore [SEAL]
Sidney R. Whitmore, Attorney-in-Fact
and by Powers of Attorney, [SEAL]
for and in behalf of the lessors

I, _____, certify that I am the _____

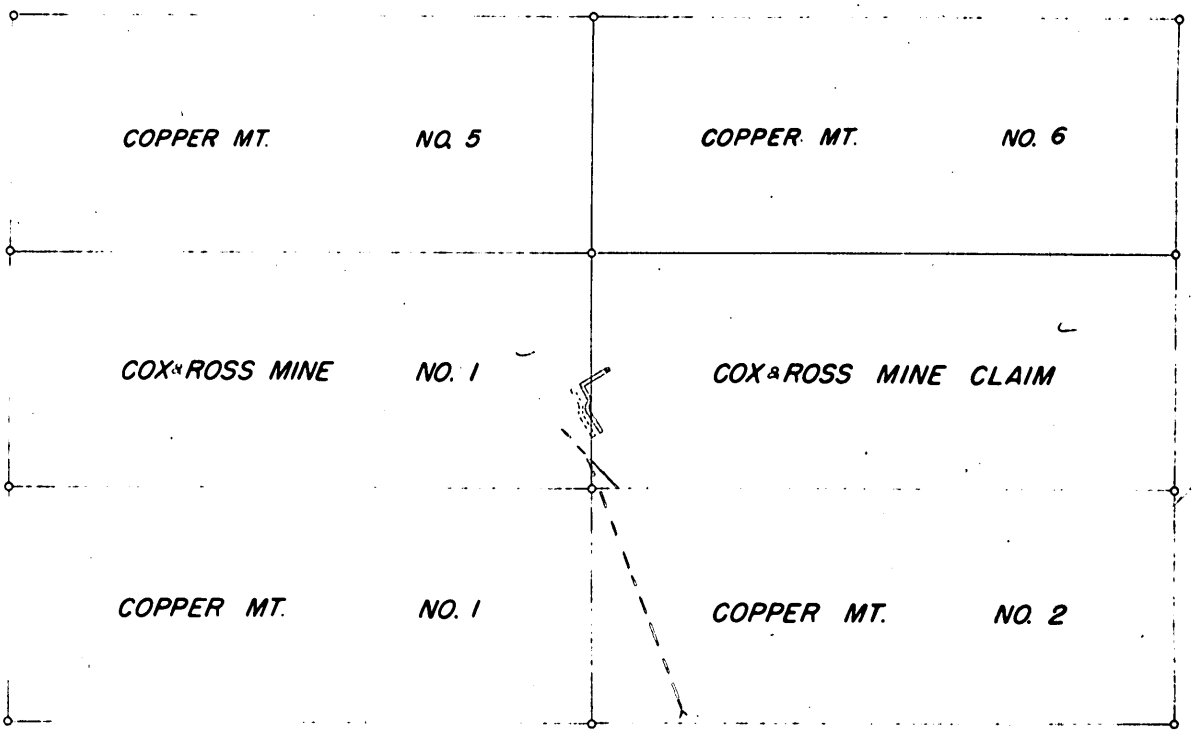
(Secretary, etc.) of the corporation named herein; that _____

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

_____
[CORPORATE SEAL]

*Include date of the instrument, and if recorded, book, page, and county of record.

16—68181-1 U. S. GOVERNMENT PRINTING OFFICE



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. [redacted] DMEA Docket No. 3075

Claim Map

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JAN. 31, 1954
DRAWN: JAN., 1954; BY: A. P. T. S.	1900 - 277 - D
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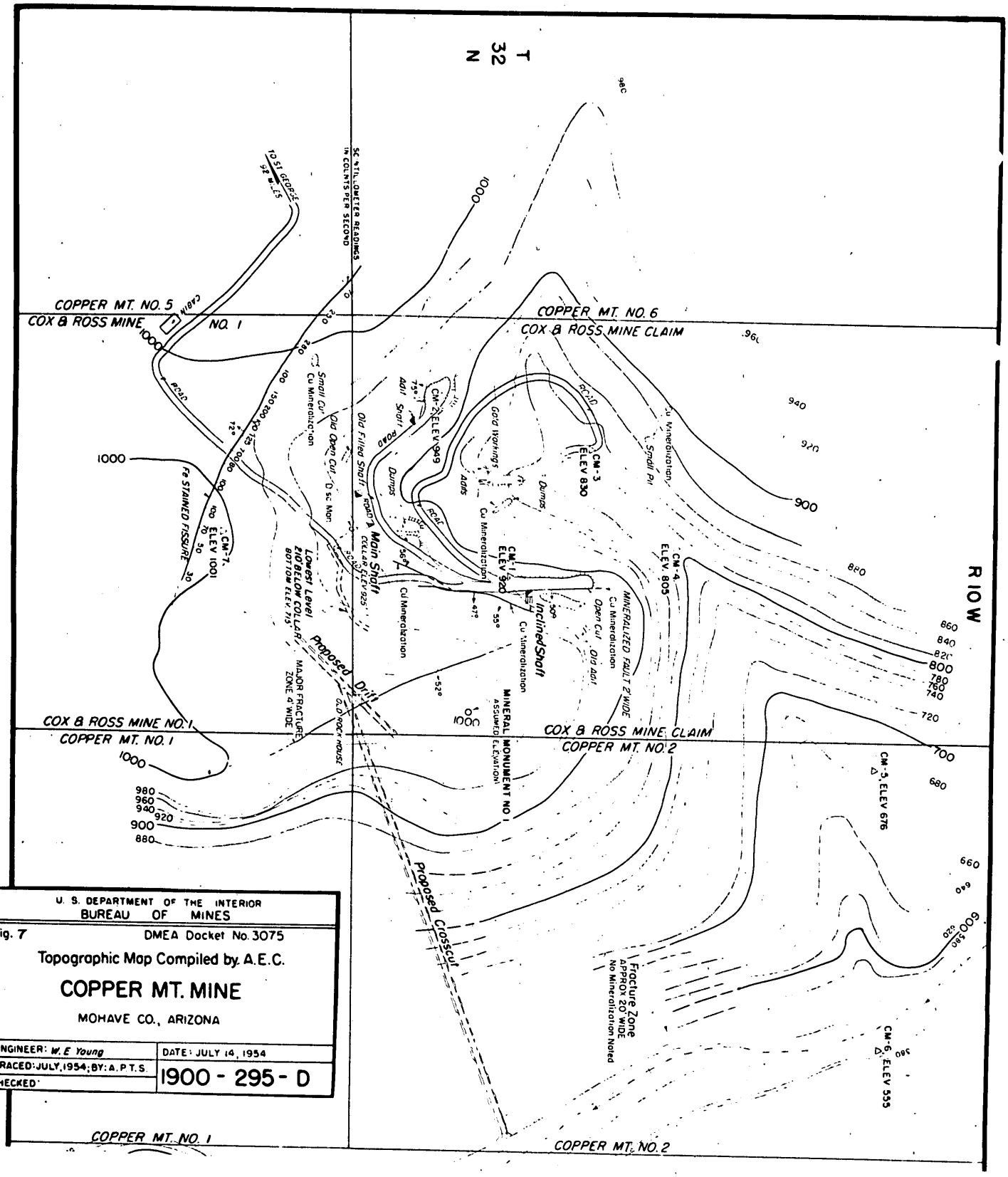


U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 7 DMEA Docket No. 3075

Topographic Map Compiled by A.E.C.

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JULY 14, 1954
TRACED: JULY, 1954; BY: A.P.T.S.	1900 - 295 - D
CHECKED:	

Field Team copy

MF-200A
(Revised June 1954)

Docket No. DMEA - 3075

Commodity Copper

Contract No. Idm-E - 729

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
EXPLORATION PROJECT CONTRACT[1]
(Short Form)

It is agreed this 19th day of October, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] J. & M. Leasing Company, a partnership comprised of McMurrin Wulfenstein of 446 West 400 North, St. George, Utah, and James E. Wulfenstein of 172 East 300 South, St. George, Utah, whose mailing address is 446 West 400 North St. George, Utah, hereinafter called the "Operator," as follows:

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

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

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

(b) The Operator represents and undertakes that:

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

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

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title of the land (lessor, seller, optionor, etc.), are attached, as follows: Subordination Agreement of the sublessors and Owner's Consent to Lien of the lessors.

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

16—70618-1

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 7, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 7(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of copper. The work to be performed is described in Exhibit "A." The Operator on or before 90 days from date* shall commence the work, and on or before 18 months from date* (unless the Operator's obligation to complete the work is terminated—see Article 8) shall complete the work.

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

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

ARTICLE 5. *Contribution by the Government.*—A fixed cost for each unit of work to be performed (per foot of drifting, per foot of drilling, per hour of operations, etc.) is hereby agreed upon, and is set forth in Exhibit "A" in connection with the estimated total cost of the project in the sum of $27,060.00. The Government will contribute 50 percent of the fixed unit costs as work is performed, in a total sum not in excess of $13,530.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 6(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. To the extent that excesses over fixed unit costs or any excess over the estimated total cost may be necessary for the performance of the work, the Operator shall incur and pay such excesses for his own account without contribution by the Government. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the units of work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing a detailed statement of units of work performed during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and the fixed unit costs incurred for each type of work; and (3) a Narrative Report of the work

* The word "date" means the date of the contract.

performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

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

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

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

ARTICLE 7. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 6) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

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

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

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

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

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½) percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

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

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

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

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

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

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

ARTICLE 8. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon the Government shall be free of all obligation to pay on account of units of work not then performed, and the Operator shall be free of all further obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

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

(c) The giving of any notice by the Government under the provisions of this Article 8 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 9. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 10. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 11. *Changes and added provisions.*—

Executed in sextuplicate the day and year first above written.

J. & M. LEASING COMPANY
(Operator)

By ..... (Partner)

..... (Partner)

THE UNITED STATES OF AMERICA

By ..... Administrator, Defense Minerals Exploration Administration

---

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—70618-1

EXPLORATION PROJECT CONTRACT
J. & M. MINING COMPANY
DOCKET NO. DMSA-3075

ANNEX I

The land referred to in Article 2 of the contract consists of the following unpatented mining claims which were leased (three-fourths interest) by Mary Etta Cox, V. Loraine Cox, Anna C. Cox, Kenneth Cox, and Anna F. Cox, to Lorin Whitmore, L. O. Whitmore, and Gale Whitmore by an instrument dated February 2, 1949, and subleased by the Whitmores to the Operator by an instrument dated June 29, 1952:

Cox and Ross Mine Claim, recorded on page 285 of Book 3-U;

Cox and Ross Mine Claim No. 1, recorded on page 286 of Book 3-U;

and also the following unpatented mining claims which are owned by the Operator:

Copper Mountain No. 1, recorded on page 53 in Book 4-D;

Copper Mountain No. 2, recorded on page 54 in Book 4-D;

Copper Mountain No. 5, recorded on page 57 in Book 4-D;

Copper Mountain No. 6, recorded on page 58 in Book 4-D.

All of the cited unpatented mining claims, are recorded in the Office of the County Recorder of Mohave County, at Kingman, Arizona. Such claims are shown on the attached map entitled "Claim Map, Copper Mountain Mine, Mohave County, Arizona."

EXPLORATION PROJECT CONTRACT
J. & M LEASING COMPANY
DOCKET NO. DMEA-3075

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for copper ores. The work is to consist of approximately 900 feet of drifting and crosscutting to intersect and explore the vein. Such work is roughly indicated on the attached map entitled "Topographic map Compiled by A.E.C. Copper Mt. Mine, Mohave County, Arizona." The exact location of the work is subject to the advance approval of the Government.

Fixed Unit Costs

900 feet of crosscutting and drifting @ $30.00/ft.	$27,000.00	
40 assays @ $1.50/each	60.00	
Estimated Total Cost of Project		$27,060.00
Government's Participation @ 50%		$13,530.00

MF-201
(Revised February 1953)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

Sublessors under a lease dated June 29, 1953, between Leland C. Whitmore, Gale S. Whitmore, and Lorin B. Whitmore, by Sidney R. Whitmore their Attorney-in-Fact and James E., and M. Wulfenstein

upon that certain parcel of ground described in a proposed Exploration Project Contract

between James E., and McMurrin Wulfenstein

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

The undersigned agrees to commit no act nor assert any right, title, or interest under said mortgage, claim, lien, or encumbrance that might contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 23d day of July, 1953.

Sidney R. Whitmore [SEAL]
Sidney R. Whitmore, Attorney-in-Fact
and by Powers of Attorney, [SEAL]
for and in behalf of the lessors

I, _____, certify that I am the _____

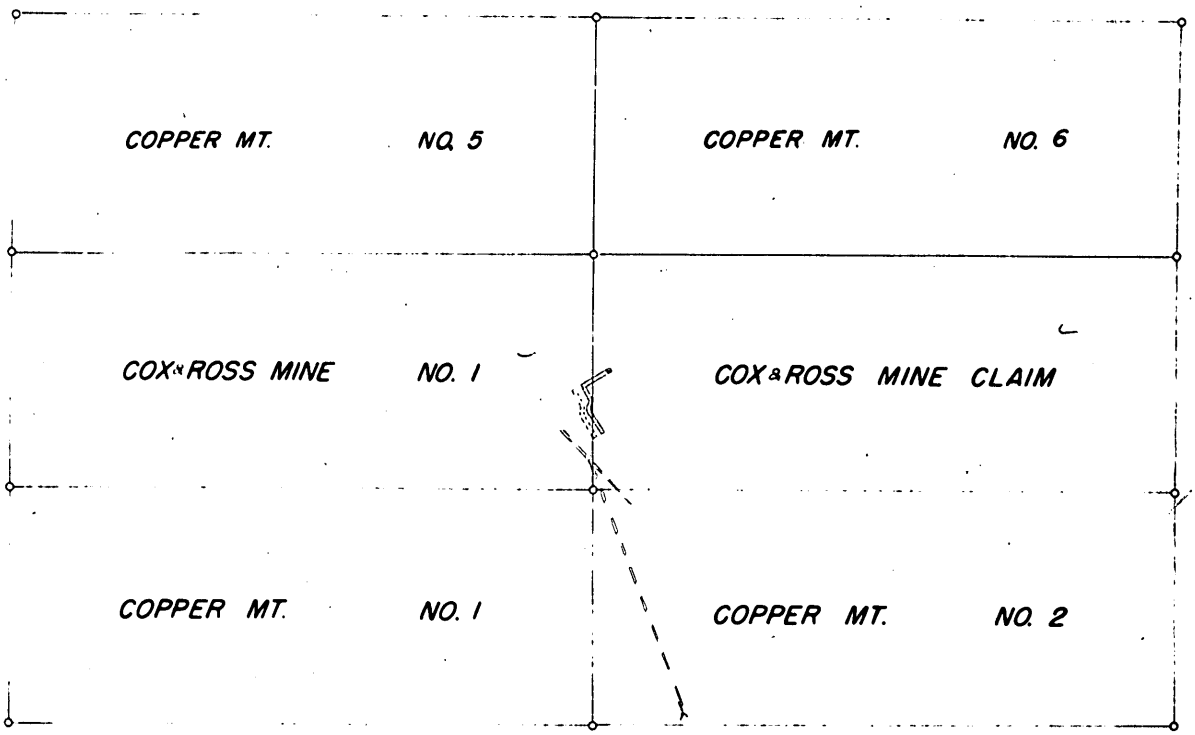
(Secretary, etc.) of the corporation named herein; that _____

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

_____
[CORPORATE SEAL]

*Include date of the instrument, and if recorded, book, page, and county of record.

16—68181-1 U. S. GOVERNMENT PRINTING OFFICE



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

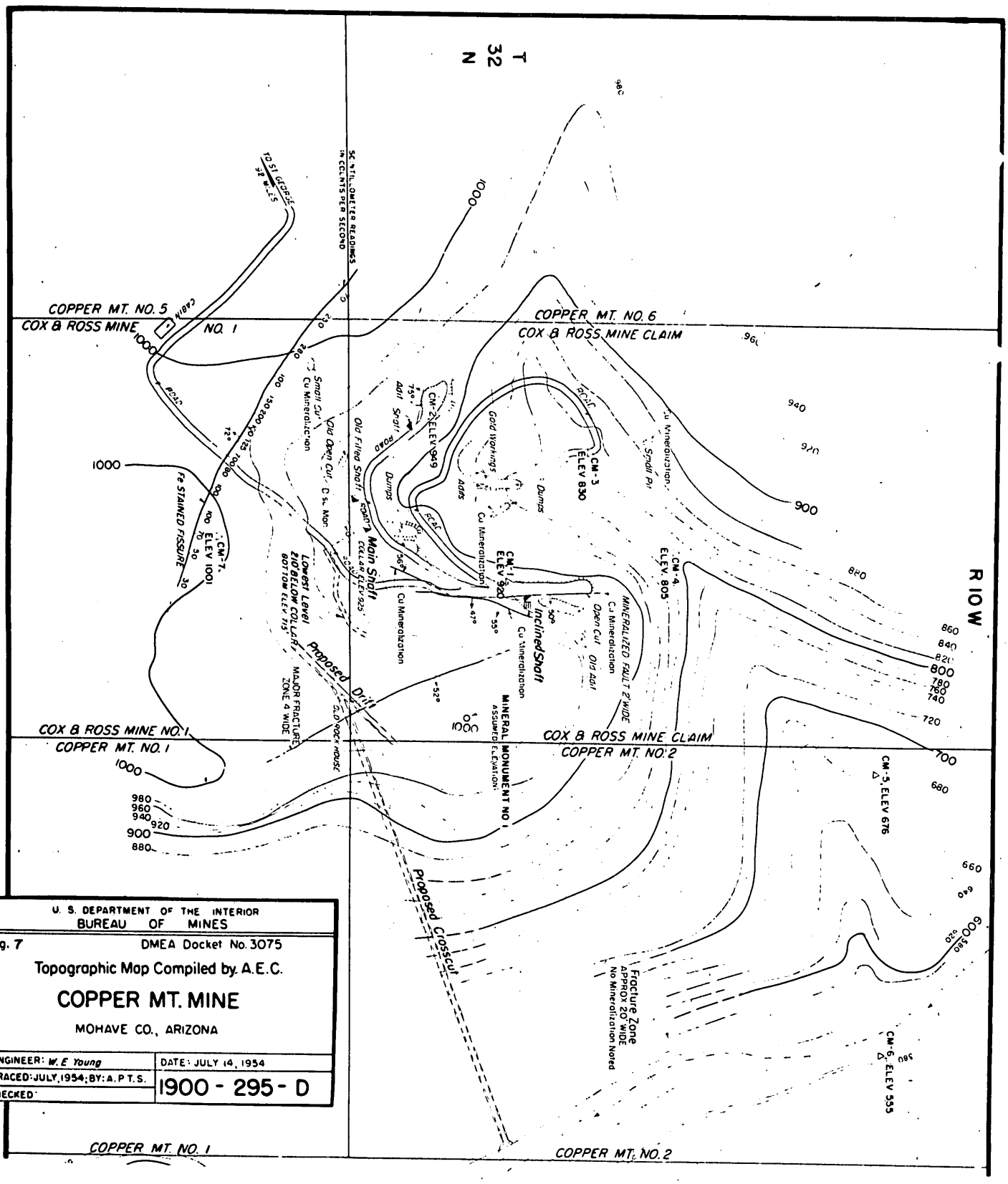
Fig. [redacted] DMEA Docket No. 3075

Claim Map

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JAN. 31, 1954
DRAWN: JAN., 1954; BY: A. P. T. S.	1900 - 277 - D
CHECKED:	



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 7 DMEA Docket No. 3075

Topographic Map Compiled by. A.E.C.

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JULY 14, 1954
TRACED: JULY, 1954; BY: A. P. T. S.	1900 - 295 - D
CHECKED:	

Division copy

MF-200A
(Revised June 1954)

Docket No. DMEA 3015

Commodity Copper

Contract No. Idm-E - 729

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
EXPLORATION PROJECT CONTRACT[1]
(Short Form)

It is agreed this 19th day of October, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] J. & M. Leasing Company, a partnership comprised of Melvin Wulfenstein of 446 West 400 North, St. George, Utah, and James E. Wulfenstein of 172 East 300 South, St. George, Utah, whose mailing address is 446 West 400 North St. George, Utah, hereinafter called the "Operator," as follows:

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

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

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

(b) The Operator represents and undertakes that:

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

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

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title of the land (lessor, seller, optionor, etc.), are attached, as follows: Subordination Agreement of the sublessors and Owner's Consent to Lien of the lessors.

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

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 7, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 7(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of copper. The work to be performed is described in Exhibit "A." The Operator on or before 30 days from date* shall commence the work, and on or before 90 days from date* (unless the Operator's obligation to complete the work is terminated—see Article 8) shall complete the work.

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

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

ARTICLE 5. *Contribution by the Government.*—A fixed cost for each unit of work to be performed (per foot of drifting, per foot of drilling, per hour of operations, etc.) is hereby agreed upon, and is set forth in Exhibit "A" in connection with the estimated total cost of the project in the sum of $27,000.00. The Government will contribute 50 percent of the fixed unit costs as work is performed, in a total sum not in excess of $13,500.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 6(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. To the extent that excesses over fixed unit costs or any excess over the estimated total cost may be necessary for the performance of the work, the Operator shall incur and pay such excesses for his own account without contribution by the Government. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the units of work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government.

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* The word "date" means the date of the contract.

performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

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

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

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

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

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

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

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½) percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

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

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

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

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

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

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

ARTICLE 8. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon the Government shall be free of all obligation to pay on account of units of work not then performed, and the Operator shall be free of all further obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

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

(c) The giving of any notice by the Government under the provisions of this Article 8 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 9. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 10. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 11. *Changes and added provisions.*—

Executed in sextuplicate the day and year first above written.

J. & M. LEASING COMPANY
(Operator)

By ..... (Partner)

..... (Partner)

THE UNITED STATES OF AMERICA

By ..... Administrator, Defense Minerals Exploration Administration

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—70618-1

EXPLORATION PROJECT CONTRACT
J. & M. LEASING COMPANY
DOCKET NO. DMEA-3075

ANNEX I

The land referred to in Article 2 of the contract consists of the following unpatented mining claims which were leased (three-fourths interest) by Mary Etta Cox, V. Lorraine Cox, Anna C. Cox, Kenneth Cox, and Anna F. Cox, to Lorin Whitmore, L. O. Whitmore, and Gale Whitmore by an instrument dated February 2, 1949, and subleased by the Whitmores to the Operator by an instrument dated June 29, 1952:

Cox and Ross Mine Claim, recorded on page 285 of Book 3-U;

Cox and Ross Mine Claim No. 1, recorded on page 286 of Book 3-U;

and also the following unpatented mining claims which are owned by the Operator:

Copper Mountain No. 1, recorded on page 53 in Book 4-D;

Copper Mountain No. 2, recorded on page 54 in Book 4-D;

Copper Mountain No. 5, recorded on page 57 in Book 4-D;

Copper Mountain No. 6, recorded on page 58 in Book 4-D.

All of the cited unpatented mining claims, are recorded in the Office of the County Recorder of Mohave County, at Kingman, Arizona. Such claims are shown on the attached map entitled "Claim Map, Copper Mountain Mine, Mohave County, Arizona."

EXPLORATION PROJECT CONTRACT
J. & A LEASING COMPANY
DOCKET NO. DMEA-3075

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for copper ores. The work is to consist of approximately 900 feet of drifting and crosscutting to intersect and explore the vein. Such work is roughly indicated on the attached map entitled "Topographic map Compiled by A.E.C. Copper Mt. Mine, Mohave County, Arizona." The exact location of the work is subject to the advance approval of the Government.

Fixed Unit Costs

900 feet of crosscutting and drifting @ $30.00/ft.	$27,000.00	
40 assays @ $1.50/each	60.00	
Estimated Total Cost of Project		$27,060.00
Government's Participation @ 50%		$13,530.00

MF-201
(Revised February 1953)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

Sublessors under a lease dated June 29, 1952, between Leland O. Whitmore, Gale S. Whitmore, and Lorin B. Whitmore, by Sidney R. Whitmore their Attorney-in-Fact and James E., and M. Wulfenstein upon that certain parcel of ground described in a proposed Exploration Project Contract

between James E., and McMurrin Wulfenstein

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

The undersigned agrees to commit no act nor assert any right, title, or interest under said mortgage, claim, lien, or encumbrance that might contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 23d day of July, 1953

Sidney R. Whitmore [SEAL]
Sidney R. Whitmore, Attorney-in-Fact
and by Powers of Attorney, ~~[SEAL]~~
for and in behalf of the lessors

I, _____, certify that I am the _____

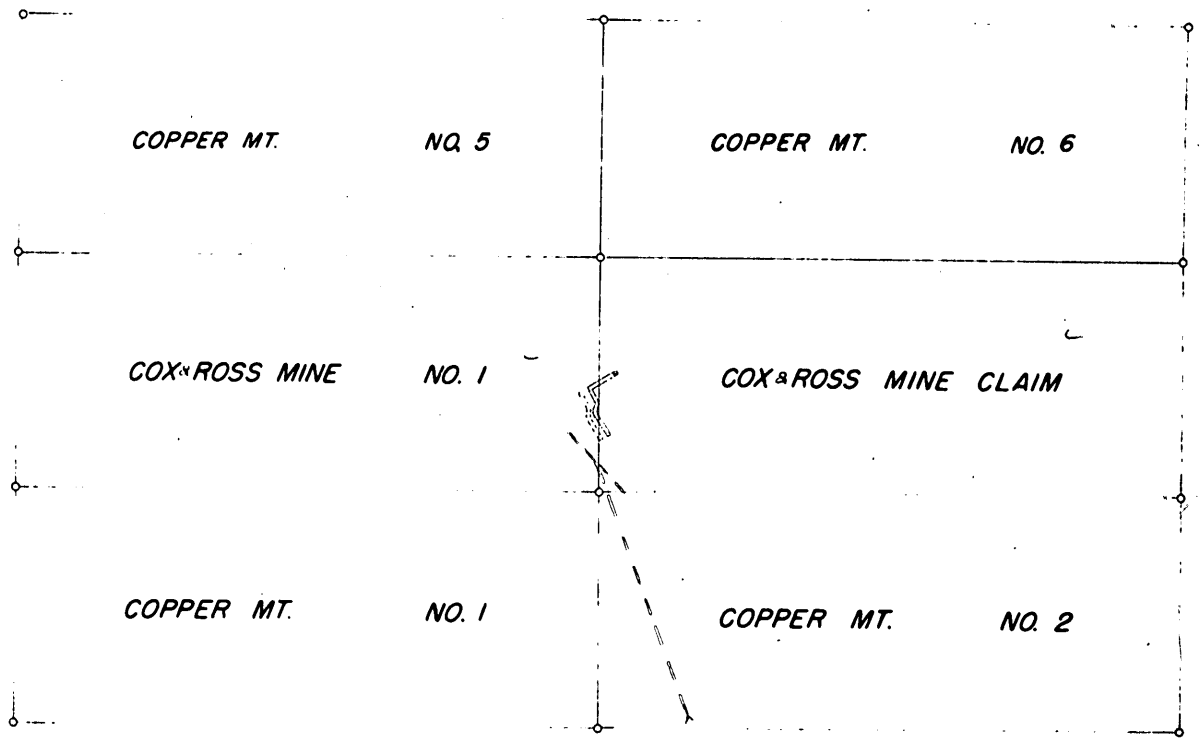
(Secretary, etc.) of the corporation named herein; that _____

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

_____
[CORPORATE SEAL]

*Include date of the instrument, and if recorded, book, page, and county of record.

