DMA Form 1

DEFENSE MINERALS ADMINISTRATION
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CONTROLLED DOCUMENT

DMA Docket No. 3250

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Exploration Assistance

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1 set each to USBM, USGS, & Reg.

Routing Slip

To:	400	Date	2/11/54
To:	Oper Comm.	Date	3-5-54
To:	Oper Comm	Date	6-4-54
To:	400	Date	6-24
To:	Oper Comm	Date	10-13-54
To:	Oper Comm	Date	1-7-55
To:	Oper Comm	Date	3-21-55
To:	Oper Comm	Date	4-27-55
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DO NOT DETACH

CONTROLLED DOCUMENT

DOCKET
SURNAME
400 Rutledge
Martin

JUN 27 1955

Castro Mining Co.
625 Market Street
San Francisco 2, California

Re: Docket No. DMEA 3250 - Chromium
Castro mine
San Luis Obispo County, California

Gentlemen:

Reference is made to the above-docketed application for exploration assistance dated February 3, 1954. Processing of this application has been held in abeyance pending the submission of certain data requested through the Executive Officer, DMEA Field Team, Region II. Though we wish to cooperate fully in the matter of allowing ample time for the submission of these data, we believe that this matter has been held in suspense for a sufficient period.

The referenced application therefore is being transferred to the inactive files and the docket closed. Should you subsequently desire to go ahead with the proposed program of exploration, we would be glad to consider a revised application. Such an application should refer to the present docket and contain all the data formerly requested.

Sincerely yours,

C. O. Mittendorf

Administrator

FARUTLEDGE:FOC
6-24-55
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.
FT. REG.
Messrs. Katlin, USBM
Kiilsgaard, USGS

R.G.R.

DOCKET
SURNAME

400 Rutledge
Martin
Selfridge
Hedges
Mottesberg

MAY 2 4 1955

Mr. Spangler Richer, Executive Officer
DMEA Field Team, Region II
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, California

Dear Mr. Richer:

The subject application for exploration assistance at the Castro mine has now been held in abeyance since June 7, 1954, when our letter to the Executive Officer, DMEA Field Team, requested necessary data from the applicant.

Please advise the applicant that if the requested data are not furnished to this Administration by June 25, 1955, his application will be transferred for administrative reasons to our inactive file. Such transfer, however, will be made without prejudice to the property and we shall be glad to consider a revised application for exploration assistance when the requested information becomes available. A revised application should mention the present docket.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (JHB)

APPROVED:

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

Thor H. Kiilsgaard
Member, Geological Survey (JHB)

WSMartin/FARutledge/foc
5-20-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. II
Messrs. Katlin, USBM
Kiilsgaard, USGS

R.C.H.

DMEA

Docket

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

1605 Evans Avenue
Reno, Nevada

Copy to Docket 3250

May 4, 1955

WSM

Memorandum

To: Operating Committee, DMEA, Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region II

Subject: Docket No. DMEA-3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, Calif.

In response to your letter of March 22, 1955, I wrote Mr. Hall on March 31, 1955 regarding his intention concerning above subject docket.

Todate, I have received no response but understand that Mr. Hall expects to visit this office the first part of May. At that time I will try to obtain some definite information relative to his plans regarding his application for an exploration contract.

S. Ricker

DOCKET
Surname:
Rutledge
Martin
Selfridge
Kennon
Mitchell

APR 2 8 1955

Mr. Spangler Ricker, Executive Officer
DMEA Field Team, Region II
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, Calif.

Dear Mr. Ricker:

Reference is made to the subject application for exploration assistance and our letter of March 22, 1955.

Please advise us of the status of the referenced application and of the applicant's proposed exploration program.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Approved:

/s/ Robert W. Geehan

Member, Bureau of Mines

Thor R. Killsgaard

Member, Geological Survey

cc: Docket
Code 400
Adm. Read. File
Operating Committee
FT, Region II
Charles Katlin, USBM
Thor Killsgaard, USGS

FARutledge/ls
4/25/55

R.C.S.

DOCKET
SURNAME

100 Rutledge
Martin
Selfridge
Bjornson
Mitchenoff

MAR 22 1955

Mr. Spangler Richer, Executive Officer
DMEA Field Team, Region II
U. S. Bureau of Mines
Rare & Precious Metals Experiment Station
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, California

Dear Mr. Richer:

Reference is made to the above-docketed application for exploration assistance.

It would be appreciated if you would ascertain Mr. Hall's plans for the proposed exploration of the Castro mine. Please advise him that, in the interest of expediting the Defense Minerals Exploration Program, the previously-requested data should be submitted as early as possible.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

APPROVED:

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

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

cc to: Docket ✓
Code 400
Adm. Reading File
Operating Comm.
FT. REG. II
Charles Katlin, USBM
Thor H. Kiilsgaard, USGS

R.C.S.

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

Docket

420 Custom House
555 Battery Street
San Francisco 11, Calif.

January 18, 1955

Mr. Durand Hall
Castro Mining Company
625 Market Street
San Francisco 2, California

Re: Docket No. DMEA-3250 - Chromium
Castro Mining Company
Castro Mine
San Luis Obispo County, California

Dear Mr. Hall:

For the records, I wish to inform you that our Washington office is willing to hold your application in abeyance until early spring. This is in accordance with my telephone conversation with you on November 17, 1954.

It will be appreciated, however, if you submit the required data as early as you can conviently do so.

Sincerely yours,

S. RICKER

S. Ricker
Executive Officer
DMEA Field Team, Region II

Copy to: DMEA, Washington, D. C.
R. M. Smith, USGS

DOCKET
SURNAME

400

Rutledge
Martin
Selfridge
Ferguson
Mitchendorf

JAN 1 0 1955

Mr. Spangler Ricker, Executive Officer
DMEA Field Team, Region III
420 Custom House
555 Battery Street
San Francisco 11, California

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, California

Dear Mr. Ricker:

This will acknowledge your letter of December 30, 1954, reporting that Mr. Hall has asked to have the above-docketed application for exploration assistance held in abeyance until early spring, at which time the previously-requested data will be submitted.

Please advise Mr. Hall that we will hold the referenced application in abeyance a reasonable period as requested. However, it would be appreciated if Mr. Hall would submit the required data as early as he conveniently can.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (JHB)

APPROVED:

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

Thor H. Kiilsgaard
Member, Geological Survey (JHB)

FARutledge:foc
1-6-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. III
Charles Katlin, USBM
Thor H. Kiilsgaard, USGS

R.C.S.

Docket

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 4 1955

420 Custom House
555 Battery Street
San Francisco 11, California

December 30, 1954

Memorandum

WSM

To: George C. Selfridge, Chairman, Operating Committee, DMEA, Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3250 (Chromium)
Castro Mining Company
Castro Mine
San Luis Obispo County, California

Reference is made to your letter of December 20, 1954, in which you refer to your previous letter of October 14, 1954 requesting additional data to process above subject docket.

The operator, in a conversation with him on November 17, 1954, informed me that he would appreciate it if we could hold final processing of docket in abeyance until early spring. He said he was still interested in receiving DMEA exploration assistance and in the spring expects to reopen negotiations relative to a contract and would supply all the required data necessary to consummate a contract at that time.

Mr. Hall is an experienced chromite operator and I recommend that the application for aid be held in abeyance as requested.

S. Ricker
Executive Officer
DMEA Field Team, Region III

Copy to: R. M. Smith-USGS
A. C. Johnson-Reno, Nevada

Copy retained 300

400

DOCKET
SURNAME

Martin
Selfridge
Johnson
Kiilsgaard

DEC 20 1954

Mr. Spangler Ricker, Executive Officer
DMEA Field Team, Region III
420 Custom House
555 Battery Street
San Francisco 11, California

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, California

Dear Mr. Ricker:

Reference is made to our letter of October 14, 1954, and previously requested data needed to process the above-docketed application for exploration assistance.

It would be appreciated if you would confirm our understanding, based on your recent conversation with Mr. W. S. Martin, that Mr. Hall has expressed the intention to resume production at the subject property in the early Spring. In the interest of expediting the Defense Minerals Exploration Administration Program the requested data should be promptly provided, but under the circumstances, we could hold the matter in abeyance for these next few months.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

APPROVED:

C. H. JOHNSON
Member, Bureau of Mines (CHJ)

Thor H. Kiilsgaard
Member, Geological Survey (THK)

FARutledge:foc
12-17-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. III
Chas. Katlin, USBM
Thor Kiilsgaard, USGS

400

DOCKET
Surname:
Rutledge
Martin
Selfridge
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Hedges

OCT 14 1954

Mr. H. C. Miller, Executive Officer
DMEA Field Team, Region III
420 Custom House
555 Battery Street
San Francisco 11, California

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Company
Castro mine
San Luis Obispo County, Calif.

Dear Mr. Miller:

Reference is made to your letter of August 3, 1954, and the subject docket.

Please advise Mr. Hall that in the interest of expediting the Defense Minerals Exploration Program the requested data should be promptly provided.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Approved:

J. H. Hedges

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

cc: DOCKET
FT, REG. III
CODE 400
OPER. COMM.
ADM. READ. FILE
CHAS. KATLIN, USBM
THOR KIILSGAARD, USGS

FARutledge/ls
10/12/54

Docket

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

420 Custom House
555 Battery Street
San Francisco 11, Calif.

August 3, 1954

Memorandum

WSM

To: George C. Selfridge, Chairman, Operating Committee, DMEA
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3250 - Chromium
Castro Mining Company
Castro Mine
San Luis Obispo County, California

I have just heard from Mr. Durand Hall's secretary that the reason I have had no reply to my numerous telephone calls and letter of July 7 is that Mr. Hall has been seriously ill. The last several weeks he has been hospitalized.

Mr. Hall is now on the road to recovery, and through his secretary has promised to get in touch with me sometime next week. He requests that his application be held in abeyance for some time longer.

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Copy to: Roscoe Smith, USGS

RECEIVED
JUN 30 7 57 AM '54
PUBLIC SERVICES BRANCH
PUBLIC INFORMATION OFFICE
U.S. DEPT. OF INTERIOR

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GEORGE C SELFRIDGE, CHAIRMAN

OPERATING COMMITTEE, DEFENSE MINERALS EXPLORATION ADMINISTRATION,

INTERIOR BUILDING WA

REURTEL JUNE 23 CASTRO MINING CO.7 DOCKET DMEA-3250. AM STILL TRYING TO GET HOLD OF DURAND HALL FOR INFORMATION YOUR REQUEST.

H C MILLER EXECUTIVE OFFICER, DMEA FIELD TEAM REGION III

23 DMEA-3250

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JUL 1 10 00 AM '54

BUREAU OF MINES
MAIL ROOM
WASHINGTON, D. C.

SPECIAL

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Interior Department
Defense Minerals Exploration
Administration
14X4401(01) Revolving Fund, Defense
Production Act, Interior (Allocated Working Fund to the Office of the Secretary)

454

TO: H. C. Miller, Executive Officer, San Francisco 11, California

Recourlet June 7, 1954, Castro Mining Company, Docket No. DMA 3250.

