CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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Arizona Department of Mines and Mineral Resources Mining Collection

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ARIZONA TESTING LABORATORIES

A DIVISION OF CLAUDE E. McLEAN & SON LABORATORIES, INC.
PHONE AL 3-6272 817 WEST MADISON ST. P. O. BOX 1888 PHOENIX

Chemists . . . Engineers

CHEMICAL • RESEARCH • ASSAY • ORE TESTING • PHYSICAL TESTING

For: Omega Mining and Exploration Co.
Rooms 108 and 110
Flamingo Hotel
Tucson, Arizona

Date: August 1, 1956

Lab. No.: T-1710, T-1711, T-1712, T-1713, T-1714, T-1790

Sample: Sand

Marked: Below

Received: 7-9 and 7-20-56

Submitted by: Mr. R. E. Martin

Report of Laboratory Tests

LAB. NO.	IDENTIFICATION	% MAGNETITE	
T-1710	Pit 5 #1 #1	[illegible]	5.0
T-1711	Pit 5 #2 2	[illegible]	6.3
T-1712	Pit 5 #3 3	[illegible]	6.4
T-1713	Pit 6 #4 4	[illegible]	7.3
T-1714	Pit 6 #5 5	[illegible]	8.2
T-1790	Pit 7	[illegible]	8.6
			41.8
			7.0

Sample taken under supervision of Mr. [illegible]

Note: Material screened on #8 sieve before magnetic separation.

CLAUDE E. McLEAN ... ARIZONA U.S.A.

Respectfully submitted,
ARIZONA TESTING LABORATORIES

Claude E. McLean

ARIZONA TESTING LABORATORIES

A DIVISION OF CLAUDE T. McLEAN & SON LABORATORIES, INC.
PHONE AL 3-6272 817 WEST MADISON ST. P. O. BOX 1888 PHOENIX

Engineers

For [illegible] and Exploration Company Date August 3, 1956

Received:

Sample of ore

Submitted by [illegible]

ASSAY CERTIFICATE

Gold figured at [illegible] Silver figured at $ 0.90 per ounce.

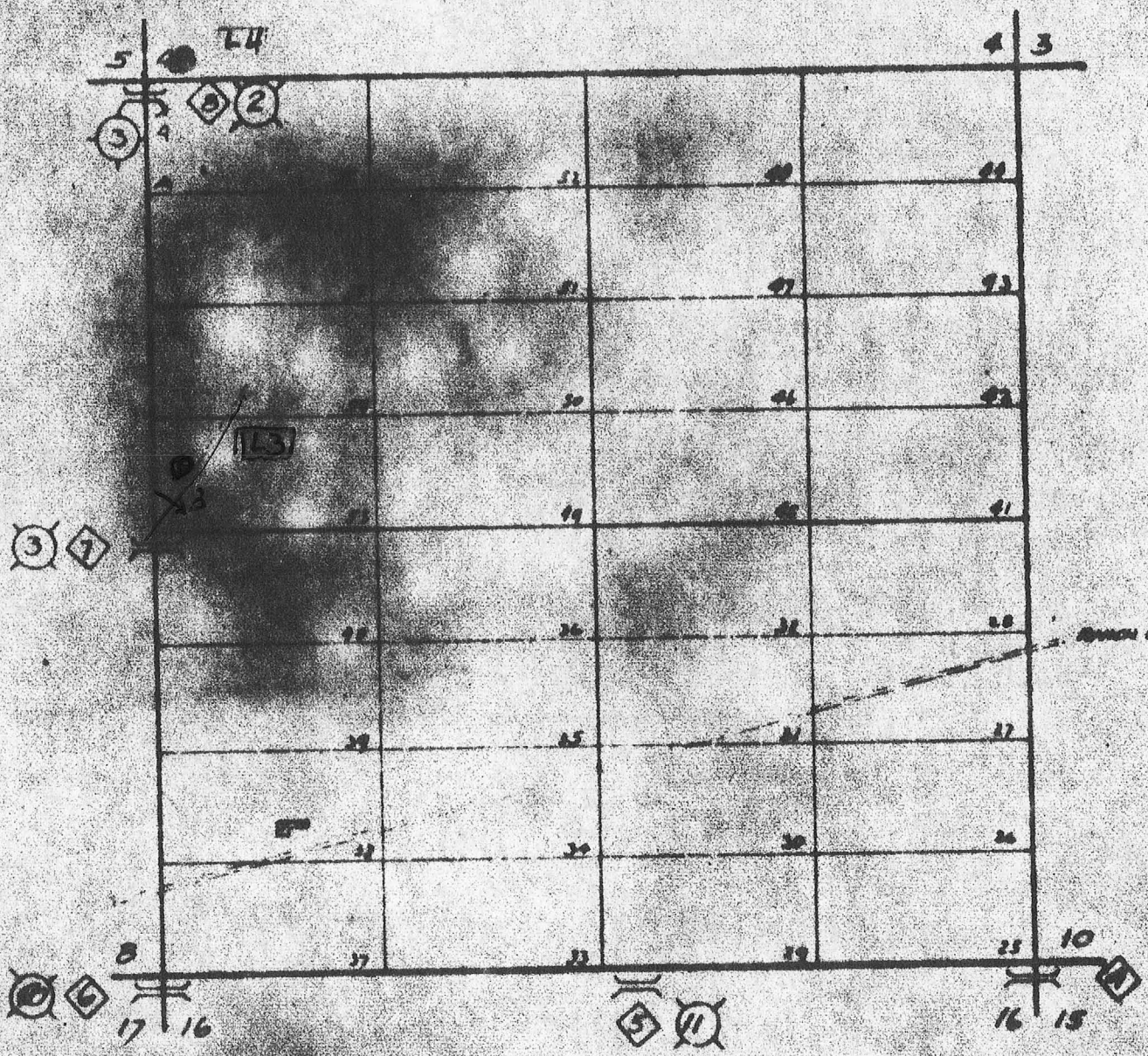
Lab. No.	Identification	Gold Oz. per Ton	Gold Value	Silver Oz. per Ton	Silver Value	Percentage Iron (Fe)
T-1710	Omega Sand Pit #5, #1					35.84
T-1711	Omega Sand Pit #5, #2					49.62
T-1712	Omega Sand Pit #5, #3					42.89
T-1713	Omega Sand Pit #6, #4					45.50
T-1714	Omega Sand Pit #6, #5					44.46
T-1789	Omega Sand Pit #7, #6					53.51

