FORM 602 5M 10-56

E. J. LONGYEAR COMPANY

DMEA
APPLICATION FOR AID IN A URANIUM EXPLORATION PROJECT

ON THE E 1/2 SECTION 32, T. 14 N., R. 8 W.

SAN MATEO DOME PROJECT PROPERTIES

Grants - Mt. Taylor Mining District
McKinley County, New Mexico

Prepared for

SAN MATEO DOME PROJECT

By

E. J. Longyear Company
416 Colorado Building
Denver, Colorado

JUN 13 1958

Department of the Interior

DMEA

14X4401(01) Revolving Fund, Defense Production Act, Interior, (Transfer to Office of Secretary)

T E L E T Y P E

J. W. TOWNSEND
ALTERNATE ACTING EXECUTIVE OFFICER
DMEA FIELD TEAM, REGION III
224 NEW CUSTOMHOUSE BUILDING
DENVER 2, COLORADO

REURTT JUNE 11, DMEA-4842 AND 4995, SAN MATEO DOME PROJECT, IF YOU ARE SATISFIED THAT YUCCA URANIUM, INC., HAS ACCOMPLISHED CHANGE OF NAME TO YUCCA URANIUM & PETROLEUM COMPANY, INC., CONSENT TO LIEN AND SUBORDINATION AGREEMENT SIGNED BY ~~BOTH~~ latter IS ACCEPTABLE FOR LANDS LEASED BY YUCCA URANIUM, INC. COPY OF CHANGE OF NAME CERTIFICATE SHOULD ALSO BE FURNISHED WITH THE CONSENT TO LIEN AND SUBORDINATION AGREEMENT PRIOR TO EXECUTING AMENDMENT. IF ANY LAND INSTRUMENTS WERE EXECUTED IN CONNECTION WITH CHANGE OF CORPORATE NAME, WE SHOULD ALSO HAVE COPIES OF SAME.

Mr. Rubin
Mr. Knouse

FLKnouse/HFRubin/gla 6-13-58
cc to: Admr.'s Reading File
Operating Committee
TWKillgeard, 5224

George C. Selfridge

CHAIRMAN, OPERATING COMMITTEE

Form MF—103
Revised Feb. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPORTATION ADMINISTRATION

Budget Bureau No. 42—R1035.3
Approval expires June 30, 1958

APPLICATION FOR AID IN AN EXPLORATION PROJECT

PURSUANT TO DMEA ORDER I, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

NAME OF APPLICANT (Full legal name and mailing address as it should appear on contract if one is executed)

SAN MATEO DOME PROJECT (of McKinley County, N.M.)
Addressed: OWNERS COMMITTEE
Messrs. Allan B. Grady and Raymond Hartz
c/o Mineral Projects-Venture B. Ltd.
55 Green Village Road, P. O. Box 390
Madison, New Jersey
Messrs. A. P. Kibbe and Max B. Lewis
c/o Lisbon Uranium Corporation
310 First Security Bank Building
Salt Lake City, Utah

APPLICANT NOT TO USE THIS BLOCK

Docket Number: 4995
Date Received:
Government Participation %:
Region:
Division Code:

BUSINESS ORGANIZATION: LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

(Check one)

Individual: [ ]
Corporation: [ ]
Partnership: [X]
Other (Specify): [ ]

State in which firm is organized: New Jersey & Utah

Name: See Owners Committee (addressed as shown above)
Address:
Title:

DMEA
DEPARTMENT OF THE INTERIOR
APR 25 1958
REGION III
DENVER, COLORADO

Mineral(s) for which you wish to explore: Uranium

Estimated Cost of Project: $ 73,800.00

LOCATION OF PROPERTY

Name: San Mateo Dome Project
County: McKinley
State: New Mexico

GENERAL INSTRUCTIONS

Before filling out this application please read DMEA Order—I, Amended, "Government Aid in Defense Exploration Projects." To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 1, existing mine workings and geology in item 2, and the proposed exploration project in item 4. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 2(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals* of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest DMEA Field Office.*

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.

April 23, 1958
Dated

J. J. LONGYEAR COMPANY
BY *(Signature)*
D. M. Davidson
Vice President
Title

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

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COMPANY

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INTRODUCTION

This report, together with Application Form MF-103 revised February 1957, is an application for a Defense Minerals Exploration Administration project contract of the unit cost type. A $73,800.00 exploration program is recommended for drilling in an area comprised of some 26 unpatented lode mining claims. The claims are situated within a favorable area on the San Mateo Dome in the Grants-Mt. Taylor Mining District, McKinley County, New Mexico. A two stage drilling program, to be completed by independent contractors, is recommended.

NAME OF APPLICANT

The name of the applicant is San Mateo Dome Project. This project is financed and controlled by LISBON URANIUM CORPORATION, a corporation organized and existing under the laws of the State of Utah, with principal offices at Salt Lake City, Utah, and MINERAL PROJECTS - VENTURE B, LTD., a limited partnership organized under the laws of the State of New Jersey, with principal place of business at Madison, New Jersey.

GENERAL

This report, together with the attached completed Form MF-103, is an application for a DMEA loan under a

unit cost form contract and has been prepared in accordance with DMEA Order No. 1, Amended. It is to be submitted in quadruplicate to the Executive Officer, Region IV, DMEA, New Customhouse Building, Denver 2, Colorado.

Sufficient space is not available on Application Form MF-103. Therefore the necessary information is supplied in this report with reference to each case by number and letter to the item which is referred to on Form MF-103.

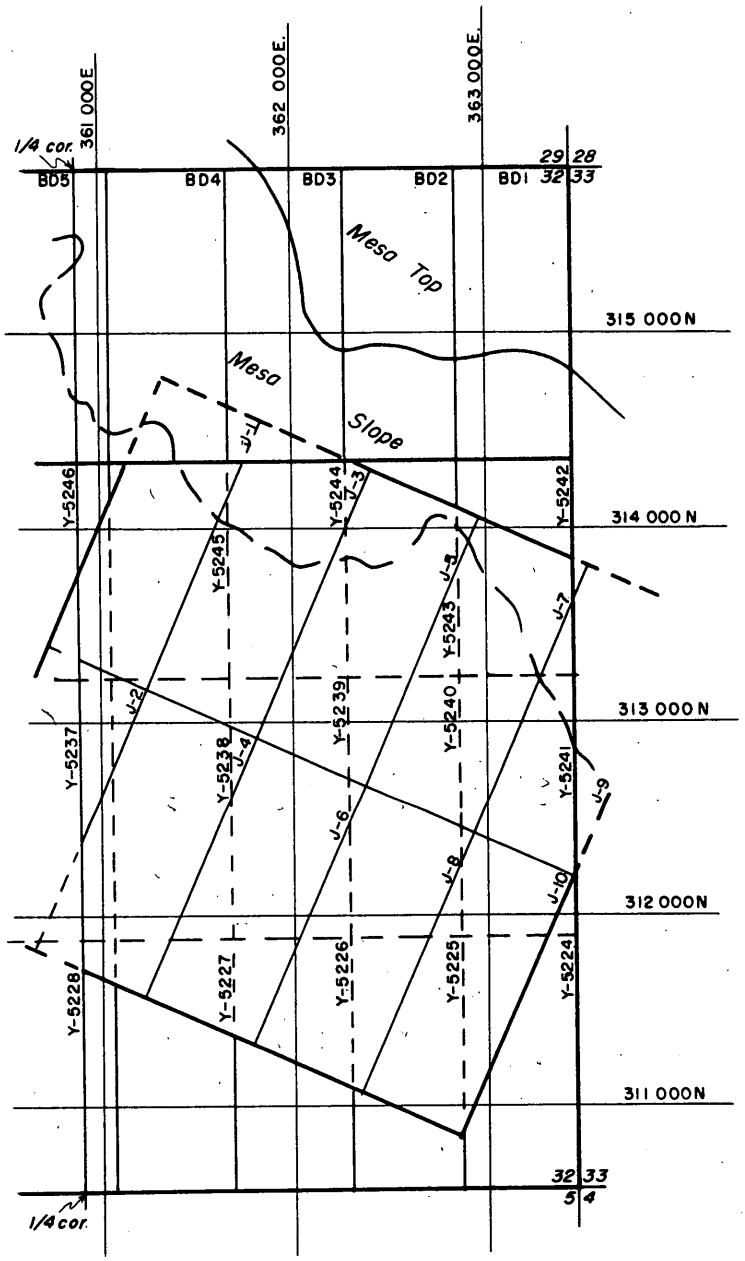
(1) APPLICANT'S PROPERTY RIGHTS

(a) Legal Description of Property

The area consists of 26 full and fractional mining claims, all contiguous, covering all of the East 1/2 of section 32, T. 14 N., R. 8 W., New Mexico Principal Meridian, McKinley County, New Mexico (see Exhibit A).

This area is within the Grants-Mt. Taylor Mining District, being a part of 21 full and 5 partial sections of land held under lease by the San Mateo Dome Project (see Exhibit B). The claims are unpatented mining claims and all have been surveyed under the supervision of a New Mexico Registered Engineer. The location notices, or amended notices, are posted and copies are recorded in the McKinley County Courthouse, Gallup, New Mexico. The book and page numbers of all the recordings are tabulated and attached hereto under Appendix I. The claims outlines, with reference to the public land survey and adjacent claims, are as shown on Exhibit C, Claim Location Map.

It being specifically understood that the lands which are to be security for this loan and subject to the government's lien for royalty payments are only those lands described and designated above, under Exhibit A and Appendix I.



EXPLANATION

J	John claims
BD	Bulldog claims
Y	Yucca claims

EXHIBIT A
SHOWING
CLAIMS IN E 1/2 OF SECTION 32
T. 14 N., R. 8 W.
McKINLEY COUNTY, NEW MEXICO

SCALE: 1" = 1000'

1000 500 0 1000
FEET

E. J. LONGYEAR APRIL 15, 1958

N

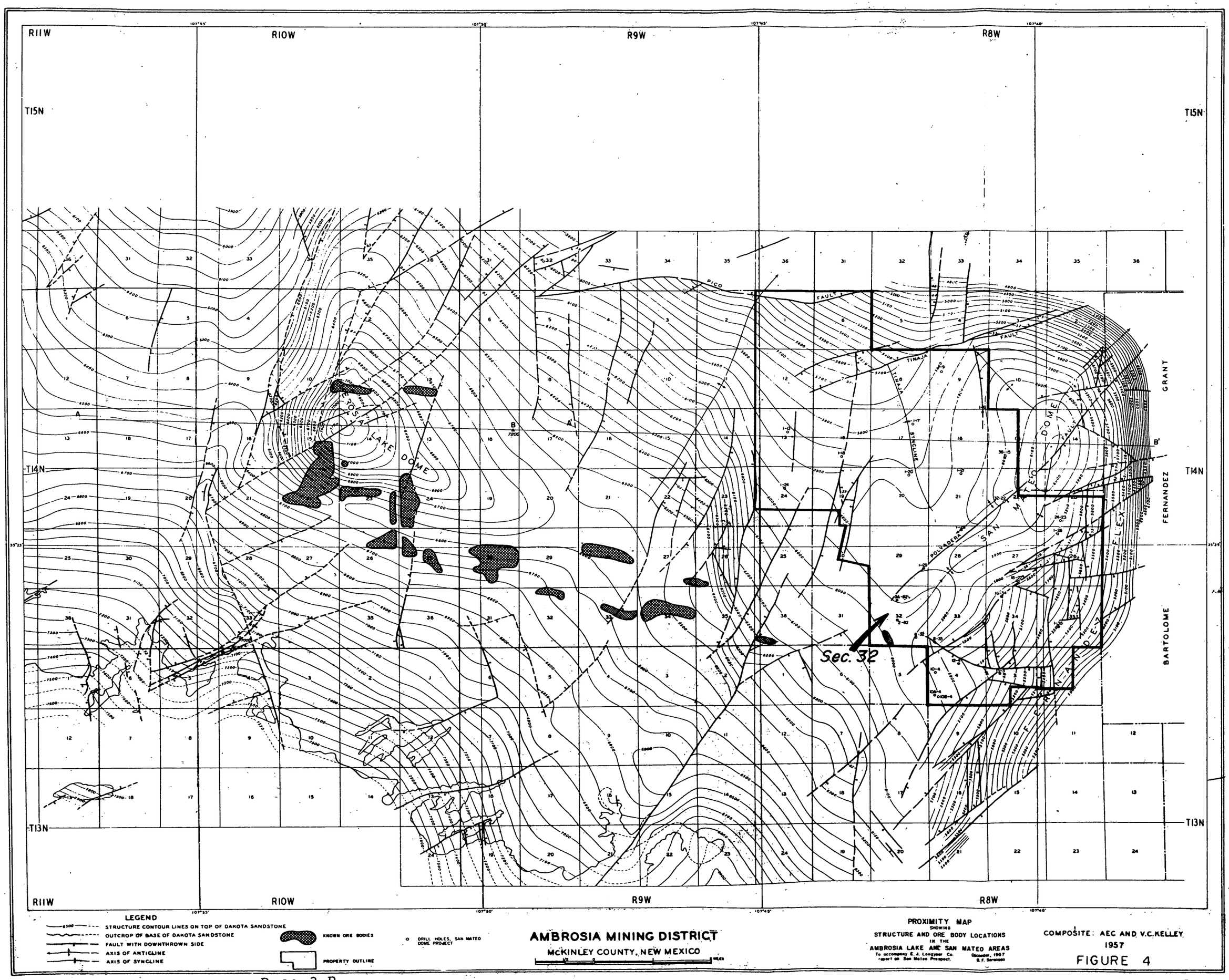


FIGURE 4

Exhibit B

The following lands, although part of the project lands and workings of the applicant, are specifically excluded from any liens arising from loans obtained through this application:

Township 14 North, Range 9 West, NMPM

Sec. 12: All
Sec. 13: All
Sec. 24: N 1/2, N 1/2, S 1/2

Township 14 North, Range 8 West, NMPM

Sec. 7:	All	Sec. 22:	S 1/2, NW 1/4
Sec. 8:	All	Sec. 23:	S 1/2
Sec. 9:	All	Sec. 26:	All
Sec. 15:	W 1/2	Sec. 27:	All
Sec. 16:	All	Sec. 28:	All
Sec. 17:	All	Sec. 29:	All
Sec. 18:	All	Sec. 30:	Portion of NE 1/4 shown on Exhibit B.
Sec. 19:	N 1/2, SE 1/4, N 1/2 SW 1/4	Sec. 33:	All
Sec. 20:	All	Sec. 34:	All
Sec. 21:	All	Sec. 35:	All Sec 32: W 1/2

Township 13 North, Range 8 West NMPM

Sec. 2: All
Sec. 3: All
Sec. 4: All

(b) Name of Property

The area is part of the property referred to as the San Mateo Dome Project. The area applied for herein, (E 1/2 Sec. 32) is covered by the following claims: Yucca claims, John claims and Bulldog claims.