Please advise status of securing Owner's Consent to lien and requested clarification of lease.

George C. Selfridge

G. C. Selfridge (HB)
Chairman, Operating Committee

FARutledge:foc
6-23-54

cc to: DOCKET
Adm. Reading File
Operating Comm.
Code 400
Audits Divn., Bur. Mines
Charles Katlin, USBM
Phillip Guild, USGS

CONFIRMATION - FT. REGION III

Rutledge
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R.C.S.

Docket copy
Surname
140 Martin
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H S Plumb
Martin
Selfridge
Ferguson
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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

JUN - 7 1954

Mr. H. C. Miller, Executive Officer
DMEA Field Team, Region III
420 Custom House
555 Battery Street
San Francisco 11, California

Re: Docket No. DMEA-3250 (Chromium)
Castro Mining Company
Castro Mine
San Luis Obispo County, Calif.

Dear Mr. Miller:

In reviewing the lease submitted with the subject application it is noted that the term of the lease is "for the period commencing on the date hereof [_____ day of April 1952] and continuing during the remainder of the life and existence of said Lessors' rights in said property * * *." According to paragraph 10 of the lease, Lessors' title is held by the California Pacific Title Insurance Company under a holding agreement and the paragraph provides that if an exploration project contract is obtained from the Government, Lessors agree to take such steps necessary to revest themselves with title and to execute documents necessary to confirm the lease.

As you know, an applicant must have a sufficient interest in the property for the purposes of an exploration project contract; ordinarily, ten years is required. The term of this lease is unclear. If read literally, Lessors could sell the property the day after the Applicant executed a contract with the Government and his lease would thereby be terminated. We require, therefore, that this provision of the lease be clarified, by amendment to the lease or otherwise. We will also require, if the contract is approved for this project, a copy of the document confirming the lease.

As the Applicant is a lessee, an Owner's Consent to Lien will, of course, be required.

To save useless work, in requesting field examinations we do not ask you to obtain Owner's-Consent-to-Lien forms from every lessee who has neglected to provide the same.

R.C.S.

Thus, if no contract is recommended, no time is lost in seeking unnecessary forms. In any instance where you recommend a contract, however, you can expedite our corresponding action by instructing the applicant to submit Owner's-Consent-to-Lien forms if none have been supplied.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (JHB)

Approved:

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

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

W.S.Martin/H.C.Rubin/emd 6/2/54
Copy to: Docket
Adm. R. File
Op. Comm.
W. S. Martin(2)
Charles Katlin, USBM
Philip Guild, USGS
J. L. Hofflund
H. C. Rubin
chron.
pending

Docket

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

1012 Flood Building
870 Market Street
San Francisco 2, Calif.

May 14, 1954

Memorandum

WSM

To: George C. Selfridge, Chairman, Operating Committee, DMEA
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA-3250 - Chromium
Castro Mining Company
Castro Mine
San Luis Obispo County, California

Reference is made to your letter dated March 5, 1954, requesting a field examination of the subject property.

Accordingly, the Castro property was examined on March 26 and 27, 1954. Attached are four copies of a resulting report entitled "DMEA-3250, Castro Chrome Mine, San Luis Obispo County, California," by H. R. Stager and E. D. Jackson, Geologists, U. S. Geological Survey, and Frank J. Wiebelt, Mining Engineer, U. S. Bureau of Mines, dated May 11, 1954.

The engineer and geologists are in agreement that 10,000 feet of dry-hole drilling at a unit cost of $2.00 per foot is warranted.

See page 18 of the report

The geological conditions at the Castro mine are favorable for the discovery of additional ore bodies to the southeast of the area that has been mined. The trend of the known ore bodies, the presence of a favorable host rock, and the favorable indications shown by a geophysical survey are believed to be sufficient justification for the proposed exploration.

The examiners failed in their report to describe the property to be included in the project, giving lateral and vertical boundaries and excluding the area not to be subject to royalty payments to the Government, in accordance with Item 14 of DMEA Memorandum No. 9 dated July 15, 1953.

Reviewed by
DMEA OPERATING COMMITTEE
5-21-54
(date)

cleared OC 5/21

Accordingly, I had Mr. Durand Hall call at the office this morning, and it was decided that the area of the Castro Claim to be excluded from royalty payments should be the western 650 feet of the claim.

Kindly note the correction I made in pencil on Page 10 of the examiners' report. The correction is based on information supplied by Mr. Hall. The first full sentence on Page 10 should read: "The present operators, Castro Mining Co., since the start of operations early in 1953, produced up to October 30, 1953, about 12,725 short tons of ore and 4,750 long dry tons of concentrates."

The operator states that he is prepared to start exploratory operations within 45 days of the date of a contract.

I agree with the examining engineer and geologists that favorable consideration should be given to this application.

H. C. Miller
Executive Officer
DMEA Field Team, Region III

Attachment

Copy to: Roscoe Smith, USGS
A. C. Johnson, Reno

Defense Minerals Exploration
RECEIVED
MAY 18 1954

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA-3250, Castro Chrome Mine

San Luis Obispo County, California

H. R. Stager, Geologist
E. D. Jackson, Geologist
U. S. Geological Survey

Frank J. Wiebelt, Mining Engineer
U. S. Bureau of Mines

May 11, 1954

Reviewed by
DMEA OPERATING COMMITTEE
5-21-54
(date)

EXAMINATION REPORT

Docket No.: DMEA-3250 (Chromium)

Name and address of applicant: Durand A. Hall, 625 Market St., San Francisco, Calif.
George I. Barnett, 1351 Mill St., San Luis Obispo, Calif.

Name and location of property: Castro Chrome Mine
San Luis Obispo County, Calif.

SUMMARY

The Castro Chrome mine, said to be the second largest producer of chromite ore in the United States, is situated 22.1 miles by road northwesterly of San Luis Obispo, San Luis Obispo County, Calif.

The Castro claim is underlain by a northwestward trending body of serpentinized dunite and peridotite containing elongated masses of chromite ore.

The mine has produced about 100,000 tons of chromite ore to the present time from ten ore bodies. The present operators commenced milling operations May 1953 and have been milling about 2400 tons of ore a month and operations have been continuous since that date.

Indicated ore reserves in present workings are estimated at 5,000 tons of 25% chromite content. Inferred ore in the area to be explored is estimated at 100,000 tons of 25% chromite content.

The amended proposed exploration work consists of 10,000 feet of dry hole drilling at a unit cost of $2.00 per foot or a total cost of $20,000.

CONCLUSIONS

The geological conditions at the Castro mine are favorable for the discovery of additional ore bodies to the southeast of the area that has been mined. The trend of the known ore bodies, the presence of a favorable host rock, and the favorable indications shown by a geophysical survey are believed to be sufficient justification for the proposed exploration.

RECOMMENDATIONS

It is recommended that Government participation in an exploration program at the Castro mine be favorably considered.

INTRODUCT ION

The examiners, consisting of Harold K. Stager and Dale Jackson of the Geological Survey and Frank J. Wiebelt of the Bureau of Mines, spent March 26 and 27, 1954 on the property. They were accompanied during the examination by the applicants, Durand A. Hall and George I. Barnett.

NAME AND LOCATION OF PROPERTY

The property is known as the Castro Chrome mine and is situated in sec. 29, T. 29 S., R. 12 E., M.D.B.&M. in San Luis Obispo County, Calif.

The property is accessible by automobile from San Luis Obispo, California by starting from the intersection of U.S. Highway 101 and State Highway 1 and following State Highway 1 northwesterly toward Morro Bay

10.8 miles and thence turning right on the E. Caccia ranch road and following the latter road 5.5 miles to the mill and an additional 5.8 miles to the mine. Of the 22.1 miles to the mine from San Luis Obispo, 12.4 miles is paved and the balance is a narrow winding mountain dirt road with moderate grades.

ACCESSIBILITY

The property is readily accessible throughout the year. An occasional slide during the wet months may at times temporarily block access to the mine.

COMPETENCY OF APPLICANT

The applicants are operating the property in an efficient and workmanlike manner and the mine is on a paying basis. One of the applicants is a mining engineer and the other a geologist and both of them are capable men and undoubtedly will conduct the proposed exploration work intelligently and efficiently.

APPLICANTS PROPERTY RIGHTS

The Castro Mining Company is a co-partnership of Durand A. Hall and George I. Barnett who hold a lease from the people who constituted the Castro Chrome Associates, owners and operators of the mine during World War II.

The property consists of Lot 1; the northeast quarter of the northeast quarter; and the Castro Chrome Mine designated as Surveyor General's Lot No. 46; all in section 29, T. 29 S., R. 12 E., M.D.B.&M. A copy of

the lease is included in the applicants application.

DESCRIPTION OF PROPERTY

The company is mining by open pit operations. Seven ore "pods" of commercial size (2,500 to 22,000 tons) have thus far been discovered. In 1941 an underground exploration project was conducted on the property by the Bureau of Mines in collaboration with the Geological Survey. As a result of this work about 65,000 tons of ore were mined from the project area. The company also did some underground exploration work. All the underground workings are caved and inaccessible.

There are no buildings at the mine. The only equipment on the property consists of a Gardner-Denver, 110cu. ft. portable compressor and a jackhammer and accessories such as drill steel, hose, etc.

All work including stripping, mining, loading and hauling to the mill (6 miles) is done under contract. Supervision of actual mining is under the direction of Castro Mining Co.

Since all the ore at the mine is uniform in grade (20 to 25% Cr_2O_3), no samples were taken by the examiners.

GEOLOGY

The geology of the chromite deposits in the Castro mine area was studied in 1940 and 1941 by the U. S. Geological Survey and described in a report by Smith and Griggs 1/.

1/ Smith, C. T., and Griggs, A. B., 1944, Chromite deposits near San Luis Obispo, San Luis Obispo County, California: U. S. Geol. Survey Bull. 945-B, pp. 23-44.

The Castro claim is underlain by a northwestward trending body of serpentinized dunite and peridotite containing elongate masses of chromite ore (see fig. 2). This serpentinized body is part of a large mass that crops out continuously for over ten miles, has a maximum width of two-and-a-half miles, and contains the better chromite deposits of the district. All the chromite deposits in this area that have been studied by the Survey are associated with dunite which forms irregular bodies in peridotite. Dunite is a nearly pure olivine rock and this name is applied here to rocks that originally contained 95 percent or more of olivine. All other ultramafic rocks in this area have been mapped as peridotite without further subdivision. On fresh surfaces the dunite varies from dark green to nearly black. In weathering it acquires a smooth reddish-brown to buff-colored surface, which local miners call "buckskin." The dunite at the Castro mine trends northwestward within the peridotite, like the larger body of the peridotite itself.

The ultramafic bodies contain many small blocks of diorite, which are probably parts of dikes that were broken up by complex fault movements that took place after serpentinization.

Faulting and shearing is widespread in the serpentinized bodies at the Castro mine. Landslides as much as a quarter of an acre in extent are numerous. The largest fault exposed in the pit of the Castro mine has apparently dropped the ore bodies in the western part of the mine about 60 feet relative to the bodies in the eastern part of the mine

(see fig. 2).