16—68181-1 U. S. GOVERNMENT PRINTING OFFICE



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

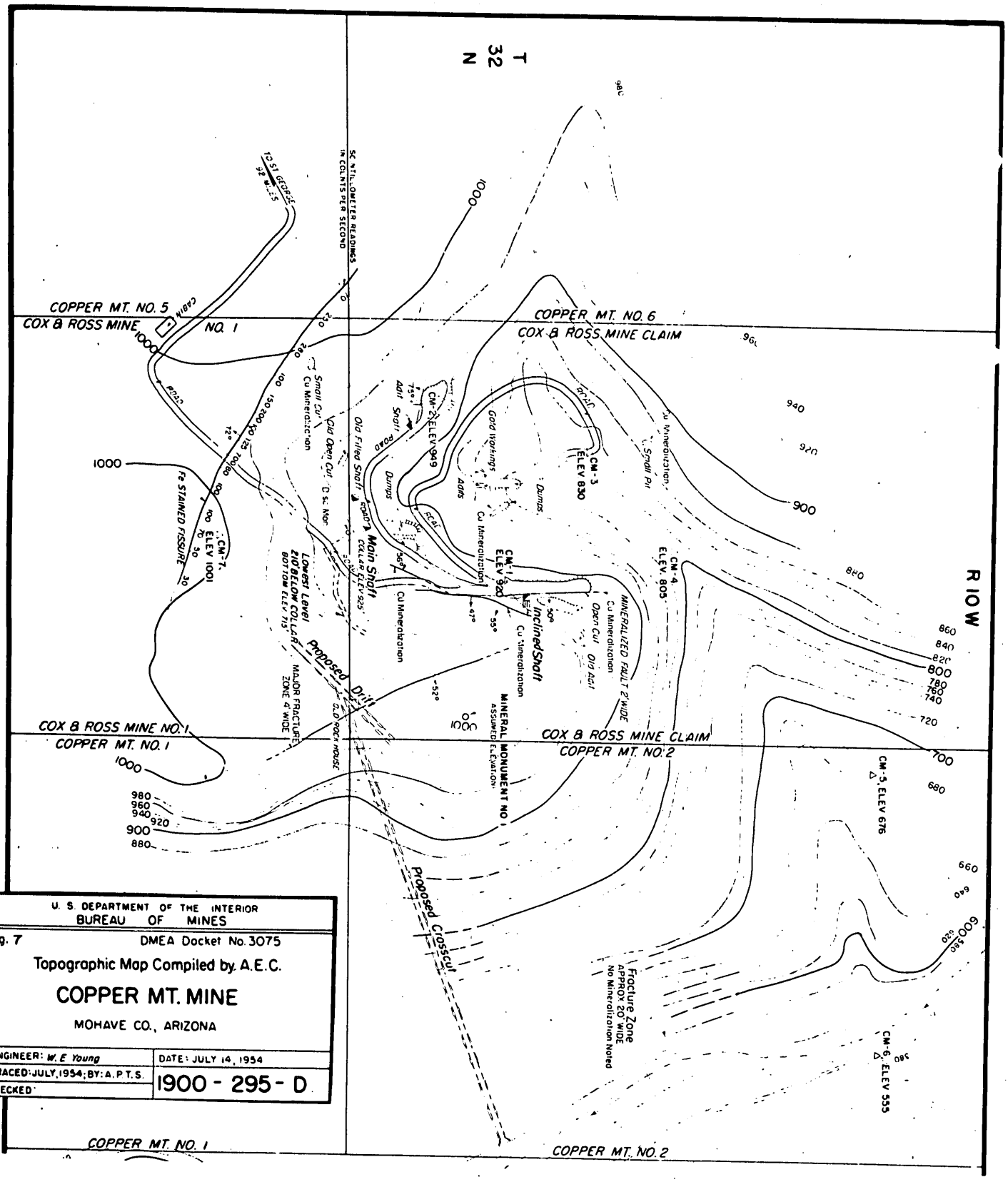
Fig. [redacted] DMEA Docket No. 3075

Claim Map

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JAN. 31, 1954
DRAWN: JAN., 1954; BY: A. P. T. S.	1900 - 277 - D
CHECKED:	



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 7 DMEA Docket No. 3075

Topographic Map Compiled by A.E.C.

COPPER MT. MINE

MOHAVE CO., ARIZONA

ENGINEER: W. E. Young	DATE: JULY 14, 1954
TRACED: JULY, 1954; BY: A. P. T. S.	1900 - 295 - D
CHECKED:	

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 26 1954

224 New Customhouse
Denver 2, Colorado

February 24, 1954

F. O. Manol
P. O. Box 246
Grants, New Mexico

Re: Docket No. DMEA 3089

Dear Mr. Manol:

This will acknowledge receipt of your letter dated February 18, 1954.

We are happy to know that your drilling program has been so successful, and in accordance with your request, we will close this docket as of this date.

Your abstract of title is being returned to you under separate cover by registered mail.

Very truly yours,

W. H. King
Executive Officer
DMEA Field Team, Reg on IV

HMC:es

cc: Docket
Chron.
Mittendorf with enc.
Fischer w/enc.
Koschmann w/enc.
Storms w/enc.
~~Chro.~~

C
O
P
Y

F. O. MANOL
P. O. Box 246
Grants, New Mexico

February 18, 1954

Defense Minerals Exploration Administration
224 New Customhouse
Denver 2, Colorado

Attention: Mr. W. H. King
Re: Docket DMEA 3089

Gentlemen:

The subject docket has been taken up with my associates for discussion since the receipt of your last letter.

In view of highly successful results of our own drilling program in the last three months during which we blocked out about a half million dollars worth of ore, including two ore bodies which project into the land covered by the subject docket, we no longer see any need for DMEA assistance at this time. We are now prepared to conduct a more intensive program with our own funds.

In view of the tremendous backlog of work your office must be burdened with we know this decision will be welcomed by you.

Kindly return our abstract at an early date.

Very truly yours,

(signed) F. O. Manol

1-1027
(April 1946)

UNITED STATES
DEPARTMENT OF THE INTERIOR

AGENCY DMEA REG IV

TELETYPE

Originator:
Ext.: Room:

Appro.:
Date: 12/29/53
Time:
No.:
To: C. O. Mittendorf DMEA Wash

Subject:

REFERENCE IS MADE TO OUR MEMORANDUM DATED OCTOBER 20, 1953 RE DOCKET DMEA 3089, F. O. MANOL. PLEASE RETURN OWNER'S CONSENT TO LIEN FORMS MF-203 AND ANY OTHER DATA WHICH YOU MAY HAVE TO ENABLE US TO PREPARE CONTRACT AS REQUESTED BY ERNEST W. ELLIS IN LETTER DATED DECEMBER 14, 1953.

W. H. KING

Authorized:
CONFIRMATION

Sign original message and transmit to Room ..... in duplicate

U. S. GOVERNMENT PRINTING OFFICE 16—50915-1

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

JAN - 4 1954

Mr. [illegible] King
Executive Officer
Field Team, Region [illegible]
[illegible] New Customhouse Building
Denver 2, Colorado

Re: Docket No. [illegible]-3089 (Uranium)
[illegible] Manol
Manol Mine
McKinley County, New Mexico

Dear Mr. King:

In accordance with your teletype request of December [illegible], 1953, I am enclosing six copies of the Owner's Consent to Lease covering the captioned proposed project.

Your teletype requested any other data which we may have appertaining to the subject property. We have no other data which you do not also have in your office with the exception of the Operating Members' comments on the Field Team report. Accordingly, we are enclosing copies of memoranda from Mr. Arthur P. Butler, Jr., and Mr. E. D. Keiser, both dated November 12, 1953.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (2+6)

Approved:

J. H. Hedges
Member, Bureau of Mines (2+6)

D. M. Larrabee
Member, Geological Survey (2+6)

Enclosures 6

EEEllis/gla/db
12-31-53
cc to: Adm. Reading File
Operating Committee
Docket
Messrs: E.D.Keiser, Rm. 3641
A.P.Butler, Jr., Rm. 3212, GSA
Ellis

R.C.S. 1-4-54

Mr. C. O. Mittendorf
12-29-53
(Mittendorf service)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 30 1953

DN 235 BUREAU MINES 12-29-53 4-04 PM

C O MITTENDORF

REFERENCE IS MADE TO OUR MEMORANDUM DATED OCTOBER 20,1953 RE DOCKET DMEA 3089, F. O. MANOL, PLEASE RETURN OWNER,
S CONSENT TO LIEN FORMS MF-203 AND ANY OTHER DATA WHICH YOU MAY HAVE TO ENABLE US TO PREPARE CONTRACT AS REQUESTED BY ERNEST W. ELLIS IN LETTER DATED DECEMBER 14,1953.

W H KING

Denver, Colo.

Docket DMEA-3089

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

224 New Customhouse
Denver 2, Colorado

December 2, 1953.

Memorandum

To: Chairman of the Operating Committee

From: Field Team, Region IV

Subject: Docket No. DMEA-3190 (Uranium), Richard Vopat et al, McKinley County, New Mexico.

Reference is made to the letter dated November 27, 1953 from the Acting Chairman of the Operating Committee regarding data required to process Docket No. DMEA-3190.

A review of the information in our files indicates that the ownership of the property involved in Docket No. DMEA-3190 is more complicated than that involved in Docket No. DMEA-3089. The memorandum from the Chief Counsel dated November 20, 1953 discusses in detail the information required before Docket No. DMEA-3089 can be processed.

We would appreciate it if a similar memorandum were prepared covering Docket No. DMEA-3190 so that we may transmit this information to Richard Vopat.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Original in DMEA-3190

FILE COPY
SURNAME:

Murphy
Martin
Johnson
McCullough

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

Mr. [illegible]
Executive Officer
[illegible] Field Team, Region IV
221 [illegible] Courthouse Building
Denver 2, Colorado

NOV 27 1953

Re: Docket No. [illegible]-3089 (Uranium)
[illegible] Vanol Fine
McKinley County, New Mexico

Re: Docket No. [illegible]A-3190 (Uranium)
Richard Kopat et al
McKinley County, New Mexico

Dear Mr. [illegible]:

We refer to your letter dated November 6, 1953, which contains certain recommendations pertaining to the above docketed applications.

Concerning the question of subordinating adjoining ground, Mr. Vanol's letter of November 6, 1953, a copy of which is enclosed, states- "We further agree that the standard DMA royalty payments shall apply to any and all continuous ore bodies which project into contiguous holdings we have in the same section of ground". As the ore bodies found in this area are isolated masses, we feel that this is reasonable and acceptable, especially in view of the fact that part of the land adjoining the property mentioned in the applications has been explored by the applicant.

We definitely agree with you that the drilling proposed by the applicants is excessive. The drilling proposed by the Field Team for the area mentioned in application Docket No. [illegible]A-3089 seems reasonable, although we would prefer not to include the [illegible] holes drilled on 25 foot spacing, unless you believe such close drilling is essential to explore this particular area.

Mr. Vanol has forwarded executed copies of Owner's Consent to Lien on the land mentioned in Docket No. [illegible]A-3089, however, our legal department thinks we should have more security before a contract can be written. The attached memorandum from the Chief Counsel to Mr. Allis is self-explanatory, so if the Field Team believes a contract should be written, they should contact Mr. Vanol and request the data mentioned in this memorandum. Although the memorandum concerns only Docket No. [illegible]-3089, the same data will be required to process the Docket No. [illegible]A-3190 application.

Referring to this latter application, and applying the Field Team's method in estimating the work proposed for Docket No. DRA-3089, we estimate that 162 holes (11,500 feet of drilling) at a cost of $10,000.00, would be more reasonable than the 532 holes at a cost of $37,139.93 proposed by the applicant.

If you believe that contracts might be written on the subject applications, we suggest that you inform Mr. Manol concerning the amount of drilling that might be recommended. If he is agreeable to the reduced programs, then he should arrange to submit the required data mentioned in the Chief Counsel's memorandum.

Sincerely yours,

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

Enclosures 4

APPROVED:

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

D. M. Larrabee (JHB)
Member, Geological Survey

FMMurphy/db
11-25-53
cc to: Adm. Reading File
Operating Committee
Docket
Messrs: H. D. Keiser, Rm. 3641
A. P. Butler, Jr., Rm. 3212, CBA
Ellis
Murphy

HHR 11-27-53

Master File

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

224 New Customhouse
Denver 2, Colorado

October 20, 1953

Memorandum

To: Secretary to the Operating Committee
Defense Minerals Exploration Administration

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3089, Owner's Consent to Lien

Enclosed are six copies of Form MF-203, Owner's Consent to Lien on Lot No. 3 of the SW¼; N½ of the E½ of SW¼; both in Section 30, Township 13 of Range 9 West of the New Mexico Meridian, New Mexico.

John F. Shaw

John F. Shaw for
W. H. King

Enclosures

WHK:ld

cc: Storm
Fasciman
sub
chron

These O.C.'s were returned to Region IV — Dec. 31/53.

700

Surname
DOCKET COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Ching
Hedges
Forkgabe
Selfridge
Appleton
Matthews

Ref: DMEA
Case No. 4640
Docket No. 1413923.970 Working Book, Interior, DMEA
Date: December 14, 1953
To: M. S. Ching, Mountain Region, DMEA Field Team, Region IV, 224 New Courthouse Building, Denver 2, Colorado
Re: Docket No. DMEA-3089, F. S. Panel (Uranium)

REQUEST DECEMBER 14 DOCKET DMEA-3089 F. S. PANEL REVISION OF REPORT OF EXAMINATION FROM EXAMINER'S METHOD OF ESTIMATING PROJECT COST IN PROR[illegible] TOTAL OVER 100 FEET IN DEPTH WAS 5.52 PERCENT NOT 33.33 PERCENT. REVISION OF MAXIMUM OVER-ALL UNIT COST REDUCED BY $0.92 NOT $1.06 AND MAXIMUM TOTAL COST $15,787.20 NOT $18,189.60.

George C. Selfridge
CHAIRMAN, OPERATING COMMITTEE (JHB)

MChing/gla
12/14/53
cc to: Administrator's Reading File
Operating Committee
Docket
Messrs. H. D. Keiser, Rm. 3641
A. P. Butler, Jr., Rm. 3212, GSA
Ellis
Ching
Confirmation to Region IV

SENT
DEC 14 1953
~~Clerical Service Section~~
PBS

HHH
12-14-53

F-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 12-11-53

REFERRED TO:

DMEA-3089

1. Code 220, Rm. 4070
2. Code 700, Rm. 4640
3.
4.

FOR:

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

REMARKS: Please note last paragraph -- that Region IV is asked to write contract and execute it. I am, therefore, dropping this docket from our list of active Washington cases ~~and~~ during the month of December. However, we would like to have the docket charged out to us because of the supervision which may be required in connection with the contract when written by Reg. IV. gla

Check (X) before the items needing attention.

Ernest Wm. Kiss
Initials of sender.

GPO 16—63815-1

FILE COPY
SURNAME:

Ching
Files
L. Jones

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

DEC 14 1953

Mr. W. H. King
Executive Officer
DMEA Field Team, Region IV
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3089 (Uranium)
F. O. Manol Mine
McKinley County, New Mexico

Dear Mr. King:

Reference is made to the Field Team's memorandum of December 2, 1953, with attached copy of your letter of the same date to Mr. F. O. Manol, regarding the subject docket. Our tentative proposal of 162 holes totaling 11,500 feet of drilling was meant to apply to Docket No. DMEA-3190 and not to this docket.

In our letter to you of November 27, 1953, we stated: "The drilling proposed by the Field Team for the area mentioned in application Docket No. DMEA-3089 seems reasonable, although we would prefer not to include the 60 holes drilled on 25 foot spacing, unless you believe such close drilling is essential to explore this particular area."

In your memorandum of December 2, you agreed that holes should not be drilled on 25 foot centers. You also added the suggestion that holes should not be drilled within 200 feet of the property lines since the Applicant also owns adjoining properties to the South and East which would profit unduly from the proposed exploration.

The area covered by the proposed project measures 1320 x 2640 feet. Adopting the spacing to these measurements but using the engineer-miner's methods, we propose that no holes be drilled within 160 feet of the north and south boundaries and none within 120 feet of the east and west boundaries. Stage I would then consist of 78 holes spaced 200 feet apart and Stage II would consist of 60 or less offset holes. Stage III would consist of 92 holes offset where justified at 50 foot intervals.

The contract should, therefore, authorize the drilling of 230 holes totaling 17,160 feet at an over-all unit cost basis of not more than $1.00 per foot of hole drilled. The total estimated cost

R. C. G.
12-14-53

should not exceed $18,189.60. The latter figure compares with Applicant's proposed expenditure of $73,559.51 for 900 holes and the engineer examiner's figure of $28,627.00 for 362 holes.

In order to facilitate the processing of this application it is suggested that you draw up and execute the contract as outlined above as soon as the Applicant has met the requirements stated in the Chief Counsel's memorandum of November 20, 1953 to the Chief, Rare and Miscellaneous Metals Division.

Sincerely yours,

Ernest Wm. Ellis
By EGS
ACTING Chairman, Operating Committee

Also to:

T. H. Bedges
By EGS
Member, Bureau of Mines

E. P. Thayer
By EGS
Member, Geological Survey

MChing/db
12-11-53
cc to: Adm. Reading File
Operating Committee
Docket
Messrs: H. D. Keiser, Rm. 3041
A. P. Butler, Jr., Rm. 3212, GSA
Ellis
Ching

12/9/53 gla

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

224 New Customhouse
Denver 2, Colorado

December 2, 1953.

Memorandum

To: Chairman of the Operating Committee

From: Field Team, Region IV

Subject: Docket No. DMEA-3089 (Uranium), F. O. Manol Mine, McKinley County, New Mexico.

Reference is made to the memorandum dated November 27, 1953 from the Acting Chairman of the Operating Committee regarding Docket No. DMEA-3089.

We agree that a contract should be prepared authorizing 162 holes totaling 11,500 feet of drilling. Holes should not be drilled within 200 feet of the property lines. Further consideration of the matter indicates that holes should not be drilled on 25 foot centers. We believe that Stage I of the contract should consist of holes drilled on 200 foot centers. The additional holes should be drilled at locations acceptable to the Government based on the results of the initial drilling.

We are enclosing copy of our letter to Mr. Manol.

W H King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosure

shuquity
schuppel

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

224 New Customhouse
Denver 2, Colorado

December 2, 1953.

Memorandum

To: Chairman of the Operating Committee

From: Field Team, Region IV

Subject: Docket No. DMEA-3089 (Uranium), F. O. Manol Mine, McKinley County, New Mexico.

Reference is made to the memorandum dated November 27, 1953 from the Acting Chairman of the Operating Committee regarding Docket No. DMEA-3089.

We agree that a contract should be prepared authorizing 162 holes totaling 11,500 feet of drilling. Holes should not be drilled within 200 feet of the property lines. Further consideration of the matter indicates that holes should not be drilled on 25 foot centers. We believe that Stage I of the contract should consist of holes drilled on 200 foot centers. The additional holes should be drilled at locations acceptable to the Government based on the results of the initial drilling.

We are enclosing copy of our letter to Mr. Manol.

W. H. King

W. H. King

A. H. Koschmann

A. H. Koschmann

Enclosure

224 New Customhouse
Denver 2, Colorado

December 2, 1953.

Mr. F. O. Manol
P. O. Box 246
Grants, New Mexico

Re: Docket No. DMEA-3089

Dear Mr. Manol:

Reference is made to your application for exploration assistance, Docket No. DMEA-3089.

The Defense Minerals Exploration Administration will consider a revised drilling program consisting of drilling holes on 200-foot centers. Holes are not to be drilled within 200 feet of the property lines. Additional holes will be authorized by the Government if in the opinion of the Government the drilling of the initial holes indicates that additional drilling is warranted. The contract would provide for 152 holes totaling 11,500 feet of drilling at a cost of $10,000.00.

If the above program is acceptable to you, the Washington Office requires clarification of the following which is quoted from a memorandum from the Chief Counsel, DMEA:

> "The application is in the name of 'F. O. Manol *** Operator and Agent for group venture of persons named in supplement attached ***' to the application, and states that the applicant is a lessee of the land. It is not clear from the application whether F. O. Manol is the applicant or whether a 'group venture' is contemplated, because although the reference to a 'group venture' is made in item 1(a) of the application, a reference is made in item 3(d) to the Applicant's interest in the property being based upon an 'Operating Agreement' dated July 1, 1952, between all the lessees and Mr. Manol. There is no copy of the lease from the owner of the property in the docket.
>
> "If the lessees are the applicants, their interests in the land are held under the lease and do not depend upon the Operating Agreement. If Mr. Manol is the applicant, he does not have a sufficient interest in the land under the Operating Agreement, for the agreement gives him no interest in the land, but rather grants him certain limited authority to act as agent for the lessees, and, it appears, this agency is terminable at the will of any of the principals, without notice.

"Accordingly, we must be informed as to the identity of the applicant and the nature of the entity under which business is to be done. If Mr. Manol is the applicant as an individual, he must demonstrate that he holds a sufficient interest in the land for the purposes of an exploration project contract. We must have copies of the instrument which gives him this right, a copy of the basic lease, and Owner's Consent to Lien from sublessors as well as from the owner."

If the proposed work is acceptable to you, we suggest that in order to expedite processing your application you write the Administrator, DMEA, signifying your acceptance and clarifying the items mentioned by the Chief Counsel. Please send this office a copy of all correspondence.

Very truly yours,

W. H. King
Field Team, Region IV

A. H. Koschmann

JFS:cwm

cc: Docket
RPFischer
WRStorms
Chairman, Oper. Comm.
Chron.
Connors
AHKoschmann

11/27/53-db.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 25 1953

F. O. MANOL
P. O. BOX 246
GRANTS, NEW MEXICO

November 23, 1953

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

Attention: Mr. Ernest Wm. Ellis
Chief Rare & Misc. Metals Division

Re: DMEA Docket 3089

Gentlemen:

Please advise what is the status of the above DMEA application?

It is our understanding that your office has had in its possession all necessary data since the middle of October. Your Mr. Murphy informed me over the telephone that after your office has all necessary data from your field offices that it normally takes only a week or two to complete the processing.

Very truly yours,

F. O. Manol

F. O. Manol

cc-W. H. King
Executive Officer
Region IV

11/25/53-dg.

FILE COPY
SURNAME:

140

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

Murphy
NEKane

No 5. in R.R.

November 20, 1953

Memorandum

To: Chief, Rare and Miscellaneous Metals Division

From: Chief Counsel

Subject: F. O. Manol, Docket No. DMEA-3089 (Uranium)

At the request of Mr. Murphy, we have reviewed the application which is identified above, in order to determine whether the Applicant has a sufficient interest in land for the purposes of an exploration project contract.

The application is in the name of "F. O. Manol * * * Operator and Agent for group venture of persons named in supplement attached * * *" to the application, and states that the applicant is a lessee of the land. It is not clear from the application whether F. O. Manol is the applicant or whether a "group venture" is contemplated, because although the reference to a "group venture" is made in item 1(a) of the application, a reference is made in item 3(d) to the Applicant's interest in the property being based upon an "Operating Agreement" dated July 1, 1952, between all the lessees and Mr. Manol. There is no copy of the lease from the owner of the property in the docket.

If the lessees are the applicants, their interests in the land are held under the lease and do not depend upon the Operating Agreement. If Mr. Manol is the applicant, he does not have a sufficient interest in the land under the Operating Agreement, for the agreement gives him no interest in the land, but rather grants him certain limited authority to act as agent for the lessees, and, it appears, this agency is terminable at the will of any of the principals, without notice.

Accordingly, we must be informed as to the identity of the applicant and the nature of the entity under which business is to be done. If Mr. Manol is the applicant as an individual, he must demonstrate that he

holds a sufficient interest in the land for the purposes of an exploration project contract. We must have copies of the instrument which gives him this right, a copy of the basic lease, and Owner's Consent to Lien from sublessors as well as from the owner. Similarly, any other applicant must have the same interest in the land.

Albert E. Kane

for J. L. Hofflund
Chief Counsel

HCRubin/emd

Copy to: Docket
J. L. Hofflund
H. C. Rubin
Chron.

STANDARD FORM NO. 64

11/17/53 gla

Office Memorandum • UNITED STATES GOVERNMENT

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

DATE: November 12, 1953

Defense Minerals Administration
RECEIVED
NOV 16 1953

FROM : Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee by William S. Twenhofel

SUBJECT: Field Team Report DMEA Docket 3089 (Uranium), F. O. Manol, applicant, N½, SW¼, Sec. 30, T. 13 N., R. 9 W., McKinley County, New Mexico

The Field Team report concerning Government assistance for exploration of the property identified above has been reviewed.

Comment

The examining members of the Field Team are generally agreed that the property is sufficiently favorable for the presence of deposits of uranium ore in the Todilto limestone to warrant some exploration. Many details of the application have been reviewed and discussed by the Field Team with the Chief, Grant's Sub-office, U. S. Atomic Energy Commission.

A decision with respect to granting assistance depends in the opinion of this reviewer on two principal points.

1. Revision of the application, especially as it may affect amount of work and land benefitted.

2. Probable size and distribution of the ore bodies to be sought. The original application proposed exploration of the N½,SW¼ and N½, SE¼ of the section. Subsequently the application was revised to exclude land in the SE¼, though it may be benefitted. In addition, the revised application proposed about 72,400 feet of drilling to explore 80 acres at a cost of about $73,560, whereas the original application proposed exploration of 160 acres by 83,000 feet of drilling at a cost of about $79,800.

The amount of drilling recommended by the engineer examiner disposes of the applicant's inconsistency in asking for nearly as much expense to explore an area half the size originally included. Your letter of October 29, puts the problem of lands that may be benefitted directly up to the applicant.

With regard to the second point, it seems to me that the Field Team report presents the problem of the size, distribution, and depth to ore bodies and suggests a plan of exploration that takes these factors partly into account, but perhaps not definitely enough so as to permit drawing of a contract. In the southwest part of the applicant's property, perhaps in about

one-fifth the area, the depth to ore may be shallow enough to permit mining of less than the estimated average size ore body and exploration will be cheaper because of lesser depth of hole. In the remainder of the property type of overburden or depth of ore will make mining and exploration more costly and perhaps ore bodies would have to be above average size to be mined. It would seem therefore, that the plan of drilling after stage 1, which appears eminently reasonable, should be modified to permit search for smaller than average ore bodies in the southwest one quarter. On the other hand, in the central and northeasterly part of the area, offset drilling of the second stage holes spaced 100 feet apart might be allowed only if results in those holes combined with those of the primary stage suggested the probability that ore intersected in such holes were in a body of a size that would be minable under the prevailing conditions. Subject to the foregoing comment, the engineering report presents a plan of drilling amounting to about one-third that requested by the applicant, and is a satisfactory plan of procedure. I believe, however, that any contract that may be entered into should provide for review of results by DMEA of one stage before any drilling of the next stage is authorized. As the geologist examiner estimates that only about 10 percent of the area may meet testing by drilling holes spaced more closely than 200 feet, such review may result in substantial savings below the amount presently estimated and recommended by the Field Team.

Recommendation

Subject to resolution of the problem concerning land that may be benefitted and consideration by the Field Team of the desirability of adjusting the plan of drilling to take into account the size of ore body that might be mined under conditions prevailing in different parts of the area, I recommend that Government assistance be granted for the Government's proportionate share of a total of $28,627.

Copies to: E. Wm. Ellis (2)
A. H. Koschmann
W. H. King

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

11/16/53 gla

November 12, 1953

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

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

Subject: Report of Examination, DMEA Docket 3089, Manol Claims, McKinley County, New Mexico

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

I recommend that the report be returned to the Field Team for reconsideration, and with instructions that the application be analyzed along the lines indicated in the instance of DMEA Docket 3151 (Four Corners Exploration Co.) and DMEA Docket 3190 (Richard Vopat et al, Flat Top-Vilatie Hyde claims). If the land involved or a portion thereof can be explored with a reasonable chance of finding economic deposits of uranium, taking into account exploitation mining costs, favorable action on the application, to the extent of such favorable land, might well be recommended by the Field Team; otherwise a recommendation of denial would appear to be in order.

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

11/9/53 gla

F. O. MANOL
P. O. BOX 246
GRANTS, NEW MEXICO

November 4, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 6 1953

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

Re: Docket No. DMEA 3089

Attention: Mr. Ernest Wm. Ellis
Chief Rare & Miscellaneous Metals Div.

Gentlemen:

We are herewith replying to your letter of Oct. 29, and also confirming our long distance telephone of this date made to your office with your Mr. Murphy.

(1) Replying to your paragraph No. 2.

Area "A" in original application was the N½ of the SE¼ as shown on the maps.

(2) Replying to your paragraph No. 3.

Amended DMEA Docket No. 3089 is for the exploration of Lot 3; and the N½ of the E½ of the SW¼; both in Section 30, Township 13 N, Range 9 W, McKinley County, New Mexico. We agree to the standard DMEA royalty loan repayment lien for ore produced from this area.

We further agree that the standard DMEA royalty repayments shall apply to any and all continuous ore bodies which project into other contiguous holdings we have in the same Section of ground.

Ore bodies wholely within our other property in the same Section but which land is not included in this DMEA application and contract shall not be subject to DMEA royalty under Docket No. DMEA 3089.

(3) After talking on the telephone with Mr. Murphy who told us your office had not yet received the Field Team recommendations from the Denver office on this Docket No. we contacted Mr. W. H. King of the Denver office by telephone. Mr. King stated that the whole file including Field Team recommendations had been sent to your office October 13. Therefore it appears your office now has everything it takes to pass on this application. We hope we shall be hearing from you shortly.

Very truly yours,

F. O. Manol

F. O. Manol

FILE COPY
SURNAME:

Murphy
Secy
Secretary

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

[illegible] Nagol
[illegible]
[illegible], [illegible]

OCT 29 1953

Re: Docket No. [illegible]-309 [illegible]
[illegible] Nagol [illegible]
McKinley County, New Mexico

Dear Mr. Nagol:

This is to acknowledge receipt of your amended application dated October 7, 1953, and 7 copies of executed (but undated), "Lessee's Consent to Lease" forms on land described as Lot No. 3 ([illegible] of [illegible]) and the [illegible] of the [illegible], both in Section 30, [illegible] 13, [illegible]. The amended application forwarded to this office by the Executive Officer of Region [illegible], has been filed with your original application under the above docket number.