These assays show the iron content of the magnetite concentrate.

Respectfully submitted,
ARIZONA TESTING LABORATORIES

Charges $ [illegible]

Claude T. McLean



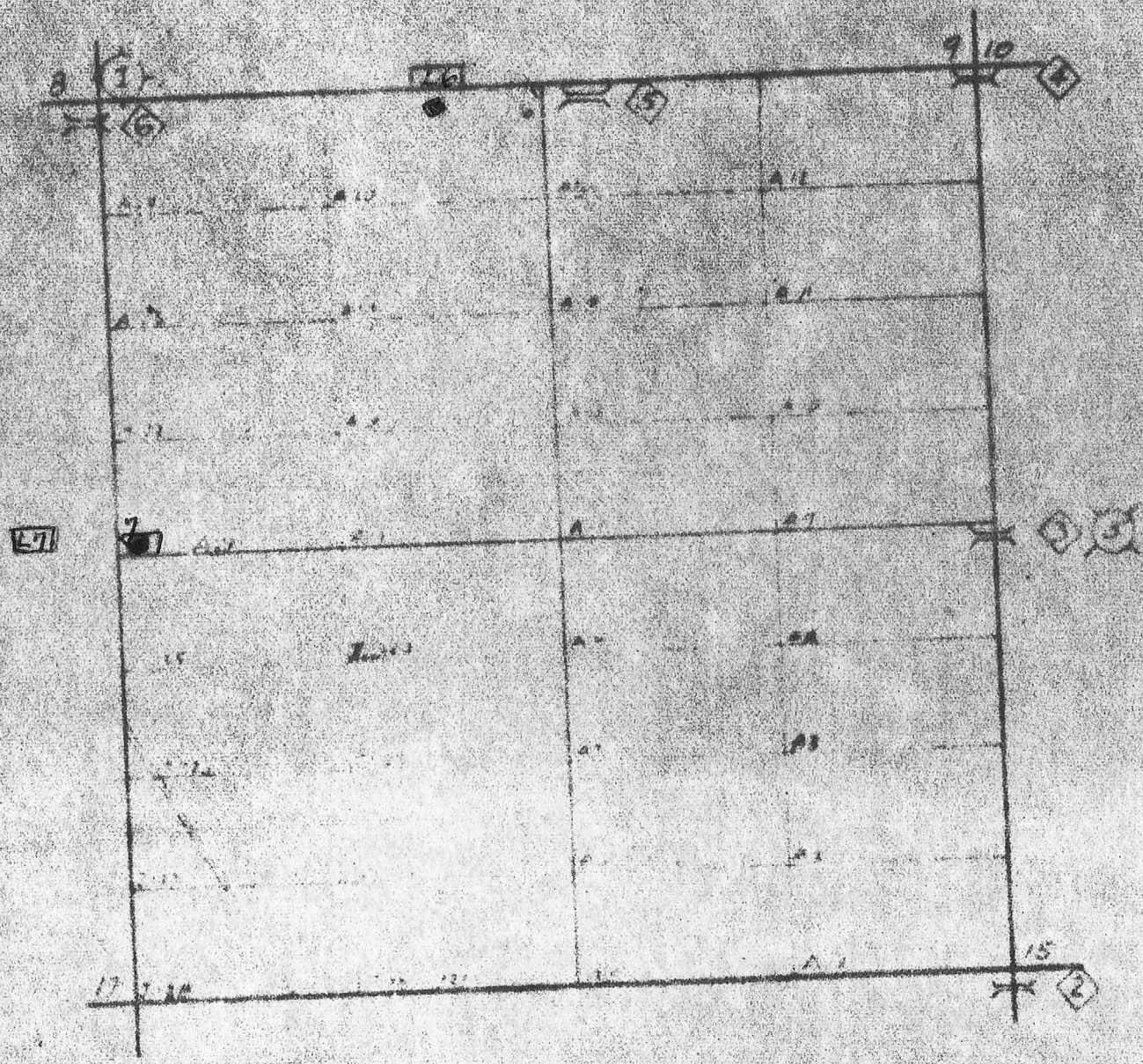