ORE DEPOSITS

The Castro mine has produced about 100,000 tons of chromite ore from 1870 to the present time. This production has come from the four large ore bodies and the six smaller bodies shown in figure 2. All of the chromite bodies are in a serpentinized mass of dunite which lies within a larger mass of peridotite. The ore bodies are flat lying and in general trend northwestward approximately parallel to the elongation of the enclosing dunite. In all of the bodies the horizontal dimensions exceed the vertical. The bodies that have been mined have ranged from 25 to 100 feet wide, 25 to 200 feet long, and 4 to 50 feet thick. The leaner bodies consist of dunite containing chromite in small clots and disseminated grains and the richer bodies contain large pods of massive chromite. In the bodies exposed by mining at the time of the examination all consisted of massive chromite in the lower part grading up into about 50 percent disseminated chromite, which formed the larger part of the body. The ore as shipped to the mill averages about 24 percent chromite and has a chrome-iron ratio of about 2.5 to 1. The ore is concentrated by the mill to about 45 percent chromite.

ORE RESERVES

At the time of the examination there were four exposures of minable ore in the Castro mine pit. The largest exposure was a southeast extension of the Upper ore body that was about 60 feet wide, ranged from

one foot in thickness at the edges to 30 feet in the center, and had been explored by drilling for 30 feet into the face. This extension is estimated to contain at least 3,000 tons of indicated ore. A second exposure was along the southwestern edge of the Blue ore body about 100 feet long and from 1 to 10 feet thick. The Blue ore body had reportedly yielded 12,000 tons of ore before mining stopped because of danger from overhanging walls. An estimated 1,000 tons of indicated ore remains in this exposure. A southeast extension of the No. 3 ore body was exposed in the face of the pit and was about 45 feet wide and up to 15 feet thick. An estimated 1,000 tons of indicated ore remains in this deposit. The M & R ore body has just recently been exposed but has not been mined as it extends south of the Castro property line. A lens-shaped body about 12 feet thick in the center and about 25 feet wide is exposed. An estimated 1,000 tons of indicated ore is exposed but it is not the property of the Castro Mining Company unless negotiations to acquire the adjoining privately owned ground to the south of the Castro claim have been successfully completed.

In the area to the southeast of the present mine area a block of ore equal in tonnage and grade to that already mined is inferred. This inferred ore reserve is estimated to be about one-third within the ground owned by the Castro Mining Company and two-thirds within the privately-owned ground to the south of the Castro claim.

Table I

Tonnage and grade of reserves at the Castro Chrome Mine

Kind of ore	Tons	Average grade (Percent)
Measured ore	0	--
Indicated ore (in present workings)	5,000	25
Inferred ore (in area to be explored)	100,000	25

EXPLORATION

The applicants originally proposed to drill 20,000 feet of dry wagon drill holes in two phases of 10,000 feet each at an estimated total cost of $26,200. This proposal has been amended by the applicants to 10,000 feet of dry-hole drilling, in about 140 holes, at a unit cost of $2.00 per $\frac{10000}{140} = 71\frac{1}{2}'$ foot or a total cost of $20,000. The holes will be on 25-foot centers across the trend of the ore bodies and the lines 100 feet apart. The drilling will be subject to change depending on results. Tentative locations for about half of the proposed holes (69 holes) are shown on figure 2. The intermediate 50-foot lines of holes will not be drilled if ore is found by holes in the 100-foot lines that will be drilled first. Locations of the remaining holes to round out the proposed 10,000 feet will be determined later subject to the approval of the operator and field team.

The drilling program is planned to test the favorable ground to the east of the present producing area. Dunite, the favorable host rock

for the deposits, underlays the ground to be explored. The trend of the ore bodies that have been mined is southeast across the ground to be explored. A magnetometer survey has indicated the presence of several magnetic highs to the east of the producing area. Although there is considerable doubt as to the significance of magnetic highs in prospecting for chrome ore, and the Castro mine has been sited as an example of the unsuccessful application of magnetic methods in the past [2/], the drilling has been planned to test these highs in order to evaluate the worth of magnetic surveys in chromite exploration.

The ideal exploration program for this property would extend more to the southeast than is possible because of conflicting ownership of the land. The initial drilling pattern has been restricted to a strip of ground well within the claim boundary of the Castro claim in order to protect the interests of the Castro Mining Company and the Government. If the Castro Mining Company is successful in acquiring the property to the south of the Castro claim, by negotiations now in progress, the lines of holes will be extended southward.

PAST PRODUCTION

The Castro Mine was located in 1876 by Jose Castro and others. It is now owned by Castro Chrome Associates. During World War I about 5,000 tons were mined. From 1942 to 1946 some 26,500 long tons

2/ Hawkes, H. E., 1951, Magnetic Exploration for Chromite: U. S. Geol. Survey Bull. 973a, p. 13.

of concentrates were produced by Castro Chrome Associates from approximately 90,000 short tons of ore averaging 20%+ Cr_2O_3. The present operators, Castro Mining Co., since the start of operations early in 1953 produced up to October 30, 1953 about 12,725 short tons of ore and 4,750 long dry tons of ore concentrates. This ore has averaged slightly over 23% Cr_2O_3 and the concentrates averaged 43% Cr_2O_3 with a Cr:Fe ratio of about 2.45 to 1.

MANPOWER, SUPPLIES, ETC.

There is no housing problem as the city of San Luis Obispo is 22 miles by road distant from the mine. San Luis Obispo is less than 250 miles distant from San Francisco on the main coast highway number 101. Supplies, materials and equipment are consequently readily available. Water is available on the ground for all exploration purposes. There is no power available at the mine, consequently gasoline driven equipment is used. Experienced mining labor is not plentiful but is sufficient for the limited work required.

ESTIMATE OF COSTS

The applicants originally thought they could drill at the rate of 100 feet of hole per day but have found out by experience that this figure is too high and that 60 feet of hole per day is more probable. The revised costs, in this report, based on a 60-foot advance per day and 8 months to complete the program were made in consultation with the applicants and has their indorsement. The costs of the exploration are based on current wage rates, supply and equipment costs and have been

estimated on an overall footage basis in order to simplify bookkeeping and payments for work accomplished.

Cash purchases:

Drill rods, hose, bits, etc.	$505.08
Freight on above to San Luis Obispo	50.00
Freight on drill rig " " "	250.00
Misc. tools	50.00
Work shed	500.00
	$1,355.08
Estimated salvage value	355.08
Net cost (fixed)	$1,000.00

Rental:

1 Drill and rig	$225.00 per month
1 305 compressor	140.00 " "
At Castro Mine	
1 110 compressor	125.00 " "
	$490.00

$19.60 per day (6 working days per week)

Labor:

25 working days per month
1 driller @ $2.25 per hour
1 helper @ $1.75 per hour

40 hours @ $4.00 per hour	$160.00
Overtime (Saturday) 8 hrs @ $6.00	48.00
	$208.00
Taxes, etc. @ $10.58 per $100.00	22.00
(Calif. State 2.7)	
(Led. Old Age 2.0)	
(Unemployment 0.3)	
(Compensation 5.58)	
Total labor	$230.00 per week

Supervision 1/2 time @ $25.00/day 12.50 per day
or 75.00 per week

Based on 60 feet advance per day and 8 months to complete job:

	Cost for 10,000 feet	Cost per foot
Cash purchases	$1,000	$0.10
Rentals $490 per month 8 months	3,920	0.39
Labor 8 months = 32 weeks @ $230	7,360	0.74
Misc. supplies, oil, gas, etc.	3,500	0.35
Supervision 8 months = 32 weeks @ $75.00	2,400	0.24
	$18,180	$1.82
Contingencies 10%	1,818	.18
Total	$19,998	$2.00 cost per foot
Say	$20,000	

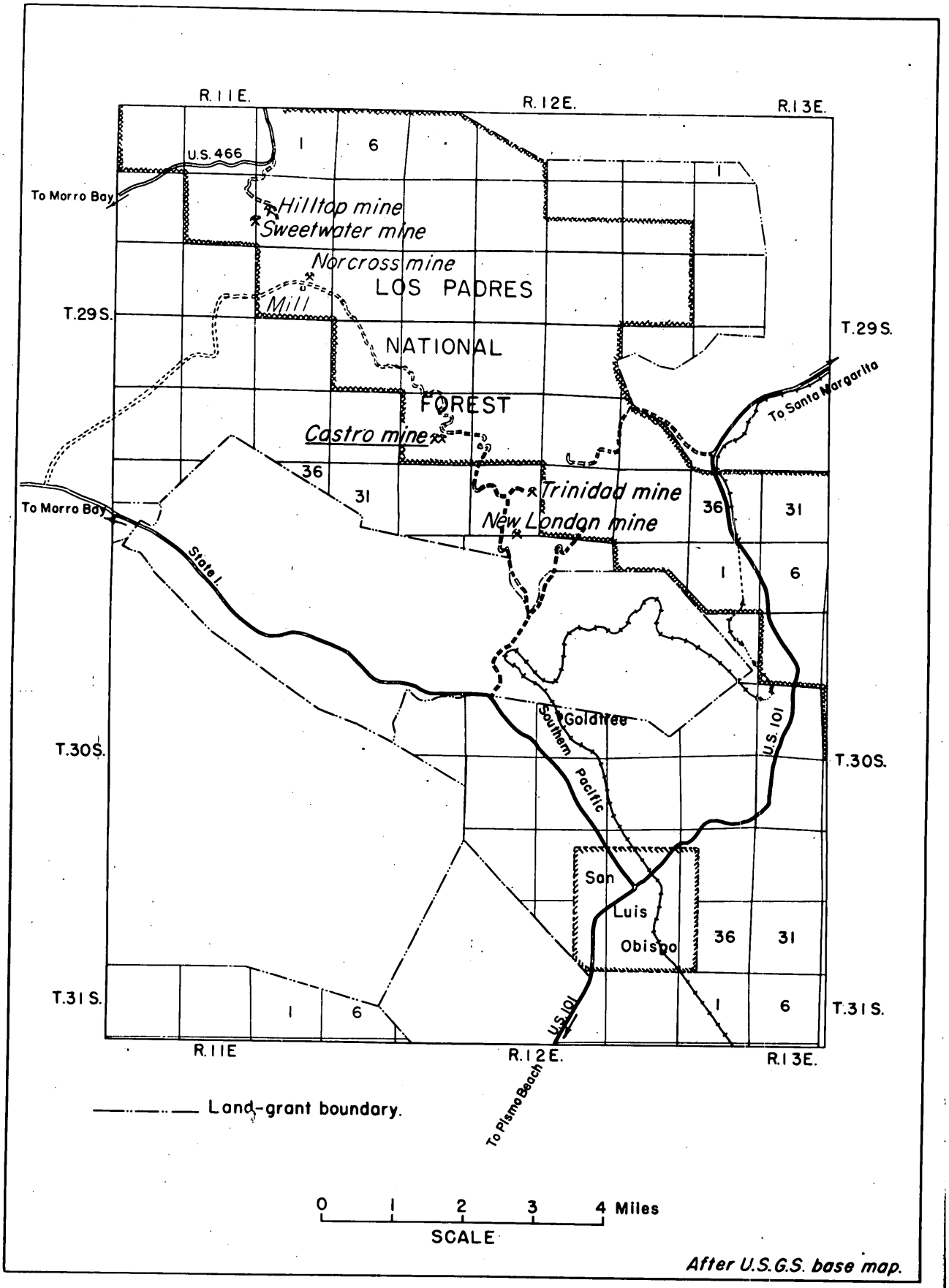

Figure 1.-Location map, Castro chromite mine, San Luis Obispo County, California.