(c) Interest

The Applicant's interest is as Lessee. The Yucca claims were originally staked by Yucca Uranium Inc., who in October, 1956, leased the property to G. R. Kennedy and Henry C. Adams. Subsequently, G. R. Kennedy and Henry C. Adams leased the properties to E. J. Longyear Company who assigned them to Mineral Projects - Venture B, Ltd., and Lisbon Uranium Corporation in April, 1957. The Bulldog claims were originally staked by H. B. and S. Uranium Company, a Co-partnership composed of L. G. Shaw, Roy B. Shaw, and K. B. Baird, and their wives, who in September of 1955, quitclaimed the claims to Fred Pool. Subsequently, Fred Pool quitclaimed to G. R. Kennedy and Henry C. Adams (April, 1957) who leased the properties to E. J. Longyear Company, who assigned them to Mineral Projects - Venture B, Ltd., and Lisbon Uranium Corporation, in April, 1957.

The John claims were originally staked by Parador Mining Company, Inc., who, in June, 1957, leased the claims to Donald J. Dufford. Subsequently, Donald J. Dufford assigned the claims to Mineral Projects - Venture B, Ltd., and Lisbon Uranium Corporation.

Copies of substantiating documents of ownership are included as part of this application under the

following appendices.

Appendix I - Tabulation showing claim names and recorded book and page numbers.

Appendix II - Mining Lease between Yucca Uranium Inc., and G. R. Kennedy and Henry C. Adams, (October 29, 1956), and an Amendment to the Mining Lease

Appendix III - Mining Lease between Yucca Uranium Inc., and G. R. Kennedy and Henry C. Adams, (November 24, 1956), and an Addendum to this Mining Lease.

Appendix IV - Quitclaim deed from H. B. & S. Uranium Company to Fred Pool (September, 1955). Quitclaim deed from Fred Pool to G. R. Kennedy and Henry C. Adams, (April, 1957).

Appendix V - Mining Lease between Parador Mining Company and Donald J. Dufford (June, 1957). Amendment to Lease between Parador Mining Company and Donald J. Dufford (June, 1957), and Assignment from Donald J. Dufford to Lisbon Uranium Corporation and Mineral Projects, Inc.

Appendix VI - Agreement between G. R. Kennedy, Henry C. Adams, and E. J. Longyear Company.

Appendix VII - Assignment from E. J. Longyear Company to Mineral Projects - Venture B, Ltd., and Lisbon Uranium Corporation.

(d) Liens, mortgages or other encumbrances on the property.

A royalty of 10% of the gross value of all ores mined from Yucca claims is payable to the Lessor, Yucca Uranium Company, Inc.

A royalty of 10% of the gross value of all ores mined from the John claims is payable to the Lessor, Parador Mining Company.

A (4%) overriding royalty on the sale price on any and all ore produced from the Bulldog claims is payable to Roy C. Shaw, and a (4%) overriding royalty on the sale price on any and all ore produced from the Bulldog claims is payable to L. G. Shaw.

(2) PHYSICAL DESCRIPTION

(a) Previous Exploration

The San Mateo Dome Project has leased some 700 lode mining claims on the San Mateo Dome, which are shown on the Claim Location Map, Exhibit C. On April 8, 1957, a reconnaissance drilling program was initiated and 26 holes were drilled as of July 15, 1957. Of the total holes drilled, one was an ore hole, three were mineralized, two showed radio-activity over twice background, and twenty were barren. Because the one ore hole and the two other mineralized holes were in the W 1/2 of section 32, T. 14 N, R. 8 W, indicating favorable ground in at least that area, it was decided that offset drilling was warranted in that 1/2 section.

Reference is made to Exhibit D, herein attached, which fully describes the exploration carried out in the W 1/2 of section 32.

(b) Interest in Previous Operations

All previous exploration on the property has been carried out by the applicant.

(c) Production

There has been no production from the property.

(d) Ore Reserves

A drilling program was carried out in the W 1/2

of section 32 in an attempt to block out ore reserves. Reference is made to Exhibit D, herein attached, which fully describes resulting ore-reserve calculations.

(e) General Geologic Features

Reference is made to Exhibit D, herein attached, in which the general geologic features are discussed.

(f) Favorability

The center of the San Mateo Dome Project lies ten miles directly east of the Ambrosia Lake Dome and is adjacent to its easternmost known extremities of mineralization. This mineralized area, stretching eight miles west to east is authoritatively estimated to contain uranium ore reserves of 47,000,000 tons---over 50% of the total U. S. reserves. One section (640 acres) alone of this area, is said to contain reserves worth on the order of $200,000,000.

In area the San Mateo Dome Project covers about 24 sections. All of the features (structural and sedimentary) which are believed to have controlled the deposition of ore in the Ambrosia Lake area are known to continue into this Project area.

Recent exploration has proven the existence of ore-grade mineralization in the southern part of the San Mateo Dome Project area.

Ore has been blocked out in the W 1/2 of section 32 and mineralization is shown to exist over a 4000 foot north-south distance. To date sufficient drilling has not been completed to determine the limit of the mineralization in any direction.

For further details and substantiating data see Exhibit D, here attached.

(g) Supplemental Reports

1. Exhibit D - E. J. Longyear Company Report of December 31, 1957, on Results of Offset Drilling for Uranium Ore on Section 32, T 14 N, R 8 W, San Mateo Dome Project, Grants-Mt. Taylor Mining District, McKinley County, New Mexico.

(3) ACCESSIBILITY OF PROJECT

(a) Location and Accessibility

The San Mateo Dome Project area lies in Township 13 and 14 North, Ranges 8 and 9 West, McKinley County, New Mexico. The center of the project area lies about 10 miles east of the Ambrosia Lake District. Section 32 is in the southwest quarter of T. 14 N., R. 8 W., and approximately 7 miles northwest of the village of San Mateo. The area can be reached from U. S. Highway 66 north about 35 miles from Grants, New Mexico.

(b) Operating Headquarters

Manpower, materials and equipment are available in Grants, New Mexico. Office facilities are maintained in Milan, just west of the Grants City limits. All operating personnel reside in Grants.

(4) THE EXPLORATION PROJECT

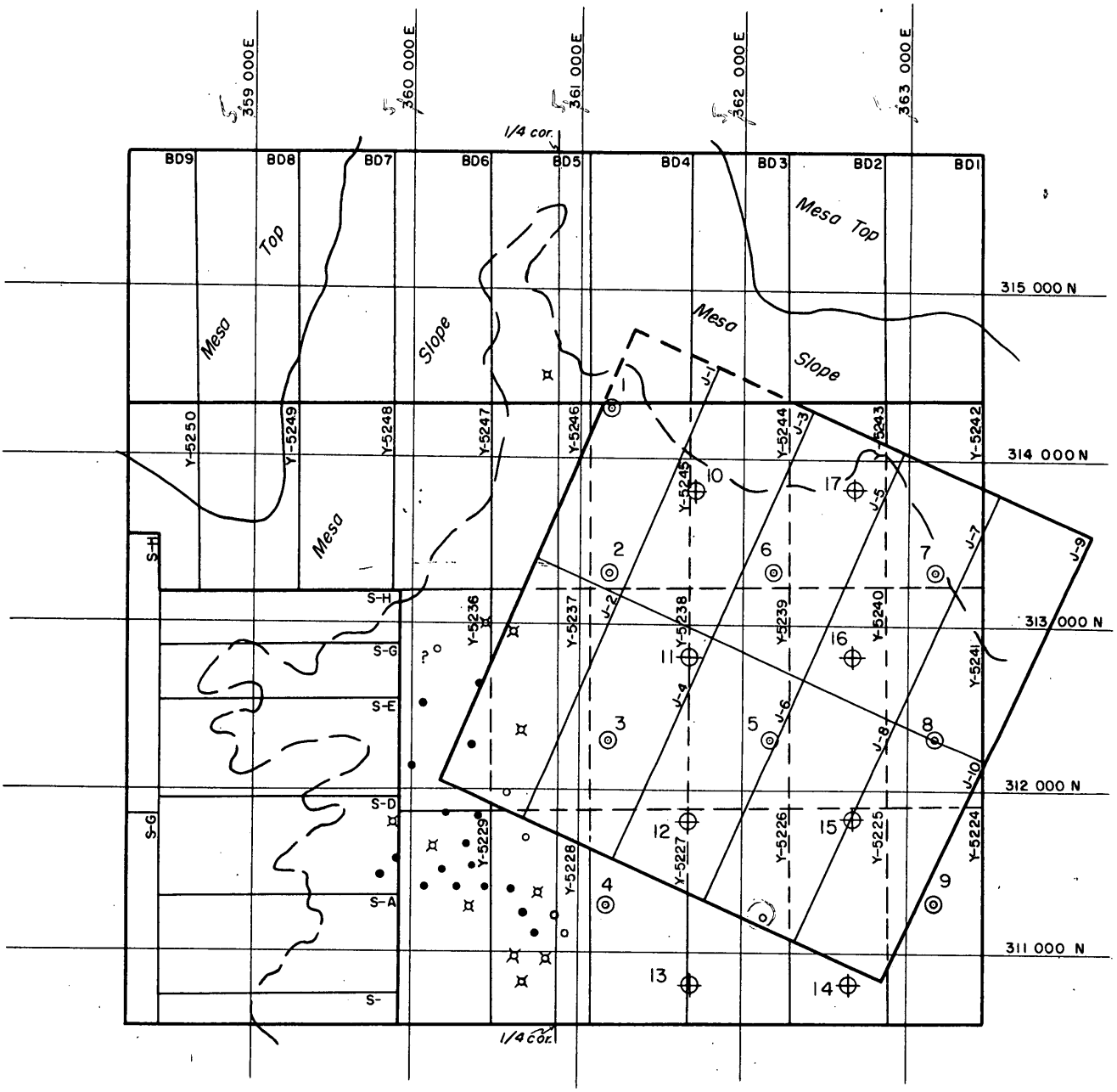
(a) Proposed Work

The proposed work will be carried out in two stages of drilling. Drill holes will be of a sufficient depth to penetrate the upper 20 feet of the Recapture member of the Morrison formation. The holes will be plug drilled in all cases. All hole locations will be surveyed and elevations run to drill sites.

It is recommended that 17 holes be drilled, averaging 2100 feet each for a total of 35,700 feet. The holes are planned on a staggered 1000-500 foot grid covering an area in the E 1/2 of section 32, bounded by the section lines on the south and east, and the base of the Mesa slope on the north. The locations of the holes are shown on Exhibit E.

Stage I: A total of 9 holes (18,900 feet) are proposed, averaging 2100 feet per hole. The holes are planned on a 1000-foot grid spacing. This stage of drilling is aimed at orienting the second-stage drilling for more favorable results.

Stage II: Drilling in Stage II would follow the pattern shown on Exhibit E, unless the data accumulated should show that the holes might be more advantageously used on a different pattern. However, it is understood



EXPLANATION

Proposed Drilling

- ◎ Stage I holes
- ⊕ Stage II holes

Previous Drilling

- ● Ore holes
- ⌑ Mineralized holes
- ○ Barren holes

J John claims

BD Bulldog claims

Y Yucca claims

S Sophie claims

N

EXHIBIT E

PROPOSED DRILL HOLE LOCATIONS

McKINLEY COUNTY, NEW MEXICO

SCALE: 1" = 1000

1000 500 0 1000

FEET

E. J. LONGYEAR APRIL 15, 1958

that no holes will be drilled which could be construed as "blocking" ore, and a hole spacing of greater than 200 feet will be used in offsetting ore or mineralized holes.

We recommend 16,800 feet of Stage II drilling. This would embrace a total of 8 holes averaging 2100 feet per hole.

It is expected that two truck-mounted Failing-1500 Drill Rigs will be used for the job. Sludge samples will be taken from every 10 feet of hole drilled, and logged by a geologist. Through the Westwater horizon, and through any other horizon that may be favorable or mineralized, samples of the sludge from 10-foot intervals will be sacked and saved for possible future study.

All holes will be probed, and recorded gamma ray, resistivity, and self-potential readings on geophysical strip logs will be provided.

(b) Access Roads and Drill Site Preparation

Only maintenance work will be required, as access roads are now in existence. An RD-6 Bulldozer, provided by private contractors, will be available for this work.

Each drill hole location will require bulldozer work to prepare slush pits and to level off an area for the drill rig.

(c) Time Required for Project

The work can start within 30 days and be completed within three months from the date of an exploration project contract. This estimate is based on a 2-rig operation.

Time estimates by stages as follows:

Stage I	1.5 months
Stage II	1.5 months
Total	3 months

(5) EXPERIENCE

On the participants in the joint venture, San Mateo Dome Project:

Lisbon Uranium Corporation was organized in December, 1953. The Company has been engaged in the acquisition, exploration and development of mining properties (principally uranium). The Company's original acquisition was in the Big Indian Mining District, San Juan County, Utah, on which several orebodies of major size have been established. An extensive exploratory and development program has been and is being conducted on these properties. Production is now in progress. Lisbon is also maintaining an aggressive program in the examination of uranium properties in relatively new areas of interest.

Mineral Projects - Venture B, Ltd. was organized in 1955, to undertake mineral projects, either as principal agent, partner, stockholder, syndicate member, associate, joint venturer, participant, managing agent, or in any other capacity; to invest funds in and to raise funds to be invested in mineral properties, and to organize, create, own, operate, lease, mortgage, pledge, sell, and dispose of properties and any interest therein and to do any and all things necessary or

incident thereto.

During 1956, an intensive program of property search and examination was carried out in the western United States. This program culminated in the present interest in San Mateo Dome Project.

The proposed exploration program would be managed by the E. J. Longyear Company in conjunction with other duties and responsibilities assigned to it for adjacent exploration work within the boundaries of the San Mateo Dome Project.