[illegible] the original application, we find that the three parcels of land (5 acres, each) referred to as Area "A" and "B" respectively and also Area "C" (1/4 of the [illegible], Sec. 30) were listed as the land on which the proposed exploration work was to be done. Area "A" was referred to in the application [illegible]-103 form as being the [illegible] of the [illegible], but on the map attached it was shown as the [illegible] of the [illegible]. We assume the map location is correct as shown.

In the amended application [illegible] Area "A" has been withdrawn. However, in our opinion the drilling proposed for Area "B" would benefit Area "A" and also the [illegible] of the [illegible], and moreover, the drilling proposed for Area "C" would benefit Lot No. 1 (shown on map submitted with your original application). As you hold leases on both Area "A", the [illegible] of the [illegible], and Lot No. 1, we believe these areas should be included as subject to royalty requirements in case a discovery were made as a result of work done on "B" and "C", which discovery might lead into the adjoining areas. We have no knowledge concerning the ownership of the [illegible] of the [illegible] of Section 30, which we believe would also be benefited by the proposed exploration project.

You are probably aware that monetary aid is advanced by the Government through [illegible] for exploration and is interest free. However, a reasonable warranty of the repayment of such aid is a part of the contract and for this reason we require that any land which is benefited by work performed under such contract shall be included if it is possessed or controlled by the applicant.

R.C.G.
10-29-53

Before continuing to process your application we would appreciate having your comments concerning the above question of the land to be included in the proposed contract.

We are enclosing a sketch of the areas mentioned in this letter.

Sincerely yours,

SIGNED

Ernest Am. Ellis, Chief
Rare & Miscellaneous Metals Division

Enclosure

FMMurphy/db
10-27-53
cc to: Adm. Reading File
Docket
Messrs. H.D. Keiser, Rm. 3641
A.P. Butler, Jr., Rm. 3212, GSA
Ellis
Murphy
DMEA Field Team, Region IV (2)

10/19/53 gla

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 19 1953

224 New Customhouse
Denver 2, Colorado

October 13, 1953

Memorandum

To: Secretary to the Operating Committee, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3089 (Uranium), Manol Claims, McKinley County, New Mexico

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

We believe that the DMEA should be exceedingly cautious when approving drilling contracts in this area owing to the lack of surface indications that would serve to delimit the favorable areas. The extremely close drilling required approaches development rather than exploration. The size of the anticipated discoveries seems to require the application of all available methods which offer some chance of reducing the total costs of the exploration.

The applicant proposes to have the drilling performed by the Four Corners Exploration Company, an organization in which the applicant, F. Q Manol, owns a half interest.

The applicant's amended application proposes to confine the exploration work to Lot 3 and the adjoining N 1/2 of the E 1/2 of SW-1/4 Sec. 10. His original application requested $79,819.40 to drill 160 acres and the amended application asks for $73,559.54 to drill only 80 acres.

We believe that the project will disclose a significant amount of uranium, however, the applicant has withdrawn a large area in the amended application. The withdrawn area and the 80 acres adjoining the project on the south, which is also owned by the applicant, will profit by the proposed exploration. Therefore, we do not believe it is in the best interests of the Government to approve this application unless the applicant is willing to subordinate his adjoining holdings.

If, however, the Commodity Committee believes that this type of program can be justified under the DMEA regulations we recommend that a short form contract be prepared on a unit cost basis of not more than $1.00 per foot of hole drilled.

John F. Shaw
for W. H. King

A. H. Koschmann

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DEPARTMENT OF THE INTERIOR
Bureau of Mines Administration
RECEIVED
OCT 16 1953

Mining Division
Region IV

October 15, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - DMEA Docket 3089 (Uranium), Manol Claims, McKinley County, New Mexico.

Enclosed are eleven copies of the Engineering Report on the subject docket.

The applicant's original application requested $79,819.40 to drill an area comprising 160 acres. His amended application requests $73,559.54 to drill one half that area or 80 acres. Adjoining ground held by the applicant would be benefited by the proposed exploration but would not be subordinated.

We do not believe it is in the best interests of the Government to approve this application unless the applicant will subordinate his adjoining ground.

John F. Shaw
John F. Shaw
For W. E. King

Enclosures

UNITED STATES
Department of the Interior
Geological Survey
P. O. Box 360
Grand Junction, Colo.

October 8, 1953.

Memorandum

To: A. H. Koschmann and W. H. King, Region IV

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

Subject: DMEA 3089, Revised application F. O. Manol, McKinley County, N. M.

The original application was received in early August and a joint field examination was made by J. D. Strobell and Lloyd Farnham on August 11. Strobell's report on this examination was transmitted to Denver on August 21. This report outlined a tentative plan of exploration, subject to review and possible modification after Manol's revised application was received.

The revised application was received in Grand Junction on September 28, along with a copy of Farnham's report regarding the revised application. This was discussed with Strobell during his visit to Grand Junction on October 2. On October 5 a letter was received from Storms, and attached to it was a statement of explanation from Farnham regarding a minor point of confusion in Farnham's report.

After a review of Strobell's report of August 21, and Farnham's report on the revised application, it is my personal opinion that the two reports are sufficiently compatible so that no additional report from Strobell is needed. The exploration proposed by the two reports is identical in general plan. Strobell's report, however, included drilling in the N 1/2, SE 1/4, sec. 30 as well as the N 1/2, SW 1/4, sec. 30; whereas, the revised application requests exploration only in the N 1/2, SW 1/4, sec. 30; thus Strobell's report deals with twice as much ground and equivalent amount of drilling than the revised application.

I will not request Strobell to prepare any addition comments regarding the Manol application unless you request me to do so.

Returned herewith is one copy of Farnham's report on the revised application and the copy of the revised application, both of which were sent to me by Storms with the request that we transmit them to King's office.

/s/ R. P. Fischer
Acting Supervisor
Colorado Plateau District

Enclosures (2)
Farnham's Rpt. and
Revised application to King

MINING DIVISION
REGION IV

September 23, 1953

Air Mail

Memorandum

To : W. H. King, Chief, Mining Division, Region IV

From : Chief, Mining Methods Br., Mining Div., Region IV

Subject : Report on Docket NMA-3089, F. W. Manol's Uranium Property, McKinley County, N. Mex.

Enclosed are original and 9 copies of a report on the above property by L. L. Farnham of the Bureau of Mines. One copy was sent to Dick Fischer and he will send it on to you. A separate section on Geology will be submitted by J. D. Strobell of the Geological Survey.

As the chance of discovering a substantial quantity of uranium ore by drilling from the surface seems good, the examiner has recommended that an exploration loan be granted the applicant. I concur with this recommendation.

The original brochure is enclosed. The amended application has been sent to the Geological Survey at Grand Junction, Colo.

Walter R. Storms

Walter R. Storms

cc W. H. King (10)
R. F. Fischer
NMA-3089
GF

WRSTORMS:frj

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

August 24, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3039, Menol claims, McKinley County, New Mexico

Enclosed are 15 copies of the geologic report by J. D. Strobell, Jr. of the U. S. Geological Survey covering the above docket.

Because of circumstances, which are briefly explained in this report, final recommendations will have to await receipt of the applicant's revised proposal.

E. M. Hasselman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (15)

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

August 21, 1953

Memorandum

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

From: R. P. Fischer
Colorado Plateau District Office

Subject: DMEA 3089, Manol claims, McKinley County, New Mexico

Transmitted herewith are 10 copies of a geologic report on the Manol claims, McKinley County, New Mexico. Mr. Manol has applied for assistance to explore for uranium ore on these claims. The work is estimated to cost $79,819.40.

The attached report was prepared by J. D. Strobell, Jr. and is based on a field examination made jointly on August 11 with Lloyd Farnham, Bureau of Mines. The field examiners also conferred with the applicant and with P. L. Melancon, AEC.

The area seems to offer a good chance of finding uranium deposits by exploration, and it is recommended that the general plan of exploration suggested in this report receive favorable consideration by DMEA. Because of circumstances, which are briefly explained in this report, the applicant will submit a revised proposal, which should be reviewed before final approval and detailed specifications for a contract are prepared.

I concur with the conclusions and recommendations of the report.

R. P. Fischer

R. P. Fischer
Acting District Supervisor

Enclosures 10

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3089, F. O. Manol's Uranium Property

McKinley County, New Mexico

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

September 1953

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By L. L. Farnham[1]

GCL 12/17/53

Late in July 1953, F. O. Manol applied to the Defense Minerals Exploration Administration, under the Production Act of 1950, as amended, for an exploration loan amounting to $78,819.40. The application was docketed as DMEA-3089. The property was visited by the examiners[2] on August 11, 1953. Early in September 1953, the applicant submitted a revised application in which he requested a loan of $73,559.54 for the purpose of exploring an 80-acre tract for possible uranium deposits by means of 72,360 feet of rotary air drilling. The property is about 16 miles north of the town of Grants, N. Mex.

Uranium mineralization in the Grants district, first detected in 1950, occurs in the Todilto limestone and the Morrison sandstone, both of Jurassic age. The subject property, so far as known, is underlain by the Todilto limestone. Erosion has removed the overlying Morrison formation. In the district Todilto limestone ranges from 8 to 20 feet in thickness and dips about 4° in a northeasterly direction. The uranium ore bodies found in the limestone are irregular tabular masses that vary greatly in size, shape, and grade. On adjoining land, in close proximity to the subject property, 26 ore bodies have been found distributed erratically within an area of about 600 acres. Some of these deposits contain but a few tens of tons of ore and others contain upwards of 10,000 tons. To date, the applicant has mined

1/ Mining Engineer, U. S. Bureau of Mines
2/ Farnham, L. L., U. S. Bureau of Mines; J. D. Strobell, U. S. Geological Survey.

about 7,500 tons of ore, averaging somewhat more than 0.20 percent U_3O_8, from 3 separate ore bodies found on 60 acres immediately south of the area proposed for exploration. The subject property has not been explored and the ore bearing limestone is completely covered with from 20 to 140 feet of overburden.

In the revised application the applicant proposed to explore an 80-acre tract by 72,350 feet of rotary air drilling in 900 holes spaced from 25 to 200 feet apart. This work was estimated to cost $73,559.54. Over one half of the 900 holes proposed by the applicant was spaced 25 feet apart which would appear more of the nature of development than of exploration. It was the opinion of the examiners that this large amount of proposed drilling was excessive for the purposes of an exploratory project. Consequently an alternative program was recommended which involved 27,000 feet of rotary air drilling in 362 holes spaced from 25 to 200 feet apart. This work was estimated to cost $28,627.

The area proposed for exploration in the revised application appears to offer a favorable chance for the discovery of additional uranium ore. Therefore it is recommended that a loan amounting to not more than $28,627 be approved.

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS MCKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM

REGION IV

DMEA 3098 (Uranium)

F. O. Manol
Sec. 30, T. 13 N., R. 9 W., Grants District
McKinley County, New Mexico

Geologic Report

By

J. D. Strobell, Jr., Geologist
U. S. Geological Survey

August 1953

DMEA DOCKET 3089 (Uranium)

F. O. MANOL Sec. 30, T. 13 N., R. 9 W. GRANTS DISTRICT
MCKINLEY COUNTY, NEW MEXICO

BCB 12/17/53

INTRODUCTION AND SUMMARY

Application has been made (DMEA 3089) for government assistance in exploring for uranium on the F. O. Manol property in the Grants District, McKinley County, N. Mex. The proposed work is estimated to cost $79,819.40. The application has been reviewed in Washington, and the property was examined August 11, 1953, by Lloyd Farnham of the Bureau of Mines, Tucson, Ariz., and J. D. Strobell, Jr. of the Geological Survey, Grand Junction, Colo. The examiners also conferred with the applicant and with P. E. Melancon, District Geologist of the U. S. Atomic Energy Commission, Grants, N. Mex.

The applicant and his partners hold under lease in section 30, T. 13 N., R. 9W., the following plots:

S ½ of NE ¼ of Sec. 30
N ½ of NE ¼ " " "
E ½ of SW ¼ " " "
Lots 3 & 4 of SW ¼ of Sec. 30

This area is shown in figure 1. The description given in the application is correct as recorded in the original deed (1923) at Santa Fe, N. Mex., and mineral rights are included in the deed. [1]

[1] John X. Combo, AEC, oral communication

The area seems to offer a good chance of finding uranium deposits by exploration, and it is recommended that the general plan of exploration suggested in this report receive favorable consideration by DMEA. Because of circumstances, which are briefly explained in this report, the applicant will submit a revised proposal, which should be reviewed before final approval and detailed specifications for a contract are prepared.

GEOLOGY

In the Grants district, uranium deposits occur in the Todilto limestone and Morrison sandstone beds of Jurassic age and in the overlying Cretaceous rocks. The Manol property is underlain by the Todilto limestone, which the applicant proposes to test by drilling. The Todilto caps cliffs of the underlying Entrada sandstone and forms a broad bench where the overlying Summerville formation has been removed by erosion. The stripping off of the Summerville formation was accompanied or followed by erosion and locally complete removal of the Todilto limestone. The remaining limestone ranges up to 20 or 25 feet in thickness and is covered by a veneer of dune sand and alluvium, which may also locally conceal remnants of the Summerville formation. In the area of proposed exploration, the limestone is entirely covered by 25 to 150 feet of overburden, which thickens eastward across the property. The overburden consists predominantly of wind blown and fluiral sand only slightly indurated, but probably also includes increasing amounts of calcareous silty sandstone of the Summerville formation toward the east.

ORE DEPOSITS

Uraniferous minerals locally coat bedding planes and joint surfaces of the limestone, are disseminated in blebs and crystals in the matrix, and are associated with coarsely crystalline carbonates in veinlets. Such minerals are locally present in sufficient amounts to form ore bodies of irregular plan and thickness without sharply defined limits. Controls of their localization are not well understood. They occur at all positions between the top and bottom of the limestone, and may be present even where the limestone is partly removed by recent erosion. There is evidence of localization along the axial portion of minor folds, and the influence of dominant joint directions is in places apparent, both of which factors tend to produce narrow elongate ore bodies. The ore-bodies range in size from small tabular masses covering a few square feet to large bodies several hundred feet across. The thickness ranges from 1 foot or less up to as much as 14 feet. The largest known bodies contain a couple of ? hundred thousand tons of ore. The average grade of the ore shipped from the limestone in the district is a little more than .20 percent U_3O_8.

$\frac{415' \times 415' \times 14'}{12\ ft^3/Ton} =$ 200,922 Tons WSM

There are 25 or 26 known ore bodies in the immediate vicinity of the area of proposed exploration. Four of these are known from surface exposures; the applicant and the Santa Fe Railroad found the others by drilling. These known bodies are estimated to contain from 25 to 10,000 tons of ore apiece, and the total indicated reserves (before mining) were probably on the order of 80,000 tons.

The applicant has already found about 10,000 tons of ore on his property and has shipped about 6,500 tons averaging between .20 and .25 percent U_3O_8. The property is considered to be favorably situated and to afford a good chance for finding more ore.

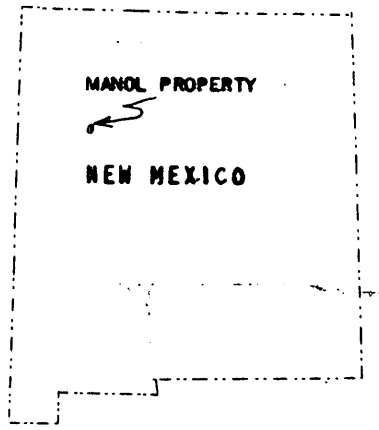
The size and distribution of the known deposits can be considered representative of the deposits expected in the area to be explored. Based on this information, which is largely company-confidential, the average ore-body contains about 3,000 tons, and about eight bodies would be expected in the area to be drilled. It thus appears that the proposed exploration has a favorable chance of finding 20,000 to 30,000 tons of ore.

The known deposits also afford estimates of the size of the target deposits and guides to the spacing of drill holes. They range in size from as little as 25 feet in diameter up to 100 by 800 feet. Most of them exhibit a marked elongation, the length being several times the width. They are, however, surrounded by a zone in which radioactivity is considerably higher than the radiation background of the containing limestone. Such zones of increased radioactivity may extend as much as 100 feet beyond the limits of ore. In order to find the expected ore, primary drilling on 100-foot centers would be necessary. If, however, advantage be taken of the radioactive halo, primary drilling could be done on 200-foot centers. Radiometric logging of the drill-holes would give this advantage. The size of the anticipated discoveries seems to require the application of all available methods which offer some chance of reducing the total costs of the exploration.

PROPOSED EXPLORATION

The applicant proposes to explore only parts of his property with federal assistance at the present time, namely the N½ of the SW¼ and the N½ of the SE¼ of Section 30. (See figure 1.) He is willing to subject only ore found in this area to royalty payments under the necessary lien. It is likely that ore known at present in other parts of the property will be mined out completely before any ore found in this area with government assistance is produced. Control of sales of ore that may result from the proposed drilling can very likely be worked out to the government's satisfaction.

The applicant proposed to rely upon radiometric logging of the wide-spaced drill holes by the Atomic Energy Commission to determine the relative favorability of the ground and to base the location of closely spaced holes upon the Commission's determinations. This practice is strongly advocated by the examiners, but they and the operator were informed by Mr. Melancon of the Commission that his capacity to perform this service is limited. In addition to his committments to Commission projects, he can probably handle only one or possibly two other projects in the district with the equipment and personnel at his disposal. As three other DMEA applicantions for exploration in the district have already been recommended (at least one of which, DMEA 3044, has been approved) the free logging service of the Commission can not definitely be assumed to be available for use in exploring the Manol property.



T. 13 N., R. 9 W. N.M.P.M.

SECTION 30

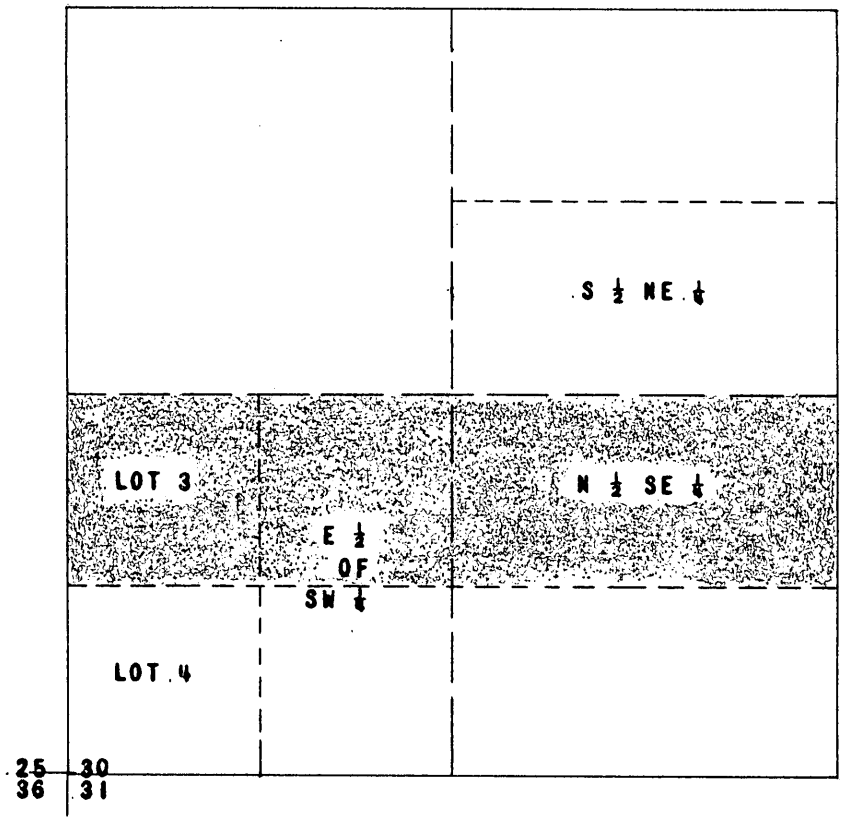


Figure 1. SKETCH MAP OF MANOL PROPERTY; SHADED AREA TO BE EXPLORED.
D.M.E.A. DOCKET 3089

In view of this changed situation, Mr. Manol wishes to revise his proposal and application to include radiometric logging obtained elsewhere, and also to modify to some extent the spacing of holes and the area to be explored. It is his intent to submit a revised application in the immediate future, which is expected to agree closely with the recommendations contained in this report. Until his revised proposal is reviewed, our final recommendations cannot be given.

RECOMMENDED EXPLORATION

Owing to the overburden which covers the ore-bearing limestone in the area to be explored, the sites for the first drill holes must be arbitrarily selected. It is recommended that the initial or primary holes be drilled on 200-foot grid-coordinate intersections and logged by in-hole radiation-detection equipment, which should detect ore deposits or the radioactive halo around deposits. Holes showing abnormally high radiation should be off-set by additional closer-spaced drilling. If no hole-logging device is available, samples for radiometric scanning would have to be collected from each hole, and the costs would be considerably increased.

Two other considerations seem to recommend the wider-spaced initial drilling. (1) There are indications from drilling already done by the applicant that in parts of the area to be explored the Todilto limestone may possibly have been removed by recent erosion. Wide-spaced drilling would indicate broad areas where the limestone is still present and warn of its absence in certain other areas.

(2) In the eastern half of the area, ore would have to be mined by underground methods, and larger reserves would be required to justify mining. In the central part of the area, thick deposits of sand cover the limestone, but underground mining is not possible, so increased stripping costs in this part of the area would also require larger reserves to justify mining.

In as much as the drilling is done in order to obtain a sample of the covered rocks, it seems necessary to require off-set holes to be sampled, because radiometric logging should not be relied on soley to determine grade. Samples should be collected and preserved in 2-foot runs throughout the entire thickness of the limestone in each offset hole. Radiometric logging of the hole and/or radiometric scanning of the samples can be used to select the samples to be assayed chemically for U_3O_8. All potentially ore-grade samples should be assayed.

Because the ore bodies are narrow elongated masses mostly less than 100 feet wide, this primary drilling on 200-foot centers is not very likely to intersect ore-grade material. It should, however, intersect the halo of high radioactivity surrounding an ore body. Subsequent drilling will be required to further outline and test any such favorably radioactive ground and to locate ore-grade material within it. Judging by the distribution of the known deposits on adjacent ground, about 10 percent of the area will merit testing by closely spaced drilling, and 2 or 3 percent may be underlain by ore-grade material.

All holes should be drilled completely through the limestone and well into the underlying sandstone to prevent caving from covering up the lower part of the limestone in the hole. Two feet below the base of the limestone may be sufficient in holes less than 50 feet deep, but 5 feet should be allowed in the deeper holes.

CONCLUSIONS

Exploration for uranium on part of the Manol property appears to have a good chance of finding 20,000 to 30,000 tons of ore averaging between .20 and .25 percent U_3O_8. In about 2/3 of the area of expected exploration high mining costs can be anticipated as underground mining or stripping of thick overburden would be required. If exploration is undertaken, primary drill-hole spacing of 200 feet and radiometric logging of the holes is recommended. It would be advantageous to log the off-set holes also, but they must in any event be sampled through the entire thickness of the limestone. Samples of potential ore grade as determined by the logging or radiometric scanning should be assayed chemically.

Final recommendations will have to await receipt of the applicants revised proposal.

DMA-3089, F. O. AARGL'S URANIUM PROPERTY
MCKINLEY COUNTY, N. MEX.

Engineering Report

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

September 1953

DMEA-3089, F. O. MANOL'S URANIUM PROPERTY
MCKINLEY COUNTY, NEW MEXICO

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INTRODUCTION

GGS 12/17/53

Late in July 1953, F. O. Manol applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $79,819.40. The application was docketed as DMEA-3089. The funds requested were for the purpose of exploring portions of a 160-acre tract for uranium by means of some 83,000 feet of rotary air drilling. The property was visited by the examiners[1/] on August 11, 1953. Early in September 1953, the applicant revised the original application in which he requested $73,559.54 for the purpose of exploring an 80-acre tract with 900 holes, totaling 72,360 feet of drilling.

ACKNOWLEDGMENTS

Special thanks are due Paul E. Melancon, supervising geologist of the Atomic Energy Commission of Grants, N. Mex., for his cooperation in supplying the examiners with much needed information.

LOCATION AND PHYSICAL FEATURES

The F. O. Manol property is situated about 16 miles northeast of Grants, N. Mex. in the SW¼ of Sec. 30, T. 13 N., R. 9 W., McKinley County, N. Mex. It can be reached from Grants by traveling west on U. S. Highway 66 for 3.2 miles, thence northward on State Highway 53 for 10.8 miles to a branch road running westward. The area proposed for exploration then can be reached by traveling for 1.3 miles westward on this branch road (figure 1).

1/ Parnham, L. L., U. S. Bureau of Mines;
Strobell, J. D., U. S. Geological Survey.

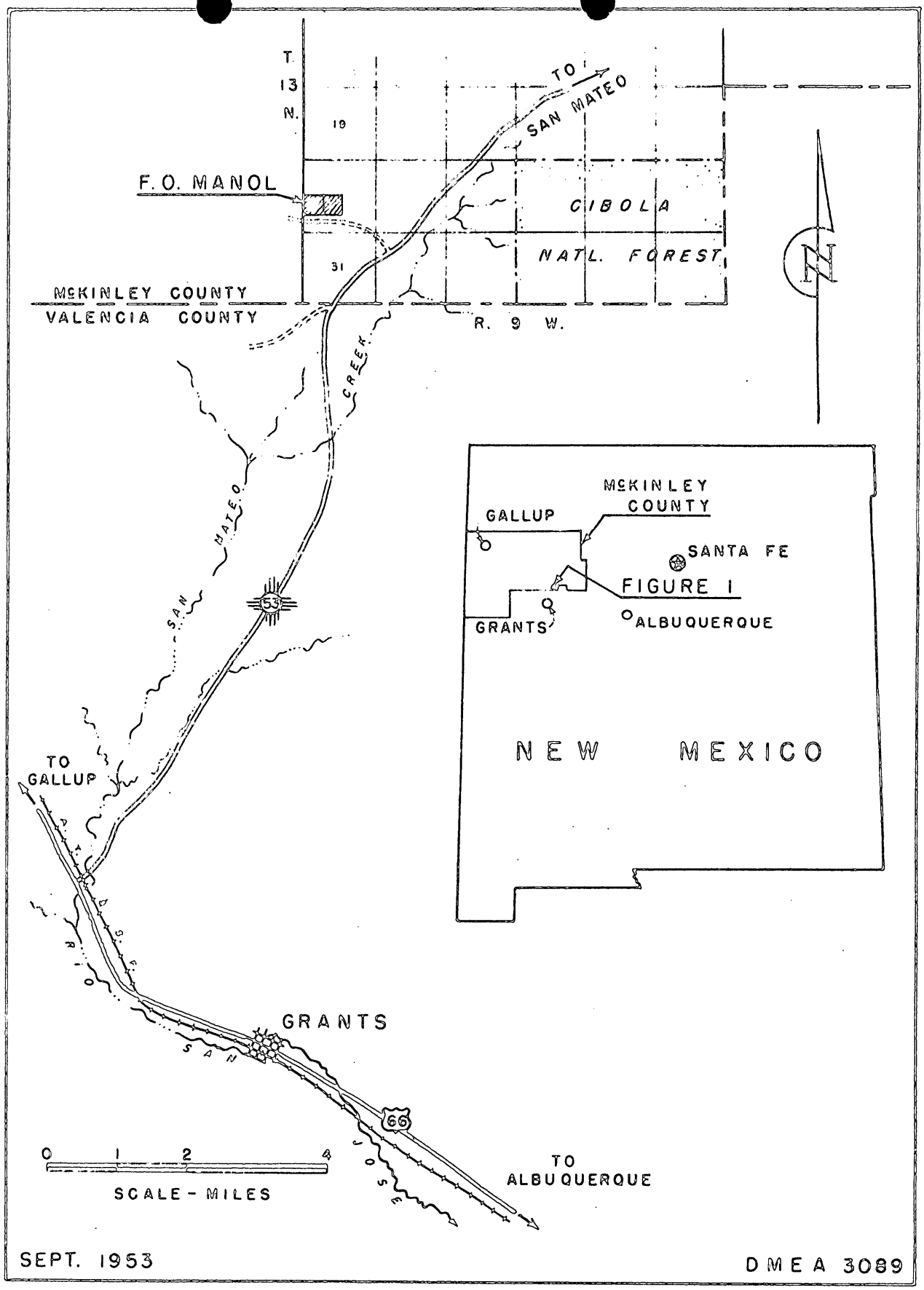


FIGURE 1. - LOCATION MAP - F. O. MANOL LEASE
McKINLEY COUNTY, NEW MEXICO

The project area, covering about 60 acres, lies within a gentle sloping alluvium-covered valley. Altitude above sea level ranges from a maximum of 6,890 feet in the southwest corner of the tract to a low of 6,840 feet on its eastern side (figure 3).

HISTORY AND PRODUCTION

The first mining activity in the area was started in 1950 following the initial discovery of uranium ores in the Grants district. The area covered in this application has not been explored and has had no production. The applicant has mined about 7,500 tons of ore, averaging over 0.20 percent U_3O_8, from 3 ore bodies found on a 60-acre tract adjoining the area of the proposed exploration (figure 2).