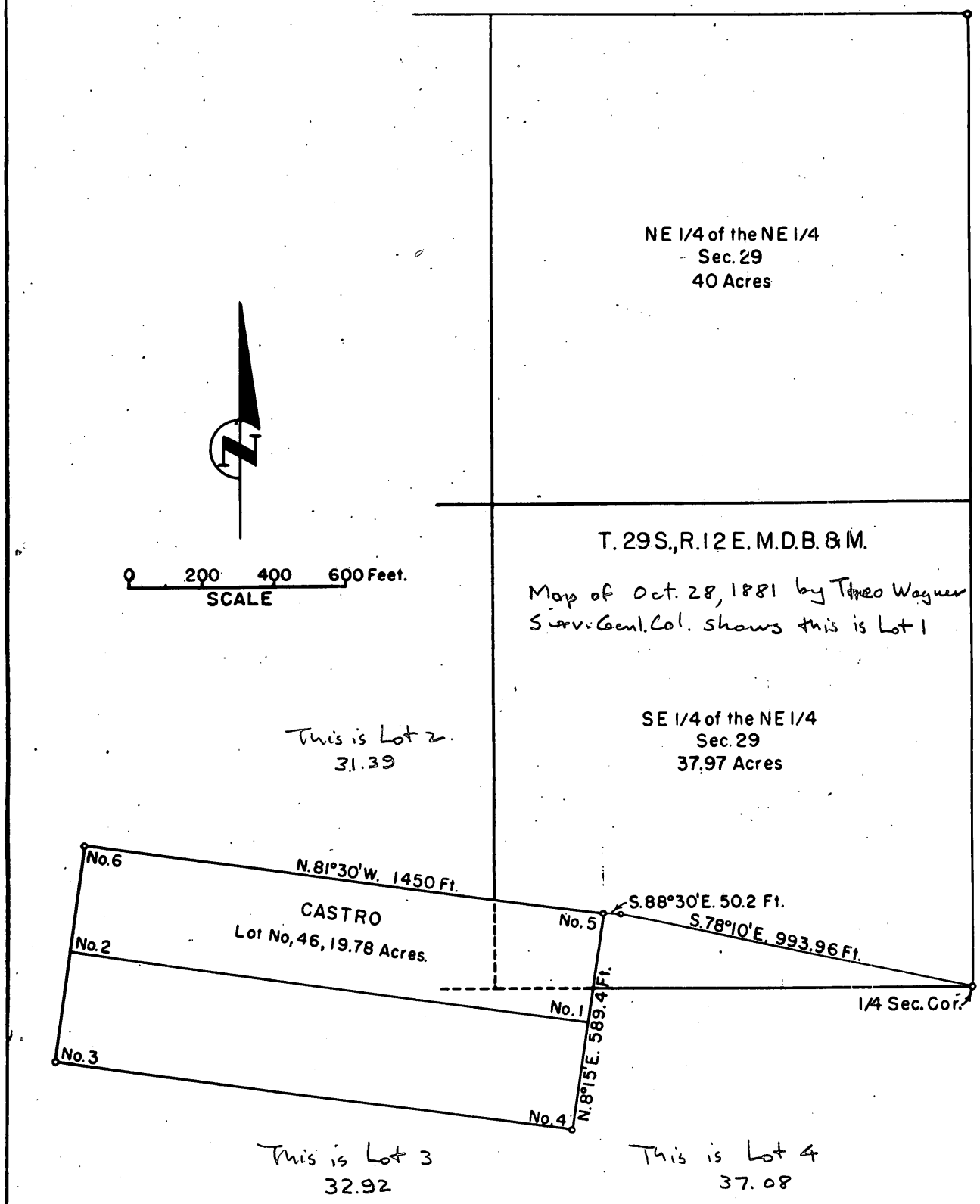

Figure 3 - Map of the Castro chrome land.

Docket

COPY

Copied from the MINING WORLD of
MARCH 1954, Vol. 16, No. 3, page 89

Amea 3250

CALIFORNIA CHROME MINE IS SECOND LARGEST IN U. S.

The Castro Chrome Associates mine near San Luis Obispo, California is now producing 100 tons of chrome ore per day. Production from this mine, which is the largest chrome producer in California and the second largest in the United States, is an important addition to the government's stockpile of this critical metal. The ore which occurs in altered basic igneous rocks, is mined largely by open-pit methods with some underground mining being done through a 15 percent inclined adit. Ore bodies consist of horizontal lying pods, or lenses, which vary in size from a few thousand tons of ore to 22,000 tons. The ore requires some light blasting, drilling being done with wagon drills. Front-end loaders then load the broken ore into Diesel trucks for haulage to the 100-ton gravity concentration mill located six miles from the mine. Mine ore averages 23 to 25 percent Cr_2O_3 and is processed in the mill to produce a 44 percent Cr_2O_3 concentrate with a CR/FE ratio of 2.5:1. It is then loaded into railroad cars and shipped to the General Services Administration purchasing depot at Grants Pass, Oregon. Because of the irregular occurence and softness of the ore, prospecting is very difficult. To date the only proven method has been by wagon drilling. Recently it has been determined that the ore is magnetic and the United Geophysical Company was contracted to conduct a magnetometer survey. A drilling program is now being planned to test these magnetic anomalies to check and evaluate this type of prospecting.

400

DOCKET
SURNAME
Rutledge
Martin
Hedges
Guild
Selfridge
Johnson

MAR 5 1954

Castro Mining Co.
625 Market Street
San Francisco 2, California

Re: Docket No. DMEA 3250 - Chromium
Castro mine
San Luis Obispo County, California

Dear Sirs:

The above-docketed application for exploration assistance has been reviewed by the Iron and Ferro-Alloys Division of the Defense Minerals Exploration Administration and referred to Mr. H. C. Miller, Executive Officer, DMEA Field Team, Region III, 1012 Flood Building, 870 Market Street, San Francisco 2, California, for a field examination of the property.

Any assistance that you can render the members of the Field Team will be appreciated.

Sincerely yours,
C. O. Mittendorf (fw)
Administrator

FARutledge/foc
3-4-54
cc to: Docket
Code 400
Adm. Read. File
Oper. Comm.
FT. Reg. 3
Mr. Katlin, Rm. 3515, BM
Mr. Guild, Rm. 4205, GSA

RC 3-5-54

400

MAR 1954

DOCKET
SURNAME
Rutledge
Martin
Selfridge
Fellman

Mr. H. C. Miller, Executive Officer
DMEA Field Team, Region III
1012 Flood Building
870 Market Street
San Francisco 2, California

Re: Docket No. DMEA 3250 - Chromium
Castro Mining Co.
Castro mine
San Luis Obispo County, California

Dear Mr. Miller:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

In reviewing the subject application, we were unable to determine if the occurrence is one of those listed under the Castro group in U. S. Geological Survey Bulletin 945-B. In addition, the proposed drilling under Stage I was shown to extend to within a short distance of the property line and the area to be drilled under Stage II was outside of the property. If the results of the Field Team examination indicate an exploration project is warranted, sufficient property should be included under the land description to protect the Government's interest.

Memoranda by Charles Katlin, Bureau of Mines, P. W. Guild, Geological Survey, and L. C. Pakiser, Geophysics Branch, Geological Survey, have been prepared and are enclosed for your information.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (JHB)

Enclosures

APPROVED:

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

Philip W. Guild
Member, Geological Survey (JHB)

FARutledge/foc
3-4-54
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.
FT. Reg. 3
Mr. Katlin, USBM
Mr. Guild, USGS

R.C.L.
3-5-54

Docket

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

March 1, 1954

W3 09

Memorandum

To: W. S. Martin, DMEA

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

Subject: DMEA Docket 3250 (Chromium), Castro Mining Co.
625 Market Street, San Francisco, California

Summary of proposed work:- The applicants request $26,200 to explore for chromite deposits in the zone east of the present workings at the Castro mine. They submit a topographic map of the area and a magnetic map, both made by the United Geophysical Company, the latter indicating an area immediately east of the present face which is felt to be favorable for the discovery of new ore bodies. Exploration is to be divided into two phases of 10,000 feet of dry-hole drilling each, with additional geophysical work between the two if the results of the first phase seem to justify it.

Comments:- The applicants did not submit an adequate geologic map of the property. For example, the application refers to "two specific ore occurrences of substantial size", but they are not definitely located.

Dunite has been specifically described as the country rock enclosing the known ore bodies (945B - p. 35), and its presence in the area of the magnetic anomaly would be an additional factor favoring exploratory drilling. The bulldozing of the survey lines may have made new exposures, which should be studied.

Dry-hole percussion drilling should be adequate to locate any chromite deposits of commercial grade. The general method has been used successfully elsewhere.

Recommendation:- The property should be examined by a field team in company with the applicants or their representative to determine whether additional geologic information can be gained which will further delimit the best areas for drilling.

Copy retained 400

P. W. Guild

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

February 18, 1954

Memorandum

W304

To: W.S. Martin, Defense Minerals Exploration Administration

From: Charles Katlin, Bureau of Mines

Subject: Docket No. 3250 - Chromium - $26,200
Castro Mining Co.
625 Market St.
San Francisco, Calif.

I recommend a check by the DMEA Field Team. Before the application is sent to the field, however, I suggest it be reviewed by the Geological Survey for evaluation of the magnetic anomalies and the planned drilling program based thereon.

Charles Katlin

Charles Katlin

Attachments 3

Made
Copy retained

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

3

MEMORANDUM

February 26, 1954

TO: W. S. Martin, D.M.E.A.

FROM: L. C. Pakiser, Geophysicist
Geophysics Branch

WSM

SUBJECT: DMEA Docket No. 3250

The conclusions of A. M. Rugg of the United Geophysical Company, concerning the magnetic survey of the Castro Claim (DMEA Docket No.3250) appear to be sound. I concur generally in his recommendations on drilling the magnetic anomaly described, and in the drilling program proposed by the Castro Mining Company. However, I believe the existence or absence of an ore body associated with this anomaly can be established with fewer drill holes than the number included in the loan application.

My feeling is that about fifteen well placed drill holes would be sufficient to pretty well prove or disprove the ore body. The use of a regular grid pattern of drill holes is not, in my opinion, the best way to test a geophysical anomaly. One of the basic purposes of geophysics, besides finding ore, is to reduce drilling requirements.

I would suggest that the magnetic anomaly be tested by first drilling on the center of the anomaly and then, if ore is found, placing later drill holes along the strike of the anomaly, to get some idea of its extent, and normal to the strike, to get some idea of its width. No regular drilling pattern should be followed, but the location of each new drill hole should be determined from the accumulated information of the earlier ones.