The E. J. Longyear Company has had over sixty years' experience in the exploration and mining business and has a staff of seasoned and trained engineers. In its varied activities the E. J. Longyear Company has been closely associated with a number of successful explorations including the discovery and development of the Falconbridge nickel-copper orebody in Ontario, Canada. In recent years its contract drilling division has been engaged in extensive work in the uranium fields of Canada and the southwestern United States. Similarly, its consulting and appraisal staff has been engaged to an increasing degree in the preparation of appraisals and reports of uranium property. In one capacity or another the company's staff has had contract with most

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E. J. LONGYEAR
COMPANY

of the large uranium properties now in operation in this hemisphere.

(6) ESTIMATE OF COSTS

(a) Independent Contracts

All drilling, bulldozer work necessary in preparation of sites, road, maintenance, etc., and probing, will be performed by independent contractors.

Drilling is to be in two stages. Locations for Stage I drill-hole sites are tabulated in Schedule 1. Stage II drilling is tabulated in Schedule 2 (locations are tentative). The cost estimates of drilling, bulldozer work, and probing are summarized in Schedule 3. Drilling bid is attached as Exhibit F. There has been no great change in current per foot drilling prices and as we have a drilling program now in force, we feel that it would be economically advantageous to use the same contractor on the work presently proposed.

(b) Personal Services

E. J. Longyear Company will supervise this program and furnish geological and engineering services. An estimate of costs is included in Schedule 3 under incidental allowances.

(c) Operating Materials and Supplies

Estimated costs of office supplies incidental to this project; maps and drill log reproductions; and field supplies, such as location stakes, flagging, etc.,

are included in Schedule 3 under incidental allowances.

(d) Operating Equipment

To be furnished by independent contractors.

(e) Initial Rehabilitation and Repairs

Not applicable.

(f) New Buildings, Fixtures, Installations

Not applicable.

(g) Miscellaneous

Schedule 3 lists estimates of cost for chemical assays, under category (g).

(7) APPLICANT'S SHARE OF COSTS

(a) and (b) Meeting the Costs

The San Mateo Dome Project will complete this exploration project for uranium and make such payments as will be required to allow completion and will be reimbursed by DMEA. Total cost of this project is estimated at $73,800.00 as summarized in Schedule 3, Summary of Costs. Reimbursement by DMEA will be at the rate of 50% of the allowable costs as stated in DMEA Order No. 1, Amended: The San Mateo Dome Project will contribute $36,900.00, which is 50% of the estimated cost of the project.

Respectfully submitted,

E. J. LONGYEAR COMPANY

R. C. Gebhardt
Senior Geologist and
Mining Engineer

Date: April 22, 1958
Denver, Colorado
416 Colorado Building

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E. J. LONGYEAR
COMPANY

SCHEDULES

1 Through 3

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E. J. LONGYEAR
COMPANY

SCHEDULE 1

STAGE I DRILL HOLE LOCATIONS

Hole No.	Coordinates (1) Feet North	Feet East
1	314,300	561,200
2	313,300	561,200
3	312,300	561,200
4	311,300	561,200
5	312,300	562,200
6	313,300	562,200
7	313,300	563,200
8	312,300	563,200
9	311,300	563,200

(1) A.E.C. Net

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SCHEDULE 2

STAGE II DRILL HOLE LOCATIONS (TENTATIVE)

Hole No.	Coordinates(1) Feet North	Feet East
10	313,800	561,700
11	312,800	561,700
12	311,800	561,700
13	310,800	561,700
14	310,800	562,700
15	311,800	562,700
16	312,800	562,700
17	313,800	562,700

(1) A.E.C. Net

SCHEDULE 3

ESTIMATED COSTS OF THE PROJECT

Stage I

Actual Costs

Category (a) Independent Contracts

13,500 feet non-core drilling, 0-1,500 ft. depths @ $1.50/ft.	$20,250.00	
5,400 feet non-core drilling, 1,500-2,200 ft. depth @ $2.25/ft.	12,150.00	
9 hrs. drill crew stand-by time @ $15.00/hr.	135.00	
18,900 feet probing and logging @ $0.115/ft. . . .	2,173.50	
9 hrs. logging crew stand-by time @ $10.00 hr.	90.00	
9 holes @ $40.00/hole for cost of circulation materials in excess of $100.00 per hole	360.00	
27 hrs. bulldozing @ $15.00/hr.	405.00	
Categories (b) through (f)		
None		
Category (g) Miscellaneous		
15 chemical analyses @ $5.00 each	75.00	
		$35,638.50

Fixed Unit Costs

Incidental allowance(1) for each foot of hole drilled, 18,900 feet @ $0.18/ft	3,402.00
Estimated total cost of Stage I	$39,040.50

(1) Includes all allowable costs of the project under Categories (a) through (g) of Article 6, except as otherwise scheduled above.

Stage II

Actual Costs

Category (a) Independent Contracts

12,000 feet non-core drilling, 0-1,500 ft. depths @ $1.50/ft.	$18,000.00	
4,800 feet non-core drilling, 1,500-2,200 ft. depths @ $2.25/ft.	10,800.00	
8 hrs. drill crew stand-by time @ $15.00/hr.	120.00	
16,800 feet probing and logging @ $0.115/ft. . . .	1,932.00	
8 hrs. logging crew stand-by time @ $10.00/hr.	80.00	
8 holes @ $40.00/hole for cost of circulation materials in excess of $100.00 per hole	320.00	
24 hrs. bulldozing @ $15.00/hr.	360.00	
Categories (b) through (f)		
None		
Category (g) Miscellaneous		
20 chemical analyses @ $5.00 each	100.00	
		$31,712.00

Fixed Unit Costs

Incidental allowance(1) for each foot of hole drilled, 16,800 @ $0.18/ft.	3,024.00
Estimated total cost of Stage II	$34,736.00

(1) Includes all allowable costs of the project under Categories (a) through (g) of Article 6, except as otherwise scheduled above.

Summary of Costs

Estimated Total Cost of Stage I	$39,040.50
Estimated Total Cost of Stage II	$34,736.00
Estimated Total Cost of the Project (rounded)	$73,800.00
Government participation @ 50%	$36,900.00

Memorandum May 23, 1958

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 4995 (uranium), San Mateo Dome Project, (K. S. Longyear Co.), McKinley County, New Mexico.

The examining team report that chances for a new discovery of ore on the applicant's property appear to be excellent. They point out that drilling on land adjacent, to the west, has resulted in the discovery of a significant ore deposit.

Previous drilling in the area has shown that a belt of large uranium deposits extends from the well-known Ambrosia Lake area to the property of the San Mateo Dome Project.

The examiners recommend that if the new proposal is approved by the Government that the new lands be incorporated into Contract Dmc-E 1183.

.8442

I agree with the advice of the examining team for approval of the application.

W. P. Williams

Copy to: DMEA (3)
C. I. Gardner
James Pacos, 3645
Docket file
Chron. file
Director's reading
Branch reading

WPWilliams:pbb
G-MD: 5/23/58

4995

EXTRA COPY
RECEIVED
DATE

224 New Customhouse
Denver 2, Colorado
May 13, 1958

Memorandum

To: Secretary to the Operating Committee

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

Subject: Docket No. DMEA 4995 (Uranium) San Mateo Dome Project (E. ½, S. 32, T. 14 N., R. 8 W., NMPM) McKinley County, New Mexico - Joint Report of Examination

Enclosed are the original and two copies of the joint report of examination on the subject property by M. H. Salsbury, USBM, and J. William Hasler, USGS.

The field examiners conclude that there is an excellent chance that the proposed exploration will find uranium ore bodies of significant size and grade. They recommend that the Applicant's work proposal be approved as modified by them, in which the field team concurs.

Owner's Consent to Lien and Subordination Agreements will be prepared by this office and forwarded the Applicant to obtain required signatures.

Enclosed are eight extra copies of Figure 1 for use in the preparation of the contract.

Original sig.
E. N. HARSHMAN

E. N. Harshman

ENHtdp

cc: Harshman
Salsbury
Hasler
DMEA/DFC
Baker
Docket
Chron.

Reviewed by
DMEA OPERATING COMMITTEE

(date)

IN REPLY REFER TO:
MINERAL DEPOSITS
DMEA
RECEIVED
MAY 12 1958

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEPARTMENT OF THE GEOLOGICAL SURVEY
P. O. Box 300
Grand Junction, Colorado
REGION III
DENVER, COLORADO

DMEA
MAY 12 1958

U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO
EXTRA COPY
DMEA
RECEIVED MAY 15 1958

DATE	INITIALS	CODE

May 7, 1958

Memorandum

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

Through: E. N. Harshman

From: J. William Hasler

Subject: Transmittal of a joint report of examination on an application for Government assistance by the San Mateo Dome Project on the East ½ sec. 32, T. 14 N., R. 8 W., NMPM, McKinley County, New Mexico.

Enclosed herewith are ten copies of a joint report of examination by J. W. Hasler and M. H. Salsbury on the East ½ sec. 32, T. 14 N., R. 8 W., NMPM, McKinley County, New Mexico as well as 21 copies of Figure 1, claims and proposed drilling on the East ½ sec. 32, T. 14 N., R. 8 W., NMPM, McKinley County, New Mexico.

The E. J. Longyear Company, P. O. Box 998, Grants, New Mexico, acting as agents for the "San Mateo Dome Project" applied to the Defense Minerals Exploration Administration on April 28, 1958 for assistance to explore for uranium ore bodies on the East half of the above mentioned section of ground in the San Mateo area of Grants Mining District, McKinley County, New Mexico.

A previous DMEA application (docket 4842) was made and a contract (Idm-E 1183) is currently in force on sections 33, 4 and 3, T. 14 and 13 N., R. 8 W., adjoining sec. 32 on the east and southeast to test the Poison Canyon and Westwater members of the Jurassic Morrison formation at depth for significant ore deposits.

Previous drilling on section 32 disclosed an ore body, and at the time of the field examination on DMEA docket 4842, section 32 was also examined. The discovery of the ore body in section 32 further established a southeasterly trend of the major ore belt from the Ambrosia Lake area and consequently resulted in the preparation of the present Contract Idm-E 1183.

Additional drilling in section 32, T. 14 N., R. 8 W. has disclosed an ore deposit calculated to contain 166,000 tons of indicated ore averaging 0.29 percent U_3O_8 with a thickness of 8.8 feet, and 161,000 tons of inferred ore averaging 0.23 percent U_3O_8 and having a thickness of 5.5 feet.

Reviewed by
DMEA OPERATING COMMITTEE

TRANSMITTED
MAY 13 1958

(date)

The DMEA examiners conclude that there is an excellent chance of finding substantial ore bodies by the proposed exploration which, together with the known ore body to the west, would constitute a minable reserve. The drilling program proposed by the applicant is recommended substantially as presented. It calls for two stages of drilling requiring an estimated 35,700 feet of non-core drilling in a maximum of 17 holes at an estimated cost of $73,371.50. Government participation at 50 percent would be $36,685.75.

To protect the Government's interest both in the new proposal and in the project on the adjoining land, it is recommended that the new proposal, if approved, be incorporated in Contract No. Idm-E 1183 with all lands subordinated as one unit.

I concur with the conclusions and recommendations of the examining team that the work herein proposed be prepared for a DMEA contract and that the chances for discovery of a significant tonnage of uranium ore on the East half of section 32, T. 14 N., R. 8 W. are favorable.

The Atomic Energy Commission was consulted relative to the appraisal of the area.

J. William Hasler

J. William Hasler,
Geologist

JWH/bh
Enclosures

FOR UNITED STATES GOVERNMENT USE ONLY

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

DMEA
DEPARTMENT OF THE INTERIOR
MAY 12 1958
REGION III
DENVER, COLORADO

TRANSMITTED
MAY 13 1958

DMEA

San Mateo Dome Project

East ½ Sec. 32, T. 14 N., R. 8 W.

McKinley County, New Mexico

Uranium

Joint Engineering and Geologic Report

by

J. William Hasler
U. S. Geological Survey

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

May 1958

Reviewed by
DMEA OPERATING COMMITTEE

_____
(date)

DMEA
SAN MATEO DOME PROJECT
EAST ½ SEC 32, T. 14 N., R. 8 W.
McKINLEY COUNTY, NEW MEXICO

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Joint Engineering and Geologic Report

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Conclusions and Recommendations	13

ILLUSTRATIONS

Figure	Follows page
1. Claims and proposed drilling in areas II and III and East ½ of Sec. 32, T. 14 N., R. 8 W., San Mateo Dome Project, McKinley County, New Mexico	14

DMEA
SAN MATEO DOME PROJECT
EAST ½ SEC. 32, T. 14 N., R. 8 W.
McKINLEY COUNTY, NEW MEXICO

INTRODUCTION AND SUMMARY

The E. J. Longyear Company, P. O. Box 998, Grants, New Mexico (field office) acting as agents for the "San Mateo Dome Project", applied on April 23, 1958 for Government assistance in exploration for uranium on mining claims adjacent to property on which a DMEA project by the same operator is in operation under Docket No. DMEA 4842, Contract No. Idm-E 1183. Exploratory drilling on the E½ Sec. 32, T. 14 N., R. 8 W., adjoining an area (W½ Sec. 32) where a substantial ore deposit has been partially defined by drilling is proposed in the present application. The estimated cost for 35,700 feet of non-core drilling in a maximum of 17 holes averaging 2,100 feet in depth is $73,800.00. Government participation at 50 percent would be $36,900.00.

The DMEA examiners did not make a field inspection of the project. Investigation under Docket No. DMEA 4842 provided all data which could be obtained in the field and no useful purpose would have been served by an additional visit. The applicant's representative in the Grant's area, Bryan F. Sorenson, had conferred with the Grand Junction, Colorado DMEA office before submitting the new application.

The rocks exposed on the property are the Mancos shale and the Mesa Verde group of Cretaceous age. Below the Mancos, but unexposed, are in descending order: the Dakota formation of Cretaceous age and the Morrison formation of Jurassic age. The potential ore-bearing formation is in the Westwater Canyon member of the Morrison formation which contains the major

portion of a large uranium reserve which has been developed in the Ambrosia Lake area 3 to 10 miles to the west. Reconnaissance drilling on the applicant's property followed by closer-spaced drilling on sec. 32, T. 14 N., R. 8 W., has indicated that a belt of large uranium deposits extends from the Ambrosia Lake area to the property of the San Mateo Dome Project. At the time of the initial field examination work was still in progress on the W.½ of sec. 32 with the hope of proving minable reserves of substantial tonnages in that section of ground. The examining team mentioned to Mr. Sorenson that it might be wise to include sec. 32 in the DMEA application; however, they were in the process of developing the section and did not feel that they would apply for DMEA aid at that time. However, sec. 32 was examined along with the other areas.