OWNERSHIP AND TENURE

The applicant and his partners hold under lease the following acreage:

S½ of NE¼	of Sec.	30,	T. 13 N.,	R. 9 W.
E½ of NW¼	" "	30,	T. 13 N.,	R. 9 W.
E½ of SW¼	" "		"	"
Lots 3 and 4 2/	"		"	"

In the revised application, Governmental assistance was requested only for Lot 3 and E½ of the E½ of the SW¼ of Sec. 30.

A copy of the applicant's lease was not submitted with the application and nothing is known concerning the ownership of the land nor the terms of the lease agreement.

2/ These lots comprise the W½ of the SW¼ of Sec. 30.

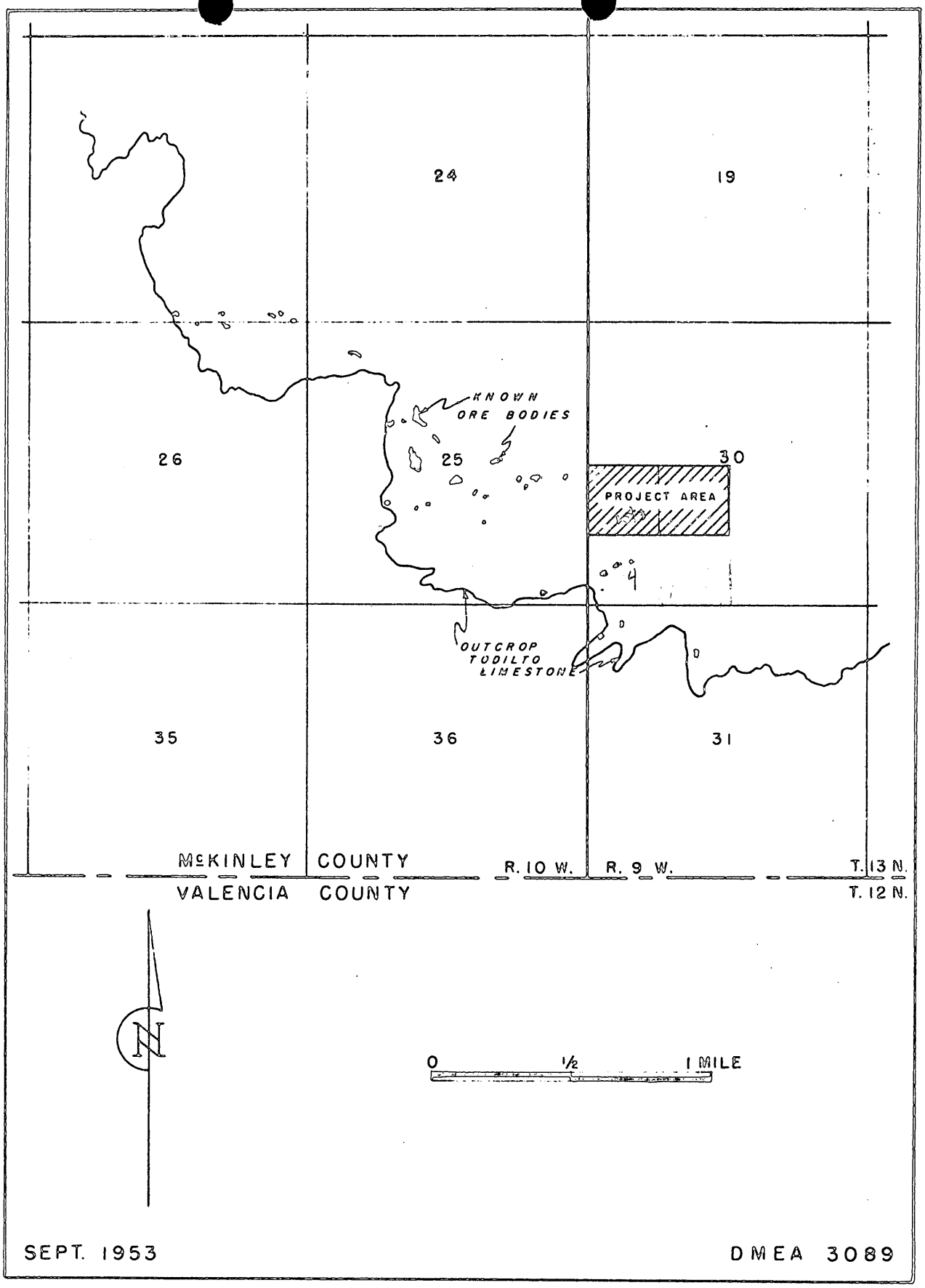
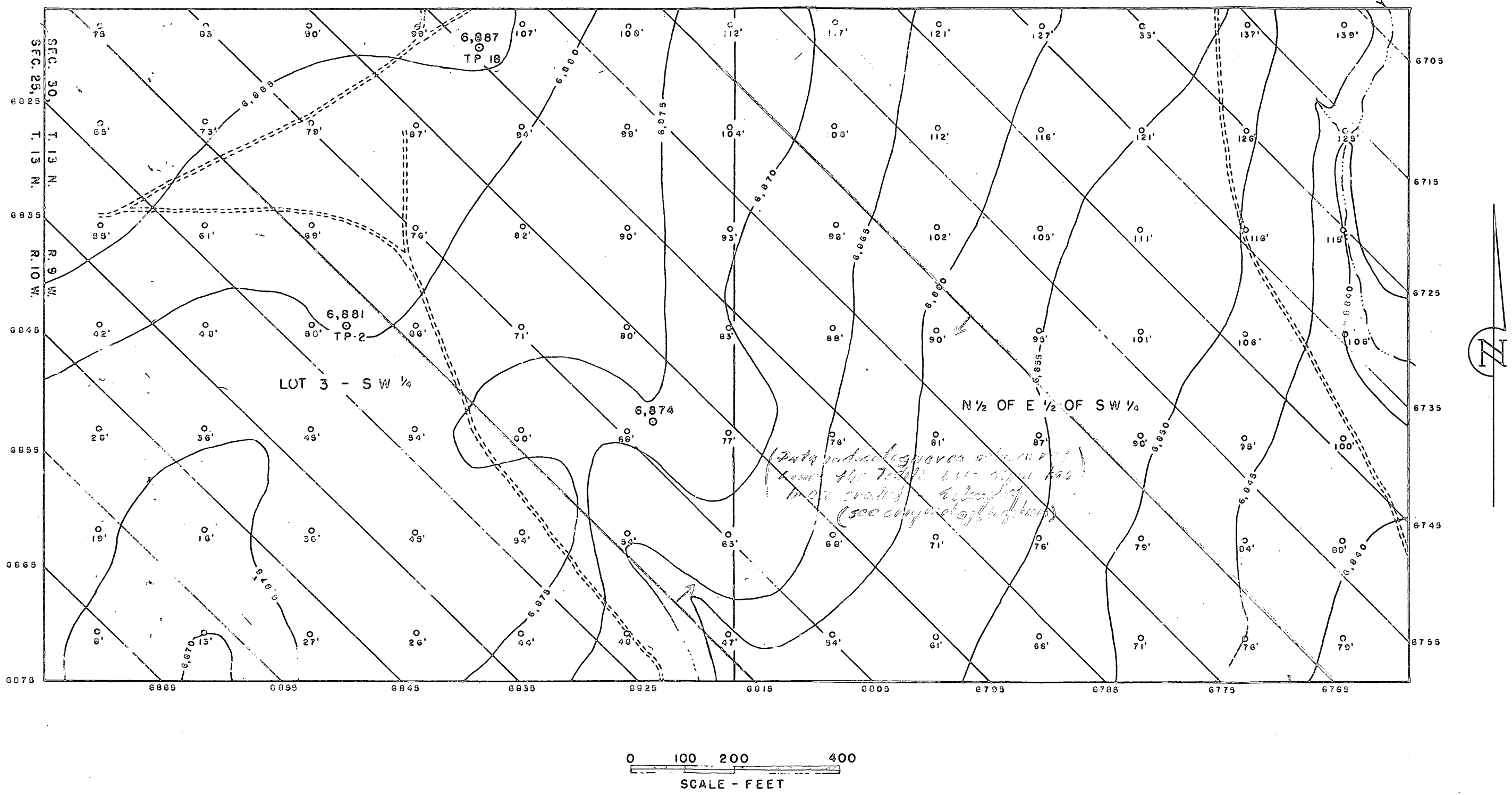


FIGURE 2 LOCATION OF KNOWN ORE BODIES IN VICINITY OF PROPOSED EXPLORATION (F. O. MANOL)
McKINLEY COUNTY, NEW MEXICO



DATA SUPPLIED BY THE ATOMIC ENERGY COMMISSION

SEPT. 1953

DMEA 3089

FIGURE 3. - TOPOGRAPHIC AND STRUCTURAL CONTOUR MAP
(SHOWING STAGE I OF PROPOSED DRILLING WITH DEPTH OF HOLE TO BASE OF LIMESTONE)

F. O. MANOL LEASE

McKINLEY COUNTY, NEW MEXICO

DESCRIPTION OF THE DEPOSITS

Uranium mineralization in the Grants district occurs in the Todilto limestone and in certain sandstone beds of the Morrison formation. The subject property is underlain by the Todilto limestone which in the area of the proposed drilling is completely covered by 20 to 140 feet of overburden. The productive limestone ranges from 8 to 20 feet in thickness and dips about 4° to the northeast. The ore bodies are irregular tabular masses distributed very erratically within the limestone. They range in thickness from a foot to as much as 14 feet and vary greatly in size, shape and grade.

About 26 separate ore bodies have been found in close proximity to the area proposed for exploration (figure 2). The total ore reserves indicated by these discoveries have been estimated to be of the order of 80,000 tons, or an average of about 3,000 tons per ore body. It was necessary to explore approximately 600 acres in order to outline the 26 ore bodies.

On this basis the 80 acres under consideration could be expected to contain from 3 to 4 ore bodies of 3,000 tons each, or a total of from 10,000 to 12,000 tons of ore. However, because of the great variance in the size of the deposits and their unpredictable distribution, the 80 acres in question could contain much more than 12,000 tons, and likewise could contain very much less.

PROPOSED EXPLORATION

In the revised application it was proposed to confine the work to lot 3 and the adjoining N½ of the E½ of Sec. 30 (figure 3). The proposals, with cost estimates as set forth in the application, are as follows:

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MP-103

Estimate:

(a) Independent Contracts	Quantity	Unit Cost	Total
Drilling Test Holes 0 to 100 ft.	65,448 ft.	0.50	$32,724.00
Drilling Test Holes 101 to 200 ft.	6,912 ft.	1.00	6,912.00
Blowing & Catching Drill Hole Cuttings for Assay Purposes	13,950 ft.	.50	6,975.00
Radiometric Log of Test Holes	45,000 ft.	.15	6,750.00
Radiometric Scan of Test Holes	27,360 ft.	.07	1,915.20
Radiometric Assay Cuttings, this includes collecting, mixing, pulverizing, and assaying.	3,987 ea.	1.00	3,987.00
Contingencies	Lump Sum		2,000.00
Supervision, Geologic Consultation, Mine Evaluation, Surveying and Laying-out Grids, Accounting, and equipment and supplies, etc. incidental to these services.	72,360 ft.	.15	10,854.00
			72,117.20
New Mexico School Tax 2%			1,442.34
Total Maximum Cost of Project			$73,559.54

The applicant proposes to have the above drilling performed by the Four Corners Exploration Co. This is a new organization in which the applicant, F. O. Manol, owns a half interest. The other partner

is a geologist who formerly was employed in the Grant's office of the Atomic Energy Commission. The company has a Failing 1500 Rotary rig and is expecting the delivery of a mobile radiometric hole logging device in the near future.

A copy of the bid for the proposed drilling, submitted by the Four Corners Exploration Co., is given below:

"Utah Colorado
Arizona New Mexico FOUR CORNERS EXPLORATION COMPANY
P. O. Box 101

Irving Rapaport
F. G. Manol

August 31, 1953
Grants, New Mexico

"F. G. Manol and Associates
Box 246
Grants, New Mexico

Gentlemen:

"Below are our prices to your organization for drilling services, supervisory and geologic services, radiometric logging services, and radiometric assay services as per your request.

"Drilling:
1st 100 feet or any part thereof $.50 per ft.
2nd 100 feet or any part thereof 1.00 per ft.

"Blowing hole clean and catching cuttings every two feet. $.50 per foot extra over regular prices.

"No charge for standby time on your work.

"Radiometric Logging:
Logging hole furnishing original copy of log to you. $.15 per foot.

"Scanning holes with logging unit but no transcript furnished. $.07 per foot.

"With this service you can log just the suspected ore zones and scan for unexpected mineralization in other zones of the drill holes. Substantial savings can be effected in this manner.

"Radiometric Assaying:
Collecting, mixing, pulverizing; sacking, assaying drill hole cuttings. $1.00 each.

"Supervision:
Supervision, geologic consultation, mine evaluation, surveying and laying-out grids, accounting, and equipment and supplies, etc. incidental to these services. $.15 per foot.

"We believe we are the only organization in the uranium exploration business providing a complete package deal exploration service combining all necessary services into one easy to administer contract.

"Very truly yours,

/s/ Irving Rapaport
Irving Rapaport"

The costs per foot of drilling in the above bid are the same as those charged by the W. T. Myers Drilling Co. for similar contract work.

The applicant's project proposals involved the drilling of 900 holes, having an average depth of 80.4, totaling 72,360 feet, and estimated to cost $73,559.54. It appears that the large amount of drilling would not be necessary for the purpose of determining the presence or absence of worthwhile ore bodies within this 80-acre tract.

Based on the experience of other exploratory operations in the district, the examiner recommends the following procedure as an alternative to that proposed by the applicant.

The entire 80 acres should be drilled with holes spaced 200 feet apart. This phase of the program would require 91 holes (figure 3). In all probability this primary stage would eliminate a portion of the area from further consideration. Experience in the district has shown that about 1 out of 6 holes spaced 100 feet apart might indicate sufficient abnormally high radio-activity so as to merit off-set drilling. Based on this ratio, about 30 of these 182 holes would justify off-setting by 4 holes each, spaced 50 feet apart. Thus, this third phase would require an additional 120 holes, and thereby increase the total to 302 holes at this stage of the work. It would seem that an additional 60 holes spaced no closer than 25 feet would be sufficient to outline, for discovery purposes, any ore bodies indicated by the former holes. On this basis, a total of 362 holes would be required. The average depth of these holes as computed by the examiner was 74.6 feet (figure 3). Hence the total for the project would amount to 27,005 feet of drilling. This is only about one-third of the total footage proposed by the applicant. Nevertheless, 362 holes would seem adequate to explore the area to such an

extent as to indicate whether or not significant ore bodies were present. About one half of the holes proposed by the applicant could be considered to be more of the nature of development than of exploration.

SAMPLING

No samples need be collected from the initial 91 holes (spaced 200 feet apart) if they can be logged radiometrically. The balance of the holes (271) should be logged radiometrically and sampled as well. When the holes enter the top of the limestone, the drill cuttings should be blown from the hole at each 2-foot interval and caught in a suitable collector. If the limestone averages 18 feet thick, there would be 9 samples from each hole. These can be scanned with a standardized Geiger Counter and those that appear of ore grade should be retained for further testing. Since most of the ore is seldom more than 6 feet thick, it is probable that not more than 3 samples from each hole would warrant assaying. On this basis there would not be more than 813 samples that would merit assaying.

The applicant proposed assaying the samples radiometrically, rather than chemically. The examiners discussed this matter with the manager of the Anaconda Copper Mining Co. and the chief mining engineer of the Atchison, Topeka & Santa Fe Railroad Co. Both of those gentlemen were of the opinion that radiometric assaying results on the limestone ores would check very closely with the U_3O_8 content

as determined chemically. In view of this information, it appears that for the purposes of exploration, the radiometric assaying of the drill hole samples would be satisfactory and should be adopted in the case of limestone ores. Radiometric assaying is not satisfactory for the sandstone ores of the district.

ESTIMATED COST OF PROJECT

The depth of the proposed holes averaged 74.6 feet which included 5 feet of drilling below the bottom of the limestone. This extra 5 feet of hole would allow space for any caving that might occur before the hole could be logged radiometrically. The data used by the examiner for computing the depth of the holes was based on information furnished by the Atomic Energy Commission.

A summary of the amount of drilling follows:

Stage 1 and 2 -	182 holes @ 74.6 ft.	13,577 feet
Stage 3	120 holes @ 74.6 ft.	8,952 "
Stage 4	60 holes @ 74.6 ft.	4,476 "
Total	362 holes	27,005 feet

Figure 3 indicates that about two thirds of the holes would be less than 100 feet deep and the balance would exceed 100 feet. Thus the drilling cost under the bid of the Four Corners Exploration Co. would be as follows:

18,000 feet @ $0.50	$9,000
9,000 " @ 1.00	9,000
Catching samples - 4,878 ft. @ $0.50	2,439
Radiometric logs, 27,000 ft. @ $0.10[3]	2,700
Radiometric assaying, 800 @ $1.00	800
Total cost for 27,000 feet	$23,939
Cost per foot	$0.89

Drilling with this rotary type of equipment, the contractor expects to average between 250 and 300 feet a shift. Thus working 25 shifts a month the work could be completed in about 4.5 months. The other costs of the project based on 4.5 months are given below:

1 Supervisor, 4.5 mos. @ $500	$2,250
1 Sampler, 4.5 mos. @ $300	1,350
Compensation insurance, taxes, etc., 13%	468
Allowance for use of pickup truck @ $60	270
Bookkeeping and office supplies	250
Sample sacks and incidentals	100
	$4,688

Summary of Total Estimated Costs

Contrast drilling	$23,939
Supervision and sampling	4,068
Miscellaneous	620
Total for 27,000 feet	$28,627
Total per foot	$1.06

PROPOSED FINANCING

The project as estimated by the writer would cost $28,627 of which the applicant would furnish one tenth, or $2,862.70, and the Government would provide $25,764.30.

The value of the ore produced by the applicant from the tract immediately south of subject area has averaged about $23 a ton. With ore of this value, at 5 percent royalty, the area proposed for

3/ Based on $0.15 a foot for logging and $0.07 a foot for scanning only.

exploration would have to produce some 22,000 tons of ore in order to repay the Government loan. Tonnage of this order is not too far out of line with the potential of the area as judged by the results of former exploration in the vicinity.

CONCLUSIONS AND RECOMMENDATIONS

Important uranium deposits have been found immediately to the south and west of the area which the applicant has proposed for exploration. There is no evident reason why similar deposits are not likely to be found on the subject property. One disadvantageous feature of the area proposed for exploration is the amount of cover overlying the productive limestone bed. Over a large portion of this tract, the overburden may be of such thickness as to preclude open pit mining. In such cases much more costly underground methods would be necessary which could result in making some of the smaller or lower grade bodies noneconomic.

The applicant, who will no doubt supervise the operation, has had 2 years of experience in the exploration and mining of uranium ores in the Grants district. If the contract drilling is performed by the Four Corners Exploration Co., Irving Rapaport will supervise the drilling and attend to the technical features of the project. Both Manol and Rapaport are considered to be competent in their respective capacities. The fact that the applicant will be financially interested in the drilling contract may have certain

disadvantages as well as advantages.

As there appears to be a reasonable chance of finding ore on the subject property, it is recommended that a loan amounting to $28,627 be approved. A short form contract is suggested specifying a maximum of 27,000 feet of drilling at a price of $1.06 a foot.

10/22/53 gla

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

224 New Customhouse
Denver 2, Colorado

October 20, 1953

Memorandum

To: Secretary to the Operating Committee
Defense Minerals Exploration Administration

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3089, Owner's Consent to Lien

Enclosed are six copies of Form MF-203, Owner's Consent to Lien on Lot No. 3 of the SW$\frac{1}{4}$; N$\frac{1}{2}$ of the E$\frac{1}{2}$ of SW$\frac{1}{4}$; both in Section 30, Township 13 of Range 9 West of the New Mexico Meridian, New Mexico.

John F. Shaw

John F. Shaw for
W. H. King

Enclosures

Returned to Regional Exec. Off
Dec. 31/53

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 9-15-53

REFERRED TO:

1. Code 200 Rm. 4640
2. ~~Mr. Murphy~~
3.
4.

FOR:

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

REMARKS: No distribution made
We will wait for Field Team
Examination report.
[illegible]

Check (X) before the items needing attention.

ROBERT E. ADAMS

Initials of sender.

GPO 16—63815-1

9/15/53. db

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

224 New Customhouse
Denver 2, Colorado

September 9, 1953

Memorandum

To: Secretary to the Operating Committee, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: DMEA - 3089 (Uranium), Amended application of F. O. Manol, Mc Kinley County, New Mexico

Enclosed are two copies of an amended application on the subject docket in the amount of $73,559.54.

One copy of the amended application has been sent to the field and one retained in this office because the applicant is coming here to discuss it with us.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosure

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

224 New Customhouse
Denver 2, Colorado

September 9, 1953

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W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosure

Triplicate Copy

F. O. MANOL
P. O. BOX 246
GRANTS, NEW MEXICO

August 31, 1953

Executive Officer
DMEA
224 New Customhouse Building
Denver 2, Colorado

Subject: DMEA-3089

Dear Sir:

Enclosed is our amended application for DMEA assistance in the exploration of a mining lease we have in the Grants, New Mexico Mining District.

We have changed the area to be explored. Changed to a broader starting grid for our drilling program. Eliminated chemical assays. Added radiometric logging by private enterprise. Added radiometric assaying of drill cuttings.

These changes result from the discussions we had at the project site with your field team on Aug. 11.

Inclusions herewith are:

Amended DMEA Form MF-103	4 copies
6 pages supplementing Form MF-103	4 copies
Structure-contour map	4 copies
Manol Operating Agreement	0 copies
Drilling and Logging Bid	4 copies

Kindly remove Manol Operating Agreement from original application which now can be considered superceded, and include same with this amended application.

Very truly yours,

F. O. Manol

F. O. Manol

-103
April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

Amended Application

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-3089
Metal or Mineral
Date Received 9-15-53
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: F. O. Manol--P.O. Box 246--Grants, New Mexico--Operator and Agent for group venture of persons named in supplement attached hereto.

(*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 Lot No. 3 of the SW¼, N½ of E½ of SW¼; both in Section 30, Township 13 of Range 9 West of the New Mexico Meridian, New Mexico

(*b*) State any mine name by which the property is known. F. O. Manol

(*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. See attached Operating Agreement

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable

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.

(*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.

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(*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 wish to explore Uranium ores

(*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 90 days and be completed within 15 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)?

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[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 September 2, 1953

F. O. Manol
(Applicant)

By F O Manol

Box 246--Grants, New Mexico

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

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

SUPPLEMENTAL INFORMATION TO FORM MF-103

1a Names and addresses of owners of lease and their proportionate of ownership:

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D. R. Dobyns-------731 S. Delaware-----Irving, Texas---------1/75

H. V. Copeland----- Aztec, New Mexico-----1/150

F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENTAL INFORMATION TO FORM MF-103

4a No mining or exploration has been done on the subject land.

However, the applicant has been operating a mine on an eighty acre block of land which is contiguous to the entire south line of the land covered by this application. This block of land, which has been, and is being mined ~~XXXX~~, has been explored by the applicant with own funds.

This mine in seven actual working months out of the last two years has produced more than 7,500 tons of ore grossing more than $200,000.00, at a profit of $100,000.00. Approximately 1,500 tons of ore remain to be mined. Larger reserves in this eighty acres are absent for the reason that almost eighty-five percent of the ore bearing Todilto Limestone formation is eroded away.

The subject land is most easily accesible for examination purposes. Starting from Grants, N.M. going 3 miles west on U.S. Highway 66 to a "T" intersection of San Mateo Road going north and right, thence almost 11 miles north on San Mateo Road to a cattle-guard on the west and left, thence 2 miles west on the road going across the cattle-guard. Existing operations then are obvious.

4b Not applicable

4c The property to be explored is a colluvial covered dip slope bench of the Todilto Limestone formation of upper Jurassic age. Uranium minerals found in the Todilto are tyuymanite, uranophane, and small amounts of pitchblende. The minerals have been deposited along fractures, bedding planes, and individual crystals of calcite. These ores are intimately associated with hematite and psilomelene.

The uranium deposits in the Todilto Limestone are essentially tabular bedded deposits ranging in thickness up to ~~thirteen~~ twenty-one feet, and in lateral ~~XXXX~~ extent to over 100,000 square feet.

We believe the land covered by this application merits exploration for uranium ores for the reason that adjoining sections of land on the north, west, and south all have substantial known ore reserves. In other words the land covered by this application is in the middle of a proven ore belt.

Also, exploration conditions are simple and easy. The terrain is very level making it possible to bring in anywhere, and to move easily anywhere, mobile drilling equipment. The ore horizon is uniform and well defined. Drilling depths are not excessive.

4d Accessibility of the project is excellent. Access roads are good. Distance to the Anaconda Copper Mining Co. buying station at Bluewater, New Mexico is only 19 miles. Supply points are good. Residence points are ~~XXXX~~ fair.

4e Manpower, materials, supplies, equipment, water, and power are all abundant.

F. O. Manol
Box 246
Grants, N.M.

SUPPLEMENTAL INFORMATION TO FORM MF-103

5b The attached structure-contour map defines the 80 acre block of land we propose to explore with the NMEA loan we are applying for herewith. Our primary drilling grid is plotted on the map, and drilling depths are shown immediately beneath the drilling locations. Depths are carried five feet below the ore bearing Todilto Limestone formation to take care of minor cave-ins that we have found by experience to occur occasionally before the holes can be logged.

All proposed exploratory drilling will be done with a Failing 1500 Rotary Rig, drilled dry, compressed air being the medium of circulation. The applicant introduced this superior low cost method of exploratory drilling to the Grants Mining District.

As the result of our previous exploration experience in this very same Section of land we know we are going to encounter several different geologic conditions in this project. In the southwesterly corner the ore bearing Todilto Limestone formation will be relatively shallow with only blowsand above it. Border line test holes on the west and south, drilled by Santa Fe Railroad Company and by ourselves, indicate a substantial presence of the Todilto Limestone. Ore bodies discovered in this area can be mined by open pit methods.

In the middle of the land covered by this application, in an undefined belt, presumed at this time to extend in a diagonal northwest-southeast direction, we are anticipating a considerable amount of local erosion channels in which the ore bearing limestone formation is partly or even completely removed. Drilling depths will average about 100 feet. Only blowsand will cover the orebodies discovered in this area. Adverse conditions to mining feasibility in this area may preclude any intensive drilling even if ore is located with the primary grid. This determination will have to be made if and when the problem arises.

In the northeasterly part of the land covered by this application we can expect full sections of the ore bearing limestone capped by the Summerville Sandstone. Drilling depths will be the deepest in this area, but mining feasibility by underground methods is assured by the fact that the Summerville Sandstone overlays the ore bearing limestone providing a ceiling which can be economically cribbed.

In view of the complexity of geologic conditions we know we can anticipate, we plan to drill first on a broad 200 foot grid to eliminate unfavorable ground immediately from further consideration.

The 200 foot grid will be our basic grid, excepting in areas with drilling depths of 65 feet or less in which the 100 foot grid will be our basic grid. All off-set holes to our basic grids will be predicated on a show of abnormal radio-activity. Our drilling patterns will be systematically shortened as necessary using 100 foot, 50 foot, and 25 foot grids in suspect areas. The 25 foot grid will be used to outline and evaluate ore bodies.

On the basis of what is know about the surrounding area it is possible that as much as 20% of the area to be explored hereunder will show varying degrees of mineralization requiring intensive exploration.

F. O. Manol
Bos 246
Grants, N.M.

SUPPLEMENTAL INFORMATION TO FORM MF-103

5b All holes will be logged by a mobile radiometric logging unit and a permanent record of the intensity of the gamma radiation for every inch of every hole will be procured and kept in our files. This very sensitive instrument greatly increases chances for discoveries and simultaneously cuts uranium exploration costs tremendously by eliminating the need for core drilling, and much of the catching of drill cuttings for assay purposes. The instrument enables the project supervisor to decide immediately where to drill off-set holes. No waiting for assays is necessary.

Only on the final 25 foot grid will we catch cuttings. This will be done every two feet while in the ore bearing limestone formation. These will be sacked and cataloged, and field checked with a good sensitive Geiger Counter. Those samples of cuttings which show uranium mineralization approaching ore grade of better will be carefully assayed by radiometric methods and a systematic permanent record of them will be kept. This information will then be used to evaluate any ore bodies discovered.

We are satisfied by our past experiences that radimetric assays of ore in the Todilto Limestone formation are in equilibrium with chemical assays. Therefore no costly chemical assays are contemplated.

5d The writer, F. O. Manol, will supervise the exploration program. He has managed the mining and exploration of contiguous property for the past two years. His record has been one of the most successful in the Grants Mining Dristrict.

The writer is also a partner in the Four Corners Exploration Company, Box 101, Grants, New Mexico. His partner and associate in that venture is Irving Rapaport of Grants, New Mexico, a Geologic Engineer formerly employed in technical and supervisory capacity by the Atomic Energy Commission.