MC JUNKING DRILLING CO

DR SCHMITT - TEST PITTS.

O J. SCHERER.

Long Drilling Co Test by Lind

T8S, R2E, SECTION



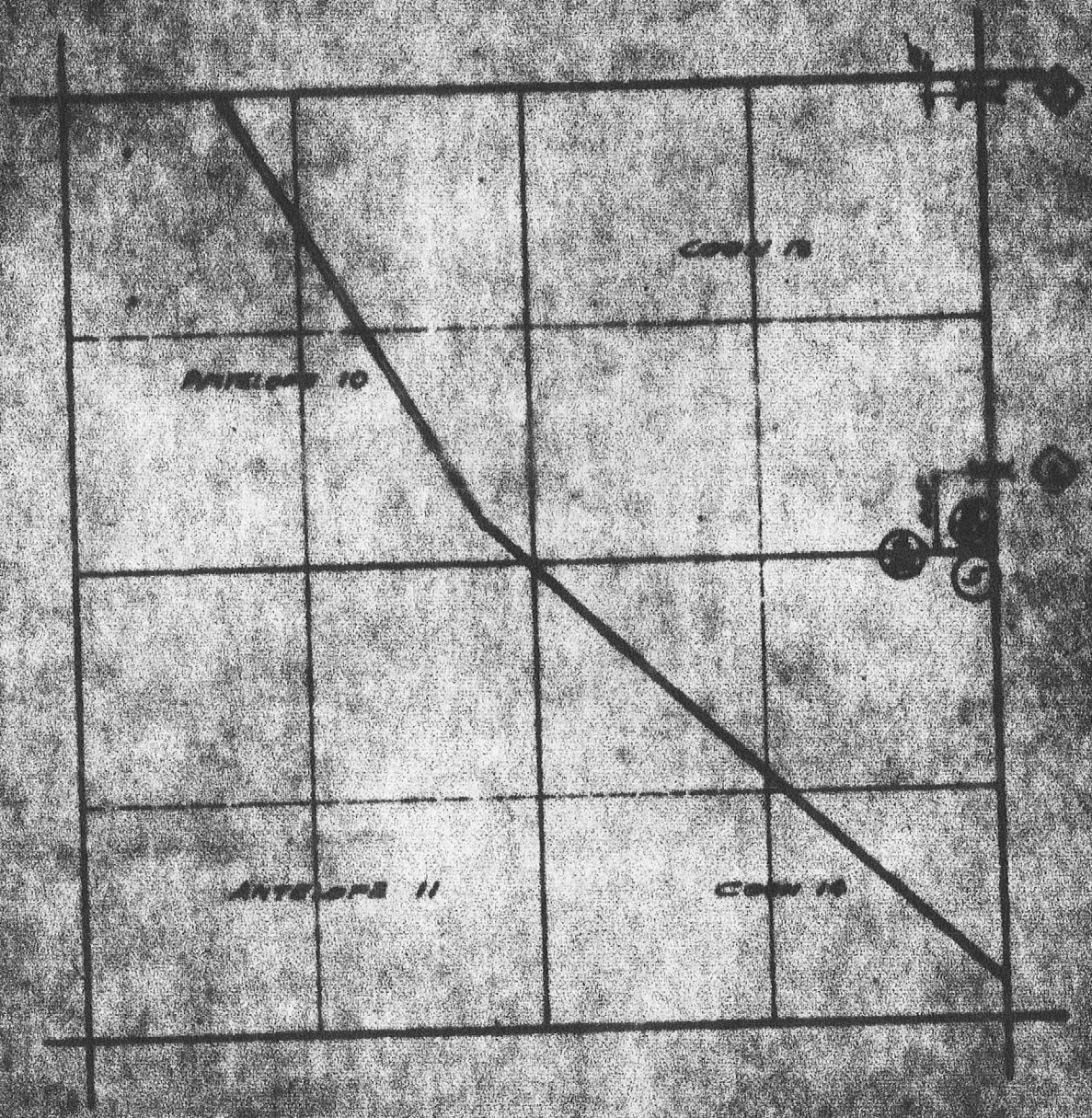
Mc JORDAN ENGINEERING CO.