The land included in the present proposal is very favorably located because of its position in a favorable trend of mineralization and in close proximity to a known deposit recently discovered by the applicant's drilling. In fact, because of this proximity, the land is more favorably located than that adjoining on the east which covers the DMEA project in operation.

Economic ore deposits in the San Mateo Dome area must be of large size to justify exploration because of the depth of occurrence, 2000 feet or more. Such an ore body has been partially outlined next to the proposed project area where drilling has resulted in discovery of a reserve, conservatively calculated by the applicant as 166,000 tons of indicated ore with an average content of 0.29 percent U_3O_8 and thickness of 8.8 feet and 161,000 tons of inferred ore with an average content of 0.23 percent U_3O_8 and thickness of 5.5 feet. Additional inferred reserves of low grade ore (0.07 to 0.12 percent U_3O_8) have been calculated.

The applicant estimates that a minimum reserve of ore to be mined from one shaft would have to be in the neighborhood of 1,000,000 tons to justify development at a depth of 2000 feet.

Exploration of the area on which the present DMEA project is proposed was originally planned as a private project, a continuation of the work done on the other half of section 32. However, the applicant was obligated to explore other parts of the holdings to the north where DMEA exploration had been denied and capital to carry on work in both areas was not available. Consequently the additional application for Government assistance in exploration of a very favorable area has been made.

The DMEA examiners conclude that there is an excellent chance of finding substantial ore bodies by the proposed exploration which together with the known ore body to the west would constitute a minable reserve. The drilling program proposed by the applicant is recommended substantially as presented. It calls for two stages of drilling requiring an estimated 35,700 feet of non-core drilling in a maximum of 17 holes at a maximum cost of $73,371.50. Government participation at 50 percent would be $36,685.75.

To protect the Government's interest both in the new proposal and in the project on the adjoining land, it is recommended that the new proposal, if approved, be incorporated in Contract No. Idm-E 1183 with all lands subordinated as one unit.

The several sections of this report have been completed only to the extent not covered in the joint report on Docket No. DMEA 4842.

OWNERSHIP

DMEA reviewers are referred to Docket No. DMEA 4842 for additional title data pertinent to this application. The 34 contiguous located claims included in the present application, many of them overlapping, lie wholly or in part in E.½ sec. 32, T. 14 N., R. 8 W., NMPM (fig. 1). The effective area is the half section, or 320 acres, more or less. They are among mineral claims controlled by the applicant in 27 sections of land in the San Mateo Dome area, and adjoin on the west section 33, T. 14 N., R. 18 W., which is part of the project under Docket No. DMEA 4842. The claim maps submitted, Exhibit A on page 3A, and Exhibit C, claim map, differ slightly in detail. Exhibit C is taken as the more accurate map and has been used as the base for figure 1 with this report. The applicant lists 26 claims, disregarding small fractions of claims that are largely in section 33 to the east. These include the Tomcat No. 1, and Falcon Nos. 4113, 4114 and 4131 claims. Section 33 is already subordinated under Docket No. DMEA 4842. Following is a list of the claims in the east half of section 32.

Claims	Recording Data (Gallup, New Mex.) Date	Book	Page	Remarks
Yucca nos. 5224 thru 5228 1/	9-6-55	13MC	290-294	Junior to overlapping John claims.
Yucca nos. 5237 thru 5246 1/	9-6-55	13MC	303-312	" " "
Bulldog Nos. 1 thru 5	6-13-55	7MCR	123-127	
John Nos. 1 thru 10 2/	8-1-55	10MCR	173-182	Junior to overlapping Bulldog claims.
Tomcat No. 1 3/	6-13-55	007	132	Narrow strip only in sec. 32
Falcon Nos. 4113, 4114, and 4131 3/	9-6-55	14MC	191-217	Narrow strip only in sec. 32.

1/ Portions of Yucca Nos. 5228, 5237 and 5246 and Bulldog No. 5 claims are in the west ½ of section 32 which will not be subordinated.

2/ Portions of John Nos. 1 and 9 claims are in section 33 which has been subordinated under Docket DMEA 4842. The part of the John Nos. 1 and 2 claims in the west ½ of section 32 will not be subordinated.

3/ The Tomcat No. 1 and Falcon Nos. 4113, 4114, and 4131 claims are largely in section 33 which has been subordinated.

The Yucca claims were staked by Yucca Uranium, Inc., referred to in some documents as Yucca Mining and Petroleum Co., Inc. They were leased to G. R. Kennedy and Henry C. Adams, sub-leased to the E. J. Longyear Co., and assigned to Mineral Projects-Venture B Ltd., and the Lisbon Uranium Corporation, the partners in the present application.

The Bulldog claims were staked by the H. B. and S. Company, a co-partnership of L. G. Shaw, Roy B. Shaw, K. B. Baird and their wives, quit-claimed to Fred Pool, then quit-claimed to Kennedy and Adams. They were transferred to the applicant in the same transactions as the Yucca claims.

The John claims were staked by the Parador Mining Company, Inc., and leased to Donald D. Dufford who assigned the lease to the present applicant.

The Falcon and Tomcat claims are owned by Yucca Uranium, Inc. and were acquired by the applicant in the same transactions as were the Yucca claims.

Copies of quit-claim deeds, leases and assignments documenting the various transactions have been submitted by the applicant. The title appraisal made in connection with Docket No. DMEA, Contract Idm-E 1183, covered all the claims in the present application except the Bulldog claims and the applicant's title was satisfactory so far as that DMEA project was concerned. Consents to Lien from prior owners and lessees of the claims in the present application

will be required.

GEOLOGY AND ORE DEPOSITS

The San Mateo dome project is located in the Mt. Taylor mining district and lies in the folded and faulted area between the southern fringe of the San Juan Basin to the north and the Zuni uplift to the south. Sedimentary formations exposed in the district consist of marine and terrestrial rocks ranging in age from Pennsylvanian to late Cretaceous. The sediments dip gently northward into the San Juan Basin. South and east of the San Mateo dome project the sedimentary formations are colored by a late Tertiary sequence of acidic volcanics and basic flows. Precambrian rocks are exposed in the Zuni uplift.

The properties of the San Mateo dome project are centered on and around the San Mateo dome which lies about 9 miles east of the Ambrosia Lake dome. Large uranium deposits occur in the belt which extends between the southern edges of these two domes. Uranium deposits are known to occur in several formations in the district. Production is from mines in the Dakota, Todilto and Morrison formations. Known ore deposits in the Morrison formation occur in the main body of the Westwater Canyon member (Poison Canyon sandstone), which extends into the Brushy Basin member of the Morrison formation. The large deposits that are concentrated in a belt that extends southeastward from the Ambrosia Lake dome to the southern flank of the San Mateo dome and onto the southern part of the property held by the San Mateo Dome Project. This belt is at least 12 miles long. It is about 3 miles wide on the apex of the Ambrosia Lake dome and apparently narrows to the southeast, though the

southeast end is only partly explored. Individual deposits within this belt contain from a few tons to several million tons of ore, averaging 0.25 to 0.30 percent U_3O_8.

About 4 miles south of the main belt of ore deposits there appears to be a parallel belt in which the deposits occur in a lens of Westwater Canyon sandstone which extends into the overlying Brushy Basin member. Locally this sandstone is called the Poison Canyon sandstone. The belt of deposits in the Poison Canyon sandstone is about 1 mile wide. Individual deposits within the belt seem to be smaller and more scattered than those in the remaining part of the Westwater Canyon member. Mineralized rock in the Morrison formation consists mainly of sandstone impregnated with uranium and vanadium minerals. Individual ore bodies have irregular lenticular shapes and are flat lying. The deposits consist of a cluster of these lenticular bodies which commonly overlap and coalesce but may be separated by barren sandstone. The deposits range in thickness from less than a foot to 80 feet or more. They are as much as 2000 feet wide and up to 5000 feet long. Most commonly they are elongate parallel to the main belt of deposits. Because of their broad extent the deposits of the Westwater Canyon member make very good drilling targets.

The applicant has drilled and logged 73,993 feet in 35 holes on the southwest portion of sec. 32, T. 14 N., R. 8 W. Of the 35 holes drilled, the applicant reports 17 holes contained 5 or more feet of at least 0.15 percent eU_3O_8 and that 3 holes contained at least 5 feet or more of material ranging from 0.01 to 0.14 percent U_3O_8. A review of the applicant's exploration on sec. 32, shows that the chemical assays are somewhat higher in value than

gamma-ray estimates but the ratio is consistent and the uranium ore appears to be in equilibrium. The applicant has calculated a reserve of 900,000 pounds of indicated U_3O_8 with an average thickness of 8.8 feet, 0.29 percent U_3O_8 and has inferred a tonnage of 161,000 tons averaging 5.5 feet in thickness, with an average grade of 0.23 percent U_3O_8. The tonnage for the indicated reserves is 166,000 tons. The results of the exploration drilling on the southwest portion of sec. 32, indicate that there is a good chance of finding additional ore at depths between 1800 and 2000 feet below the surface in the Poison Canyon sandstone member of the Morrison formation of Jurassic age.

PROPOSED EXPLORATION

The applicant has proposed a drilling project in two stages at an estimated cost of $73,800.00. Government participation at 50 percent would be $36,900.00. Stage I would consist of an estimated maximum of 18,900 feet of non-core drilling in 9 holes on 1000-foot centers averaging 2100 feet in depth (fig. 1 and Schedules 1 and 2). Stage II would require an additional 8 holes tentatively located at the center of 1000-foot squares formed by Stage I holes. Maximum non-core footage in Stage II would be 16,800 feet.

The 1000-foot minimum spacing proposed for Stage I is half of that specified in the project already in operation. This is considered to be justified even with drilling depths of 2000 feet because of the position of the area close to a known ore deposit and within the mineralized trend. The Stage II hole locations as tentatively proposed are approximately 700 feet from any previously drilled holes. This spacing would allow little flexibility. Stage II work is recommended by the examining team to offset Stage I holes which penetrate ore grade material. A minimum spacing of 500 feet from pre-

viously drilled holes would permit flexibility in locating holes. Stage II, if justified by Stage I results, would at least partially outline any ore bodies present and form some basis for a reserve calculation which could hardly be attempted with drill holes on 1000-foot centers.

SCHEDULE 1

Stage I Drill Hole Locations

Hole Nos. Applicant's Exhibit E	Hole Nos. DMMA Fig. 1	Coordinates (1) Feet North	Coordinates (1) Feet East
1	14	314,300	561,200
2	15	313,300	561,200
3	16	312,300	561,200
4	17	311,300	561,200
5	18	312,300	562,200
6	19	313,300	562,200
7	20	313,300	563,200
8	21	312,300	563,200
9	22	311,300	563,200

(1) A.N.C. Net

SCHEDULE 2

Stage II Drill Hole Locations (Tentative)

10	313,800	561,700
11	312,800	561,700
12	311,800	561,700
13	310,800	561,700
14	310,800	562,700
15	311,800	562,700
16	312,800	562,700
17	313,800	562,700

The applicant's cost estimate was supported by the low bid by the Scott Brothers Drilling Company in connection with Docket No. DMEA 4842. Two other bids are to be submitted. The items in the applicant's estimate are calculated at the unit prices in effect in Docket No. DMEA 4842, Contract Idm-E 1183. The footage of non-core drilling in the 1500-2200 foot range listed in the Stage II estimate is wrongly stated as 4,000 feet instead of 4,800 feet, the amount which agrees with the computed cost of this item, $10,800.00; and the estimated total drilling footage.

The examining team recommends use of the drilling plan proposed by the applicant, with a reservation as to Stage II as outlined in Conclusions and Recommendations. Inasmuch as conditions will be similar to those on the adjoining ground being explored under Docket No. DMEA 4842, and inclusion of the new work under the same contract is being recommended, the applicant's cost estimate is considered to be satisfactory except for bulldozing allowances. The access road network has been completed to or very near 6 of the 9 Stage I holes and maximum bulldozing requirements for drillsites and access roads on 6 holes is estimated at 1 hour each and on 3 other holes at 2 hours each for a total of 12 hours instead of 27 hours. Similarily in Stage II maximum bulldozing time is estimated at 12 hours instead of 24 hours. The new project, if approved, will probably not be started until near the end of the work now in progress and it is not believed that a saving in supervisory costs should be assumed because of possible concurrent operation of the 2 projects. For this reason no change in the contract figure of $0.18 per foot of drilling for incidental allowance is made.

Following is a summary of costs suggested for contract use:

Stage I

Actual Cost Items:

Category (1) Independent Contracts

13,500 feet non-core drilling 0-1500 ft. depths at $1.50/ft.	$20,250.00	
5,400 feet non-core drilling 1500-2200 ft. depths at $2.25/ft.	12,150.00	
9 hours drill crew standby time at $15.00/hr.	135.00	
18,900 ft. probing and logging at $0.115/ft.	2,173.50	
9 hours logging crew standby time at $10.00/hr.	90.00	
9 holes at $40.00/hole for cost of circulative materials in excess of $100.00/hole	360.00	
12 hours bulldozing at $15.00/hr.	180.00	

Categories (2) through (6)

None

Category (7) Miscellaneous

15 chemical analyses at $5.00 each	75.00	

Fixed Unit Cost Items: (see Annex II (d))

Incidental allowance for each foot of hole drilled, 18,900 ft. at $0.18/ft.	3,402.00	
Estimated total cost of Stage I		$38,815.50

Stage II

Actual Cost Items:

Category (1) Independent Contracts

12,000 ft. non-core drilling 0-1500 ft. depth at $1.50/ft.	$18,000.00	
4,800 feet non-core drilling 1500-2200 ft. depth at $2.25/ft.	10,800.00	
8 hours drill crew standby time at $15.00/hr.	120.00	

16,800 feet probing and logging at $0.115/ft.	$ 1,932.00	
8 hours logging crew standby time at $10.00/hr.	80.00	
8 holes at $40.00/hole for cost of circulating materials in excess of $100.00/hole	320.00	
12 hours bulldozing at $15.00/hr.	180.00	

Categories (2) through (6)

None

Category (7) Miscellaneous

20 chemical analyses at $5.00 each	100.00	

Fixed Unit Cost Items: (see Annex II (4))

Incidental allowance for each foot of hole drilled, 16,800 feet at $0.18/ft.	3,024.00	
Estimated total cost of Stage II		$34,556.00

Summary of Costs

Estimated total cost of Stage I	$38,815.50
Estimated total cost of Stage II	$34,556.00
Estimated total cost of the Project	$73,371.50
Government participation at 50 percent	$36,685.75

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that there is an excellent chance of finding by the proposed exploration, uranium ore bodies of significant size and grade in the area of the east half of sec. 32, T. 14 N., R. 8 W., which lies within a mineralized trend east of a known deposit which has been partially outlined by drilling.