The recommendation for additional geophysical work, if ore is found, seems well founded.

I would like to call attention to the rather broad anomaly located about 300 feet North between 3E and 4E. This may be associated with the "Eastern Ore Body" shown on Plate 8, U. S. Geological Survey Bulletin 945-B, "Chromite Deposits near San Luis Obispo, San Luis Obispo County, California."

L. C. Pakiser

L. C. Pakiser, Geophysicist
Geophysics Branch

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

MEMORANDUM February 26, 1954

TO: W. S. Martin, D.M.E.A.

FROM: L. C. Pakiser, Geophysicist
Geophysics Branch

SUBJECT: DMEA Docket No. 3250

The conclusions of A. M. Sugg of the United Geophysical Company, concerning the magnetic survey of the Castro Claim (DMEA Docket No. 3250) appear to be sound. I concur generally in his recommendations on drilling the magnetic anomaly described, and in the drilling program proposed by the Castro Mining Company. However, I believe the existence or absence of an ore body associated with this anomaly can be established with fewer drill holes than the number included in the loan application.

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/s/ L. C. Pakiser, Geophysicist
Geophysics Branch

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

February 11, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region III

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 III.

DMEA -3250 Castro Mining Co.

ROBERT E. ADAMS

Robert E. Adams,
Chief, Operation's Control
and Statistics Division

February 11, 1954
Subject: DMEA-3250
Re: Exploration Assistance
Castro Chrome Mine

Castro Mining Co.
625 Market St.
San Francisco, Calif.

Dear Sirs:

The receipt of your application dated February 3, 1954 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3250 and referred to the Iron and Ferro Alloys Division.

Kindly refer to DMEA-3250 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams
Chief, Operation's Control
and Statistics Division

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 11 1954

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. 3250
Metal or Mineral Chromium
Date Received
Estimated Cost $26,200
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: Castro Mining Co. (Partnership) 625 Market St. San Francisco, California
Durand A. Hall, 625 Market St. S.F.; George I. Barnett, 1351 Mill St. San Luis Obispo, Cal.

(*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 See attached sheet

(*b*) State any mine name by which the property is known. Castro Chrome Mine

(*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 hereto marked 3(d)

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

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. No unpatented ground involved.

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. See separate sheet.

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

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. See separate sheet (Refer to MF100 on file with DMPA

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

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

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Chromite. Similar ore to the 100,000+ tons already mined - CR_2O_3 20-25%; CR:FE 2.5-1.

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

(*c*) The work will start within 10 days and be completed within 6 months from the date of an exploration project contract.

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

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.). None

(*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. See separate sheet

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

(*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. See separate sheet

(*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. None

(*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. None

(*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. See separate sheet

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

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

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

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

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

Explain in detail on acompanying paper. See separate sheet

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 February 3, 1954

Castro Mining Co.
(Applicant)

By Durand W. Hall
Partner.

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

CASTRO MINING COMPANY

SAN FRANCISCO OFFICE
625 MARKET STREET
SAN FRANCISCO 5, CALIF.
TEL. DOUGLAS 2-1387
DURAND A. HALL

SAN LUIS OBISPO OFFICE
1351 MILL STREET
SAN LUIS OBISPO, CALIF.
TEL. 3944
GEORGE I. BARNETT

Defense Minerals Administration
RECEIVED
FEB 21 1954

3 (a) APPLICANTS PROPERTY RIGHTS -- DESCRIPTION OF PROPERTY

Property situated in the County of San Luis Obispo, State of California, more particularly described as follows:

"Any and all minerals and metals of any kind and character in and under Lot 1; the Northeast Quarter of the Northeast Quarter; and the Castro Chrome Mine designated as Survey or General's Lot no. 46; all in Section 29, Township 29 South, Range 12, East, MDB and M and comprising 98.15 acres; together with the right of ingress and egress for the purpose of mining, together with enough of the surface of the same as may be necessary for the proper and convenient working of such minerals and substances therefrom; all as more fully reserved by the grantors and described in that certain deed from Maxwell C. Milton and Josephine Milton, his wife, to Ernest Volmer, dated April 11, 1946, and recorded in the office of the County Recorder of San Luis Obispo County, California, on April 15, 1946, in book 399 of Official Records at page 270 et seq. (hereinafter called the 'Castro Property'."

3(d) APPLICANTS PROPERTY RIGHTS -- LEASE (COPY

L E A S E

THIS LEASE, made this _____ day of April, 1952, by and between PIERCE MILTON, ANN MILTON WALLIS, DURAND A. HALL, MARGARET B. MERRILL, STANLEY PEDDER, L. A. SMITH, AND JANE H. SWINERTON, First Parties, (hereinafter called "Lessors"), "Lessee"):

WITNESSETH:

In consideration of the payments and the performance of the other terms, covenants, and conditions herein contained on the part of Lessee to be made and performed, Lessors lease, demise, and let unto Lessee, and Lessee hires and takes from Lessors, all of the property situate in the County of San Luis Obispo, State of California, more particularly described as follows:

> Any and all minerals and metals of every kind and character in and under Lot 1; the Northeast Quarter of the Northeast Quarter; and the Castro Chrome Mine designated as Surveyor General's Lot No. 46; all in Section 29, Township 29 South, Range 12 East, MDB & M, and comprising 98.15 acres; together with the right of ingress and egress for the purpose of mining, together with enough of the surface of the same as may be necessary for the proper and convenient working of such minerals and substances therefrom; all as more fully reserved by the grantors and described in that certain deed from MAXWELL C. MILTON and JOSEPHINE MILTON his wife, to ERNEST VOLLMER, dated April 11, 1946, and recorded in the office of the County Recorder of San Luis Obispo County, California, on April 15, 1946, in Book 399 of Official Records at page 270 et seq. (hereinafter called the "Castro property".)

for the period commencing on the date hereof and continuing during the remainder of the life and existence of said Lessors' rights in said property, upon the following terms and conditions:

1. Lessors reserve, and Lessee shall pay Lessors (to be divided between them in the proportion of their respective interests in the Castro property), as rental for the leased premises, a royalty in cash equal to 10% of the price paid by the Government or other purchaser at point of acceptance (less freight thereto, if any) for all chrome concentrates and/or other mineral products made, shipped, or sold from the leased premises; such payments to be made by Lessee within ten (10) days of receipt of payment, for chrome concentrates and/or other mineral products shipped or sold from the leased premises. In the event that, during the term of this lease, Lessee shall lease or otherwise obtain the right to mine chrome ore from land contiguous to the leased premises, at a royalty to the land owner of less than 10% of the price paid by the Government or purchaser at the point of acceptance (less freight thereto, if any), then Lessee shall pay Lessors, as additional royalty, (to be divided between them in the same proportion as other rentals received hereunder), an amount in cash equal to the amount by which the royalty by Lessee to such owners of such contiguous properties is less than 10% of the price paid by the Government or other pruchaser at the point of acceptance (less freight thereto, if any) for all chrome

concentrates and/or other mineral products made, shipped, or sold from such other contiguous properties; such additional payments, if any, to be made by Lessee within ten (10) days after receipt of payment for chrome concentrates and/or other mineral products shipped or sold from such contiguous properties. All such payments of royalties shall be accompanied by a detailed statement of account by Lessee hereunder.

2. Lessee shall enter upon the leased premises, and begin and continue the exploration and development of the chrome resources thereof, in a good and minerlike manner, to a point which justifies the provisions of a treatment plant for the manufacture of concentrates, and shall thereafter provide such treatment plant, and mine and treat the greatest amount of chrome ore possible, with due regard to the operation and development of the property as a workable mine. All such work and all costs of exploration, development, equipment, labor, and facilities incident thereto, and of the operations of the Lessee hereunder, shall be borne and paid by Lessee; and Lessors shall not be chargeable with, or liable for, any part thereof, and may post notices of non-responsibility for any of such work done or to be done at the instance of Lessee, or for any other purpose; and Lessee shall protect the leased land against liens of every character arising from his operations thereon.

3. It is understood that this lease is entered into in

the contemplation that Lessee shall be able to procure a contract from the United States Government for the purchase of chrome concentrates from the leased property. If and when Lessee procures and signs such purchase contract with the United States Government, Lessee shall:

(a) Within 45 days thereafter commence the construction of a suitable access road to the leased premises;

(b) Within 15 days after the commencement of such road to begin and thereafter maintain exploration or development work upon the property, to which Lessee shall devote a minimum of eight 8-hour man shifts per 24 hours for 5 days a week, or its equivalent -- not less than 160 8-hour man shifts in any one month; such exploration and development work to be continued until sufficient ore is developed to warrant the provision of a treatment plant; and

(c) when and if such ore is so developed to the extent of 30,000 tons or more, Lessee shall provide treatment facilities for the treatment of not less than 100 tons of such ore per day; it being understood that milling operations

shall be commenced on or before 14 months from the date of the signing of said purchase contract.

If the Government purchase contract shall specify in detail standards and requirements of performance required of Lessee in his operation of the leased premises in addition to the requirement of Lessee hereinabove provided, Lessee shall also comply with and observe such standards and requirements of performance required of Lessee by such Government contract.

4. Lessors, and their agents, may at all reasonable times enter upon and examine the leased premises and the work done and in progress thereon and the production therefrom, and may inspect all of Lessee's books and papers in any way connected with this lease or Lessee's operations upon the leased property.

5. This lease may be cancelled and terminated for all purposes:

(a) by the mutual written agreement of the parties, or

(b) by the written notice to Lessee by Lessors holding 50% or more of the Lessors' interest in the issued property, if:

(1) Lessee shall, within ninety (90) days from the date hereof, fail

to obtain a contract from the United States Government for the purchase of chrome concentrates from the leased property; or

(2) Lessee shall fail to begin the work required of him hereunder within the times herein provided, and/or shall thereafter fail to continuously prosecute said work (a failure to actively work, or produce from, the leased property for any period of six (6) months or more being deemed a failure to so "continuously prosecute said work"); or

(3) Lessee shall fail to account for or make any of the payments of rental or royalty required of him hereunder on the date or dates the same become due; or

(4) Lessee shall, within thirty (30) days after written notice to him so to do, fail to perform, or remedy his breach of, any of the other terms or conditions of this lease.

Upon the expiration or sooner termination of this lease, Lessee shall quietly and peaceably surrender possession of the leased property to the Lessors, and may, provided Lessee is not then in default in the payment of rental or royalties hereunder, within ninety (90) days thereafter remove all movable machinery, equipment, rail, pipe, and buildings placed by him on the leased property. Any such movable machinery, equipment, rail, pipe, or buildings not so removed within ninety (90) days shall become, and thereafter be, the property of Lessors.

6. Lessee shall, during the term of this lease, pay all taxes upon the leased property, mineral rights therein, chrome concentrates stored on the leased property, and upon Lessee's personal property placed upon the leased property. In the event that any governmental authority levies a license, severance, production, or other tax on the chrome produced hereunder, or on the Lessee's right to operate, Lessee shall pay the same.