PERMITTED TEST PITS

SEWER

Long Distance Co. Test Pits

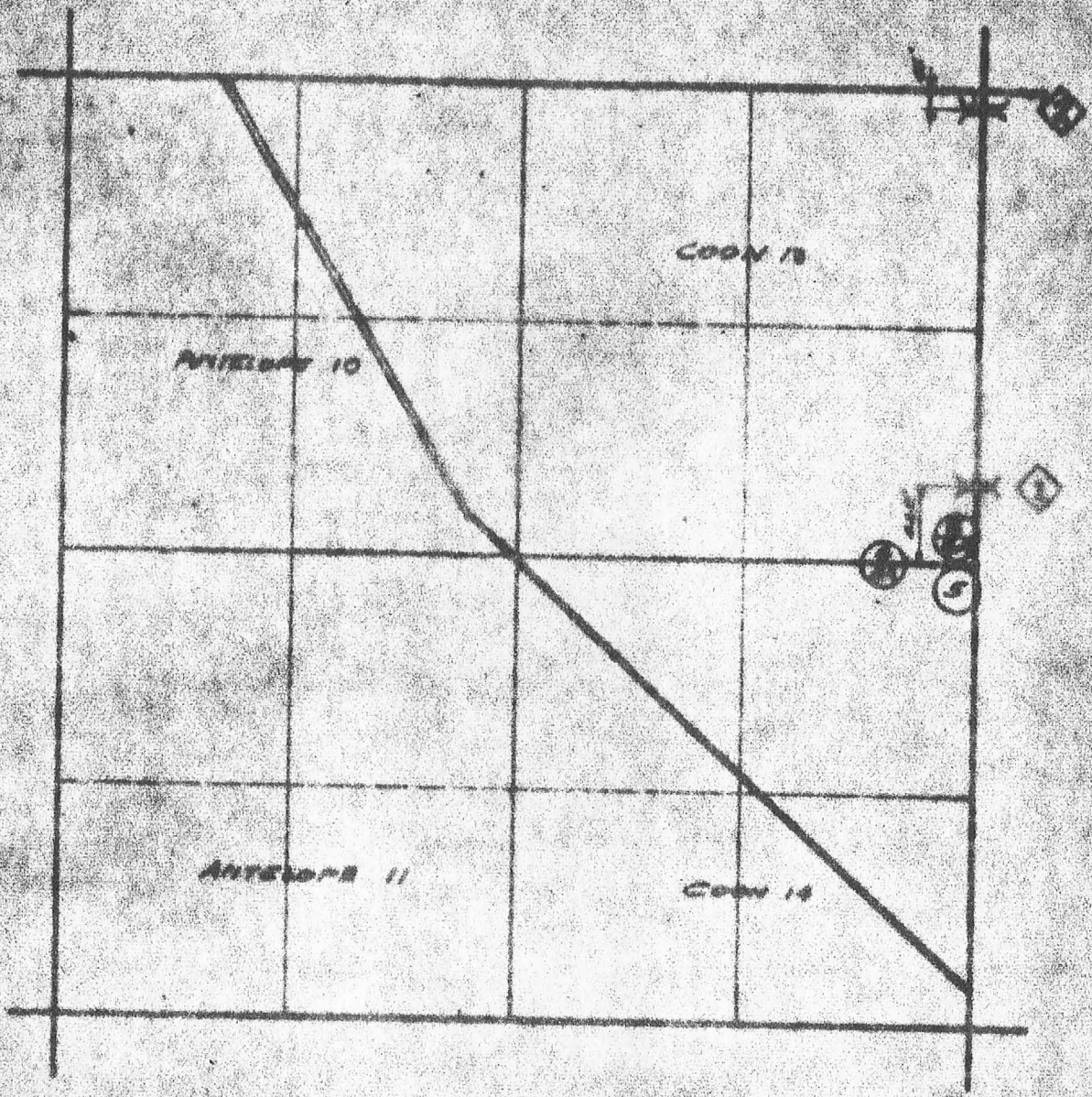
TERRACE SECTION