The recommended work has been set up in two stages as proposed by the applicant. The minimum hole spacing of 1,000 feet in Stage I and 700 feet in Stage II is half of the minimum spacing in the project under Docket No. DMEA 4842. This is believed to be justified because of the proximity of the proposed exploration to a known ore body. The maximum hole spacing which is possible in Stage II as proposed is 700 feet and there would be little flexibility in spotting holes with this limitation. A more practical minimum spacing would be 500 feet. Justification for drilling on 500-foot centers to a depth of 2100 feet is perhaps questionable. As the project is set up, Stage II could be eliminated without any necessity for making changes in Stage I work. However, it is recommended that Stage II be left in so that if mineralization indicating a significant ore occurrence is found in Stage I, enough additional drilling can be done to at least partially establish some reserves. The requirements for approval of Stage II could specify that Stage I holes, to be offset, must penetrate uranium mineralization of at least 0.20 percent U_3O_8 in thicknesses of 2.0 feet or more.

It is recommended that the proposed project in the east half of sec. 32 be made a part of Contract Idm-E 1183 by amendment. Specifications in Contract Idm-E 1183 would be applicable, even in regard to hole spacing.

A minimum of 500-foot spacing for Stage II holes is permitted by the contract under certain conditions. The general requirements for authorization of Stage II work are not rigid in Contract Idm-X 1183, however, and more definite limitations may be desirable. Thus approval of Stage II drilling might be limited to offsets of Stage I holes which penetrate uranium mineralization of at least 0.20 percent U_3O_8 in a thickness of 2.0 feet or more.

The estimated cost of the proposed work is $73,371.50 in which Government participation at 50 percent would be $36,685.75.

EXHIBIT D

E. J. Longyear Company Report of December 31, 1957, on Results of Offset Drilling for Uranium Ore on Section 32, T. 14 N., R. 8 W., San Mateo Dome Project, Grants - Mt. Taylor Mining District, McKinley County, New Mexico.

TO BE RETURNED TO:
E. J. LONGYEAR COMPANY
416 COLORADO BUILDING
DENVER 2, COLORADO

RESULTS OF OFFSET DRILLING
FOR URANIUM ORE

SECTION 32, T. 14 N., R. 8 W.,
SAN MATEO DOME PROJECT
Grants-Mt. Taylor Mining District
McKinley County, New Mexico

TO BE RETURNED TO:
E. J. LONGYEAR COMPANY
416 COLORADO BUILDING
DENVER 2, COLORADO

E. J. LONGYEAR COMPANY
by B. F. Sorensen
December 31, 1957

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PLATE 1. (in pocket) -- Section 32 showing drill hole locations and areas of influence.

PLATE 11. (in pocket) -- Cross-sections through the ore zone.

E. J. LONGYEAR
COMPANY

RESUME

Conclusions

Reconnaissance drilling on the San Mateo Dome Project showed the presence of uranium mineralization in Section 32.

Geophysical drill hole logs indicate the mineralization to be in a tongue of the Westwater sandstone locally referred to as the Poison Canyon sand. The mineralization is not in the main body of the Westwater sandstone.

Chemical assays of split-core samples from hole SM 1-32 have proven the mineralization to be of ore grade.

Close-spaced offset drilling shows this mineralization to be comparatively low-grade ore occurring in a worm-shaped body.

Drill hole information shows shaly beds overlying and underlying the ore-bearing sand in all locations. The ore occurs in discontinuous flat-lying beds or pods at depths that range from 1850 to 1950 feet.

Drift Surveys in several holes show the holes to penetrate the rock formations in cork-screw fashion, deviating approximately 50 to 70 feet to the southwest in 2000 feet of hole.

A total of 35 holes have been drilled in Section 32, amounting to 4 reconnaissance holes and 31 offset holes.

Preliminary ore reserve calculations, based on 16 ore holes, show an estimated 166,000 tons of indicated ore at a thickness of 8.8 feet and grade of 0.287% eU_3O_8. Another 161,000 tons of inferred ore is estimated having a thickness of 5.5 feet and a grade of 0.23% eU_3O_8.

Drilling commitments, assessment work requirements, and rental payments will be relatively costly for the coming year (1958), and, in the light of exploration results to date, necessitate a re-evaluation of certain parts of the property.

Ore habits, indicated by the exploration, and indicated mining problems, require an analysis for intelligent decisions regarding the extent of future explorations.

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Recommendations

Re-evaluate the San Mateo Dome Project properties, incorporating drill hole data not previously known, and drop those sections that appear unfavorable based upon economic facts.

Make a cost estimate of expected mining problems in Section 32, based upon ore habits indicated by the exploratory drilling. Estimate ore reserve requirements needed for an economic venture based upon the mining studies. Evaluate the results in Section 32 by the results of mining studies and tonnage requirements.

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INTRODUCTION

Between April 8 and July 15, 1957, a reconnaissance drilling program was carried out on the San Mateo Dome Project in the Grants-Mt. Taylor Mining District, McKinley County, New Mexico. A total of 26 reconnaissance holes were drilled within an area covering 21 full and 8 partial land sections. Of the total holes drilled, one was an ore hole, three were mineralized, two showed radioactivity over twice background, and twenty were barren. Because the one ore hole and two other mineralized holes were in Section 32, T. 14 N., R. 8 W., indicating favorable ground in at least that area, it was decided that offset drilling was warranted in that section.

This report covers the offset drilling in Section 32, recommended in the E. J. Longyear Company Report of July 15, 1957, on Results of Reconnaissance Drilling on the San Mateo Dome Project, Grants-Mt. Taylor Mining District, McKinley County, New Mexico.

Location and Accessibility

The San Mateo Dome Project area lies in Townships 13 and 14 North, Ranges 8 and 9 West, McKinley County, New Mexico. The center of the prospect area lies about 10 miles east of the Ambrosia Lake district. Section 32 is in the southwest quarter of T. 14 N., R. 8 W., and approximately 7 miles northwest of the village of San Mateo

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(see Fig. 1).

The area can be reached from U. S. Highway 66 north about 35 miles from Grants, New Mexico.

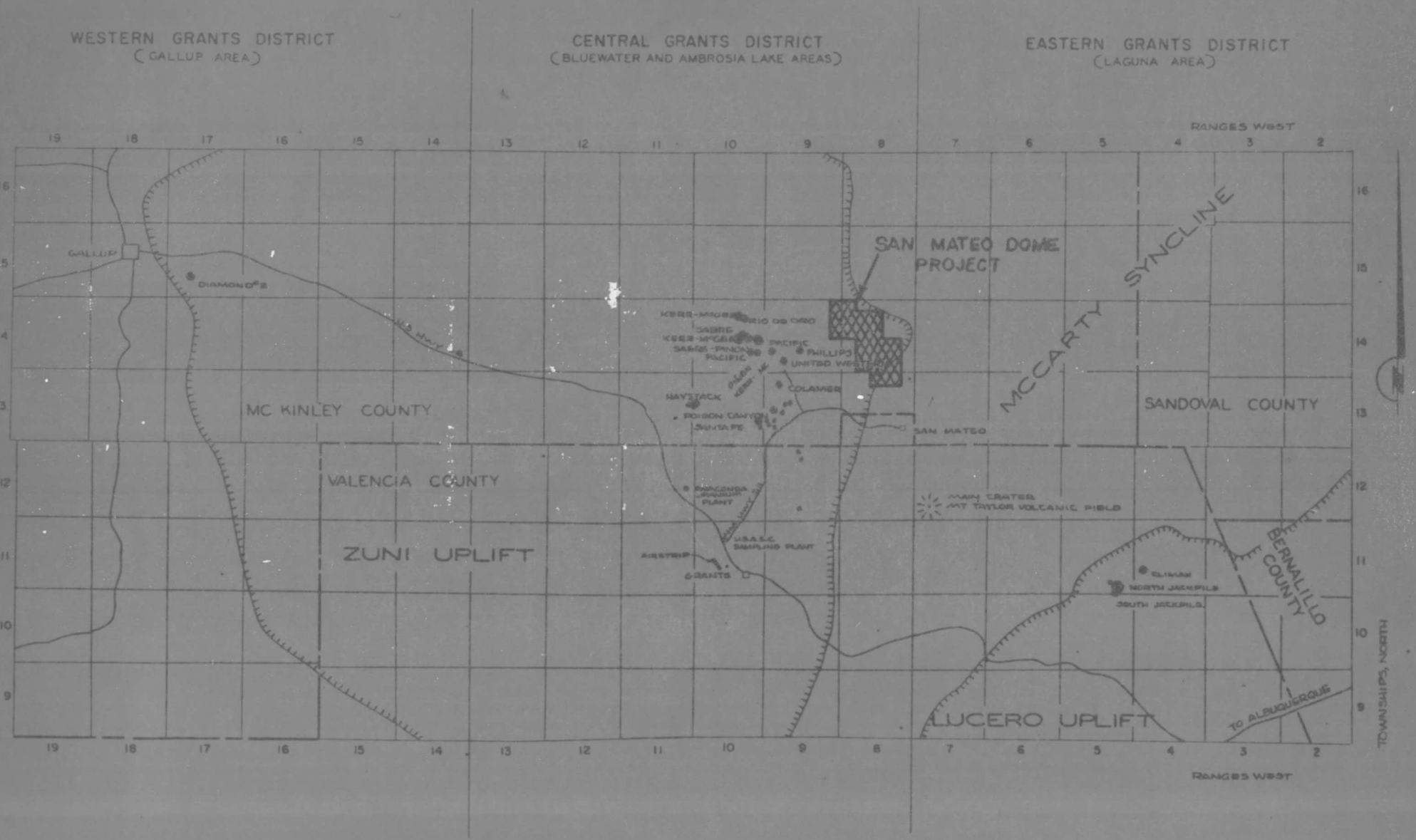
Topography

The San Mateo Dome Project area is a region of cliffs and mesas with relief of about 500 feet. Elevations range from 7200 to 8200 feet above sea level. Section 32 is situated in a broad valley hemmed in by high, steep cliffs over the north one-third of the section and cut off on the west and south by steep canyons.

Ownership

Section 32 is part of the San Mateo Dome Project, being held in part by actual ownership and in part by lease agreements. Four different claim groups exist in the section. They are the Bulldog claims, the John claims, the Yucca claims, and the Sophie claims (locations shown on Plate I, in pocket).

The Bulldog claims were purchased by the San Mateo Dome Project. The John claims are held by a lease from Parador Mining Company. The Yucca claims are a part of the original San Mateo Dome Project properties and are held by a lease from Messrs. Kennedy and Adams. The Sophie claims are owned jointly by Yucca and John Jebsen and are now in the final stages of being leased to the San Mateo Dome Project.



MAJOR URANIUM OREBODIES

OVER 10,000 TONS
OVER 100,000 TONS
OVER 1,000,000 TONS

ONLY OREBODIES EXCEEDING 10,000 TONS IN SIZE ARE NAMED.
TONNAGE ESTIMATES ARE NOT FROM OFFICIAL SOURCES AND MAY BE IN ERROR.

INFORMATION AND DESIGN: THOMAS W. MITCHAM, mining geologist
DRAFTING: B. M. MILLER
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P.O. BOX 1414
FLAGSTAFF, ARIZONA

MAP NO. 1

INDEX MAP
GRANTS DISTRICT
NEW MEXICO

0 10 MILES

Figure 1

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GENERAL GEOLOGY

Reference is made to the E. J. Longyear Company Report of March 15, 1957, on Recommended Exploration on the San Mateo Prospect, for details of stratigraphy and structures in the area of which the San Mateo Dome Project is a part.

Stratigraphy - Section 32

The rocks exposed in Section 32 are the Mesaverde group of Upper Cretaceous age. The broad valley in the center of the section and the steep canyons on the west and south are in the Mulatto shale member of the Crevasse Canyon formation. On the north, covering the north one-third of the section, steep cliffs occur, composed in ascending order, of the flat-lying Dalton sandstone and Gibson coal members of the Crevasse Canyon formation, and capped by the Point Lookout sandstone. Unexposed but lying below the Mulatto shale, in descending order, are the Dilco coal members of the Crevasse Canyon formation, Gallup sandstone, Mancos shale, and Dakota sandstone (Upper Cretaceous); Brushy Basin member of the Morrison formation (Jurassic), the Westwater Canyon member of the Morrison (an upper Westwater Canyon sandstone lens intertongues with the overlying Brushy Basin shale in this area and is locally known as the Poison Canyon sandstone); and the Recapture Creek member of the Morrison.

The uranium ore deposits of the Ambrosia Lake area

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occur in the main body of the Westwater Canyon member of the Morrison formation and also in the Poison Canyon sand-tongue. In Section 32, mineralization has been noted only in the Poison Canyon sand-tongue. (See cross-sections, Plate II, in pocket).

Structure

Reconnaissance drilling on the San Mateo Dome Project confirms the existence of an asymetrical dome of post-Cretaceous age. The offset drilling in Section 32 suggests that the axis of the dome passes through the center of the section in a northeast direction. The dome is broken by numerous northeast-trending faults, some of which pass through Section 32. Several other faults, not apparent on the surface, are indicated by drill hole information. This also suggests folding in the Morrison formation which pre-dates Cretaceous time.

EXPLORATION

Procedure

As recommended in E. J. Longyear Company Report of July 15, 1957, on Results of Reconnaissance Drilling on The San Mateo Dome Project, an offset, plug and core drilling program was set up for Section 32. (Offset holes 3-32 and 4-32 were drilled previous to this.) It was recommended that 7 to 12 holes be drilled in a three month period with one drill rig operating. We planned 25,000 feet (12 holes) of plug drilling with allowance made for some coring, if warranted; hole locations to be on 150-200 foot centers, offsetting from hole SM 1-32.