7. Lessee's obligations hereunder shall be suspended while the Lessee is prevented from complying therewith, in whole or in part, by strikes, lockouts, action of the elements, accidents, rules and regulations of any governmental authority, or other matters or conditions beyond the control of the Lessee; provided that the provisions of this paragraph shall not operate to extend the conditions and provisions set forth in subparagraph 5(b) (1) and 5(b)(3)

of this lease.

8. All royalties payable in money hereunder shall be paid to Lessors by mailing or delivering the same in cash or by certified check or draft to _____, depositary, or to its successors or assigns, herein designated by the Lessors as depositary. No change in the ownership of the land or minerals covered by this lease, and no assignment of rents or royalties, shall be binding upon Lessee until Lessee has been furnished with written notice thereof by Lessors.

9. Lessee shall not assign the whole or any part of his interest under this lease, without the written consent of Lessors owning 50% or more of the Lessors' interest in the leased property; except that Lessee may, without such consent, but without releasing himself from his obligations as Lessee hereunder, assign his interests hereunder to an operating corporation, partnership, or venture whereof he is the manager and in control of operations.

10. Lessors represent that they, together, hold all of the beneficial ownership of the leased premises, and that, for their convenience, the legal title to said premises is presently held by the California Pacific Title Insurance Company, under a title holding agreement. If and when Lessee shall obtain a contract from the United States Government for the purchase of chrome concentrates from the

leased property, Lessors agree to take such steps as shall be necessary to terminate said holding of the legal title by California Pacific Title Insurance Company, and to vest full title, both legal and equitable, in themselves; and to execute all such documents as may be necessary in such connection, and to confirm the lease of the leased premises to Lessee hereunder.

11. Time is of the essence of this lease and of every agreement and covenant hereof; and this lease and all of its terms, conditions, and stipulations shall extend to and be binding upon the heirs, executors, administrators, grantees, successors, and assigns of Lessors, and the heirs, executors, administrators, and permitted assigns of Lessee.

12. Any notice from Lessors to Lessee may be given by sending the same by registered mail to Lessee at _____, or at such other address as Lessee may notify Lessors in writing, and any notice from the Lessee to Lessors may be given by sending the same by registered mail addressed to the Lessors in care of the depositary hereinbefore named, or at such other address as Lessors may notify Lessee in writing.

IN WITNESS WHEREOF, the parties hereto have executed

these presents as of the day and year first above written.

Pierce Milton

Ann Milton Wallis

Durand A. Hall

Margaret B. Merrill

Stanley Pedder

L. A. Smith

Jane H. Swinerton
First Parties

Durand A. Hall
Second Party

CASTRO MINING COMPANY

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Defense Minerals Administration
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4. PHYSICAL DESCRIPTION.

(a) Mining is presently being carried on by Castro Mining Co. by open pit operations on an ore body discovered by vertical wagon-drill holes from the surface and subsequently developed by temporary underground workings (now inaccessible). Exploration work was done in 1945. All work including stripping, mining, loading and hauling to the mill (6 miles) is done under contract with Madonna Construction Co. of San Luis Obispo, California. Supervision of actual mining, however, is under the direction of Castro Mining Co.

Stripping operations are conducted by bull-dozer without the need of more than occasional blasting. From zero to 60 or 70 feet of overburden has been thus removed. The exposed ore deposit is drilled and lightly blasted. Mining of the shattered ore is done by shovel-loader directly into 10-ton trucks for haulage to the mill. A small amount of cleaning work, particularly around the irregular perimeter of the ore is done by hand. The main body of the ore is exceptionally free of waste and uniform in grade. The above described workings are, of course, open for inspection.

Some exploration is done with bull-dozer and several important deposits have been found by this means in the course of stripping, etc. No long-hole drilling from the surface is being done at present, nor are facilities for this work on the ground. Short-hole drilling (up to 20 feet) is done with Jack hammer, largely for delimiting the ore rather than for exploration. Castro owns a portable compressor and drilling equipment. The compressor is not of sufficient capacity for wagon-drilling.

Past mining operations (1942-1946) were of the same character as above. Some success during this period, as previously noted, was had in exploration by means of vertical wagon-drill holes to depths up to 90 feet. This drilling is done dry; the cuttings are blown out at frequent intervals and examined, usually by panning. All ore at Castro is so uniform in grade, and the deposits are so sharply defined that accurate sampling and assaying is not required; there is no question when drilling is being done in commercial ore. Reasonable care, however, must be taken in estimating thickness of ore, to allow for possible "salting" from above.

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4 (b) From 1942 to 1946, some 26,500 long tons of concentrates were produced from approximately 90,000 tons of ore averaging 20% or better. Practically all concentrates (worth slightly over $1,000,000) were sold to the Metals Reserve Corporation, a government corporation. (Note: Durand A. Hall was general partner in charge of operations and George I. Barnett was manager of mining and milling operations during this period. Hall and Barnett, as partners, constitute Castro Mining Co. and now operate under a lease from the owners, of whom Hall is one. These owners, with one exception, originally constituted Castro Chrome Associates, a partnership, (now dissolved) which operated the property from 1941 to 1946).

Castro Mining Company since the start of operations early in 1953 produced up to October 30 about 4750 long dry tons of concentrates from approximately 12,800 short tons of ore. This ore has averaged slightly over 23% Cr_2O_3. Concentrates average 43% with a Cr;Fe ratio of about 2.45 to 1.

Blocked out reserves at present are approximately 10,000 tons of ore averaging 23% Cr_2O_3 or better.

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4. (c) The ore deposits of the Castro property have been frequently described in U.S.G.S. and Bureau of Mines publications. The chromite deposits originated as magmatic segregations within a basic igneous rock (peridotite) now completely altered to serpentine and dunite, the latter phase being a frequent host of the chromite ore. The deposits thus far discovered, lie within a horizon in the enclosing rocks roughly parallel with the present surface at depths ranging from a few feet to about 100 feet (about the maximum depth of exploration). Within this horizon they occur erratically. Ore-bodies have varied in size from a few thousand up to 22,000 tons. Their dimensions vary but in all instances their longer dimensions have been roughly parallel to the present surface. The outline of the ore-bodies though frequently irregular is always sharply defined. There is no grading out from higher grade ore to lower and lower grade material. This factor is of favorable importance both to exploration and mining. Very recent faulting has dislocated the ore horizon with the result that the ore bodies are at different elevations with reference to the present surface, a circumstance which influences exploration. Seven ore "pods" of commercial size, (2500 to 22,000 tons) have thus far been discovered all lying within an area of 10 acres. Whether an ore body is of commercial size depends largely upon the amount of overburden to be removed to make it available for open-cut mining. Where actual outcrops of ore do not exist there are no structural features, such as contacts, reins, ore-bearing beds etc. to guide exploration. A general trend or pattern has, however, been established in the course of mining.

No really comprehensive exploration program has ever been undertaken at Castro since the first work in 1941. The reasons for this are as follows: In 1941, a well organized piece of underground exploration was done by the Bureau of Mines in collaboration with the Geological Survey. This work indicated about 25,000 tons of ore, upon which open-cut mining was begun. From that point on exploration was carried on within the area being mined largely by bull-dozer. As Government contracts were for limited tonnages of concentrates at a time, there was no inducement to block out large reserves ahead of mining. When the war ended, contracts abruptly stopped. Just prior to this time a drilling program was begun which resulted in the subsequent development of approximately 12,000 tons of ore.

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4. (c) (Cont.)

Since mining was begun in the spring of 1953 additional ore to the extent of 10,000-12,000 tons has been found both in the walls of the present pit and in extension of the developed ore-body.

There is no geological reason why other ore-bodies should not occur in Castro ground eastward on the present ore zone, where no out-crops of ore exist, and at approximately the same horizon. The rocks exposed in this area consist of serpentine and dunite of the same character as in the developed ground. On the contrary, a recent magneto-meter survey done for Castro by the United Geophysical Company of Pasadena, California, (a wholly owned subsidiary of Union Oil Co.), suggests the probability that chromite ore-bodies do occur in the unprospected ground. This work, though not yet definitive, is sufficiently indicative upon which to base a drilling program, particularly as it coincides with the trend of ore-bodies already found. First drilling will be guided by the results of geophysical work.

In addition to drilling, two specific ore occurrences of substantial size exist which should be further explored. Both occurrences are in the faces of present open-cuts. Any extension of them will be beneath considerable overburden, and it is consequently necessary to know their extent before stripping is begun. It is our opinion that these two occurrences can best be explored by adits driven from the face of the open cuts. The work should be of a temporary nature similar to that done by the Bureau of Mines and more recently in the development of the present ore-body. The object of such work would be to follow the ore in a drift from which cross-cuts, raises and drill holes would be run to delimit the ore in all directions. Such work, where applicable, we consider to be more conclusive than drilling in blocking out reserves. Both drilling and underground work have proved effective in the past. Furthermore, any underground work can be used as a base from which to check the results of surface drilling.

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4. (d) Inasmuch as the property is at present in operation there are no problems with respect to accessibility. A graded road is maintained between mine and mill, a distance of six miles; from the mill to rail-head is thirteen miles, all but three of which are paved. There is no housing problem as the city of San Luis Obispo is thirteen miles distant--30 minutes by automobile.

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4. (e) San Luis Obispo is less than 250 miles distant from San Francisco on the main coast highway number 101. Supplies, materials and equipment are consequently readily available.

Water is available on the ground for all exploration purposes.

There is no power at the mine. Inasmuch, however, as all exploration whether underground or drilling will be done by relatively light portable air-driven equipment, only gasoline driven compressors are required.

Experienced mining labor is not plentiful but is sufficient for the limited work required.

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5. (b) DRILLING:

Diamond drilling and churn-drilling are not applicable on the property as the ground, due to its broken character, will neither core nor hold water. The best drilling method has been found to be by air-driven wagon-drill, from which dry cuttings are forced to the surface by air and collected for examination and analysis. (See 4c). As holes will not exceed 100 feet in depth (about the limit of open cut mining), the cost per foot is relatively low and set-ups are quickly and cheaply made.

Vertical holes are to be drilled on regularly spaced coordinates. The United Geophysical Company recommends a spacing of not more than 25 feet on cross section lines 50 feet apart. As the ore bodies are relatively small in areal extent, rather close spacing is required in order not to miss ore. This is particularly true in the critical areas. It has been found to be labor saving to cut out the lines on which drilling is to be done with a bull-dozer. This work removes the heavy brushes and exposes a firm rock surface upon which to collar holes. A bull-dozer is always available on the ground and estimates (see 6) allow for a certain amount of this work.

When ore is encountered the pattern, of course, must be changed to meet the circumstances; consequently no rigid pattern can consistently by adhered to. Furthermore, the most likely areas, according to both magnetometer and geological work will be drilled first; the results may largely influence later drilling.

We feel that 10,000 feet of drilling should adequately test the immediate and most promising area. Should results of this work prove consistently negative the entire program should be re-appraised and perhaps abandoned. If results are successful, a second program of similar size should be made. We therefore divide the program into two phases and make application for both at this time:

Phase I 10,000 Feet
Phase II 10,000 Feet

Phase I. The accompanying Map (A) shows the proposed location of drill holes in Phase I both with reference to magnetometer contours, and the approximate outline of known ore-bodies, both mined out and in reserve. Map B shows the location of the same holes with reference to topographic contours. The program should be sufficiently flexible to permit of changes in this pattern as work progresses.