Prior to being in the mining business the writer was Chief Accountant and Office Manager for the H. K. Ferguson Company of Cleveland, Ohio in the construction industry. 1940 to 1946. During this time he was Project Auditor on multi-million dollar government contracts. Subsequently to 1952 he was successfully in business for himself. He sold out his partnership interest in the Home Furnishings Company of Aztec, New Mexico in 1952 to devote his full time to mining.

The writer is thoroughly familiar with and able to provide any form of accountability which the DMEA may require.

F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MF-103

Estimate:

(a) Independent Contracts	Quantity	Unit Cost	Total
Drilling Test Holes 0 to 100 ft.	65,448 ft.	$.50	$32,724.00
Drilling Test Holes 101 to 200 ft.	6,912 ft.	1.00	6,912.00
Blowing & Catching Drill Hole Cuttings for Assay Purposes	13,950 ft.	.50	6,975.00
Radiometric Log of Test Holes	45,000 ft.	.15	6,750.00
Radiometric Scan of Test Holes	27,360 ft.	.07	1,915.20
Radiometric Assay of Cuttings, this includes collecting, mixing, pulverizing, and assaying.	3,987 ea.	1.00	3,987.00
Contingencies	Lump Sum		2,000.00
Supervision, Geologic Consultation, Mine Evaluation, Surveying and Laying-out Grids, Accounting, and equipment and supplies, etc. incidental to these services.	72,360 ft.	.15	10,854.00
			72,117.20
New Mexico School Tax 2%			1,442.34
Total Maximum Cost of Project			$73,559.54

Please note entire project is on contract and all costs are based on amount of work performed on unit cost basis. This makes for a simple determination of costs no matter what quantities of work have been performed when project is completed.

This is a maximum estimate based on very favora le results in our primary and secondary drilling. It is very likely that we will not need the total amount of money in this estimate. Yet we must be prepared to carry out a sound program to its proper conclusion should substantial discoveries be made.

F. O. Manol
Box 246
Grants, N.M.

DRILLING COMPUTATIONS

(1) Total area to be drilled is 1320' x 2640', or total of 3,484,800 square feet.

(2) All holes are carried 5 feet below ore bearing Todilto Limestone formation. Average depth of holes as determined with attached structure-contour map is 80.4 feet.

(3) Primary grid is on 200' centers, each hole serving 40,000 square feet of area.
Secondary " " " 100' " , " " " 10,000 " " " " .
Third " " " 50' " , " " " 2,500 " " " " .
Final " " " 25' " , " " " 625 " " " " .

(4) 30% of area (1,045.440 SF) it is estimated will have to be drilled on 200' grid only.
50% of area (1,742,400 SF) it is estimated will have to be drilled on 100' grid before it can be eliminated from further consideration.
10% of area (348,480 SF) it is estimated will have to be drilled on 50' grid before it can be eliminated from further consideration. This grid will be used on highly suspect areas.
10% of area (348,480 SF) it is estimated will have to be drilled on 25' grid. This grid is for detailing and evaluating ore bodies.

(5) 1,045,440 SF divided by 40,000 SF equals 27 holes.
1,742,400 SF " " 10,000 SF " 175 " .
348,480 SF " " 2,500 SF " 140 " .
348,480 SF " " 625 SF " 558 " .

(6) Maximum total number of holes contemplated in this drilling program is 900. If the primary and secondary grids failed to produce highly suspect areas a maximum of 202 holes would be drilled. The actual figure will be somewhere between 202 and 900 depending on the amount of success in locating ore bodies.

(7) 32% of holes (288) will be more than 100' deep averaging 124'. These figures are developed for calculating drilling costs on holes having a depth of more than 100'. These figures are calculated from the attached structure-contour map.

(8)

Total drilling footage 100' deep or less	65,448'	@ $ .50 per foot	$32,724.00
" " " 101' " " plus	6,912'	@ $1.00 per foot	6,912.00
Total maximum drilling footage and cost	72,360'		$39,636.00

(9) Catching cuttings for assay purposes. This will be done on final holes only. 558 holes for 25' in each hole. Total 13,950' @ $.50 per foot $ 6,975.00

TOTAL MAXIMUM DRILLING COSTS INCLUDING CATCHING OF CUTTINGS FOR ASSAY PURPOSES $46,611.00

F. O. Manol
Box 246
Grants, N.M.

UTAH | COLORADO
ARIZONA | NEW MEXICO

Four Corners Exploration Company

P. O. BOX 101 GRANTS, NEW MEXICO

IRVING RAPAPORT
F. O. MANOL

August 31, 1953

F. O. Manol and Associates
Box 246
Grants, New Mexico

Gentlemen:

Below are our prices to your organization for drilling services, supervisory and geologic services, radiometric logging services, and radiometric assay services as per your request.

Drilling:

1st 100 feet or any part thereof	$.50 per ft.
2nd 100 feet or any part thereof	1.00 per ft.

Blowing hole clean and catching cuttings every two feet. $.50 per foot extra over regular prices.

No charge for standby time on your work.

Radiometric Logging:

Logging hole furnishing original copy of log to you. $.15 per foot.

Scanning holes with logging unit but no transcript furnished. $.07 per foot.

With this service you can log just the suspected ore zones and scan for unexpected mineralization in other zones of the drill holes. Substantial savings can be effected in this manner.

Radiometric Assaying:

Collecting, mixing, pulverizing, sacking, assaying drill hole cuttings. $1.00 each.

Supervision:

Supervision, geologic consultation, mine evaluation, surveying and laying-out grids, accounting, and equipment and supplies, etc. incidental to these services. $.15 per foot.

We believe we are the only organization in the uranium exploration business providing a complete package deal exploration service combining all necessary services into one easy to administer contract.

Very truly yours,

Irving Rapaport

Duplicate Copy

F. O. MANOL
P. O. BOX 246
GRANTS, NEW MEXICO

August 31, 1953

Executive Officer
DMEA
224 New Customhouse Building
Denver 2, Colorado

Subject: DMEA-3089

Dear Sir:

Enclosed is our amended application for DMEA assistance in the exploration of a mining lease we have in the Grants, New Mexico Mining District.

We have changed the area to be explored. Changed to a broader starting grid for our drilling program. Eliminated chemical assays. Added radiometric logging by private enterprise. Added radiometric assaying of drill cuttings.

These changes result from the discussions we had at the project site with your field team on Aug. 11.

Inclusions herewith are:

Amended DMEA Form MF-103	4 copies
6 pages supplementing Form MF-103	4 copies
Structure-contour map	4 copies
Manol Operating Agreement	0 copies
Drilling and Logging Bid	4 copies

Kindly remove Manol Operating Agreement from original application which now can be considered superceded, and include same with this amended application.

Very truly yours,

F. O. Manol

F. O. Manol

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

Amended Applic.

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-3089
Metal or Mineral
Date Received 9-15-53
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: F. O. Manol--P.O. Box 246--Grants, New Mexico--Operator and Agent for group venture of persons named in supplement attached hereto.

(*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.

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Explain in detail on acompanying paper.

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Dated September 2, 1953

F. O. Manol
(Applicant)

By F O Manol

Box 246--Grants, New Mexico

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F. O. Manol
Box 246
Grants, New Mexico

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4a No mining or exploration has been done on the subject land.

However, the applicant has been operating a mine on an eighty acre block of land which is contiguous to the entire south line of the land covered by this application. This block of land, which has been, and is being mined ~~XXXX~~, has been explored by the applicant with own funds.

This mine in seven actual working months out of the last two years has produced more than 7,500 tons of ore grossing more than $200,000.00, at a profit of $100,000.00. Approximately 1,500 tons of ore remain to be mined. Larger reserves in this eighty acres are absent for the reason that almost eighty-five percent of the ore bearing Todilto Limestone formation is eroded away.

The subject land is most easily accesible for examination purposes. Starting from Grants, N.M. going 3 miles west on U.S. Highway 66 to a "T" intersection of San Mateo Road going north and right, thence almost 11 miles north on San Mateo Road to a cattle-guard on the west and left, thence 2 miles west on the road going across the cattle-guard. Existing operations then are obvious.

4b Not applicable

4c The property to be explored is a colluvial covered dip slope bench of the Todilto Limestone formation of upper Jurassic age. Uranium minerals found in the Todilto are tyuymanite, uranophane, and small amounts of pitchblende. The minerals have been deposited along fractures, bedding planes, and individual crystals of calcite. These ores are intimately associated with hematite and psilomelene.

The uranium deposits in the Todilto Limestone are essentially tabular bedded deposits ranging in thickness up to ~~thirteen~~ twenty-one feet, and in lateral ~~XXXX~~ extent to over 100,000 square feet.

We believe the land covered by this application merits exploration for uranium ores for the reason that adjoining sections of land on the north, west, and south all have substantial known ore reserves. In other words the land covered by this application is in the middle of a proven ore belt.

Also, exploration conditions are simple and easy. The terrain is very level making it possible to bring in anywhere, and to move easily anywhere, mobile drilling equipment. The ore horizon is uniform and well defined. Drilling depths are not excessive.

4d Accessibility of the project is excellent. Access roads are good. Distance to the Anaconda Copper Mining Co. buying station at Bluewater, New Mexico is only 19 miles. Supply points are good. Residence points are ~~XXXX~~ fair.

4e Manpower, materials, supplies, equipment, water, and power are all abundant.

F. O. Manol
Box 246
Grants, N.M.

SUPPLEMENTAL INFORMATION TO FORM MF-103

5b The attached structure-contour map defines the 80 acre block of land we propose to explore with the EMEA loan we are applying for herewith. Our primary drilling grid is plotted on the map, and drilling depths are shown immediately beneath the drilling locations. Depths are carried five feet below the ore bearing Todilto Limestone formation to take care of minor cave-ins that we have found by experience to occur occasionally before the holes can be logged.

All proposed exploratory drilling will be done with a Failing 1500 Rotary Rig, drilled dry, compressed air being the medium of circulation. The applicant introduced this superior low cost method of exploratory drilling to the Grants Mining District.

As the result of our previous exploration experience in this very same Section of land we know we are going to encounter several different geologic conditions in this project. In the southwesterly corner the ore bearing Todilto Limestone formation will be relatively shallow with only blowsand above it. Border line test holes on the west and south, drilled by Santa Fe Railroad Company and by ourselves, indicate a substantial presence of the Todilto Limestone. Ore bodies discovered in this area can be mined by open pit methods.

In the middle of the land covered by this application, in an undefined belt, presumed at this time to extend in a diagonal northwest-southeast direction, we are anticipating a considerable amount of local erosion channels in which the ore bearing limestone formation is partly or even completely removed. Drilling depths will average about 100 feet. Only blowsand will cover the orebodies discovered in this area. Adverse conditions to mining feasibility in this area may preclude any intensive drilling even if ore is located with the primary grid. This determination will have to be made if and when the problem arises.

In the northeasterly part of the land covered by this application we can expect full sections of the ore bearing limestone capped by the Summerville Sandstone. Drilling depths will be the deepest in this area, but mining feasibility by underground methods is assured by the fact that the Summerville Sandstone overlays the ore bearing limestone providing a ceiling which can be economically cribbed.

In view of the complexity of geologic conditions we know we can anticipate, we plan to drill first on a broad 200 foot grid to eliminate unfavorable ground immediately from further consideration.

The 200 foot grid will be our basic grid, excepting in areas with drilling depths of 65 feet or less in which the 100 foot grid will be our basic grid. All off-set holes to our basic grids will be predicated on a show of abnormal radio-activity. Our drilling patterns will be systematically shortened as necessary using 100 foot, 50 foot, and 25 foot grids in suspect areas. The 25 foot grid will be used to outline and evaluate ore bodies.

On the basis of what is know about the surrounding area it is possible that as much as 20% of the area to be explored hereunder will show varying degrees of mineralization requiring intensive exploration.

F. O. Manol
Bos 246
Grants, N.M.

SUPPLEMENTAL INFORMATION TO FORM MF-103

5b. All holes will be logged by a mobile radiometric logging unit and a permanent record of the intensity of the gamma radiation for every inch of every hole will be procured and kept in our files. This very sensitive instrument greatly increases chances for discoveries and simultaneously cuts uranium exploration costs tremendously by eliminating the need for core drilling, and much of the catching of drill cuttings for assay purposes. The instrument enables the project supervisor to decide immediately where to drill off-set holes. No waiting for assays is necessary.

Only on the final 25 foot grid will we catch cuttings. This will be done every two feet while in the ore bearing limestone formation. These will be sacked and cataloged, and field checked with a good sensitive Geiger Counter. Those samples of cuttings which show uranium mineralization approaching ore grade of better will be carefully assayed by radiometric methods and a systematic permanent record of them will be kept. This information will then be used to evaluate any ore bodies discovered.

We are satisfied by our past experiences that radimetric assays of ore in the Todilto Limestone formation are in equilibrium with chemical assays. Therefore no costly chemical assays are contemplated.

5d The writer, F. O. Manol, will supervise the exploration program. He has managed the mining and exploration of contiguous property for the past two years. His record has been one of the most successful in the Grants Mining Dristrict.

The writer is also a partner in the Four Corners Exploration Company, Box 101, Grants, New Mexico. His partner and associate in that venture is Irving Rapaport of Grants, New Mexico, a Geologic Engineer formerly employed in technical and supervisory capacity by the Atomic Energy Commission.

Prior to being in the mining business the writer was Chief Accountant and Office Manager for the H. K. Ferguson Company of Cleveland, Ohio in the construction industry. 1940 to 1946. During this time he was Project Auditor on multi-million dollar government contracts. Subsequently to 1952 he was successfully in business for himself. He sold out his partnership interest in the Home Furnishings Company of Aztec, New Mexico in 1952 to devote his full time to mining.

The writer is thoroughly familiar with and able to provide any form of accountability which the DMEA may require.

F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MF-103

Estimate:

(a) Independent Contracts	Quantity	Unit Cost	Total
Drilling Test Holes 0 to 100 ft.	65,448 ft.	$.50	$32,724.00
Drilling Test Holes 101 to 200 ft.	6,912 ft.	1.00	6,912.00
Blowing & Catching Drill Hole Cuttings for Assay Purposes	13,950 ft.	.50	6,975.00
Radiometric Log of Test Holes	45,000 ft.	.15	6,750.00
Radiometric Scan of Test Holes	27,360 ft.	.07	1,915.20
Radiometric Assay of Cuttings, this includes collecting, mixing, pulverizing, and assaying.	3,987 ea.	1.00	3,987.00
Contingencies	Lump Sum		2,000.00
Supervision, Geologic Consultation, Mine Evaluation, Surveying and Laying-out Grids, Accounting, and equipment and supplies, etc. incidental to these services.	72,360 ft.	.15	10,854.00
			72,117.20
New Mexico School Tax 2%			1,442.34
Total Maximum Cost of Project			$73,559.54

Please note entire project is on contract and all costs are based on amount of work performed on unit cost basis. This makes for a simple determination of costs no matter what quantities of work have been performed when project is completed.

This is a maximum estimate based on very favora le results in our primary and secondary drilling. It is very likely that we will not need the total amount of money in this estimate. Yet we must be prepared to carry out a sound program to its proper conclusion should substantial discoveries be made.

F. O. Manol
Box 246
Grants, N.M.

DRILLING COMPUTATIONS

(1) Total area to be drilled is 1320' x 2640', or total of 3,484,800 square feet.

(2) All holes are carried 5 feet below ore bearing Todilto Limestone formation. Average depth of holes as determined with attached structure-contour map is 80.4 feet.

(3) Primary grid is on 200' centers, each hole serving 40,000 square feet of area.
Secondary " " " 100' " , " " " 10,000 " " " " .
Third " " " 50' " , " " " 2,500 " " " " .
Final " " " 25' " , " " " 625 " " " " .

(4) 30% of area (1,045.440 SF) it is estimated will have to be drilled on 200' grid only.
50% of area (1,742,400 SF) it is estimated will have to be drilled on 100' grid before it can be eliminated from further consideration.
10% of area (348,480 SF) it is estimated will have to be drilled on 50' grid before it can be eliminated from further consideration. This grid will be used on highly suspect areas.
10% of area (348,480 SF) it is estimated will have to be drilled on 25' grid. This grid is for detailing and evaluating ore bodies.

(5) 1,045,440 SF divided by 40,000 SF equals 27 holes.
1,742,400 SF " " 10,000 SF " 175 " .
348,480 SF " " 2,500 SF " 140 " .
348,480 SF " " 625 SF " 558 " .

(6) Maximum total number of holes contemplated in this drilling program is 900. If the primary and secondary grids failed to produce highly suspect areas a maximum of 202 holes would be drilled. The actual figure will be somewhere between 202 and 900 depending on the amount of success in locating ore bodies.

(7) 32% of holes (288) will be more than 100' deep averaging 124'. These figures are developed for calculating drilling costs on holes having a depth of more than 100'. These figures are calculated from the attached structure-contour map.

(8)

Total drilling footage 100' deep or less	65,448'	@ $ .50 per foot	$32,724.00
" " " 101' " " plus	6,912'	@ $1.60 per foot	6,912.00
Total maximum drilling footage and cost	72,360'		$39,636.00

(9) Catching cuttings for assay purposes. This will be done on final holes only. 558 holes for 25' in each hole. Total 13,950' @ $.50 per foot $ 6,975.00

TOTAL MAXIMUM DRILLING COSTS INCLUDING CATCHING OF CUTTINGS FOR ASSAY PURPOSES $46,611.00

F. O. Manol
Box 246
Grants, N.M.

UTAH | COLORADO
ARIZONA | NEW MEXICO

Four Corners Exploration Company

P. O. BOX 101 GRANTS, NEW MEXICO

IRVING RAPAPORT
F. O. MANOL

August 31, 1953

F. O. Manol and Associates
Box 246
Grants, New Mexico

Gentlemen:

Below are our prices to your organization for drilling services, supervisory and geologic services, radiometric logging services, and radiometric assay services as per your request.

Drilling:

1st 100 feet or any part thereof	$.50 per ft.
2nd 100 feet or any part thereof	1.00 per ft.

Blowing hole clean and catching cuttings every two feet. $.50 per foot extra over regular prices.

No charge for standby time on your work.

Radiometric Logging:

Logging hole furnishing original copy of log to you. $.15 per foot.

Scanning holes with logging unit but no transcript furnished. $.07 per foot.

With this service you can log just the suspected ore zones and scan for unexpected mineralization in other zones of the drill holes. Substantial savings can be effected in this manner.

Radiometric Assaying:

Collecting, mixing, pulverizing; sacking, assaying drill hole cuttings. $1.00 each.

Supervision:

Supervision, geologic consultation, mine evaluation, surveying and laying-out grids, accounting, and equipment and supplies, etc. incidental to these services. $.15 per foot.

We believe we are the only organization in the uranium exploration business providing a complete package deal exploration service combining all necessary services into one easy to administer contract.

Very truly yours,

Irving Rapaport

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
JUN 25 1953

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-3089
Metal or Mineral
Date Received 6/25/53
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: F. O. Manol--P.O. Box 246--Grants, New Mexico--Operator and Agent for group venture of persons named in supplement attached hereto.

(*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 South Half of the Northeast Quarter; North Half of the East Half of the Southwest Quarter; Lot 3 in the Southwest Quarter; all in Section 30, Township 13, Range 9 West, County of McKinley, State of New Mexico.

(*b*) State any mine name by which the property is known. F. O. Manol

(*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. See attached data

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable

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.

(*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.

(*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 wish to explore Uranium

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

(*c*) The work will start within 90 days and be completed within 15 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 [X] 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 June 15, 1953

J O Manol
(Applicant)

By J O Manol

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

SUPPLEMENT TO INSTRUCTION NUMBER 1
of DMEA Form MF-103

Names and addresses of owners of lease and their proportion of ownership:

F. O. Marol------P.O. Box 113-------Aztec, New Mexico		1/6
Robert B. McNeely--337 S. Terrace Dr.--Wichita, Kansas		1/12
Joy C. McNeely-----337 S. Terrace Dr.--Wichita, Kansas		1/12
John S. McNeely----5546 Merrimac-------Dallas, Texas		1/12
Flo S. McNeely-----5546 Merrimac-------Dallas, Texas		1/12
G. E. Ponder-------3136 Stanford-------Dallas, Texas		1/12
Edna F. Ponder-----3136 Stanford-------Dallas, Texas		1/12
Tom Harley, Jr.----Fourth Nat. Bank Bldg.--Wichita, Kan.		1/6
Grady B. Coan----------Aztec, New Mexico		1/30
Thomas A. King**********----------Aztec, New Mexico		1/30
L. G. and/or Evalyn Stearns----------Aztec, New Mexico		1/30
E. A. Anderson----5860 Layor Drive----Cleveland 29, Ohio		1/60
E. J. Hakalinen---4805 S. Michigan----South Bend, Ind.		1/60
O. H. Armstrong---Box 6----------Bismarck, N.D.		1/75
D. R. Dobyns------731 S. Delaware-----Irving, Texas		1/75
H. V. Copeland----------Aztec, New Mexico		1/150

Submitted by: F. O. Marol
Box 246
Grants, New Mexico

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

Original Appl

Defense Minerals Administration
RECEIVED
JUN 25 1953

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 - 3089
Metal or Mineral
Date Received 6/25/53
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: F. O. Manol--P.O. Box 246--Grants, New Mexico--Operator and Agent for group venture of persons named in supplement attached hereto.

(*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 South Half of the Northeast Quarter; North Half of the East Half of the Southwest Quarter; Lot 3 in the Southwest Quarter; all in Section 30, Township 13, Range 9 West, County of McKinley, State of New Mexico.

(*b*) State any mine name by which the property is known. F. O. Manol

(*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. See attached data

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable

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.

(*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.

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

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

(*c*) The work will start within 90 days and be completed within 15 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.).

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(*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 [x] 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 June 15, 1953

J O Manol
(Applicant)

By J O Manol

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

SUPPLEMENT TO INSTRUCTION NUMBER 1
of DMEA Form MF-103

Names and addresses of owners of lease and their proportion of ownership:

F. O. Manol------P.O. Box 113-------Aztec, New Mexico		1/6
Robert B. McNeely--337 S. Terrace Dr.--Wichita, Kansas		1/12
Joy C. McNeely-----337 S. Terrace Dr.--Wichita, Kansas		1/12
John S. McNeely----5546 Merrimac-------Dallas, Texas		1/12
Flo S. McNeely-----5546 Merrimac-------Dallas, Texas		1/12
G. E. Ponder-------3136 Stanford-------Dallas, Texas		1/12
Edna F. Ponder-----3136 Stanford-------Dallas, Texas		1/12
Tom Harley, Jr.----Fourth Nat. Bank Bldg.--Wichita, Kan.		1/6
Grady B. Coan----------Aztec, New Mexico		1/30
Thomas A. King*********----------Aztec, New Mexico		1/30
L. G. and/or Evalyn Stearns----------Aztec, New Mexico		1/30
E. A. Anderson----5860 Layor Drive----Cleveland 29, Ohio		1/60
E. J. Hakulinen---4805 S. Michigan----South Bend, Ind.		1/60
O. H. Armstrong---Box 6----------Bismarck, N.D.		1/75
D. R. Dobyns------731 S. Delaware-----Irving, Texas		1/75
H. V. Copeland----------Aztec, New Mexico		1/150

Submitted by; F. O. Manol
Box 246
Grants, New Mexico

F. O. Manol
Box # 246
Grants, N.M.

OPERATING AGREEMENT

THIS AGREEMENT, made and entered into this 1st day of July, 1952, by and between ROBERT B. McNEELY, JOY C. McNEELY, TOM HARLEY, JR., all of Wichita, Kansas; S. E. POWDER, EDNA F. POWDER, JOHN J. McNEELY, FLO J. McNEELY, all of Dallas, Texas; JAMES S. OGAN, L. J. O'Leary, THOMAS A. KING, H. V. COPELAND, all of Aztec, New Mexico; ELMER A. ANDERSON of Cleveland, Ohio; ELMER J. HAKULINEN of South Bend, Indiana; D. RAY DOBYNS of Irving, Texas; and ORVEN M. ARMSTRONG of Port Arthur, Texas, Parties of the First Part, and F. O. MANOL, Party of the Second Part.

WITNESSETH:

WHEREAS, all of the parties hereto are the owners of a certain mineral lease covering the following described real estate, to wit:

> The North Half of the Southeast Quarter (N½ SE¼) and the South Half of the Northeast Quarter (S½ NE¼) and Lots Three (3) and Four (4) and the East Half of the Southwest Quarter (E½ SW¼) of Section Thirty (30), Township Thirteen (13) North of Range Nine (9) West of the New Mexico Meridian, McKinely County, New Mexico,

and

WHEREAS, it is necessary to have someone operate and manage said lease and supervise the mining of uranium ore therefrom, and

WHEREAS, said Parties of the First Part desire to have said Party of the Second Part operate and manage said lease and supervise the mining of uranium ore therefrom and which duties said Party of the Second Part is willing to assume until such time as another person can be obtained, subject to the terms and conditions hereinafter set out.

IT IS NOW, THEREFORE, MUTUALLY CONSIDERED AND AGREED THAT in consideration of the terms, covenants, and conditions hereinafter set forth, said Party of the Second Part shall have the operation, management and supervision of said lease for the mining and production of uranium and other minerals that might

be found and that said lease and mining shall be operated and conducted as hereinafter set forth.

FIRST: That Parties of the First Part, and each of them, individually, do hereby authorize and empower said Party of the Second Part to make any application or agreement with the Atomic Energy Commission, any other branch of the Federal Government, the Anaconda Mining Company or any other purchaser of uranium ore designated by the Atomic Energy Commission relative to the mining and sale of uranium ore as may be required by the Atomic Energy Commission; to receive and receipt for any and all moneys received from the production and sale of ore from said afore-described property. Any moneys so received shall be deposited in a bank located in the State of New Mexico to be selected by said Party of the Second Part to the account of said Party of the Second Part and said Robert S. McNeely.

SECOND: That the parties hereto will leave on deposit in said bank account a sum of money to be later agreed upon by the parties hereto.

THIRD: That said Party of the Second Part and said Robert S. McNeely will each furnish a surety bond in a recognized surety company authorized to do business in the State of New Mexico in the amount of Five Thousand Dollars ($5,000.00) upon the conditions that said Party of the Second Part or said Robert S. McNeely will not embezzle, misappropriate, steal or take any of the moneys received from the sale of ore from the afore-described lease or from the aforesaid bank account; that the premiums to be paid on said bonds shall be paid out of the aforesaid bank account and charged to expense.

FOURTH: Said Party of the Second Part shall hire and employ all persons that may be deemed necessary to mine and operate such lease and contract for the hauling to the mill of any ore that may be mined or produced; it being expressly understood and agreed that said Party of the Second Part shall incur no expense in an amount in excess of Five Hundred Dollars

($500.00) except by consent of the Parties of the First Part.

FIFTH: That said Party of the Second Part shall obtain and keep any and all types of insurance that may be necessary to protect the parties hereto in the mining and operating of said lease and pay all taxes which may be assessed upon said lease and any equipment that may be purchased to operate the same.

SIXTH: Said Party of the Second Part in consideration of his management and supervision of said lease and mining operations shall receive the sum of Forty Dollars ($40.00) per day for each day spent in managing and supervising said lease, which sum shall be charged to the mining and operation of said lease and shall be payable on the first day of the next month following the performance of such services.

SEVENTH: That said Party of the Second Part will keep a true and correct record of all moneys received from the sale of ore and bonuses received from the United States Government and all expenses which may be incurred in the mining and operation of said lease and will mail to each of said Parties of the First Part an itemized statement of such receipts and expenditures on or before the 15th day of each month and said records of said Party of the Second Part shall be open to inspection to each of said Parties of the First Part during the regular business hours.

EIGHTH: That after minerals are being produced and sold from said lease and money has accumulated in said bank account in excess of the amount to remain there, such excess shall be distributed and paid to the Parties hereto according to their interest in said lease on or before the 20th day of each month.

NINTH: Said Party of the Second Part shall promptly pay the royalty due on said lease and assignment thereof as soon as he receives any money from the sale of any ore produced from said lease and charge the same to expense.

TENTH: That each of the parties now is and shall continue to be the sole owner of his or her proportionate share of the production. That said Party of the Second Part shall market the production from the above-described leased premises for the respective parties but this authority shall be terminable at any time and without notice. And provided further that, at any time, each of the parties hereto shall be entitled to designate the purchaser of his or her share of said production, or to take delivery thereof in kind, upon furnishing the necessary receiving facilities.

ELEVENTH: It is further understood and agreed between the parties hereto that, in the event said Party of the Second Part, or any other of the parties hereto who may be operating the above described mining lease, shall sell his or her interest in said mining lease, then the right of operation shall not pass to the assignees or grantees of said interest, but shall revert to the remaining parties to this agreement, who shall then be entitled to assume the operation of the hereinbefore described mining lease.

TWELFTH: This agreement shall extend to and be binding upon the parties, their heirs, executors, administrators, legatees, assigns, and successors in interest.

IN WITNESS THEREOF, we have hereunto set our hands the day and year first above written.