By September 15, 1957, nine of the proposed holes were completed and six were estimated to have penetrated ore-grade mineralization. It appeared that an ore trend had developed along a N 65°W line through hole SM 1-32. Ore had been encountered along this trend over a length of 1000 feet.

On September 18, 1957, an Owners Committee meeting was held in Albuquerque and progress of the offset drilling program discussed. It was decided that the success of previous drilling warranted additional expenditure for exploration in Section 32, and that the pace be speeded up by the addition of another drill rig.

A second rig was added to the Project on October 15,

and to date (December 31) the combined efforts of two rigs have added 20 holes (42,312 feet) since September 15.

At this writing, 35 holes have been drilled in Section 32, (see Table I). Of this total, thirty-one are offset holes, the other four being completed under the initial reconnaissance program and not considered offset holes. Probing results indicate that sixteen of the offset holes have penetrated ore-grade mineralization, three have encountered strong mineralization, seven are considered mineralized, four are barren, and one has not yet been probed. (See Plate I for hole locations).

Plug Drilling

All offset holes, with the exception of 71 feet in hole SM 17-32 were plug-drilled. Average advance per calendar day for the 65,680 feet of offset plug drilling was 262 feet per rig.

Core Drilling

An attempt was made to core the ore horizon in hole SM 17-32 and 71 feet of hole were cored. Core recovery was 70 per cent. No other offset holes were cored.

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TABLE I

Holes Drilled on Sec. 32, T14N, R8W, San Mateo Dome Project

Hole No.	Co-ordinates (ft.) North	East	Collar Elevation (Ft.)	Drilled Depth (feet)	Date of Completion
SM 1-32*	311 438.17	560 276.88	7566.5	2150	5/14/57
2-32*	312 960.89	560 648.06	7531.9	2174	6/19/57
3-32	311 542.90	560 220.96	7563.5	2165	6/28/57
3A-32*	314 517.66	560 811.23	7538.0	1993	4/25/57
4	311 554.35	560 390.12	7548.3	2150	7/14/57
5	311 672.16	560 158.10	7564.5	2020	7/18/57
6*	311 278.00	562 142.00	7473.5	1920	4/17/57
6A	311 305.52	560 348.76	7567.9	2140	7/25/57
7	311 690.22	560 317.12	7546.5	2120	8/1/57
8	311 425.90	560 457.60	7558.7	2140	8/6/57
9	311 425.74	560 109.59	7585.1	2120	8/14/57
10	311 409.65	560 622.96	7564.6	2140	8/18/57
11	311 394.03	560 792.53	7538.6	2150	8/28/57
12	311 273.50	560 695.33	7547.6	2120	9/4/57

* Holes drilled under initial Reconnaissance Program.

TABLE I (Continued)

Hole No.	Co-ordinates (Ft.) North	East	Collar Elevation (Ft.)	Drilled Depth (feet)	Date of Completion
13	311 609.11	559 952.70	7624.9	2174	9/16/57
14	311 132.10	560 927.66	7555.1	2131	9/25/57
15	311 246.35	560 873.25	7540.6	2108	10/1/57
16	311 114.63	560 762.43	7565.8	2128	10/11/57
17	310 975.84	560 819.72	7608.9	2021	10/21/57
18	311 826.78	559 917.73	7544.4	2100	10/22/57
19	310 837.08	560 731.67	7606.4	2148	10/28/57
20	311 624.84	559 816.90	7606.0	2150	10/28/57
21	310 967.55	560 662.80	7604.34	2168	11/14/57
22	311 474.19	559 889.72	7632.7	2160	11/8/57
23A	311 865.08	560 392.57	7532.3	2085	11/29/57
24	311 859.87	560 225.97	7549.9	2093	11/15/57
25	311 989.99	560 551.82	7523.8	2100	12/4/57
26	312 254.13	560 297.43	7537.5	2090	11/22/57
27	312 645.02	560 375.12	7535.9	2110	11/26/57
28	313 042.97	560 446.06	7542.6	2160	12/7/57

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TABLE I (Continued)

Hole No.	Co-ordinates (Ft.) North	East	Collar Elevation (Ft.)	Drilled Depth (feet)	Date of Completion
29	312 389.71	560 625.55	7522.4	2090	12/9/57
30	312 505.58	560 028.81	7512.7	2100	12/11/57
31	311 734.81	560 700.38	7531.3	2100	12/13/57
32	312 869.09	560 117.52	7512.8	2180	Drilled but not probed
33	312 110.76	559 962.31	7526.1	2090	12/21/57
Totals: 35				73,988	

Probing

All holes were probed by Century Geophysical Corporation of Tulsa, Oklahoma, using a truck-mounted Logging Control Unit, Model 2201. In each hole, three logs were recorded; gamma-ray, resistivity, and self-potential.

A total of 73,970 feet were logged in 35 drill holes (see Table II). Table II is a tabulation of probing results. Holes SM 1, 3, 4, 7, 8, 9, 10, 12, 13, 16, 22, 23A, 24, 26, 27, 30 and 33 are estimated to contain 5 or more feet of at least 0.15% eU_3O_8* and are considered ore holes. Holes 6A, 11, and 21 are estimated to contain 5 or more feet of at least 0.10% to 0.14% eU_3O_8 and are considered strongly mineralized holes. Holes 2, 3A, 5, 17, 18, 19, 20, 28, and 29 are weakly mineralized. Holes 6, 14, 15, 25, and 31 are considered barren. Hole SM 32-32 has not yet been probed.

The resistivity and self-potential logs indicate that the mineralization recorded on the gamma-ray log is located in a sandstone tongue of the Westwater within the Brushy Basin near its base. The sandstone tongue is locally termed the Poison Canyon sandstone. In Section 32 no mineralization has been recorded in the main body of the Westwater.

* Based upon the relationship derived by Rio de Oro for ore in Section 26, T. 14 N., R. 9 W.

TABLE II

Holes probed on Sec. 32, T. 14 N., R. 8 W., San Mateo Dome Project

Hole No.	Depth Probed (ft)	Mineralized Thick, (ft)	Average C.P.S.	Interval of Count (feet)	Est. % eU_3O_8
SM 1-32*	2150	5	Chemical	1876 - 1881	0.30**
SM 2-32*	2174	1	195	1918 - 1919	0.05
		1	180	1926 - 1927	0.05
SM 3-32	2168	6	615	1864 - 1870	0.23**
		1	140	1888 - 1889	0.04
SM 3A-32*	2010	1	80	1899 - 1900	0.02
		1	90	1904 - 1905	0.02
		1	150	1915 - 1916	0.04
		1	80	1921 - 1922	0.02
SM 4-32	2131	5	510	1867 - 1872	0.18**
SM 5-32	2130	5	265	1853 - 1858	0.08
		1	300	1872 - 1873	0.09
SM 6-32*	1932	---	---	--- ---	barren
SM 6A-32	2083	5	336	1875 - 1880	0.12
		1	320	1885 - 1886	0.10
SM 7-32	2122	5	600	1859 - 1864	0.24**
		1	320	1884 - 1885	0.10
SM 8-32	2150	12	1075	1885 - 1897	0.49**
SM 9-32	2119	5	515	1883 - 1888	0.19**
		1	100	1903 - 1904	0.02
SM 10-32	2140	5	416	1904 - 1909	0.15**
SM 11-32	2142	2	325	1898 - 1900	0.10
		13	295	1909 - 1922	0.09
SM 12-32	2120	14	770	1891 - 1905	0.31**
SM 13-32	2150	5	450	1904 - 1909	0.15**
		7	465	1913 - 1920	0.16**

* Holes drilled under initial Reconnaissance Program.
** Holes considered as ore holes.

TABLE II (Continued)

Hole No.	Depth Probed (ft)	Mineralized Thick, (ft)	Average C. P. S.	Interval of Count (feet)	Est.% eU_3O_8
SM 14-32	2131	---	---	--- ---	barren
SM 15-32	2110	---	---	--- ---	barren
SM 16-32	2125	15	730	1901 - 1916	0.28**
SM 17-32	2000	5	160	1955 - 1960	0.04
SM 18-32	2090	1	150	1847 - 1848	0.04
SM 19-32	2152	1	190	1934 - 1935	0.05
		5	250	1948 - 1953	0.07
SM 20-32	2155	4	270	1915 - 1919	0.08
SM 21-32	2163	5	190	1920 - 1925	0.05
		7	405	1936 - 1943	0.13
SM 22-32	2151	5	480	1924 - 1929	0.17**
		5	420	1933 - 1938	0.14
		3	200	1940 - 1943	0.05
SM 23A-32	2080	23	820	1864 - 1887	0.32**
SM 24-32	2083	5	620	1848 - 1853	0.23**
		1	190	1870 - 1871	0.05
SM 25-32	2100	---	---	--- ---	barren
SM 26-32	2090	4	200	1876 - 1880	0.05
		7	580	1880 - 1887	0.21**
SM 27-32	2099	6	300	1888 - 1894	0.09
		6	450	1900 - 1906	0.15**
SM 28-32	2160	5	259	1946 - 1951	0.08
SM 29-32	2090	11	258	1895 - 1906	0.08
SM 30-32	2100	5	865	1851 - 1856	0.34**
		5	554	1872 - 1877	0.20**

* Holes drilled under initial Reconnaissance Program.
** Holes considered as ore holes.

TABLE II (Continued)

Hole No.	Depth Probed (ft)	Mineralized Thick, (ft)	Average C.P.S.	Interval of Count (feet)	Est. % eU_3O_8
SM 31-32	2100	---	---	--- ---	barren
SM 32-32	(2180)----------			Not yet probed.	
SM 33-32	2090	5	630	1852 - 1857	0.23**
Totals:35	73,970				

* Holes drilled under initial Reconnaissance Program.
** Holes considered as ore holes.

Sampling

During all drilling operations sludge samples have been collected from every 10 feet of hole drilled. The samples were laid out on the ground near the drill holes and logged by a geologist. After the samples were logged and contacts picked, representative samples were taken and stored for future study. Only one or two samples were taken for storage from each formation above the Brushy Basin. Through most of the Brushy Basin and Westwater, samples were collected at 20 foot intervals and saved. Where mineralization was indicated on the geophysical logs, samples were saved from every 10 foot interval through the mineralized zone. Because of heavy dilution from the overlying Mancos shale none of the sludge samples from the mineralized zone were deemed worthy of chemical assay.

In holes where cores were taken and geophysical logs indicate mineralization, the core covering that interval was split and one-half saved and the other one-half assayed chemically.

In Section 32, parts of 3 holes have been cored (two in the reconnaissance program, one in the offset program). During the reconnaissance program, a total of 24 samples were assayed chemically, twenty from hole SM 1-32 and four from hole SM 2-32. In hole SM 1-32 chemical assays showed the presence of 8.4 feet of 0.23% U_3O_8 and confirmed the

E. J. LONGYEAR COMPANY

indication of ore recorded on the geophysical log of the hole. The assays from hole SM 2-32 showed the presence of uranium mineralization and, although below ore-grade, did confirm the grade of mineralization indicated on the geophysical log of the hole (see assay sheets under Appendix I).

During the offset drilling program, core was recovered through the Poison Canyon sand in hole SM 17-32 and 4 samples were assayed chemically. Results showed the hole to contain below ore-grade mineralization; however the chemical assays checked closely (.046 chemically and .043 from the gamma-ray log) with theestimates from the gamma-ray log and strengthen the belief that grade estimates from gamma-ray logs are very close to actual uranium content as determined by chemical assay, and serve very well for preliminary grade-value determinations and ore reserve calculations.

Hole-Drift Surveys

Drift surveys were run in holes SM 4-32, 9-32, 12-32, 15-32 and 20-32. Maximum drift recorded was less than 65 feet and is not considered serious. In all cases the holes cork-screwed their way down and bottomed with a resultant drift to the southwest. The surveys all indicate a 40-65 foot southwesterly drift. Therefore, no adjustments have been made for ore reserve calculation purposes.

ORE RESERVES ESTIMATION

Revised Summary

Reference is made to E.J. Longyear Company Report of September 5, 1957, on San Mateo Dome Project Preliminary Estimates and Interim Report of Indicated Ore reserves in Section 32, T14N, R8W, McKinley County, New Mexico, for ore reserve figures to that date. The following is a revision of those figures including the drilling results to date.

The weighted estimates of in-place grade and tonnage follow (in round figures):

	Mineralized Thickness	Short Tons Crude Ore	Per cent eU_3O_8
Indicated Ore*(1)	8.8 ft.	166,000	0.29
* 950,000 pounds of U_3O_8			
Inferred Ore(2)	5.5 ft.	161,000	0.23
- - - - - - - - - -	- - - -	- - - -	- - - -
Inferred Low-Grade A(3)	6.3 ft.	32,000	0.12
Inferred Low-Grade B(4)	6.8 ft.	177,000	0.07

(1) Using 5 ft. of 0.15% eU_3O_8 cut-off, after dilution.

(2) 5 ft. of 0.15% eU_3O_8 cut-off.

(3) 0.10% through 0.14% eU_3O_8.

(4) 0.05% through 0.09% eU_3O_8.

Explanation

Grade and Thickness. -- With the exception of holes SM 1-32 and 17-32, all values of grade and thickness are based on interpretation of gamma-ray strip logs. The interpretations are based upon relationships between chemical and radiometric assays derived by Rio de Oro for ore in Sec. 26, T. 14 N., R. 9 W., about 2½ miles to the northwest.

Areas of Influence. -- Ore was assumed to extend between adjacent ore holes, but never more than 100 feet.

Ore was extended halfway to an adjacent mineralized hole but never more than 100 feet.

Ore was extended halfway toward an adjacent barren hole but no more than 75 feet.

Ore was assumed to extend 75 feet outward into untested ground.

Isolated holes are given a 75-foot radius of influence.

(These rules were strictly observed in estimating the "indicated" reserves, but were more liberally interpreted in estimating the "inferred" ore.)

Since experience has shown that barren holes exist within 150 feet of some of our best ore holes, all ore in areas where the spacing is greater than 200 feet is inferred, regardless of grade.

Within the ore body, the areas of influence are bounded by lines drawn midway between adjacent ore holes forming polygons.

The area of each polygon was measured by planimeter. See Plate I.