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5. (b) Cont.

Phase II. Holes for this phase of the drilling have not been located on the maps. Their location will depend upon the results of drilling in Phase I.

Geophysical Work: The efficacy of the magnetometer work done by the United Geophysical Co. in locating chromite ore bodies at Castro, will be tested by Phase I of the proposed drilling program. If the outcome is successful more magnetometer work would be indicated either before drilling in Phase I is completed or certainly before holes are spotted for Phase II. For this reason $2,000.00 is allowed for additional geophysical work.

Underground Prospecting: A certain amount of underground exploration from the faces of open-cuts will probably be required to check the results of drilling and determine the size and shape of ore-bodies and their amenability to open cut operations. Estimates as to the extent and therefore the cost of such exploration obviously cannot be determined until results of drilling have been had; consequently, no application for Exploration Loan to cover such work is included with the present application.

It is anticipated, however, that approximately 1000 feet of such work will ultimately be required at a cost of between $20.00 and $25.00 per foot depending upon the need for timber.

This paragraph is simply a memorandum to the effect that application for an additional exploration loan to supplement the present one may be made either during the course of the presently proposed work or upon its completion.

Supplement to 5 (b) Castro Mining Co. 625 Market St. San Francisco Calif.

C O P Y

UNITED GEOPHYSICAL COMPANY, INC.

P. O. Box M.
1200 South Marengo Ave.
Pasadena 15, California.

November 3, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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NOV 11 1954

Mr. Durand A. Hall
Castro Mining Company
625 Market Street
San Francisco, California

Dear Durand:

Included with this letter is an interpretive report by A. M. Rugg and an original and one copy each of the topographic and magnetic intensity maps made by Robert Bonnis. After some discussion, Al and I agreed on a possible interpretation of the magnetic trends, indicated in the "Castro" survey. I carried the report a little further and penciled in red on your map copy the most promising zones for exploration. Eight proposed drill-hole locations are also marked in order of preference, however, these locations will probably require revision as drilling proceeds.

It is our honest belief that there is valuable information in the trend indications, even if the full significance of the highs and lows cannot be adequately evaluated. As a follow-up, we would very much appreciate any information on future drilling results.

Best regards,

William T. Griswold

WTG:isp
Enc.

C O P Y

C O P Y

Supplement to 5(b)

Castro Mining Co.
625 Market St. San Francisco, Cal.

MAGNETIC SURVEY OF CASTRO CLAIM

San Luis Obispo County, California

A magnetic survey was carried on for the Castro Mining Company from October 5 through October 15, 1953, by the United Geophysical Company, Inc. The field program was handled by a two-man crew, an observer-surveyor furnished by United Geophysical Company and a helper furnished by Castro Mining Company.

The survey was conducted with a vertical intensity Askania hand magnetometer, which had a sensitivity of 12 gammas per scale division. The instrument was set up over a base station every hour to determine the diurnal drift during the time of operation. A total of 340 observations was made during a period of 6 days field operation; the other 4 days were required for surveying.

Due to the rugged terrain and dense brush, a bulldozer was used to clear the lines, thus eliminating an expensive and lengthy hand brushing operation. The clearing of 7200 feet of line required approximately 5½ hours bulldoze time.

An elevations survey, carried as requested by the mine owner, was also used for computing horizontal corrections necessary to allow for rough terrain.

Two maps are submitted with the report. One map shows the vertical magnetic intensity variations, using an assumed base value of 1000 gammas. The topographic map used an approximate base value so that the absolute elevations may be high or low, but the relative topographic variation is essentially correct.

The zone on the magnetic map extending east-west from 50 feet to 250 feet north between lines 0 and 4E is of interest for two reasons: (1) It is along a projection of known ore and (2) It is the only wide zone which does not contain any narrow high-magnitude anomalies.

One possibility that may account for the magnetic effect noted in the preceding paragraph is that the iron oxides which existed in the original rock were segregated with the chromite, leaving the immediate vicinity low in magnetite. If this happened, there would be a general magnetic low surrounding the chromite zone with a high over the chromite. A magnetic high does strike about east-west between line 0-150 feet north and line 4E - 100 north. Eliminating this high, the zone is generally low compared to the remainder of the map and is the largest single magnetic feature on the map. If the high is caused by chromite, assuming that the chromite occurs in pods, it will occur almost directly over the mineralization because of the steep magnetic dip in the area.

There are numerous magnetic highs and lows on the map. These generally appear to be caused by very near surface local features. It is quite possible that some of these may be caused by chromite bearing magnetite. However, the magnitude of many of them, compared to their areal extent, would indicate very small, high magnetite concentrations. This does not seem to be likely from results of chromite ore tests. There are two or three narrow, low east-west trends which may be significant since they are magnetic lows. However, they are so narrow, compared to the major anomaly, that their significance is questionable.

Drilling should be done along the center line of the high, between 0-150N and 4E-100N, and at right angles to this high, at intervals of not over 25 feet.

If drilling is successful, consideration should be given to doing some additional magnetic work between lines 4E and the line along the east end of the Castro claim, since the south end of the latter line indicates a magnetic low. This low may be an extension of the major trend considered in this report.

A. M. Rugg

United Geophysical Co., Inc.

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5. (d) THE EXPLORATION PROJECT.

George I. Barnett and Durand A. Hall constitute a partnership d/b/a Castro Mining Company. Barnett is a mining engineer of long operating experience in the west and formerly a member of the U. S. Bureau of Mines. He is in charge of field operations. Hall is a consulting mining engineer and geologist of long experience both as mine owner and operator and consultant. He has maintained an office in San Francisco for over thirty years. He was formerly a member of the U. S. Geological Survey.

Both Hall and Barnett have been associated with the Castro operation since its inception and are thoroughly familiar with the mining and milling of chromite ores. They will supervise jointly the proposed exploration program.

Further information, if required, regarding the capabilities of Hall and Barnett, and the Castro property is obtainable through Bureau of Mines and Geological Survey officers in San Francisco.

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6. ESTIMATE OF COSTS.

PHASE I

10,000 Feet of Dryhole Drilling @ $1.21 per ft. $12,100.00

Estimated as follows:

Cash Purchases:

Drill rods, hose, bits, etc. (Quote by Geo. M. Philpott Co.)	$ 505.08	
Freight on above to San Luis Obispo	50.00	
" on Drill Ry " " "	250.00	
Miscel. Tools	50.00	
Work Shed	500.00	
	$ 1,355.08	
Estimated Salvage Value	355.08	
Net Cost (fixed)	$ 1,000.00	

Rental Purchases

1 Drill and Ry	$ 225.00	per month
1 305 Compressor (Gardner-Denver) At Castro Mine	140.00	" "
1 110 Compressor	125.00	" "
	$ 490.00	

$19.60 per day (6 working days per week)

Labor

25 working days per month

1 driller @ $2.25 per hour		
1 helper @ $1.75 " "		
40 Hours @ $4.00 per hour	$ 160.00	
Overtime (Saturday) 8 hrs. @ $6.00	48.00	
	$ 208.00	

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Labor (Cont.)

		$208.00
Taxes etc. @ $10.58 per $100.00		22.00
Calif. State	2.7	
Fed. Old Age	2.0	
Unemployment	.3	
Compensation	5.58	
	10.58	
Total Labor		$230.00 per week
		38.33 per day
Supervision - ½ time @ $25.00 per day		12.50 per day

Cost Per Foot - 100 Ft. per day

Cash purchases	$0.200
Rentals	0.196
Supplies-Gas, Oil, etc.	0.200
Labor	.383
Supervision	.125
	1.104
Contingencies (10%)	.110
Estimated Cost per Foot	$1.214

CASTRO MINING COMPANY

SAN FRANCISCO OFFICE
625 MARKET STREET
SAN FRANCISCO 5, CALIF.
TEL. DOUGLAS 2-1387
DURAND A. HALL

SAN LUIS OBISPO OFFICE
351 MILL STREET
SAN LUIS OBISPO, CALIF.
TEL. 3944
GEORGE I. BARNETT

Dalcoma Minerals Mining Co.
RECEIVED
1 1 1954

6. ESTIMATE OF COSTS. (Cont.)

PHASE II

Same as Phase I	$12,100.00
Geophysical work between Phase I and Phase II (estimated)	2,000.00
	$26,200.00

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TEL. 3944
GEORGE I. BARNETT

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
FEB 12 1951

7. (a) Yes. Castro Mining Co. is a solvent operation, free of debt and capable of furnishing its share of the cost of the proposed project in accordance with the regulations on Government participation.

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7. (b) The only equipment owned by Castro Mining Co. and applicable to the proposed project is as follows:

1. Gardner-Denver portable compressor. This compressor is adequate for underground prospecting but is not large enough for wagon-drilling.

2. Jack hammer, drill steel, hose and other attachments.

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D. C.

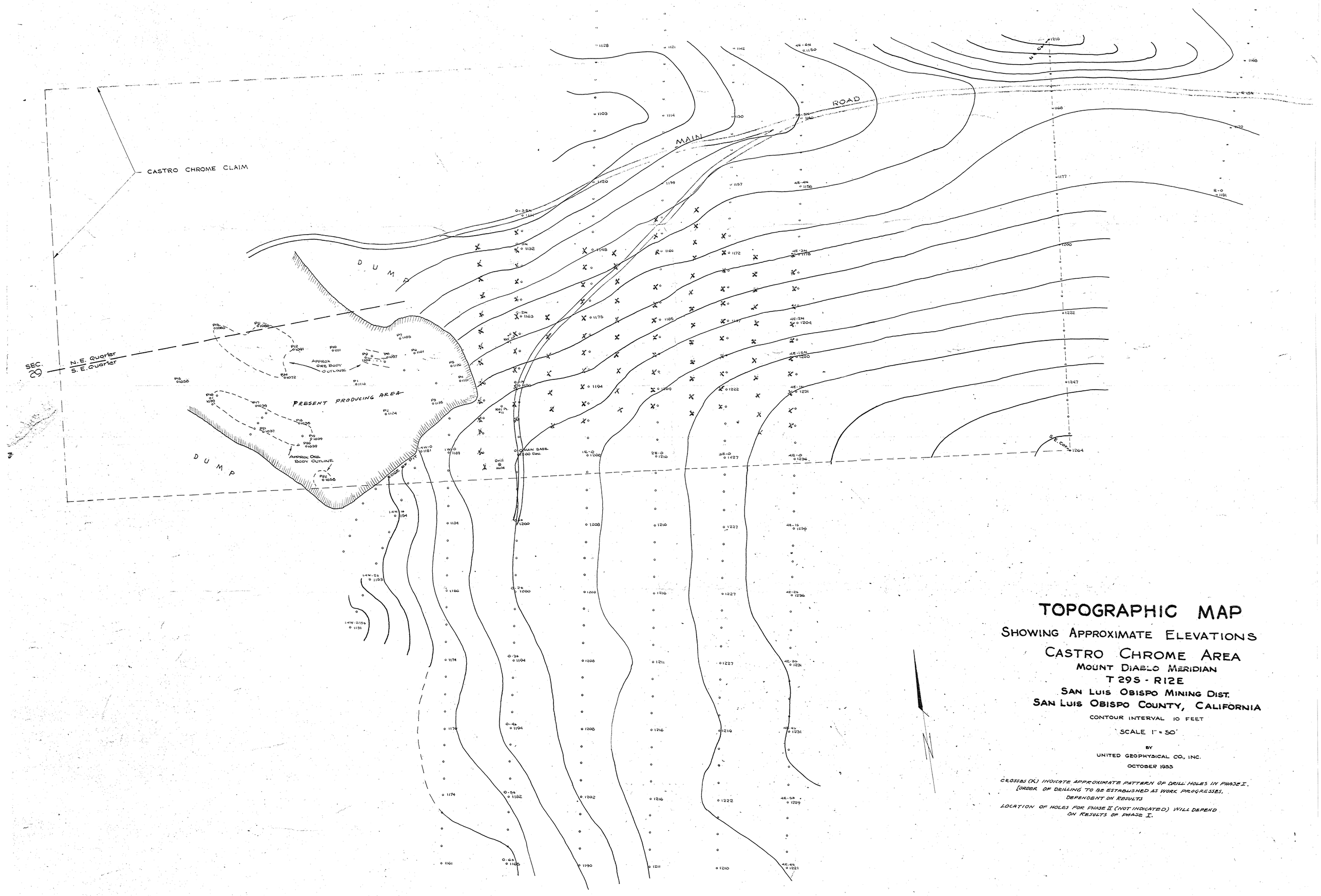
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300
(PMGC)