Robert B. McNeely

Joy C. McNeely

Tom Harley, Jr.

G. E. Ponder

Edna F. Ponder

John S. McNeely

Flo S. McNeely

Judy B. Coan

E. J. Stearns

Thomas A. King

H. V. Copeland

Elmer A. Anderson

Elmer J. Hakulinen

D. Ray Dobyns

Orven A. Armstrong

PARTIES OF THE FIRST PART

F. O. Manol

PARTY OF THE SECOND PART

SUPPLEMENT TO INSTRUCTION NUMBER 4
of DMEA Form MF-103

4a No mining activity or exploration has yet taken place on the land covered by this application. However, the applicant has conducted a successful strip mining operation on contiguous property in the same Section of land. This mining operation will be more fully described in another part of this folio.

4b Not applicable.

4c The property to be explored is a colluvial covered dip slope bench of the Todilto limestone of upper Jurassic age. Uranium minerals found in the Todilto are tyuymanite, uranophane, and small amounts of pitchblende. The minerals have been deposited along fractures, bedding planes, and individual crystals of calcite. These ores are intimately associated with hematite and psilomelene.

4c The uranium deposits in the Todilto are essentially tabular bedded deposits ranging in thickness up to twelve feet, and in lateral extent to over 100,000 square feet.

4c The attached structure contour map indicating the elevation of the base of the Todilto limestone has been used in calculating drilling depths. The map has been compiled from drill hole information

4c The South Half of the Northeast Quarter of Section 30, Township 13, Range 9 West, part of which land is included in this application, has the Summerville and Bluff sandstones overlaying the ore bearing Todilto limestone. Therefore ore deposits in this area can be mined by underground mining methods. It is expected that the Todilto limestone in this area will be found in its original full thickness of 20 plus feet.

4c Lot 3 of the Southwest Quarter, and the North Half of the East Half of the Southwest Quarter; both in Section 30, Township 13, Range 9 West, and which land is included in this application, presents a complexity of geologic conditions:

The northeast part of this land has sandstone overlaying the Todilto limestone. Ore bodies therefore can be mined by underground methods where this condition applies.

A broad belt extending diagonally through this land from the northwest corner to the southeast corner need not be explored because it can not be economically mined by either open pit or underground methods. In this area the Todilto limestone is covered by only blowsand which is in excessive depths, more than 30 feet, for feasible mining conditions.

The southwest part of this land should be explored because it can be mined by open pit methods. The blowsand overburden is less than 30 feet thick in this area.

An exact delineation of these three areas has not yet been determined.

J O Maul
Box 246
Grants N M

SUPPLEMENT TO INSTRUCTION NUMBER 4
of DMEA Form MF-103

4c We believe the land covered by this application merits exploration for uranium ores for the following reasons;

Adjoining sections of land on the north, west, and south all have substantial known ore reserves. In other words our land is right in the middle of a proven ore belt.

We have already mined more than 5,400 tons of ore assaying more than .20% U308 out of the subject section of land. We have explored about 50 acres in this section at our own expense. All of this has been done in Lot 4 of the Southwest Quarter, and the South Half of the East Half of the Southwest Quarter.

Unfortunately this part of our lease has had most of the Todilto formation eroded away and consequently we have not proven large ore reserves. Our exploration has led us to believe that the land once probably had substantial amounts of ore prior to erosion.

We drilled three test holes on the South Half of the Northeast Quarter, which land is included in this application, to get structure contour information. These holes were logged by the Grants, N.M. AEC office. One of these holes logged four to five feet of ore grade mineralization. The maximum scintilometer count in this hole reached 17,500. A count of 3,000 is presumed to approximate .10% ore. The maximum count was at a depth of 77 feet.

4d This property is 16 miles north and west of Grants, N.M.. It is 13 miles north off of U.S. Highway 66, is on level ground and is easily accesible. It is 19 miles from the Anaconda Copper Mining Company's uranium ore buying station.

4e All mining needs, equipment, supplies, and manpower are readily available.

J O Manal
Box 241
Grants, NM

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

5d The writer, F. O. Manol, will supervise the exploration program. He has been in constant contact with this work since operations were started last year in the Grants Mining District.

He has been in charge of a successful mining and development program in the same section of land for which this exploration loan is being sought.

The writer introduced and brought into the area the rotary air drilling unit which now has won the full acceptance of all operators and AEC personnel who are engaged in or are concerned with lowering the ~~XXXX~~ cost of uranium exploration.

Prior to being in the mining business he worked for many years in management positions in the construction industry and in business for himself. He is thoroughly familiar with and able to provide any form of accountability which the DMEA will require.

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MF-103

Estimate:

	Quantity		Unit Cost	Total
(a) Independent Contracts				
Drilling Test Holes 0 to 100 ft.	74,267.6	ft.	$.50	$37,133.80
" " " 101 to 200 ft.	8,704.6	ft.	$1.00	8,704.60
Catching Test Hole Cuttings	10,800	ft.	.50	5,400.00
Logging Test Holes by AEC	842	ea.		N.C.
Assaying Cuttings-Chemical	1,728	ea.	7.00	12,096.00
Surveying & Laying-out Grid	Lump Sum			500.00
(b) Labor, Supervision, Consultants				
Superintendent, one	52	wk.	200.00	10,400.00
Laborer, one	52	wk.	50.00	2,600.00
(c) Operating Materials & Supplies				
Gasoline, Oil & Grease	52	wk.	10.00	520.00
Office Supplies	52	wk.	1.00	52.00
(d) Operating Equipment				
1952 Dodge 3/4 Ton Pickup	12	mo.	50.00	600.00
Typewriter	12	mo.		N.C.
Tool Shed	12	mo.		N.C.
Bunk House	12	mo.		N.C.
Geiger Counters	12	mo.		N.C.
Small Tools	12	mo.		N.C.
(e) Rehabilitation & Repairs				None
(f) New Buildings, Improvements, Installations				None
(g) Miscellaneous				
Repairs to Pickup	Lump Sum			100.00
Workmens Comp. Ins.	"	"		190.00
Payroll Taxes	"	"		45.00
School Tax	"	"		1,278.00
Other Miscellaneous	"	"		200.00
(h) Contingencies				None
Total estimate				$79,819.40

Special Note: Radiometric and chemical assays in limestone ore run very close toghether. We believe it pointless to run chemical assays in view of this fact, however, the estimate is based on chemical assays. We believe $842 would be sufficient for radiometric assaying purposes. This would result in a considerable saving.

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "A"

We are designating the drilling area shown by red pencil marks with depth figures at the right on the attached structure contour map as Area "A" in this application.

We have under lease the entire quarter section shown on the map but at this time we propose to drill only to depths of 150 feet. Leaving the remainder of the area for development at some future date.

Area "A" consists of about 26 acres, more or less. It has sandstone overlaying the Todilto limestone formation. Therefore ore bodies found inits confines can be mined by underground methods.

We are planning a three phase drilling program on this area which we are calling our primary, secondary, and final detail programs. Our primary drilling in this area will be on a grid of 100 foot centers. These will be plain holes to be logged by the Grants, N.M. AEC Office mobile logging unit. No catching of cuttings is contemplated. We are guessing that the primary drilling will indicate mineralization in 20% (more or less) of the total area drilled. This is on the basis of our drilling experience in other parts of the same section.

Our secondary drilling phase is a reduction of the 100 foot grid to a 50 foot grid in all suspect mineralized areas. These holes too will be plain holes with no catching of samples contemplated, just logging by the AEC.. We are guessing that the secondary drilling program will eliminate from further consideration one-half of the total mineralized area as not having potential ore grade mineralization.

This leaves about 10% of the original drilled area for detail drilling of ore bodies on a 25 foot grid. On our detail holes we plan to catch cuttings while in the ore bearing Todilto limestone formation. This will be for about twenty five feet in each detail hole.

Drilling Cost Estimate on Area "A":

146	Primary holes	Average depth	118.5 feet	Cost Holes each	$68.50	Total	$10,001.00
43	Secondary holes	" "	118.5 "	" " "	68.50	"	2,945.50
201	Detail holes	" "	118.5 "	" " "	68.50	"	13,768.50
201	Catching Cuttings	" "	25.0 "	" " "	12.50		2,512.50
			Total Estimated Drilling Cost				$29,227.50

J O Manol
Box 246
Grants, N M

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "B"

We are designating two drilling areas on the attached structure contour map. These areasare shown with drill holes indicated with red pencil marks, with drilling depths given immediately at the right. The right hand area on the map shall be referred to as Area "B" in this application.

We have under lease the entire quarter section shown on the map but we are mining and exploring the south half of the quarter section with our own funds and therefore we are excluding that area from this application.

Area "B" consists of 19.2 acres, more or less. The borders of the area have not been determined. The area has sandstone overlaying the Todilto limestone formation. Therefore ore bodies found in its confines can be mined by underground methods.

We are planning a three phase drilling program on this area which we are calling our primary, secondary, and final detail programs. Our primary drilling in this area will be on a grid of 100 foot centers. These will be plain holes to be logged by the Grants, N.M. AEC Office mobile logging unit. No catching of cuttings is contemplated. We are guessing that the primary drilling will indicate mineralization in 20%, more or less, of the total area drilled. This is on the basis of our drilling experience in other parts of the same section.

Our secondary drilling phase is a reduction of the 100 foot grid to a 50 foot grid in all suspect mineralized areas. These holes too will be plain holes with no catching of cuttings contemplated, just logging by the AEC. We are guessing that the secondary drilling program will eliminate from further consideration one-half of the total mineralized area as not having potential ore grade mineralization.

This leaves about 10 % of the original drilled area for detail drilling of ore bodies on a 25 foot grid. On our detail holes we plan to catch cuttings XXXX for assay purposes every two feet of depth while in the ore bearing Todilto limestone formation. This will be for about 25 feet in each detail hole.

Drilling Cost Estimate on Area "B":

30	Primary holes	Average depth	105.6	feet	Cost holes each			$55.60	Total	1,668.00
30	Secondary holes	"	"	105.6	"	"	"	" 55.60	"	~~2,397.80~~ 2,672.80
138	Detail holes	"	"	105.6	"	"	"	" 55.60	"	1,725.00
138	Catching cuttings	"	"	25.0	"	"	"	" 12.50	"	

Total estimated drilling cost $16,514.60

Submitted by: F. O. Manol
Box 246
Grants, N.M.

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "C"

We are designating two drilling areas on the attached structure contour map. These areas are shown with drill holes indicated with red pencilmarks, with drilling depths given immediately at the right.. The left hand area on the map shall be referred to as Area "C" in this application.

We have under lease the entire quarter section shown on the map but we are mining and exploring the south half of the quarter section with our own funds and therefore we are excluding that area from this application.

Area "C" consists of 13.9 acres, more or less. The borders of the area have not been determined. Only blowsand overlays the orebearing limestone formation because the sandstone has all been eroded away. In this area we consider it unfeasible to explore where the blow sand overburden exceeds 35 feet because this area must be XXXXX mined by open pit methods,and where the ore is at greater depths we do not feel that it will be economic to mine.

On this area we are planning the same type three phase drilling program as we mentioned with reference to Area "A" and Area "B" excepting that we will first open up our primary grid on 200 foot denters to test for the presence of the Todilto limestone which in the south half of the quarter section we often found in part or wholely eroded away. If the Todilto formation is not present there is no point in continuing with the balance of the drilling program.

Drilling Cost Estimate on Area "C":

72	Primary holes	Average	depth	46.6	feet	Cost	holes	each	$23.30	Total $1,677.60
21	Secondary holes	"	"	46.6	"	"	"	"	$23.30	Total 489.30
93	Detail holes	"	"	46.6	"	"	"	"	23.30	" 2,166.90
93	Catching cuttings	"	"	25.0	"	"	"	"	12.50	" 1,162.50

Total estimated drilling cost $5,496.30

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

F. O. Manol
Box # 246
Grants, N.M.

[illegible] AGREEMENT

[illegible], made and entered into this 1st day of [illegible], 1956, by and between [illegible] B. McNEELY, [illegible] B. McNEELY, [illegible], all of Wichita, Kansas; [illegible] McNEELY, [illegible] F. [illegible], [illegible] McNEELY, [illegible] McNEELY, all of Dallas, Texas; [illegible] Beck, [illegible], Thomas [illegible], [illegible] McNEELY, all of Aztec, New Mexico; [illegible] of Cleveland, Ohio; [illegible] McNEELY of South Bend, Indiana; [illegible] RAY [illegible] of Irving, Texas; and [illegible] of Port Arthur, Texas, parties of the First Part, and F. O. MANOL, Party of the Second Part.

WITNESSETH:

WHEREAS, all of the parties hereto are the owners of a certain mineral lease covering the following described real estate, to wit:

> The North Half of the Southeast Quarter (N½ SE¼) and the South Half of the Northeast Quarter (S½ NE¼) and Lots Three (3) and Four (4) and the East Half of the Southwest Quarter (E½ SW¼) of Section Thirty (30), Township Thirteen (13) North of Range Nine (9) West of the New Mexico Meridian, McKinnely County, New Mexico,

and

WHEREAS, it is necessary to have someone operate and manage said lease and supervise the mining of uranium ore therefrom, and

WHEREAS, said Parties of the First Part desire to have said Party of the Second Part operate and manage said lease and supervise the mining of uranium ore therefrom and which duties said Party of the Second Part is willing to assume until such time as another person can be obtained, subject to the terms and conditions hereinafter set out.

IT IS NOW, THEREFORE, MUTUALLY CONSIDERED AND AGREED THAT in consideration of the terms, covenants, and conditions hereinafter set forth, said Party of the Second Part shall have the operation, management and supervision of said lease for the mining and production of uranium and other minerals that might

be found and that said lease and mining shall be operated and conducted as hereinafter set forth.

FIRST: That parties of the First Part, and each of them, individually, do hereby authorize and empower said Party of the Second Part to make any application or agreement with the Atomic Energy Commission, any other branch of the Federal Government, the Anacondas Mining Company, or any other purchaser of uranium ore designated by the Atomic Energy Commission relative to the mining and sale of uranium ore as may be required by the Atomic Energy Commission; to receive and receipt for any and all moneys received from the production and sale of ore from said afore-described property. Any moneys so received shall be deposited in a bank located in the State of New Mexico to be selected by said Party of the Second Part to the account of said Party of the Second Part and said Robert S. McNeely.

SECOND: That the parties hereto will leave on deposit in said bank account a sum of money to be later agreed upon by the parties hereto.

THIRD: That said Party of the Second Part and said Robert S. McNeely will each furnish a surety bond in a recognized surety company authorized to do business in the State of New Mexico in the amount of Five Thousand Dollars ($5,000.00) upon the conditions that said Party of the Second Part or said Robert S. McNeely will not embezzle, misappropriate, steal or take any of the moneys received from the sale of ore from the afore-described lease or from the aforesaid bank account; that the premiums to be paid on said bonds shall be paid out of the aforesaid bank account and charged to expense.

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($500.00) except by consent of the Parties of the First Part.

FIFTH: That said Party of the Second Part shall obtain and keep any and all types of insurance that may be necessary to protect the parties hereto in the mining and operating of said lease and pay all taxes which may be assessed upon said lease and any equipment that may be purchased to operate the same.

SIXTH: Said Party of the Second Part in consideration of his management and supervision of said lease and mining operations shall receive the sum of Forty Dollars ($40.00) per day for each day spent in managing and supervising said lease, which sum shall be charged to the mining and operation of said lease and shall be payable on the first day of the next month following the performance of such services.

SEVENTH: That said Party of the Second Part will keep a true and correct record of all moneys received from the sale of ore and bonuses received from the United States Government and all expenses which may be incurred in the mining and operation of said lease and will mail to each of said Parties of the First Part an itemized statement of such receipts and expenditures on or before the 10th day of each month and said records of said Party of the Second Part shall be open to inspection to each of said Parties of the First Part during the regular business hours.

EIGHTH: That after minerals are being produced and sold from said lease and money has accumulated in said bank account in excess of the amount to remain there, such excess shall be distributed and paid to the Parties hereto according to their interest in said lease on or before the 20th day of each month.

NINTH: Said Party of the Second Part shall promptly pay the royalty due on said lease and assignment thereof as soon as he receives any money from the sale of any ore produced from said lease and charge the same to expense.

TENTH: That each of the parties now is and shall continue to be the sole owner of his or her proportionate share of the production. That said Party of the Second Part shall market the production from the above-described leased premises for the respective parties but this authority shall be terminable at any time and without notice. And provided further that, at any time, each of the parties hereto shall be entitled to designate the purchaser of his or her share of said production, or to take delivery thereof in kind, upon furnishing the necessary receiving facilities.

ELEVENTH: It is further understood and agreed between the parties hereto that, in the event said Party of the Second Part, or any other of the parties hereto who may be operating the above described mining lease, shall sell his or her interest in said mining lease, then the right of operation shall not pass to the assignees or grantees of said interest, but shall revert to the remaining parties to this agreement, who shall then be entitled to assume the operation of the hereinbefore described mining lease.

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IN WITNESS THEREOF, we have hereunto set our hands the day and year first above written.

Robert B. McNeely

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PARTIES OF THE FIRST PART

F. C. Manol

PARTY OF THE SECOND PART

SUPPLEMENT TO INSTRUCTION NUMBER 4
of DMEA Form MF-103

4a No mining activity or exploration has yet taken place on the land covered by this application. However, the applicant has conducted a successful strip mining operation on contiguous property in the same Section of land. This mining operation will be more fully described in another part of this folio.

4b Not applicable.

4c The property to be explored is a colluvial covered dip slope bench of the Todilto limestone of upper Jurassic age. Uranium minerals found in the Todilto are tyuymanite, uranophane, and small amounts of pitchblende. The minerals have been deposited along fractures, bedding planes, and individual crystals of calcite. These ores are intimately associated with hematite and psilomelene.

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4c The attached structure contour map indicating the elevation of the base of the Todilto limestone has been used in calculating drilling depths. The map has been compiled from drill hole information

4c The South Half of the Northeast Quarter of Section 30, Township 13, Range 9 West, part of which land is included in this application, has the Summerville and Bluff sandstones overlaying the ore bearing Todilto limestone. Therefore ore deposits in this area can be mined by underground mining methods. It is expected that the Todilto limestone in this area will be found in its original full thickness of 20 plus feet.

4c Lot 3 of the Southwest Quarter, and the North Half of the East Half of the Southwest Quarter; both in Section 30, Township 13, Range 9 West, and which land is included in this application, presents a complexity of geologic conditions:

The northeast part of this land has sandstone overlaying the Todilto limestone. Ore bodies therefore can be mined by underground methods where this condition applies.

A broad belt extending diagonally through this land from the northwest corner to the southeast corner need not be explored because it can not be economically mined by either open pit or underground methods. In this area the Todilto limestone is covered by only blowsand which is in excessive depths, more than 30 feet, for feasible mining conditions.

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J O Manol
Box 246
Grants, N M

SUPPLEMENT TO INSTRUCTION NUMBER 4
of DMEA Form MF-103

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4e All mining needs, equipment, supplies, and manpower are readily available.

J J Maul
Box 246
Grants, N M

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "A"

We are designating the drilling area shown by red pencil marks with depth figures at the right on the attached structure contour map as Area "A" in this application.

We have under lease the entire quarter section shown on the map but at this time we propose to drill only to depths of 150 feet. Leaving the remainder of the area for development at some future date.

Area "A" consists of about 26 acres, more or less. It has sandstone overlaying the Todilto limestone formation. Therefore ore bodies found inits confines can be mined by underground methods.

We are planning a three phase drilling program on this area which we are calling our primary, secondary, and final detail programs. Our primary drilling in this area will be on a grid of 100 foot centers. These will be plain holes to be logged by the Grants, N.M. AEC Office mobile logging unit. No catching of cuttings is contemplated. We are guessing that the primary drilling will indicate mineralization in 20% (more or less) of the total area drilled. This is on the basis of our drilling experience in other parts of the same section.

Our secondary drilling phase is a reduction of the 100 foot grid to a 50 foot grid in all suspect mineralized areas. These holes too will be plain holes with no catching of samples contemplated, just logging by the AEC.. We are guessing that the secondary drilling program will eliminate from further consideration one-half of the total mineralized area as not having potential ore grade mineralization.

This leaves about 10% of the original drilled area for detail drilling of ore bodies on a 25 foot grid. On our detail holes we plan to catch cuttings while in the ore bearing Todilto limestone formation. This will be for about twenty five feet in each detail hole.

Drilling Cost Estimate on Area "A":

146	Primary holes	Average	depth	118.5	feet	Cost	Holes	each	$68.50	Total $10,001.00
43	Secondary holes	"	"	118.5	"	"	"	"	68.50	" 2,945.50
201	Detail holes	"	"	118.5	"	"	"	"	68.50	" 13,768.50
201	Catching Cuttings	"	"	25.0	"	"	"	"	12.50	2,512.50

Total Estimated Drilling Cost $29,227.50

J O Manol
Box 246
Grants, N M

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "B"

We are designating two drilling areas on the attached structure contour map. These areasare shown with drill holes indicated with red pencil marks, with drilling depths given immediately at the right. The right hand area on the map shall be referred to as Area "B" in this application.

We have under lease the entire quarter section shown on the map but we are mining and exploring the south half of the quarter section with our own funds and therefore we are excluding that area from this application.

Area "B" consists of 19.2 acres, more or less. The borders of the area have not been determined. The area has sandstone overlaying the Todilto limestone formation. Therefore ore bodies found in its confines can be mined by underground methods.

We are planning a three phase drilling program on this area which we are calling our primary, secondary, and final detail programs. Our primary drilling in this area will be on a grid of 100 foot centers. These will be plain holes to be logged by the Grants, N.M. AEC Office mobile logging unit. No catching of cuttings is contemplated. We are guessing that the primary drilling will indicate mineralization in 20%, more or less, of the total area drilled. This is on the basis of our drilling experience in other parts of the same section.

Our secondary drilling phase is a reduction of the 100 foot grid to a 50 foot grid in all suspect mineralized areas. These holes too will be plain holes with no catching of cuttings contemplated, just logging by the AEC. We are guessing that the secondary drilling program will eliminate from further consideration one-half of the total mineralized area as not having potential ore grade mineralization.

This leaves about 10 % of the original drilled area for detail drilling of ore bodies on a 25 foot grid. On our detail holes we plan to catch cuttings XXXX for assay purposes every two feet of depth while in the ore bearing Todilto limestone formation. This will be for about 25 feet in each detail hole.

Drilling Cost Estimate on Area "B":

98	Primary holes	Average depth	105.6	feet	Cost holes	each	$55.60	Total	$5,448.80	
30	Secondary holes	"	"	105.6	"	"	"	"	55.60	"	1,668.00	
138	Detail holes	"	"	105.6	"	"	"	"	55.60	"	~~[illegible]~~	7,672.80
138	Catching cuttings	"	"	25.0	"	"	"	"	12.50	"	1,725.00	

Total estimated drilling cost $16,514.60

Submitted by: F. O. Manol
Box 246
Grants, N.M.

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "C"

We are designating two drilling areas on the attached structure contour map. These areas are shown with drill holes indicated with red pencilmarks, with drilling depths given immediately at the right.. The left hand area on the map shall be referred to as Area "C" in this application.

We have under lease the entire quarter section shown on the map but we are mining and exploring the south half of the quarter section with our own funds and therefore we are excluding that area from this application.

Area "C" consists of 13.9 acres, more or less. The borders of the area have not been determined. Only blowsand overlays the orebearing limestone formation because the sandstone has all been eroded away. In this area we consider it unfeasible to explore where the blow sand overburden exceeds 35 feet because this area must be ~~XXXX~~ mined by open pit methods,and where the ore is at greater depths we do not feel that it will be economic to mine.

On this area we are planning the same type three phase drilling program as we mentioned with reference to Area "A" and Area "B" excepting that we will first open up our primary grid on 200 foot denters to test for the presence of the Todilto limestone which in the south half of the quarter section we often found in part or wholely eroded away. If the Todilto formation is not present there is no point in continuing with the balance of the drilling program.

Drilling Cost Estimate on Area "C":

72	Primary holes	Average depth	46.6	feet	Cost holes each			$23.30	Total	$1,677.60
21	Secondary holes	"	"	46.6	"	"	"	"	$23.30	Total	489.30
93	Detail holes	"	"	46.6	"	"	"	"	23.30	"	2,166.90
93	Catching cuttings	"	"	25.0	"	"	"	"	12.50	"	1,162.50

Total estimated drilling cost $5,496.30

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

5d The writer, F. O. Manol, will supervise the exploration program. He has been in constant contact with this work since operations were started last year in the Grants Mining District.

He has been in charge of a successful mining and development program in the same section of land for which this exploration loan is being sought.

The writer introduced and brought into the area the rotary air drilling unit which now has won the full acceptance of all operators and AEC personnel who are engaged in or are oncerned with lowering the ~~XXXX~~ cost of uranium exploration.

Prior to being in the mining business he worked for many years in management positions in the construction industry and in business for himself. He is thoroughly familiar with and able to provide any form of accountability which the DMEA will require.

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MF-103

Estimate:

	Quantity		Unit Cost	Total
(a) Independent Contracts				
Drilling Test Holes 0 to 100 ft.	74,267.6	ft.	$.50	$37,133.80
" " " 101 to 200 ft.	8,704.6	ft.	$1.00	8,704.60
Catching Test Hole Cuttings	10,800	ft.	.50	5,400.00
Logging Test Holes by AEC	842	ea.		N.C.
Assaying Cuttings-Chemical	1,728	ea.	7.00	12,096.00
Surveying & Laying-out Grid	Lump Sum			500.00
(b) Labor, Supervision, Consultants				
Superintendent, one	52	wk.	200.00	10,400.00
Laborer, one	52	wk.	50.00	2,600.00
(c) Operating Materials & Supplies				
Gasoline, Oil & Grease	52	wk.	10.00	520.00
Office Supplies	52	wk.	1.00	52.00
(d) Operating Equipment				
1952 Dodge 3/4 Ton Pickup	12	mo.	50.00	600.00
Typewriter	12	mo.		N.C.
Tool Shed	12	mo.		N.C.
Bunk House	12	mo.		N.C.
Geiger Counters	12	mo.		N.C.
Small Tools	12	mo.		N.C.
(e) Rehabilitation & Repairs				None
(f) New Buildings, Improvements, Installations				None
(g) Miscellaneous				
Repairs to Pickup	Lump Sum			100.00
Workmens Comp. Ins.	"	"		190.00
Payroll Taxes	"	"		45.00
School Tax	"	"		1,278.00
Other Miscellaneous	"	"		200.00
(h) Contingencies				None
Total estimate				$79,819.40

Special Note: Radiometric and chemical assays in limestone ore run very close toghether. We believe it pointless to run chemical assays in view of this fact, however, the estimate is based on chemical assays. We believe $842 would be sufficient for radiometric assaying purposes. This would result in a considerable saving.

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

FILE COPY
SURNAME:

Docket.
Murphy
Ellis
Hedges
Bayne
Selfridge

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

JUL 20 1953

Mr. F. D. Manol
P. O. Box 216
Grants, New Mexico

Re: Docket No. DMA-3039 (Uranium)
I. N. Manol Mine
McKinley County, New Mexico

Dear Mr. Manol:

The application for assistance in exploring your property in McKinley County, New Mexico, under the above-captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. It has been referred for a field examination to the Executive Officer of Region IV at the following address:

Mr. [illegible] King
Executive Officer
DMEA Field Team, Region IV
224 New Customhouse Building
Denver 2, Colorado

The Regional Office will contact you at the earliest opportunity in regard to your project.

Sincerely yours,

FRANK E. JOHNSON (B.D.H.)

ACTING Administrator

7-20-53

FMMurphy/db
7/16/53
cc to: Adm. Reading File
Docket
Messrs: H.D.Keiser, Rm.3041
A.P.Butler, Jr., Rm.3206, OSA
Ellis
Murphy
DMEA Field Team, Region IV (2)

FILE COPY
SURNAME:

Docket
Murphy
Ellis
Selfridge
Hedges

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

JUL 2 0 1953

Mr. [illegible] King
Executive Officer
DMA Field Team, Region IV
22[illegible] New Customhouse Building
Denver 2, Colorado

Re: Docket No. [illegible]-3089 (Uranium)
T. O. Manol Mine
McKinley County, New Mexico

Dear Mr. King:

The captioned application is referred to your office for a field examination of the proposed project. A copy of this application was retained by your office.

Enclosed are copies of memoranda from Mr. H. E. Keiser, dated June 30, 1953, and Mr. A. P. Butler, Jr., dated July 8, 1953, outlining recommendations that should be considered by the Field Team in their study of the subject exploration proposal.

Please note that the areas A and C, shown on the project drill maps, are not included under "3. Applicant's Property Rights" in the MP-103 form submitted by the Applicant. Area C (N. [illegible]) of S. [illegible] of Sec. 30) has also been omitted in the "Operating Agreement" attached to the subject application.

If your office recommends that a contract be executed for this project, will you kindly have the Applicant submit the correct description of all boundaries of the areas subject to the proposed contract, and also seven copies of "Owner's Consent to Lien" on this land.