Mining factors used. -- No hole was considered to be an ore hole unless the mineralized interval, when diluted to a minimum mining thickness of 5 feet, if mineralized for less than 5 feet, had a minimum grade of 0.15% eU_3O_8 (See Grade estimation below). A mineralized interval of more than 5 feet was diluted with the addition of 1 foot at both top and bottom. In figuring the grade of the diluted zone, the actual grade of the diluting material was used.

Tonnages were estimated using a factor of 15 cubic feet per ton of ore.

Grade estimation. -- Radiometric values were obtained from the interpretation of the gamma-ray logs. Average counts per second for each 1-foot interval through the indicated mineralized section (including dilution) were calculated and the corresponding value in % eU_3O_8 picked from the correlation chart (see Figure 2). A total weighted average for the mineralized interval was then calculated.

All low-grade reserves are classified as "inferred" because of inaccuracies of radiometric assays in the lower ranges of metal content. However, no mineralized rock was considered as low-grade ore unless in direct contact with top, bottom, or margins of ore (indicated or inferred).

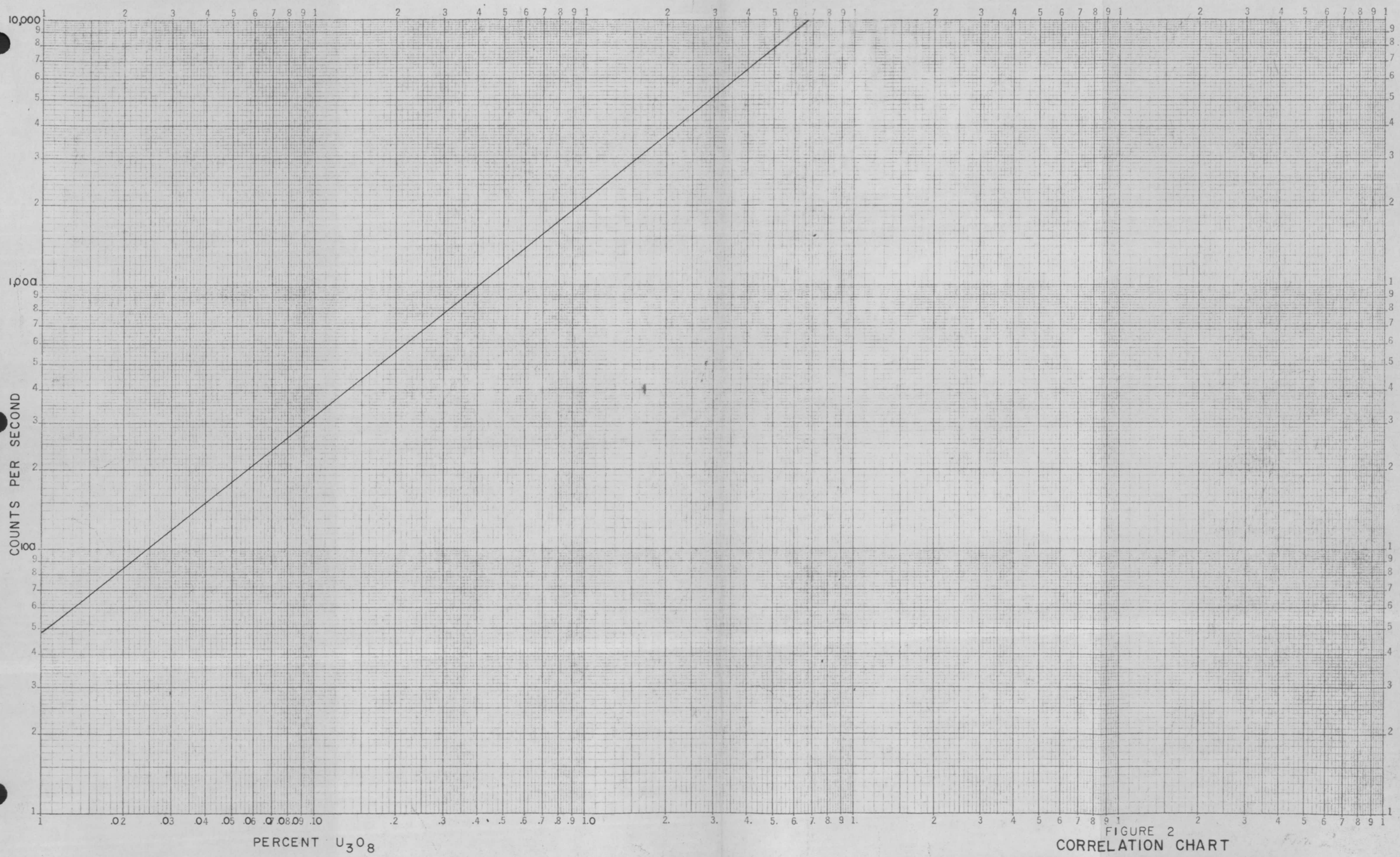

FIGURE 2
CORRELATION CHART
PERCENT U_3O_8 US COUNTS PER SECOND
(GAMMA RAY)
FROM ORIGINAL BY RIO DE ORO URANIUM MINES

APPENDIX I

(Assay Results)

REPORT ON ASSAY RESULTS

E. J. Longyear Company

SAN MATEO DOME

DRILL HOLE NO.: SM 1-32

LOCATION: Sec. 32 T. 14 R. 8

COUNTY: McKinley

STATE: New Mexico

Note: This is Revised Report No. 2

Final GR

TYPE OF SAMPLE: Split Core 1/2

CORE RUN: From 1872 To 1892

CORE RECOVERED: Ft. 15

%.RECOVERY: 75

HOLE INTERVAL SAMPLED: Ft. 15.9

(From 1872.0 To 1887.9)

WEIGHTED AVERAGE % U_3O_8: 0.238

Ft. 8.4 (From 1877.6 To 1886.0)

SAMPLE NO.	HOLE INTERVAL REPRESENTED From	To	Interval	CORE RECOVERED & SAMPLED (FT.)	ASSAY CHEMICAL % U_3O_8	ASSAY RADIOMETRIC % eU_3O_8	ASSAY % $CaCO_3$ (lime)
17	1872.0	1873.4	1.4	1.1	0.012	0.024	
18	1873.4	1874.7	1.3	1.0	0.046	0.042	
19	1874.7	1876.3	1.6	1.2	0.070	0.055	
20	1876.3	1877.6	1.3	1.0	0.089	0.080	
10	1877.6	1878.3	0.7	0.5	0.109	0.090	
11	1878.3	1879.0	0.7	0.5	0.095	0.073	
12	1879.0	1879.7	0.7	0.5	0.127	0.182	
13	1879.7	1880.5	0.8	0.6	0.099	0.099	
14	1880.5	1881.4	0.9	0.7	0.110	0.106	
15	1881.4	1882.2	0.8	0.6	0.089	0.100	

(continued)

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BY: R. C. Gebhardt

DATE: June 27, 1957

SAMPLER: R. J. Cronk
May 15, 1957 (#1-9)
May 28, 1957 (#10-16)
Date: June 7, 1957 (#17-20)

ASSAYER: Chapman Wood & Griswold
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No. 3011, June 4, 1957
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REPORT ON ASSAY RESULTS

E. J. Longyear Company

PROJECT: SAN MATEO DOME DRILL HOLE NO.: SM 1-32*

*Note: This Is Revised Report No. 2

SAMPLE No.	HOLE INTERVAL REPRESENTED From	To	Interval	CORE RECOVERED & SAMPLED (Ft.)	ASSAY CHEMICAL % U_3O_8	ASSAY RADIOMETRIC % eU_3O_8	ASSAY % $CaCO_3$ (Lime)
16	1882.2	1883.0	0.8	0.7	0.113	0.121	
1	1883.0	1883.6	0.6	0.5	0.363	0.272	Trace
2	1883.6	1884.0	0.4	0.35	0.258	0.222	Trace
3	1884.0	1884.7	0.7	0.5	0.406	0.347	Trace
4	1884.7	1885.2	0.5	0.4	0.629	0.521	Trace
5	1885.2	1885.6	0.4	0.35	0.636	0.615	Trace
6	1885.6	1886.0	0.4	0.35	0.584	0.454	Trace
7	1886.0	1886.8	0.8	0.6	0.006	0.009	Trace
8	1886.8	1887.3	0.5	0.4	0.004	0.006	Trace
9	1887.3	1887.9	0.6	0.5	0.004	0.004	Trace

REPORT ON ASSAY RESULTS

E. J. Longyear Company

PROJECT: San Mateo Dome

DRILL HOLE NO.: SM 2-32

LOCATION: Sec. 32 T. 14N R. 8W

COUNTY: McKinley

STATE: New Mexico

TYPE OF SAMPLE: Split core ½

CORE RUN: From 1914.5 To 1931

CORE RECOVERED: Ft. 6

% RECOVERY: 35

HOLE INTERVAL SAMPLED: Ft. 9.6

(From 1921.4 To 1931)

WEIGHTED AVERAGE % U_3O_8: All below cutoff grade

Ft. _____ (From _____ To _____)

SAMPLE NO.	HOLE INTERVAL REPRESENTED From	To	Interval	CORE RECOVERED & SAMPLED (FT.)	ASSAY CHEMICAL %U_3O_8	ASSAY RADIOMETRIC % eU_3O_8	ASSAY % $CaCO_3$ (lime)
21	1921.4	1924	2.6	1	0.013	0.015	
22	1934	1925.4	1.4	2.5	0.087	0.071	
23	1925.4	1928.2	2.8	1	0.003	0.009	
24	1928.2	1931	2.8	1	0.003	0.007	

RELEASED FROM: Longyear Grants Office

BY: B. F. Sorensen

DATE: 7/8/57

COPIES TO:

SAMPLER: Sorensen & Cronk

Date: June 23, 1957

ASSAYER: Chapman & Wood

Certification Date: No. 3099 7/5/57

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
MAY 1958
DOCKET

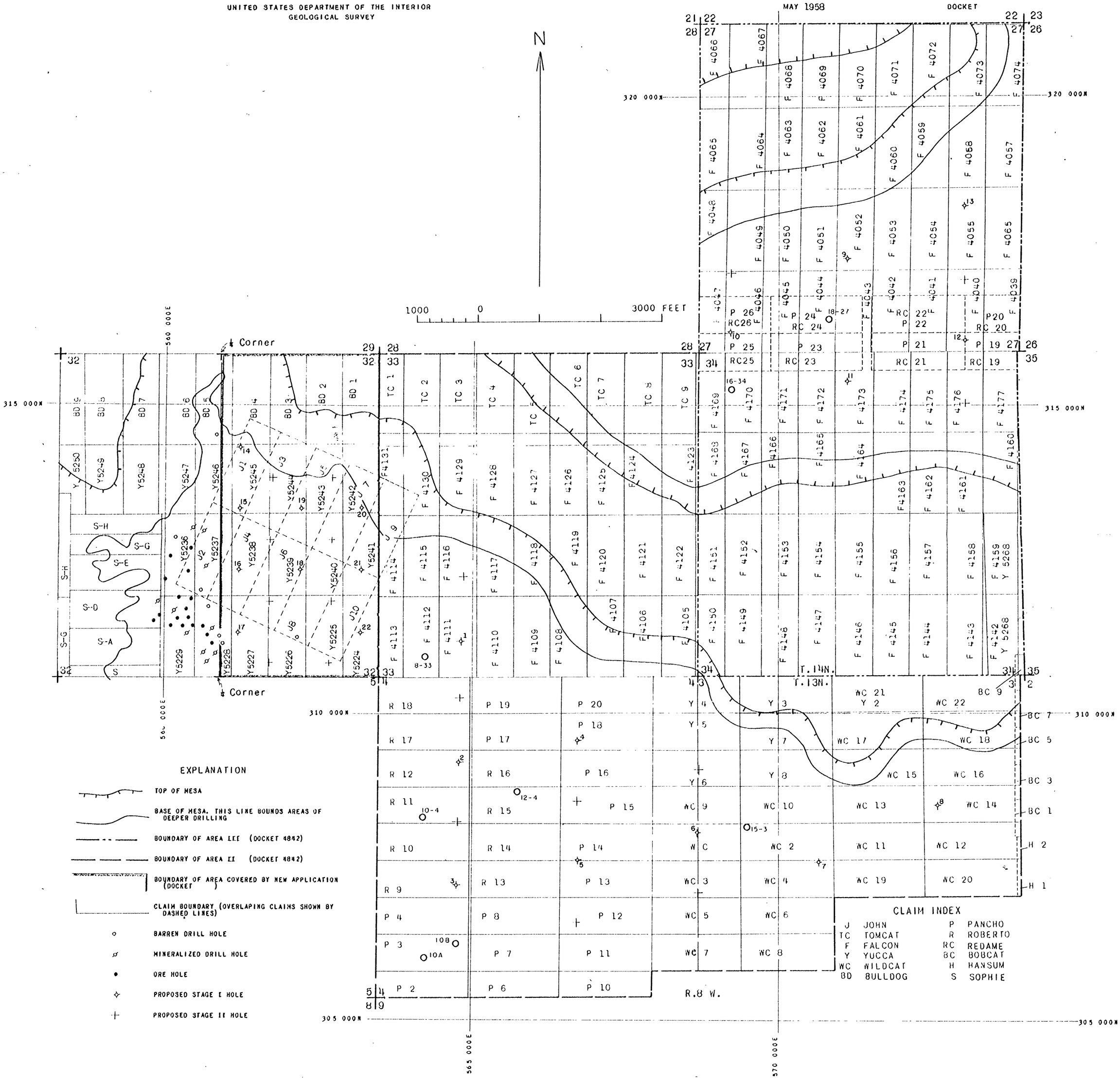
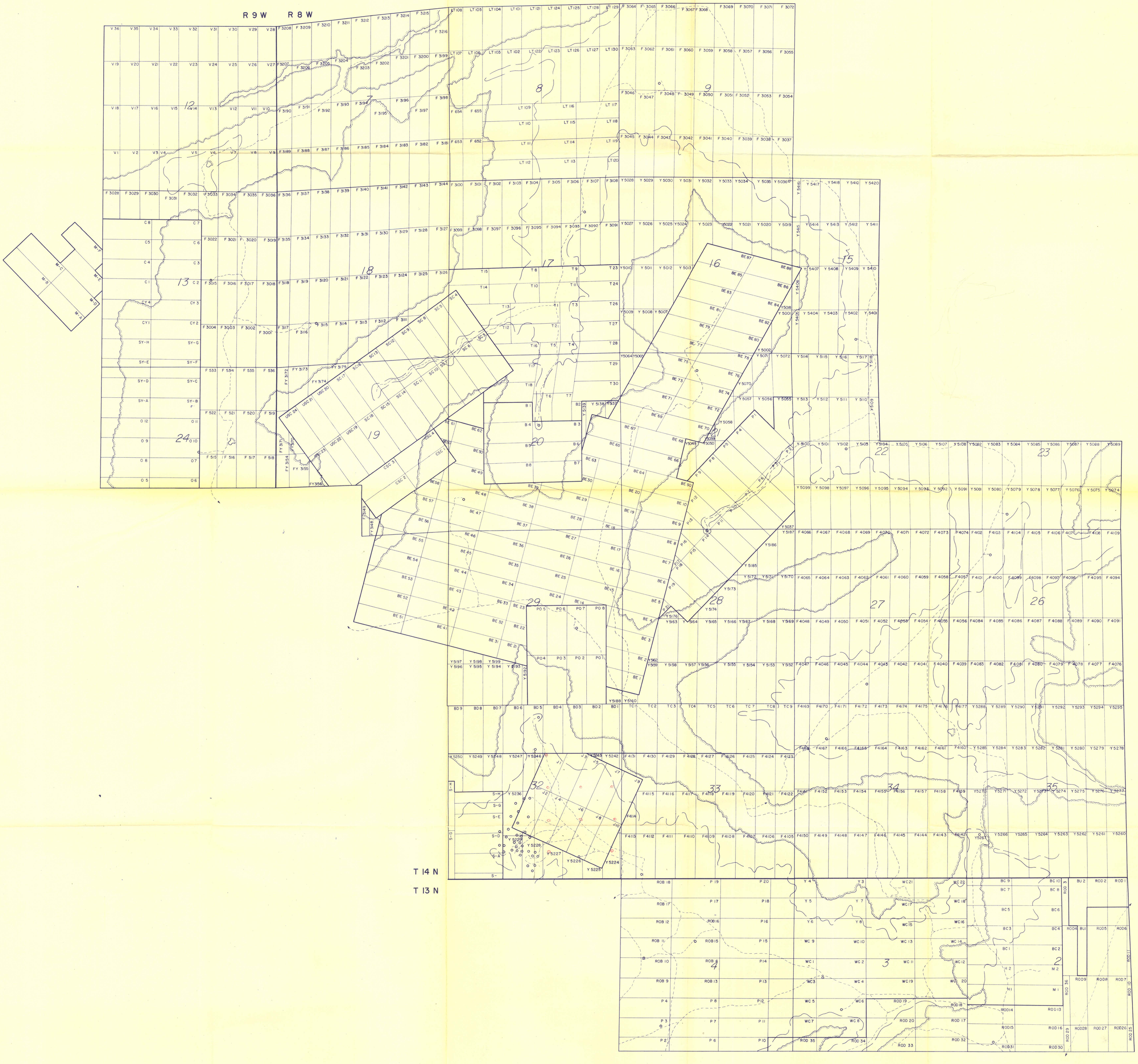