Frank E Johnson
Mining Engineer Dept.
of the Interior (2 copies)
Room 4624 No. Interior Bldg
Washington 25, D C 66a-2

DMEA - 3250

EXTRA COPIES



TOPOGRAPHIC MAP

SHOWING APPROXIMATE ELEVATIONS

CASTRO CHROME AREA

MOUNT DIABLO MERIDIAN

T 29S - R12E

SAN LUIS OBISPO MINING DIST.

SAN LUIS OBISPO COUNTY, CALIFORNIA

CONTOUR INTERVAL 10 FEET

SCALE 1" = 50'

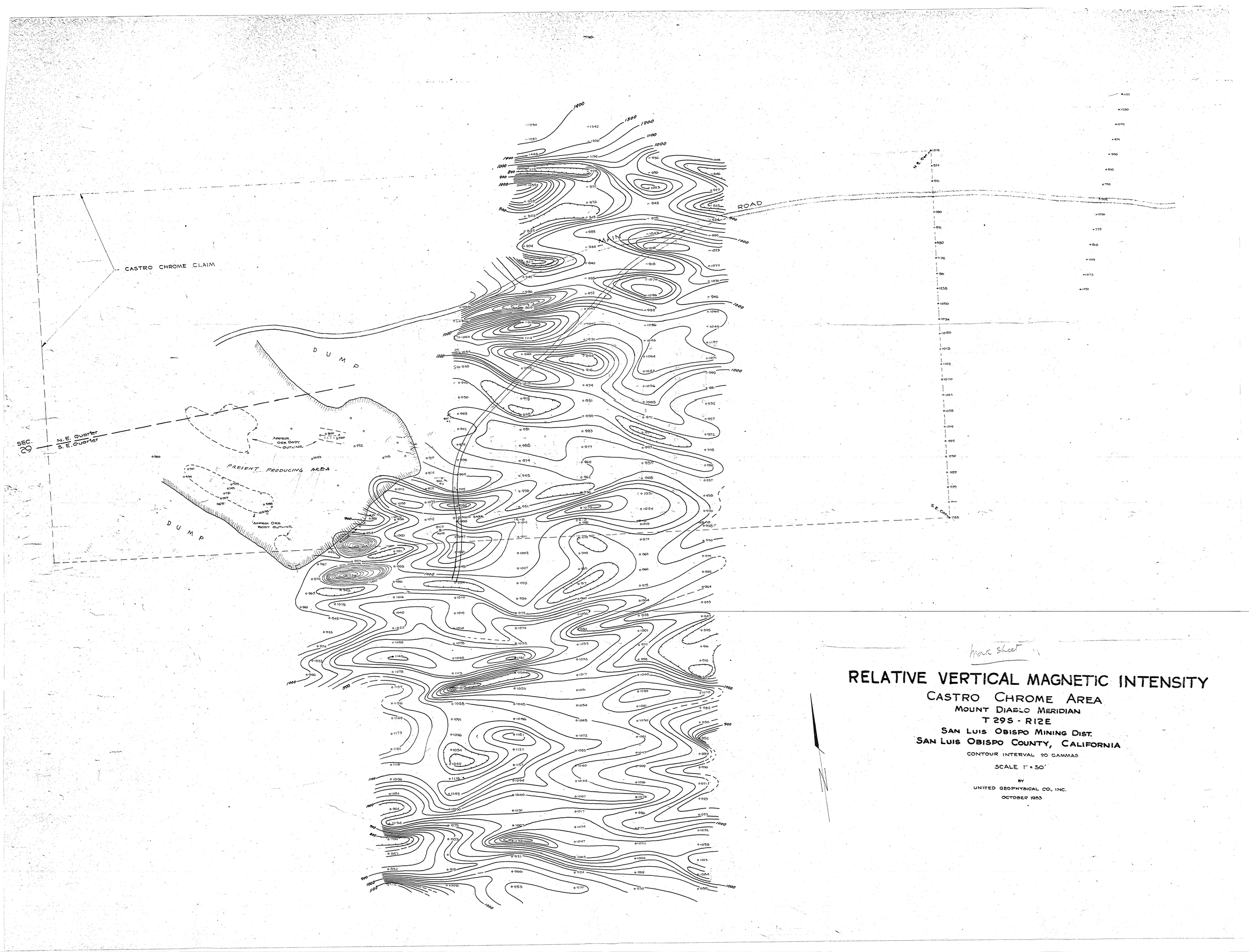
BY

UNITED GEOPHYSICAL CO., INC.

OCTOBER 1955

CROSSES (X) INDICATE APPROXIMATE PATTERN OF DRILL HOLES IN PHASE I. [ORDER OF DRILLING TO BE ESTABLISHED AS WORK PROGRESSES, DEPENDENT ON RESULTS

LOCATION OF HOLES FOR PHASE II (NOT INDICATED) WILL DEPEND ON RESULTS OF PHASE I.



Move sheet

RELATIVE VERTICAL MAGNETIC INTENSITY

CASTRO CHROME AREA

MOUNT DIABLO MERIDIAN

T 29S - R12E

SAN LUIS OBISPO MINING DIST.

SAN LUIS OBISPO COUNTY, CALIFORNIA

CONTOUR INTERVAL 20 GAMMAS

SCALE 1" = 50'

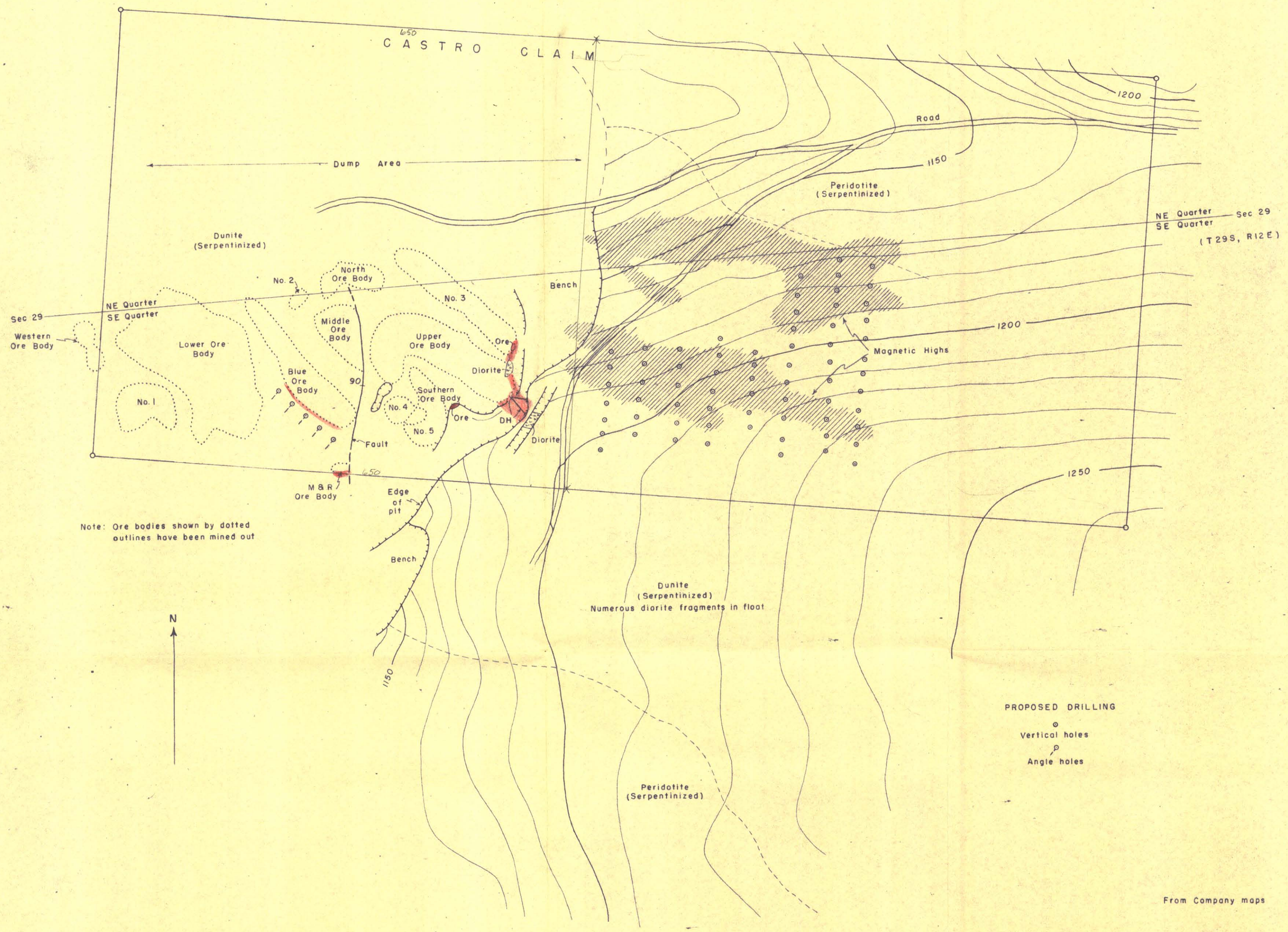
BY

UNITED GEOPHYSICAL CO., INC.

OCTOBER 1955

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA 3250
(CHROMIUM)



CASTRO CHROME MINE, SAN LUIS OBISPO COUNTY, CALIFORNIA

100 0 100 200 Feet

FIGURE 2