The present ore production area of the Manol Mine is so close to the proposed exploration area that some difficulty may be encountered in the administration of ore sales from the individual areas. If the Operator is not willing to include the whole Manol Mine area as subject to royalty payment in the event a discovery is made during the proposed exploration program, a definite arrangement should be made with the Operator in regard to the control of sales of ore that may result from the proposed drilling.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

(GCS)

MDA 7-20-53

Enclosures

APPROVED:

J. H. Hedges (JHH)

Director, Bureau of Mines

A. R. Kinkel, Jr. (ARK)

Member, Geological Survey

Messrs: H.E.Keiser, Rm. 3601
A.P.Butler, Jr., Rm. 3206, GSA
Ellis
Murphy

DMMurphy/db
7-16-53
cc to: Adm. Reading File
Operating Committee
Docket

STANDARD FORM NO. 64

7/14/53 gla

Office Memorandum • UNITED STATES GOVERNMENT

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

DATE: July 8, 1953

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

SUBJECT: Application, DMEA Docket 3089 (uranium) F. O. Manol, applicant, Grants N. Mex., 3 Parts NE 1/4 and SW 1/4 Sec. 30. T. 13 N., R. 9 W., McKinley Co., New Mexico.

The application for Government assistance to explore the property identified in the subject above has been reviewed and discussed with H. D. Keiser, Bureau of Mines Member, Uranium Commodity Committee, and J. O. Hosted, Atomic Energy Commission.

Proposal

The applicant proposes to explore parts of the NE 1/4 and SW 1/4 section 30, T. 13 N. R. 9 W. by about 83,000 feet of rotary air drilling in about 840 holes spaced from 25 to 200 feet apart. Applicants estimate of cost is $79,819.40.

Comment

No information pertinent to the applicant's property or vicinity is currently available in this office. Information furnished by the applicant indicates that much of the area of his property is underlain by the Todilto limestone which is the host rock for many of the uranium deposits in this general area. The application also states that at least 5,400 tons of ore assaying at least 0.20 percent U_3O_8 have been produced from parts of his property, and that radioactivity logging suggests the presence of more than 0.1 percent uranium in one of three test holes drilled for geologic information in one of the areas where exploration is proposed. He also reports that uranium ore is present on adjoining land.

Although the general setting appears favorable for discovery of additional ore by exploration, sufficient information to appraise the selection of areas or the amount, detail, and kind of exploration are not given in the application. Suitable evaluation can be made only as the result of inspection by the Field Team and consultation with the staff of the Grants sub-office, Atomic Energy Commission who have studied the geology and ore deposits of the general area and are familar with the distribution and habits of the ore deposits and with methods of exploring for them.

It should be noted that the applicant's map of exploration area "A" shows it to be in the N 1/2 SE 1/4 Sec. 30, whereas item 3 form MF-103 refers to land in the S 1/2 NE 1/4 Sec. 30.

The applicant proposes to collect cuttings for analysis only in his third stage or detailed holes. Favorability of more widely spaced holes, which would provide the basis for determining where the more closely spaced holes should be placed, would be based solely on interpretation of the results of logging the holes for radioactivity by the Atomic Energy

Commission. This method of estimating presence of uranium minerals and the favorability of the hole should be deemed acceptable only if the Atomic Energy Commission staff consider it a sound method of planning other holes and interpret the results of the logging in such a way as to provide a sound basis for judging the degree of favorability indicated by the logging.

Recommendations

I recommend that this application be referred to the Field Team for their consideration and recommendations concerning its appropriateness and the amount of and detail of exploration that might be desirable.

It is suggested that the examining members of the Field Team consult fully with the staff of the Grants sub-office Atomic Energy Commission to obtain the benefit of the information and suggestions which that staff may supply on all aspects of the application. Such consultation also should include obtaining recommendations by the AEC staff concerning the desirability of substituting radioactivity logging for collection of samples in the more widely spaced holes and ascertaining the feasibility of AEC doing the logging. If radioactivity logging is deemed to be a sound alternative, agreement should be reached with the AEC, whereby the AEC will supply interpretation of the results of the logging in such a manner that the interpretation will provide a suitable basis for evaluating the appropriateness of additional holes to be drilled as offsets to a hole that has been logged for radioactivity.

Arthur P. Butler, Jr.

Copy to E. Wm. Ellis (2)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 10 1953

IN REPLY REFER TO:

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

July 8, 1953

Wm. Ellis, DMEA Member
Uranium Commodity Committee
Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

Application, DMEA Docket 3089 (uranium) F. O. Manol, applicant, Grants N. Mex., 3 Parts NE 1/4 and SW 1/4 Sec. 30. T. 13 N., R. 9 W., McKinley Co., New Mexico.

The application for Government assistance to explore the property identified in the subject above has been reviewed and discussed with H. D. Keiser, Bureau of Mines Member, Uranium Commodity Committee, and J. O. Hosted, Atomic Energy Commission.

Proposal

The applicant proposes to explore parts of the NE 1/4 and SW 1/4 section 30, T. 13 N. R. 9 W. by about 83,000 feet of rotary air drilling in about 840 holes spaced from 25 to 200 feet apart. Applicants estimate of cost is $79,819.40.

Comment

No information pertinent to the applicant's property or vicinity is currently available in this office. Information furnished by the applicant indicates that much of the area of his property is underlain by the Todilto limestone which is the host rock for many of the uranium deposits in this general area. The application also states that at least 5,400 tons of ore assaying at least 0.20 percent U_3O_8 have been produced from parts of his property, and that radioactivity logging suggests the presence of more than 0.1 percent uranium in one of three test holes drilled for geologic information in one of the areas where exploration is proposed. He also reports that uranium ore is present on adjoining land.

Although the general setting appears favorable for discovery of additional ore by exploration, sufficient information to appraise the selection of areas or the amount, detail and kind of exploration are not given in the application. Suitable evaluation can be made only as the result of inspection by the Field Team and consultation with the staff of the Grants sub-office, Atomic Energy Commission who have studied the geology and ore deposits of the general area and are familar with the distribution and habits of the ore deposits and with methods of exploring for them.

It should be noted that the applicant's map of exploration area "A" shows it to be in the N 1/2 SE 1/4 Sec. 30, whereas item 3 form MF-103 refers to land in the S 1/2 NE 1/4 Sec. 30.

The applicant proposes to collect cuttings for analysis only in his third stage or detailed holes. Favorability of more widely spaced holes, which would provide the basis for determining where the more closely spaced holes should be placed, would be based solely on interpretation of the results of logging the holes for radioactivity by the Atomic Energy

Commission. This method of estimating presence of uranium minerals and the favorability of the hole should be deemed acceptable only if the Atomic Energy Commission staff consider it a sound method of planning other holes and interpret the results of the logging in such a way as to provide a sound basis for judging the degree of favorability indicated by the logging.

Recommendations

I recommend that this application be referred to the Field Team for their consideration and recommendations concerning its appropriateness and the amount of and detail of exploration that might be desirable.

It is suggested that the examining members of the Field Team consult fully with the staff of the Grants sub-office Atomic Energy Commission to obtain the benefit of the information and suggestions which that staff may supply on all aspects of the application. Such consultation also should include obtaining recommendations by the AEC staff concerning the desirability of substituting radioactivity logging for collection of samples in the more widely spaced holes and ascertaining the feasibility of AEC doing the logging. If radioactivity logging is deemed to be a sound alternative, agreement should be reached with the AEC, whereby the AEC will supply interpretation of the results of the logging in such a manner that the interpretation will provide a suitable basis for evaluating the appropriateness of additional holes to be drilled as offsets to a hole that has been logged for radioactivity.

Copy to E. Wm. Ellis (2)

7/2/53 gla

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

June 30, 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: DMEA Docket 3089, F. O. Manol, P. O. Box 246, Grants, New Mexico.

I have reviewed the application included in the subject docket and discussed it with Andrew Brown, Acting Geological Survey Member, and Joseph O. Hosted, representative of the Atomic Energy Commission.

It is recommended that the application be sent to the Field Team for investigation and report, and that the Field Team be requested to discuss the application with representatives of the Atomic Energy Commission at Grants, New Mexico.

H. D. Keiser

Attachment

June 25, 1953

Mr. F. O. Manol
P. O. Box 246
Grants, New Mexico

Subject: DMEA-3089
Re: Exploration Assistance
F.O. Manol

My dear Mr. Manol:

The receipt of your application dated June 15, 1953, for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3089 and referred to the Rare And Miscellaneous Division.

Kindly refer to DMEA-3089 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams
Chief, Operation's Control
and Statistics Division

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

June 25, 1953

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region IV

DMEA -3089 F.O. Manol

Robert E. Adams,
Chief, Operation's Control
and Statistics Division

38226

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

224 New Customhouse
Denver 2, Colorado

June 22, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 26 1953

Memorandum

To: Secretary, Operating Committee, DMEA

From: Field Team, Region IV

Subject: (Uranium) DMEA Application of F. O. Manol, McKinley County, New Mexico

Enclosed are three copies of the subject application for exploration aid in the amount of $79,819.40.

One copy of the application is being retained in this office.

W. H. King
W. H. King

E. N. Harshman
for A. H. Koschmann

Enclosure

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JUN 25 1953

224 New Customhouse
Denver 2, Colorado

June 22, 1953

Memorandum

To: Secretary, Operating Committee, DMEA

From: Field Team, Region IV

Subject: (Uranium) DMEA Application of F. O. Manol, McKinley County, New Mexico

Enclosed are three copies of the subject application for exploration aid in the amount of $79,819.40.

One copy of the application is being retained in this office.

W. H. King
W. H. King

for E. N. Hardman
A. H. Koschmann

Enclosure

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

Department of the Interior
Defense Minerals Administration
RECEIVED
JUN 25 1953

Not to be filled in by applicant

Docket No. DMEA-3089
Metal or Mineral
Date Received 6/25/53
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: F. O. Manol--P.O. Box 246--Grants, New Mexico--Operator and Agent for group venture of persons named in supplement attached hereto.

(*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 South Half of the Northeast Quarter; North Half of the East Half of the Southwest Quarter; Lot 3 in the Southwest Quarter; all in Section 30, Township 13, Range 9 West, County of McKinley, State of New Mexico.

(*b*) State any mine name by which the property is known. F. O. Manol

(*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. See attached data

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable

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.

(*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.

(*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 to explore Uranium

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

(*c*) The work will start within 90 days and be completed within 15 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 [X] 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 June 15, 1953

J O Manol
(Applicant)

By J O Manol

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

SUPPLEMENT TO INSTRUCTION NUMBER 1
of DMEA Form MF-103

Names and addresses of owners of lease and their proportion of ownership:

F. O. Manol------P.O. Box 113-------Aztec, New Mexico		1/6
Robert B. McNeely--337 S. Terrace Dr.--Wichita, Kansas		1/12
Joy C. McNeely-----337 S. Terrace Dr.--Wichita, Kansas		1/12
John S. McNeely----5546 Merrimac-------Dallas, Texas		1/12
Flo S. McNeely-----5546 Merrimac-------Dallas, Texas		1/12
G. E. Ponder-------3136 Stanford-------Dallas, Texas		1/12
Edna F. Ponder-----3136 Stanford-------Dallas, Texas		1/12
Tom Harley, Jr.----Fourth Nat. Bank Bldg.--Wichita, Kan.		1/6
Grady B. Coan----------Aztec, New Mexico		1/30
Thomas A. King**********----------Aztec, New Mexico		1/30
L. G. and/or Evalyn Stearns----------Aztec, New Mexico		1/30
E. A. Anderson----5860 Layor Drive----Cleveland 29, Ohio		1/60
E. J. Hakalinen---4805 S. Michigan----South Bend, Ind.		1/60
O. H. Armstrong---Box 6----------Bismarck, N.D.		1/75
D. R. Dobyns------731 S. Delaware-----Irving, Texas		1/75
H. V. Copeland----------Aztec, New Mexico		1/150

Submitted by; F. O. Manol
Box 246
Grants, New Mexico

F. O. Manol
Box # 246
Grants, N.M.

OPERATING AGREEMENT

THIS AGREEMENT, made and entered into this 1st day of July, 1952, by and between ROBERT B. McNEELY, JOY C. McNEELY, FOX McNEELY, JR., all of Wichita, Kansas; J. C. POWDER, LENA F. POWDER, JOHN W. McNEELY, FLO C. McNEELY, all of Dallas, Texas; ERNEST B. COAK, L. J. O'Leary, THOMAS A. KIRO, H. V. COPELAND, all of Aztec, New Mexico; ELMER A. ANDERSON of Cleveland, Ohio; ELMER J. MAHULINEW of South Bend, Indiana; D. RAY ROBYNS of Irving, Texas; and ORVEN M. ARMSTRONG of Port Arthur, Texas, Parties of the First Part, and F. O. MANOL, Party of the Second Part.

WITNESSETH:

WHEREAS, all of the parties hereto are the owners of a certain mineral lease covering the following described real estate, to wit:

> The North Half of the Southeast Quarter (N½ SE¼) and the South Half of the Northeast Quarter (S½ NE¼) and Lots Three (3) and Four (4) and the East Half of the Southwest Quarter (E½ SW¼) of Section Thirty (30), Township Thirteen (13) North of Range Nine (9) West of the New Mexico Meridian, McKinely County, New Mexico,

and

WHEREAS, it is necessary to have someone operate and manage said lease and supervise the mining of uranium ore therefrom, and

WHEREAS, said Parties of the First Part desire to have said Party of the Second Part operate and manage said lease and supervise the mining of uranium ore therefrom and which duties said Party of the Second Part is willing to assume until such time as another person can be obtained, subject to the terms and conditions hereinafter set out.

IT IS NOW, THEREFORE, MUTUALLY CONSIDERED AND AGREED THAT in consideration of the terms, covenants, and conditions hereinafter set forth, said Party of the Second Part shall have the operation, management and supervision of said lease for the mining and production of uranium and other minerals that might

be found and that said lease and mining shall be operated and conducted as hereinafter set forth.

FIRST: That Parties of the First Part, and each of them, individually, do hereby authorize and empower said Party of the Second Part to make any application or agreement with the Atomic Energy Commission, any other branch of the Federal Government, the Anaconda Mining Company or any other purchaser of uranium ore designated by the Atomic Energy Commission relative to the mining and sale of uranium ore as may be required by the Atomic Energy Commission; to receive and receipt for any and all moneys received from the production and sale of ore from said afore-described property. Any moneys so received shall be deposited in a bank located in the State of New Mexico to be selected by said Party of the Second Part to the account of said Party of the Second Part and said Robert E. McNeely.

SECOND: That the parties hereto will leave on deposit in said bank account a sum of money to be later agreed upon by the parties hereto.

THIRD: That said Party of the Second Part and said Robert E. McNeely will each furnish a surety bond in a recognized surety company authorized to do business in the State of New Mexico in the amount of Five Thousand Dollars ($5,000.00) upon the conditions that said Party of the Second Part or said Robert E. McNeely will not embezzle, misappropriate, steal or take any of the moneys received from the sale of ore from the afore-described lease or from the aforesaid bank account; that the premiums to be paid on said bonds shall be paid out of the aforesaid bank account and charged to expense.

FOURTH: Said Party of the Second Part shall hire and employ all persons that may be deemed necessary to mine and operate such lease and contract for the hauling to the mill of any ore that may be mined or produced; it being expressly understood and agreed that said Party of the Second Part shall incur no expense in an amount in excess of Five Hundred Dollars

($500.00) except by consent of the Parties of the First Part.

FIFTH: That said Party of the Second Part shall obtain and keep any and all types of insurance that may be necessary to protect the parties hereto in the mining and operating of said lease and pay all taxes which may be assessed upon said lease and any equipment that may be purchased to operate the same.

SIXTH: Said Party of the Second Part in consideration of his management and supervision of said lease and mining operations shall receive the sum of Forty Dollars ($40.00) per day for each day spent in managing and supervising said lease, which sum shall be charged to the mining and operation of said lease and shall be payable on the first day of the next month following the performance of such services.

SEVENTH: That said Party of the Second Part will keep a true and correct record of all moneys received from the sale of ore and bonuses received from the United States Government and all expenses which may be incurred in the mining and operation of said lease and will mail to each of said Parties of the First Part an itemized statement of such receipts and expenditures on or before the 15th day of each month and said records of said Party of the Second Part shall be open to inspection to each of said Parties of the First Part during the regular business hours.

EIGHTH: That after minerals are being produced and sold from said lease and money has accumulated in said bank account in excess of the amount to remain there, such excess shall be distributed and paid to the Parties hereto according to their interest in said lease on or before the 20th day of each month.

NINTH: Said Party of the Second Part shall promptly pay the royalty due on said lease and assignment thereof as soon as he receives any money from the sale of any ore produced from said lease and charge the same to expense.

TENTH: That each of the parties now is and shall continue to be the sole owner of his or her proportionate share of the production. That said Party of the Second Part shall market the production from the above-described leased premises for the respective parties but this authority shall be terminable at any time and without notice. And provided further that, at any time, each of the parties hereto shall be entitled to designate the purchaser of his or her share of said production, or to take delivery thereof in kind, upon furnishing the necessary receiving facilities.

ELEVENTH: It is further understood and agreed between the parties hereto that, in the event said Party of the Second Part, or any other of the parties hereto who may be operating the above described mining lease, shall sell his or her interest in said mining lease, then the right of operation shall not pass to the assignees or grantees of said interest, but shall revert to the remaining parties to this agreement, who shall then be entitled to assume the operation of the hereinbefore described mining lease.

TWELFTH: This agreement shall extend to and be binding upon the parties, their heirs, executors, administrators, legatees, assigns, and successors in interest.

IN WITNESS THEREOF, we have hereunto set our hands the day and year first above written.

Robert B. McNeely

Joy C. McNeely

Tom Harley, Jr.

G. E. Ponder

Edna F. Ponder

John S. McNeely

Flo S. McNeely

Grady B. Coan

E. J. Stearns

Thomas A. King

H. V. Copeland

Elmer A. Anderson

Elmer J. Hakulinen

D. Ray Dobyns

Orven H. Armstrong

PARTIES OF THE FIRST PART

F. C. Manol

PARTY OF THE SECOND PART

SUPPLEMENT TO INSTRUCTION NUMBER 4
of DMEA Form MF-103

4a No mining activity or exploration has yet taken place on the land covered by this application. However, the applicant has conducted a successful strip mining operation on contiguous property in the same Section of land. This mining operation will be more fully described in another part of this folio.

4b Not applicable.

4c The property to be explored is a colluvial covered dip slope bench of the Todilto limestone of upper Jurassic age. Uranium minerals found in the Todilto are tyuymunite, uranophane, and small amounts of pitchblende. The minerals have been deposited along fractures, bedding planes, and individual crystals of calcite. These ores are intimately associated with hematite and psilomelane.

4c The uranium deposits in the Todilto are essentially tabular bedded deposits ranging in thickness up to twelve feet, and in lateral extent to over 100,000 square feet.

4c The attached structure contour map indicating the elevation of the base of the Todilto limestone has been used in calculating drilling depths. The map has been compiled from drill hole information

4c The South Half of the Northeast Quarter of Section 30, Township 13, Range 9 West, part of which land is included in this application, has the Summerville and Bluff sandstones overlaying the ore bearing Todilto limestone. Therefore ore deposits in this area can be mined by underground mining methods. It is expected that the Todilto limestone in this area will be found in its original full thickness of 20 plus feet.

4c Lot 3 of the Southwest Quarter, and the North Half of the East Half of the Southwest Quarter; both in Section 30, Township 13, Range 9 West, and which land is included in this application, presents a complexity of geologic conditions:

The northeast part of this land has sandstone overlaying the Todilto limestone. Ore bodies therefore can be mined by underground methods where this condition applies.

A broad belt extending diagonally through this land from the northwest corner to the southeast corner need not be explored because it can not be economically mined by either open pit or underground methods. In this area the Todilto limestone is covered by only blowsand which is in excessive depths, more than 30 feet, for feasible mining conditions.

The southwest part of this land should be explored because it can be mined by open pit methods. The blowsand overburden is less than 30 feet thick in this area.

An exact delineation of these three areas has not yet been determined.

J J Manol
Box 246
Grants, N M

SUPPLEMENT TO INSTRUCTION NUMBER 4
of DMEA Form MF-103

4c We believe the land covered by this application merits exploration for uranium ores for the following reasons;

Adjoining sections of land on the north, west, and south all have substantial known ore reserves. In other words our land is right in the middle of a proven ore belt.

We have already mined more than 5,400 tons of ore assaying more than .20% U308 out of the subject section of land. We have explored about 50 acres in this section at our own expense. All of this has been done in Lot 4 of the Southwest Quarter, and the South Half of the East Half of the Southwest Quarter.

Unfortunately this part of our lease has had most of the Todilto formation eroded away and consequently we have not proven large ore reserves. Our exploration has led us to believe that the land once probably had substantial amounts of ore prior to erosion.

We drilled three test holes on the South Half of the Northeast Quarter, which land is included in this application, to get structure contour information. These holes were logged by the Grants, N.M. AEC office. One of these holes logged four to five feet of ore grade mineralization. The maximum scintilometer count in this hole reached 17,500. A count of 3,000 is presumed to approximate .10% ore. The maximum count was at a depth of 77 feet.

4d This property is 16 miles north and west of Grants, N.M.. It is 13 miles north off of U.S. Highway 66, is on level ground and is easily accesible. It is 19 miles from the Anaconda Copper Mining Company's uranium ore buying station.

4e All mining needs, equipment, supplies, and manpower are readily available.

J O Manuel
Box 246
Grants N M

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

5d The writer, F. O. Manol, will supervise the exploration program. He has been in constant contact with this work since operations were started last year in the Grants Mining District.

He has been in charge of a successful mining and development program in the same section of land for which this exploration loan is being sought.

The writer introduced and brought into the area the rotary air drilling unit which now has won the full acceptance of all operators and AEC personnel who are engaged in or are concerned with lowering the ~~XXXX~~ cost of uranium exploration.

Prior to being in the mining business he worked for many years in management positions in the construction industry and in business for himself. He is thoroughly familiar with and able to provide any form of accountability which the DMEA will require.

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 6
of DMEA Form MF-103

Estimate:

	Quantity		Unit Cost	Total
(a) Independent Contracts				
Drilling Test Holes 0 to 100 ft.	74,267.6	ft.	$.50	$37,133.80
" " " 101 to 200 ft.	8,704.6	ft.	$1.00	8,704.60
Catching Test Hole Cuttings	10,800	ft.	.50	5,400.00
Logging Test Holes by AEC	842	ea.		N.C.
Assaying Cuttings-Chemical	1,728	ea.	7.00	12,096.00
Surveying & Laying-out Grid	Lump Sum			500.00
(b) Labor, Supervision, Consultants				
Superintendent, one	52	wk.	200.00	10,400.00
Laborer, one	52	wk.	50.00	2,600.00
(c) Operating Materials & Supplies				
Gasoline, Oil & Grease	52	wk.	10.00	520.00
Office Supplies	52	wk.	1.00	52.00
(d) Operating Equipment				
1952 Dodge 3/4 Ton Pickup	12	mo.	50.00	600.00
Typewriter	12	mo.		N.C.
Tool Shed	12	mo.		N.C.
Bunk House	12	mo.		N.C.
Geiger Counters	12	mo.		N.C.
Small Tools	12	mo.		N.C.
(e) Rehabilitation & Repairs				None
(f) New Buildings, Improvements, Installations				None
(g) Miscellaneous				
Repairs to Pickup	Lump	Sum		100.00
Workmens Comp. Ins.	"	"		190.00
Payroll Taxes	"	"		45.00
School Tax	"	"		1,278.00
Other Miscellaneous	"	"		200.00
(h) Contingencies				None
Total estimate				$79,819.40

Special Note: Radiometric and chemical assays in limestone ore run very close toghether. We believe it pointless to run chemical assays in view of this fact, however, the estimate is based on chemical assays. We believe $842 would be sufficient for radiometric assaying purposes. This would result in a considerable saving.

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "A"

We are designating the drilling area shown by red pencil marks with depth figures at the right on the attached structure contour map as Area "A" in this application.

We have under lease the entire quarter section shown on the map but at this time we propose to drill only to depths of 150 feet. Leaving the remainder of the area for development at some future date.

Area "A" consists of about 26 acres, more or less. It has sandstone overlaying the Todilto limestone formation. Therefore ore bodies found inits confines can be mined by underground methods.

We are planning a three phase drilling program on this area which we are calling our primary, secondary, and final detail programs. Our primary drilling in this area will be on a grid of 100 foot centers. These will be plain holes to be logged by the Grants, N.M. AEC Office mobile logging unit. No catching of cuttings is contemplated. We are guessing that the primary drilling will indicate mineralization in 20% (more or less) of the total area drilled. This is on the basis of our drilling experience in other parts of the same section.

Our secondary drilling phase is a reduction of the 100 foot grid to a 50 foot grid in all suspect mineralized areas. These holes too will be plain holes with no catching of samples contemplated, just logging by the AEC.. We are guessing that the secondary drilling program will eliminate from further consideration one-half of the total mineralized area as not having potential ore grade mineralization.

This leaves about 10% of the original drilled area for detail drilling of ore bodies on a 25 foot grid. On our detail holes we plan to catch cuttings while in the ore bearing Todilto limestone formation. This will be for about twenty five feet in each detail hole.

Drilling Cost Estimate on Area "A":

146	Primary holes	Average	depth	118.5	feet	Cost	Holes	each	$68.50	Total	$10,001.00
43	Secondary holes	"	"	118.5	"	"	"	"	68.50	"	2,945.50
201	Detail holes	"	"	118.5	"	"	"	"	68.50	"	13,768.50
201	Catching Cuttings	"	"	25.0	"	"	"	"	12.50		2,512.50

Total Estimated Drilling Cost $29,227.50

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "B"

We are designating two drilling areas on the attached structure contour map. These areasare shown with drill holes indicated with red pencil marks, with drilling depths given immediately at the right. The right hand area on the map shall be referred to as Area "B" in this application.

We have under lease the entire quarter section shown on the map but we are mining and exploring the south half of the quarter section with our own funds and therefore we are excluding that area from this application.

Area "B" consists of 19.2 acres, more or less. The borders of the area have not been determined. The area has sandstone overlaying the Todilto limestone formation. Therefore ore bodies found in its confines can be mined by underground methods.

We are planning a three phase drilling program on this area which we are calling our primary, secondary, and final detail programs. Our primary drilling in this area will be on a grid of 100 foot centers. These will be plain holes to be logged by the Grants, N.M. AEC Office mobile logging unit. No catching of cuttings is contemplated. We are guessing that the primary drilling will indicate mineralization in 20%, more or less, of the total area drilled. This is on the basis of our drilling experience in other parts of the same section.

Our secondary drilling phase is a reduction of the 100 foot grid to a 50 foot grid in all suspect mineralized areas. These holes too will be plain holes with no catching of cuttings contemplated, just logging by the AEC. We are guessing that the secondary drilling program will eliminate from further consideration one-half of the total mineralized area as not having potential ore grade mineralization.

This leaves about 10 % of the original drilled area for detail drilling of ore bodies on a 25 foot grid. On our detail holes we plan to catch cuttings ~~XXXX~~ for assay purposes every two feet of depth while in the ore bearing Todilto limestone formation. This will be for about 25 feet in each detail hole.

Drilling Cost Estimate on Area "B":

98	Primary holes	Average depth	105.6	feet	Cost holes each			$55.60	Total	$5,448.80
30	Secondary holes	"	"	105.6	"	"	"	"	55.60	"	1,668.00
138	Detail holes	"	"	105.6	"	"	"	"	55.60	"	~~[illegible]~~ 7,672.80
138	Catching cuttings	"	"	25.0	"	"	"	"	12.50	"	1,725.00

Total estimated drilling cost $16,514.60

Submitted by: F. O. Manol
Box 246
Grants, N.M.

SUPPLEMENT TO INSTRUCTION NUMBER 5
of DMEA Form MF-103

AREA "C"

We are designating two drilling areas on the attached structure contour map. These areas are shown with drill holes indicated with red pencilmarks, with drilling depths given immediately at the right.. The left hand area on the map shall be referred to as Area "C" in this application.

We have under lease the entire quarter section shown on the map but we are mining and exploring the south half of the quarter section with our own funds and therefore we are excluding that area from this application.

Area "C" consists of 13.9 acres, more or less. The borders of the area have not been determined. Only blowsand overlays the orebearing limestone formation because the sandstone has all been eroded away. In this area we consider it unfeasible to explore where the blow sand overburden exceeds 35 feet because this area must be ~~XXXX~~ mined by open pit methods,and where the ore is at greater depths we do not feel that it will be economic to mine.

On this area we are planning the same type three phase drilling program as we mentioned with reference to Area "A" and Area "B" excepting that we will first open up our primary grid on 200 foot denters to test for the presence of the Todilto limestone which in the south half of the quarter section we often found in part or wholely eroded away. If the Todilto formation is not present there is no point in continuing with the balance of the drilling program.