FIGURE 1.--CLAIMS AND PROPOSED DRILLING ON E½ SECTION 32, T.14 N., R.8 W., N.M.P.M., AND AREAS II AND III, SAN MATEO DOME PROJECT, McKINLEY COUNTY, NEW MEXICO.



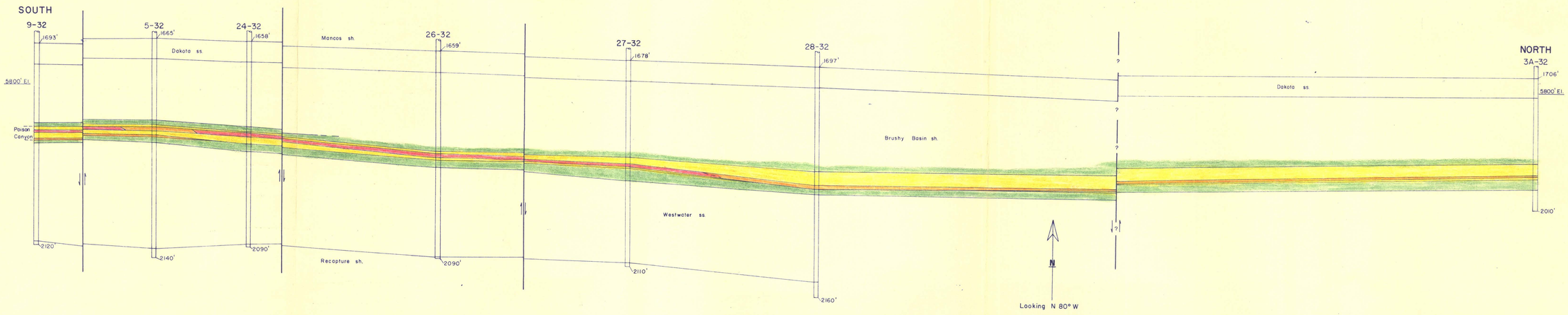
CLAIM LOCATION MAP
SAN MATEO DOME PROJECT
MC KINLEY COUNTY, NEW MEXICO

SCALE: 1" = 1000'
500 0 1000 2000
FEET

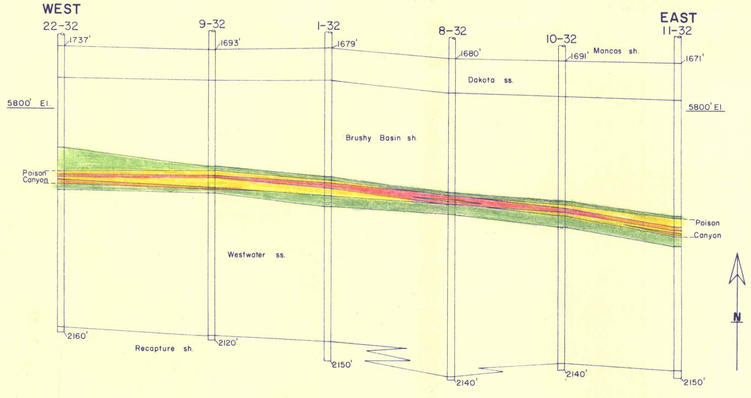
E. J. LONGYEAR COMPANY APRIL 15, 1958

TO BE RETURNED TO:
E. J. LONGYEAR COMPANY
416 COLORADO BUILDING
DENVER 2, COLORADO

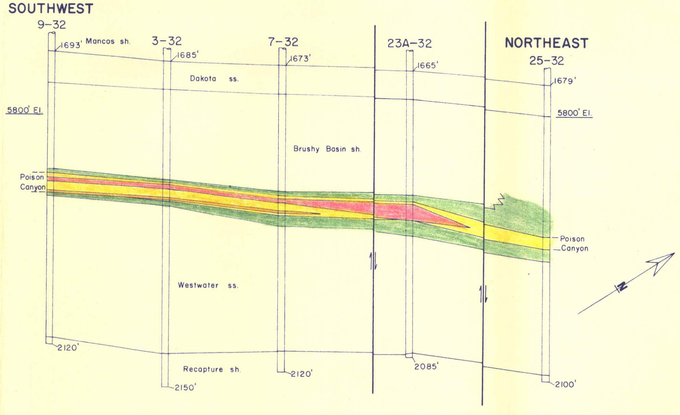
EXHIBIT C



SOUTH-NORTH CROSS SECTION



WEST-EAST CROSS SECTION



SOUTHWEST - NORTHEAST CROSS SECTION

EXPLANATION

- Shale above Poison Canyon
- Poison Canyon sandstone
- Ore - 5' or more of at least 0.15% e U_3O_8
- Mineralization - below 0.15% e U_3O_8
- Shale below Poison Canyon

TO BE RETURNED TO:
E. J. LONGYEAR COMPANY
416 COLORADO BUILDING
DENVER 2, COLORADO

SAN MATEO DOME PROJECT
CROSS SECTIONS THROUGH DRILL HOLES

SHOWING

ORE ZONE IN SECTION 32

T. 14 N., R. 8 W.

GRANTS - MT. TAYLOR MINING DISTRICT
McKINLEY COUNTY, NEW MEXICO

SCALE: 1" = 100'

100 50 0 100 200 300
FEET

E. J. LONGYEAR COMPANY
DECEMBER, 1957

GRANTS, NEW MEXICO
B. F. SORENSEN

PLATE II

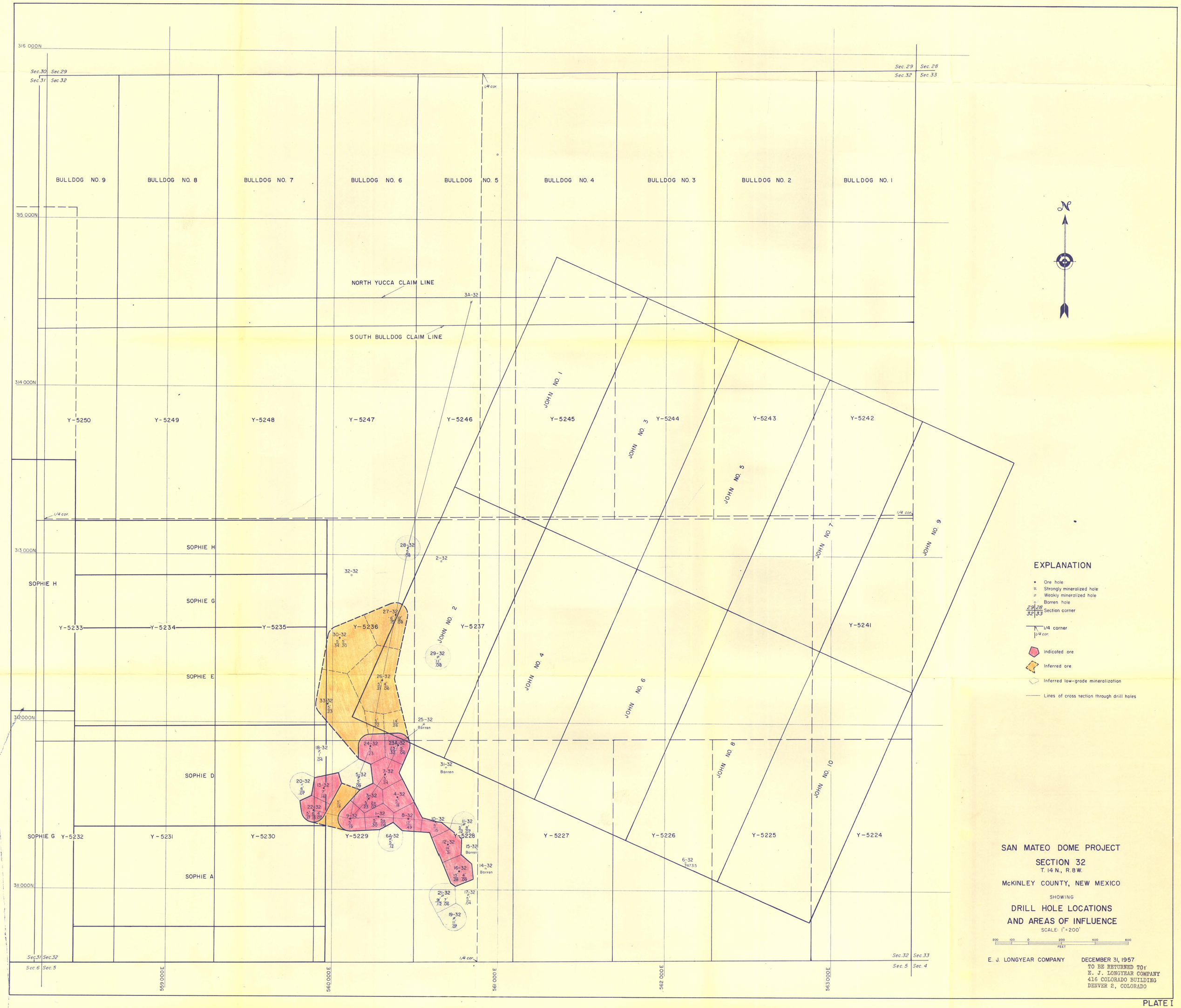

316 000N
315 000N
314 000N
313 000N
312 000N
311 000N
559 000E
560 000E
561 000E
562 000E
563 000E
Sec.30 Sec.29
Sec.31 Sec.32
Sec.29 Sec.28
Sec.32 Sec.33
Sec.31 Sec.32
Sec.6 Sec.5
Sec.32 Sec.33
Sec.5 Sec.4
1/4 cor.
BULLDOG NO. 9
BULLDOG NO. 8
BULLDOG NO. 7
BULLDOG NO. 6
BULLDOG NO. 5
BULLDOG NO. 4
BULLDOG NO. 3
BULLDOG NO. 2
BULLDOG NO. 1
NORTH YUCCA CLAIM LINE
SOUTH BULLDOG CLAIM LINE
3A-32
Y-5250
Y-5249
Y-5248
Y-5247
Y-5246
Y-5245
Y-5244
Y-5243
Y-5242
Y-5241
Y-5240
Y-5239
Y-5238
Y-5237
Y-5236
Y-5235
Y-5234
Y-5233
Y-5232
Y-5231
Y-5230
Y-5229
Y-5228
Y-5227
Y-5226
Y-5225
Y-5224
JOHN NO. 1
JOHN NO. 2
JOHN NO. 3
JOHN NO. 4
JOHN NO. 5
JOHN NO. 6
JOHN NO. 7
JOHN NO. 8
JOHN NO. 9
JOHN NO. 10
SOPHIE H
SOPHIE G
SOPHIE E
SOPHIE D
SOPHIE A
N
EXPLANATION
Ore hole
Strongly mineralized hole
Weakly mineralized hole
Barren hole
29 28 / 32 33 Section corner
1/4 corner
1/4 cor.
Indicated ore
Inferred ore
Inferred low-grade mineralization
Lines of cross section through drill holes
SAN MATEO DOME PROJECT
SECTION 32
T. 14 N., R. 8 W.
McKINLEY COUNTY, NEW MEXICO
SHOWING
DRILL HOLE LOCATIONS
AND AREAS OF INFLUENCE
SCALE: 1" = 200'
200 100 0 200 400 600
FEET
E. J. LONGYEAR COMPANY
DECEMBER 31, 1957
TO BE RETURNED TO:
E. J. LONGYEAR COMPANY
416 COLORADO BUILDING
DENVER 2, COLORADO

PLATE I