Drilling Cost Estimate on Area "C":

72	Primary holes	Average	depth	46.6	feet	Cost	holes	each	$23.30	Total $1,677.60
21	Secondary holes	"	"	46.6	"	"	"	"	$23.30	Total 489.30
93	Detail holes	"	"	46.6	"	"	"	"	23.30	" 2,166.90
93	Catching cuttings	"	"	25.0	"	"	"	"	12.50	" 1,162.50

Total estimated drilling cost $5,496.30

Submitted by: F. O. Manol
Box 246
Grants, New Mexico

DNER-3089.

22,005'
+ 525'
22,530

302 Holes

22,530' - log-radio @ 0.15'	—	3,379.50
7000 @ 1.00	—	7,000.00
11,530 @ .50	—	5765.00
600 radiometric assays @ 1.00	—	600.00
22,530' supervision @ 0.15'	—	3,379.50
Total		20,124.00

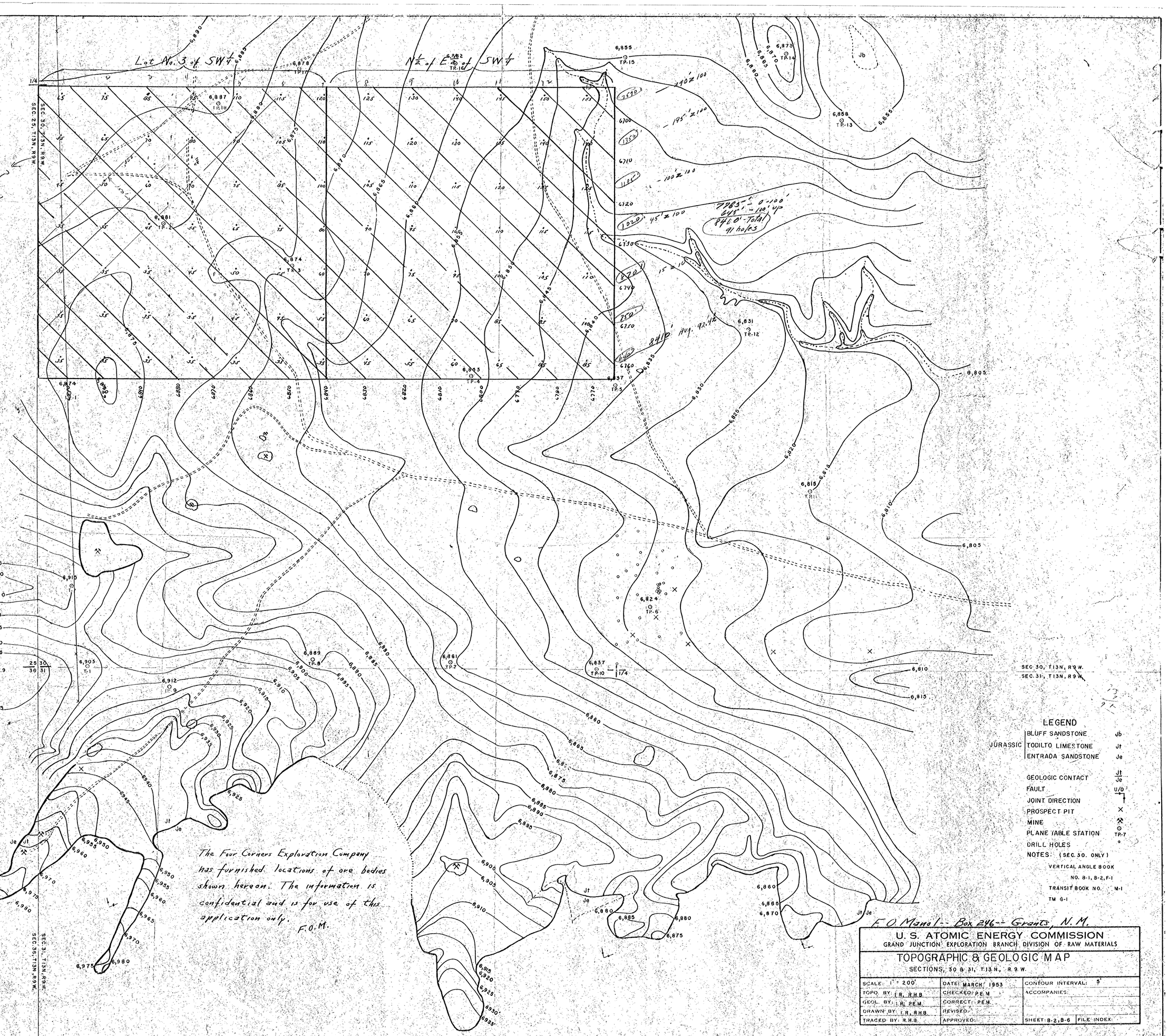
SPOKANE, WASHINGTON

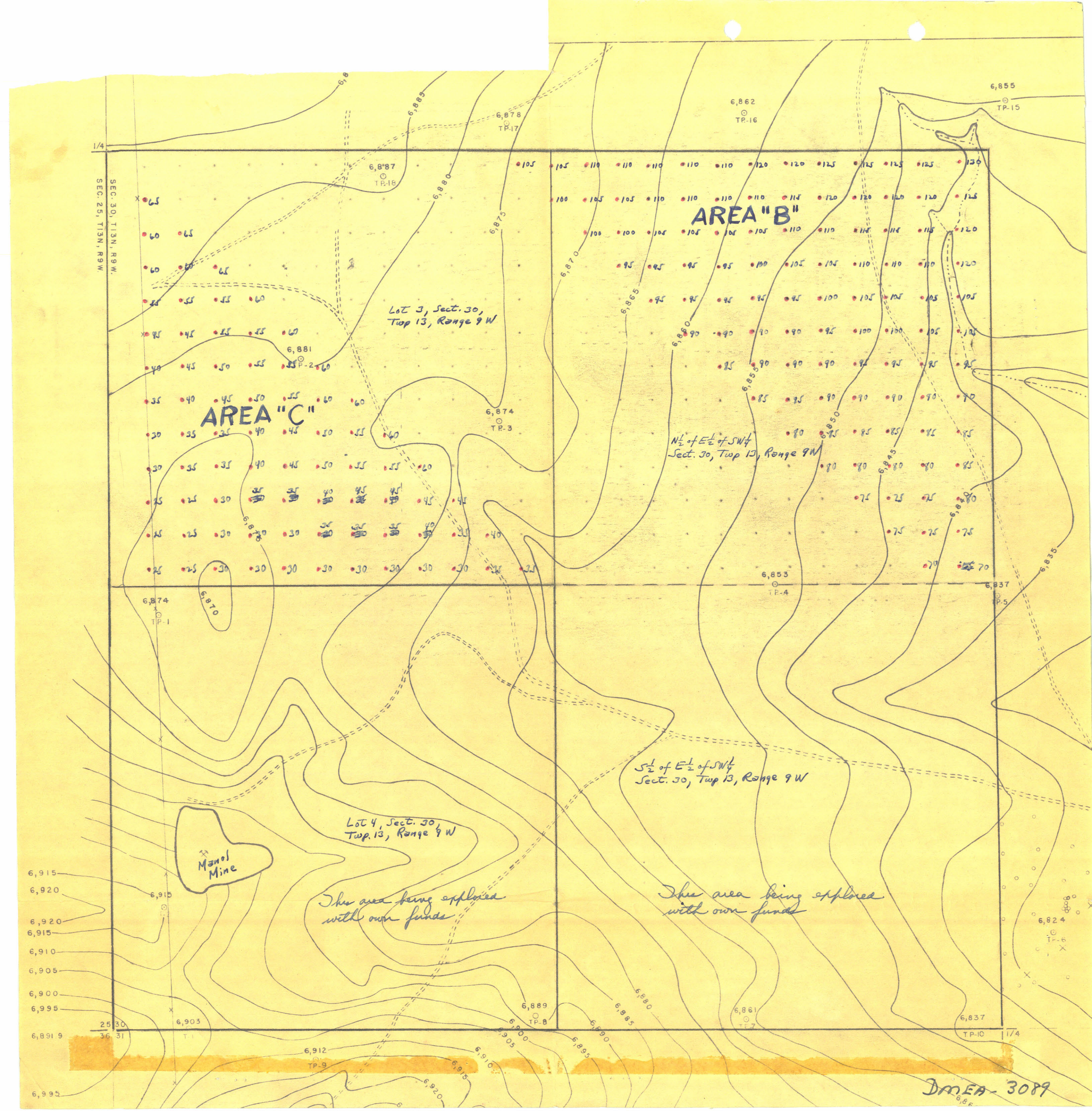
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, $300
PAYMENT OF POSTAGE, $300
(PMGC)

SPOKANE, WASH.
JE 19 8 PM
1951

Mr. George C. Selfridge
Chairman, Operating Committee
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.


Lot No. 3 of SW¼
N½ of E½ of SW¼
SEC. 30, T13N, R9W.
SEC. 25, T13N, R9W.
SEC. 31, T13N, R9W.
SEC. 36, T13N, R9W.
SEC. 30, T13N, R9W.
SEC. 31, T13N, R9W.
7285' - 0-100'
645' - 100' up
8410' - Total
91 holes
8410' Avg. 92.4%
The Four Corners Exploration Company has furnished locations of ore bodies shown hereon. The information is confidential and is for use of this application only.
F.O.M.
LEGEND
JURASSIC
BLUFF SANDSTONE Jb
TODILTO LIMESTONE Jt
ENTRADA SANDSTONE Je
GEOLOGIC CONTACT Jt/Je
FAULT U/D
JOINT DIRECTION
PROSPECT PIT
MINE
PLANE TABLE STATION TP-7
DRILL HOLES
NOTES: (SEC. 30. ONLY)
VERTICAL ANGLE BOOK NO. 8-1, 8-2, F-1
TRANSIT BOOK NO. M-1
TM G-1
F. O. Manol - Box 246 - Grants, N.M.
U. S. ATOMIC ENERGY COMMISSION
GRAND JUNCTION EXPLORATION BRANCH DIVISION OF RAW MATERIALS
TOPOGRAPHIC & GEOLOGIC MAP
SECTIONS, 30 & 31, T13N., R9W.
SCALE: 1" = 200'
DATE: MARCH 1953
CONTOUR INTERVAL: 5'
TOPO. BY: I.R., R.H.B.
CHECKED: P.E.M.
ACCOMPANIES:
GEOL. BY: I.R., P.E.M.
CORRECT: P.E.M.
DRAWN BY: I.R., R.H.B.
REVISED:
TRACED BY: R.H.B.
APPROVED:
SHEET: 8-2, 8-6
FILE INDEX:


AREA "B"
AREA "C"
SEC. 30, T13N, R9W.
SEC. 25, T13N, R9W.
1/4
Lot 3, Sect. 30, Twp 13, Range 9 W
N½ of E½ of SW¼ Sect. 30, Twp 13, Range 9W
S½ of E½ of SW¼ Sect. 30, Twp 13, Range 9 W
Lot 4, Sect. 30, Twp. 13, Range 9 W
Manol Mine
This area being explored with own funds
This area being explored with own funds
6,855 TP-15
6,862 TP-16
6,878 TP-17
6,887 TP-18
6,881 TP-2
6,874 TP-3
6,853 TP-4
6,837 TP-5
6,824 TP-6
6,861 TP-7
6,889 TP-8
6,912 TP-9
6,837 TP-10
6,874 TP-1
6,903
6,915
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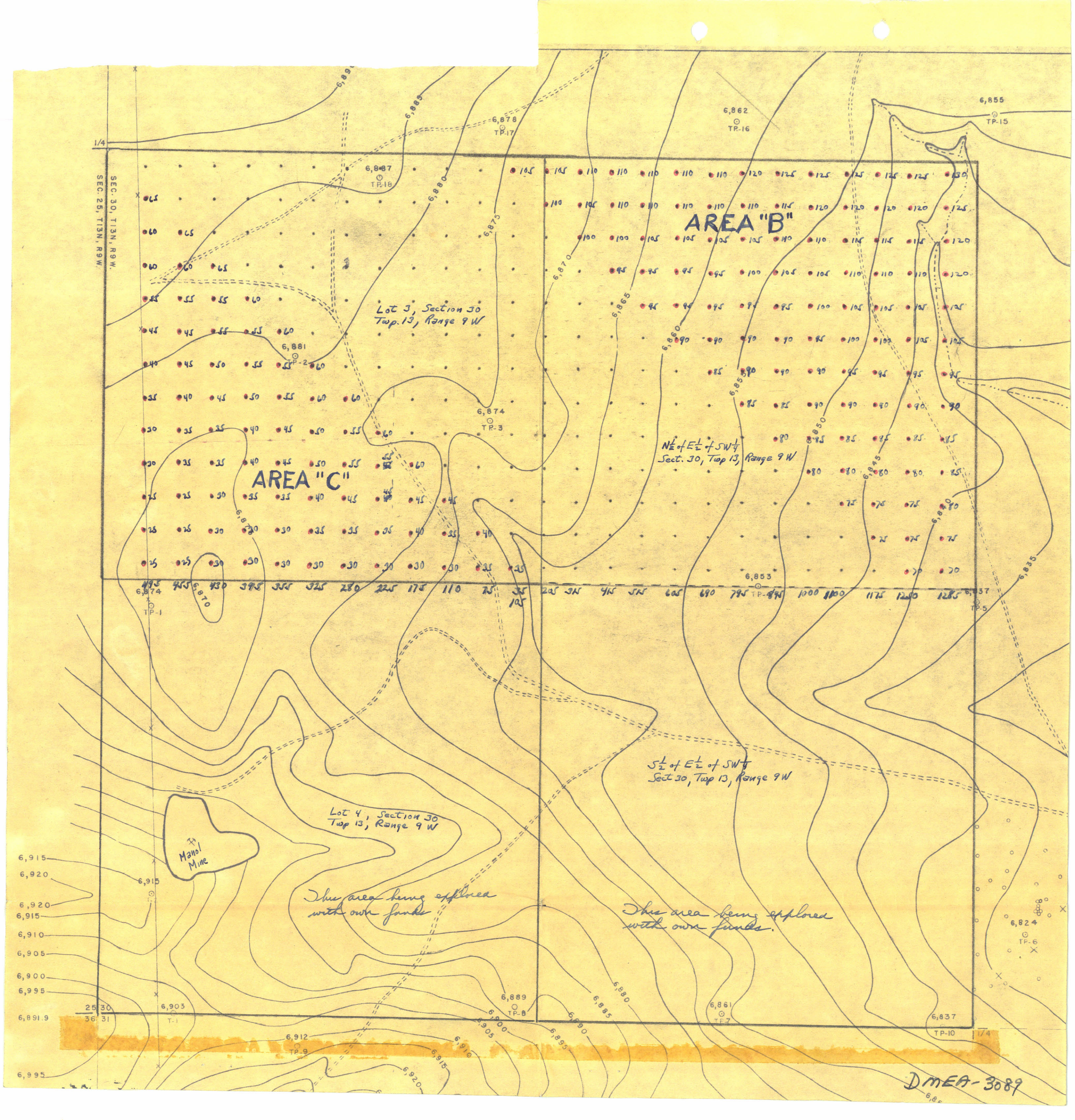
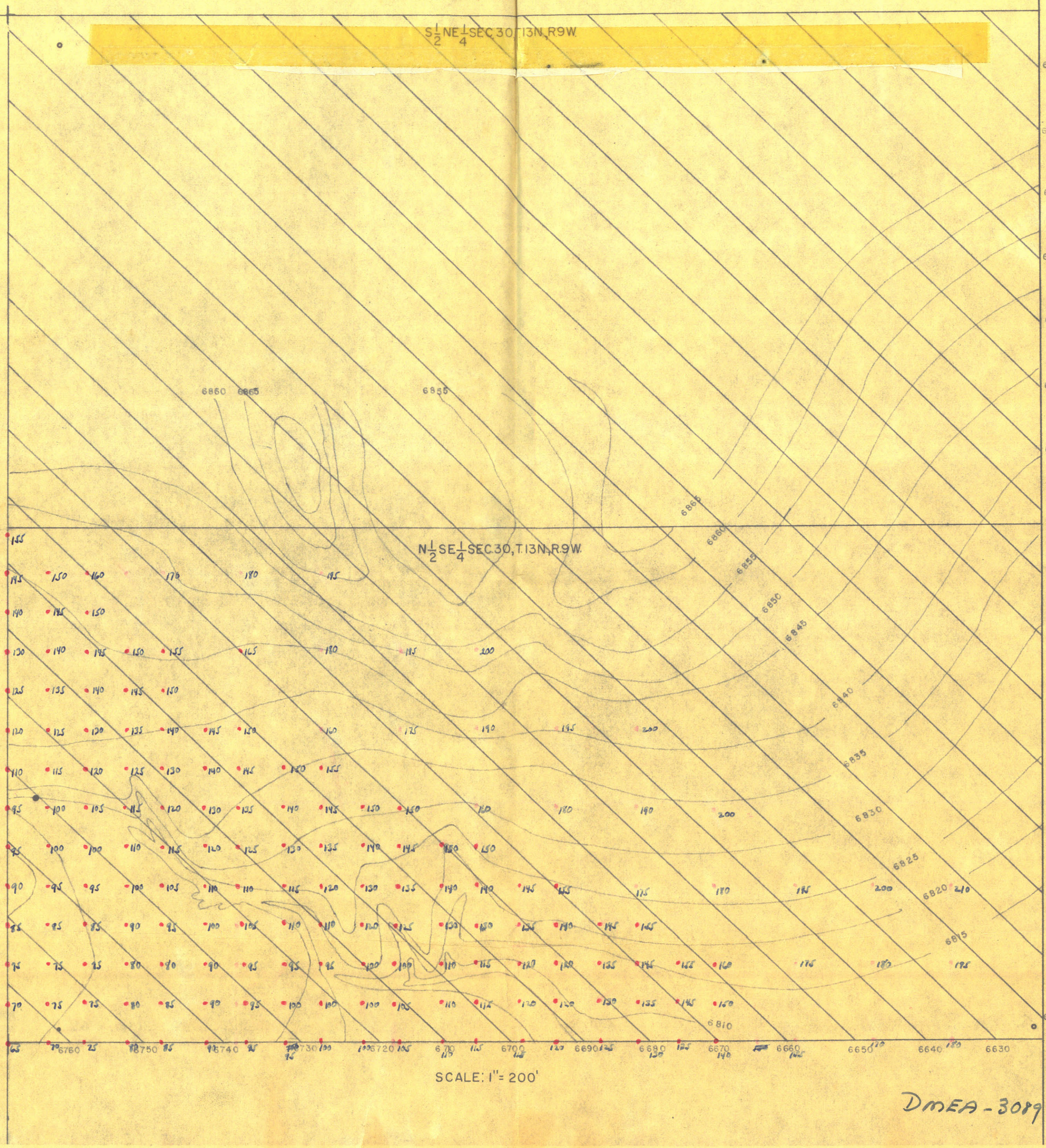
6,995
25 30
36 31
DMEA-3089


SEC. 30, T13N, R9W.
SEC. 25, T13N, R9W.
AREA "B"
AREA "C"
Lot 3, Section 30
Twp. 13, Range 9 W
N½ of E½ of SW¼
Sect. 30, Twp 13, Range 9 W
S½ of E½ of SW¼
Sect 30, Twp 13, Range 9 W
Lot 4, Section 30
Twp 13, Range 9 W
Manol Mine
This area being explored with own funds
This area being explored with own funds.
TP-1
TP-2
TP-3
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-15
TP-16
TP-17
TP-18
T-1
6,855
6,862
6,878
6,887
6,881
6,874
6,853
6,837
6,824
6,889
6,861
6,903
6,912
6,915
6,920
6,995
6,891.9

DMEA-3089



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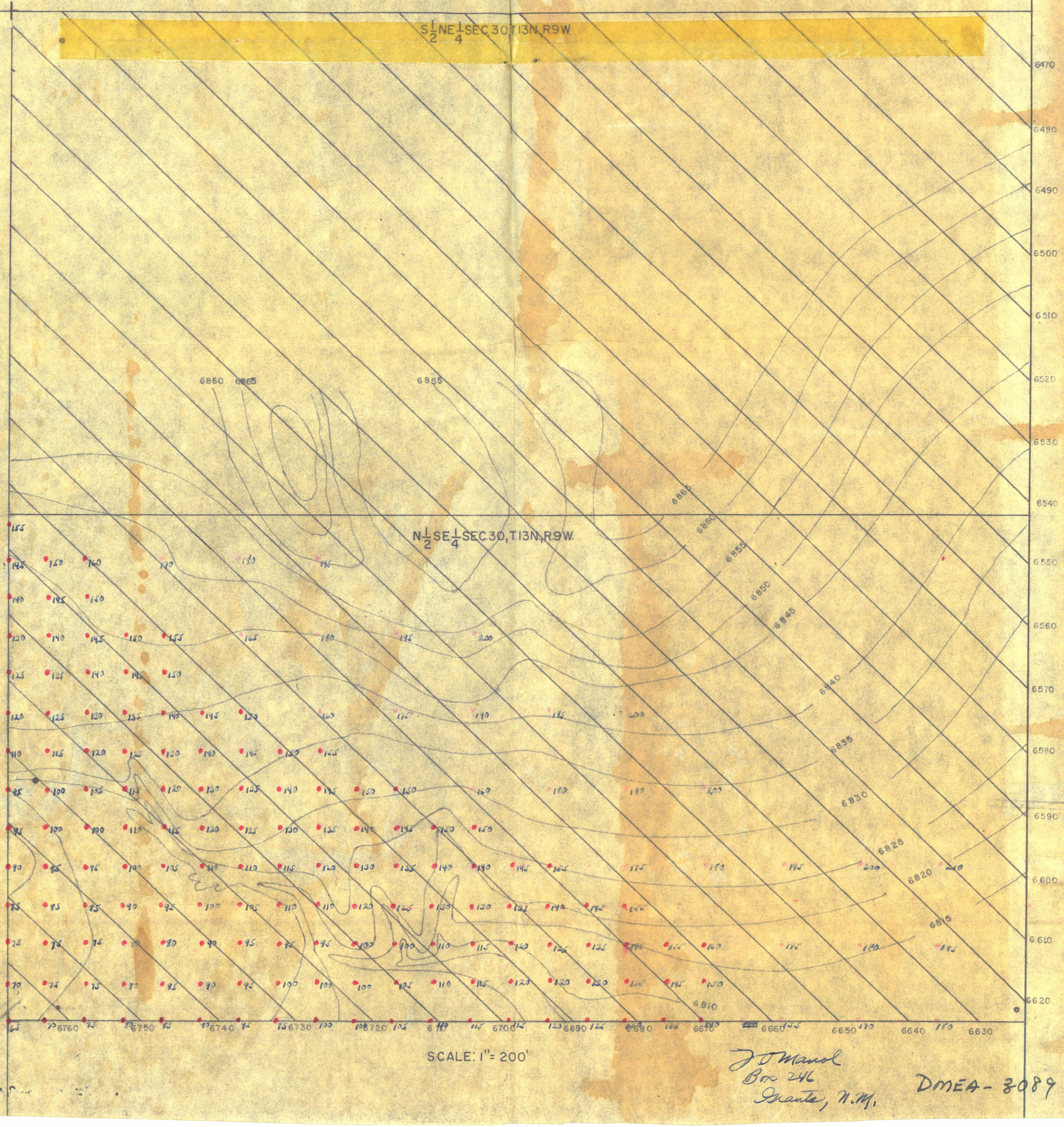
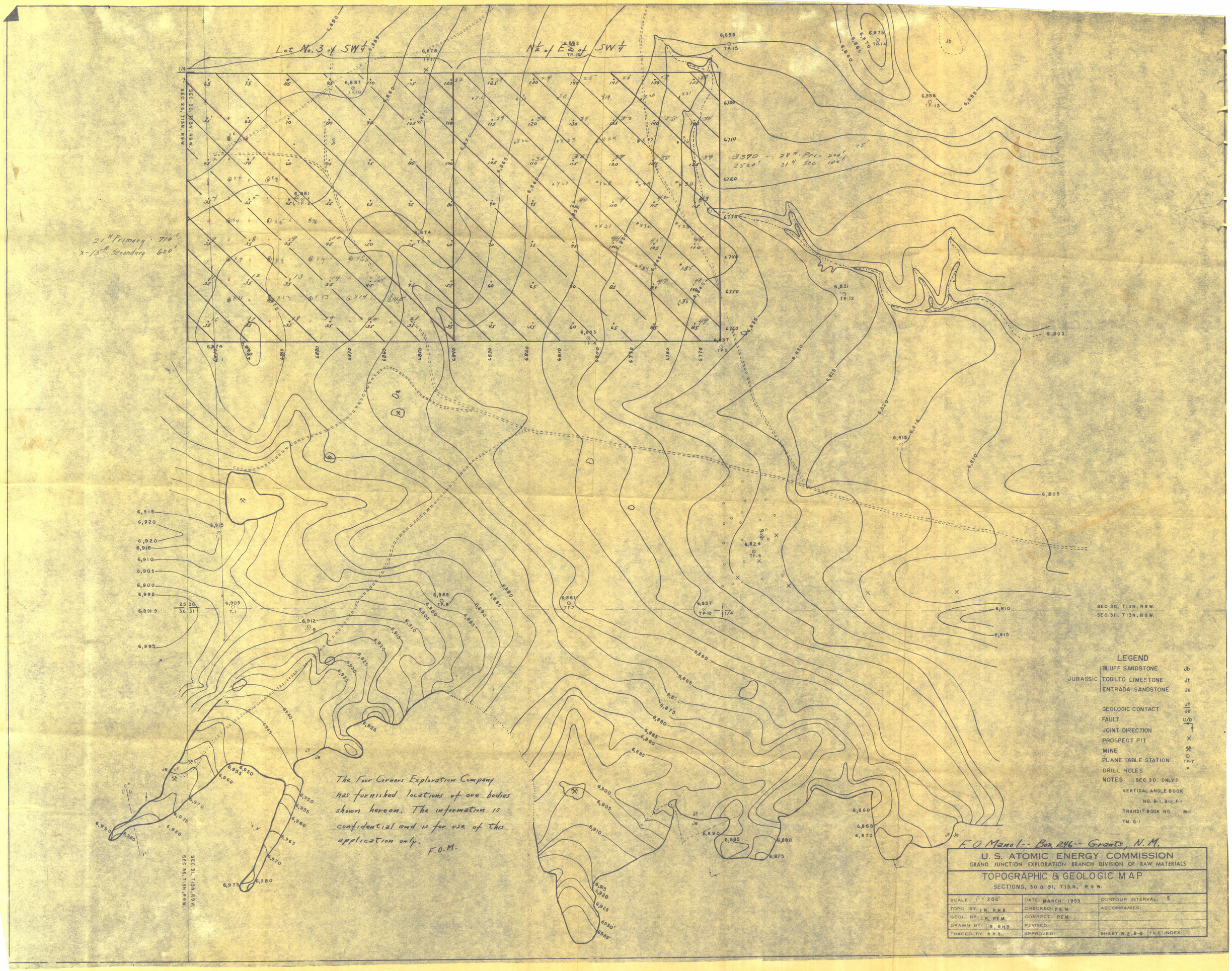


SCALE: 1" = 200'

J. D. Manol
Box 246
Grants, N.M.

DMEA-3089


Lot No. 3 of SW¼
N½ of E½ of SW¼
SEC 25, T13N, R9W
SEC 30, T13N, R9W
21" Primary 710'
X-13" Secondary 620'
3370 - 28" Pri. 200'
2520' 21" Sec 100'
The Four Corners Exploration Company has furnished locations of ore bodies shown hereon. The information is confidential and is for use of this application only.
F.O.M.
SEC 31, T13N, R9W
SEC 36, T13N, R9W
SEC 30, T13N, R9W.
SEC 31, T13N, R9W.
LEGEND
JURASSIC
BLUFF SANDSTONE Jb
TODILTO LIMESTONE Jt
ENTRADA SANDSTONE Je
GEOLOGIC CONTACT Jt/Je
FAULT U/D
JOINT DIRECTION
PROSPECT PIT
MINE
PLANE TABLE STATION TP-7
DRILL HOLES
NOTES (SEC 30. ONLY)
VERTICAL ANGLE BOOK
NO. B-1, B-2, F-1
TRANSIT BOOK NO. M-1
TM G-1
F.O. Manol -- Box 246 -- Grants, N.M.
U. S. ATOMIC ENERGY COMMISSION
GRAND JUNCTION EXPLORATION BRANCH DIVISION OF RAW MATERIALS
TOPOGRAPHIC & GEOLOGIC MAP
SECTIONS, 30 & 31, T13N., R9W.
SCALE 1" = 200'
DATE: MARCH 1953
CONTOUR INTERVAL: 5'
TOPO BY: I.R., R.H.B.
CHECKED: P.E.M.
ACCOMPANIES:
GEOL. BY: I.R., P.E.M.
CORRECT: P.E.M.
DRAWN BY: I.R., R.H.B.
REVISED:
TRACED BY: R.H.B.
APPROVED:
SHEET B-2, B-6
FILE INDEX