○ B.H. MARTIN TEST HOLES

◇ DR. SCHMITT TEST PITS

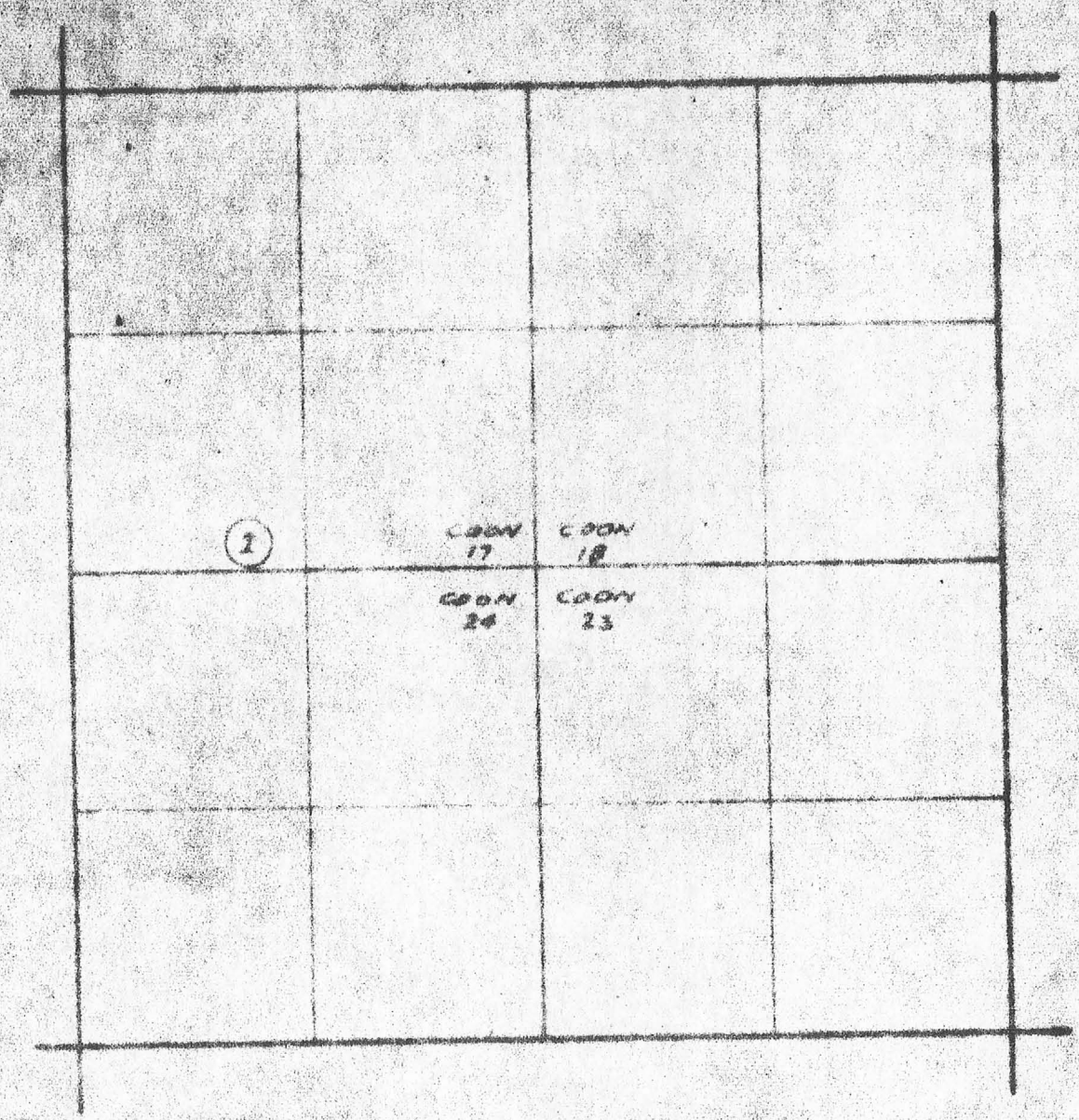
T 8 S, R 4 E, SECTION



○ D.H. MARTIN TEST HOLES

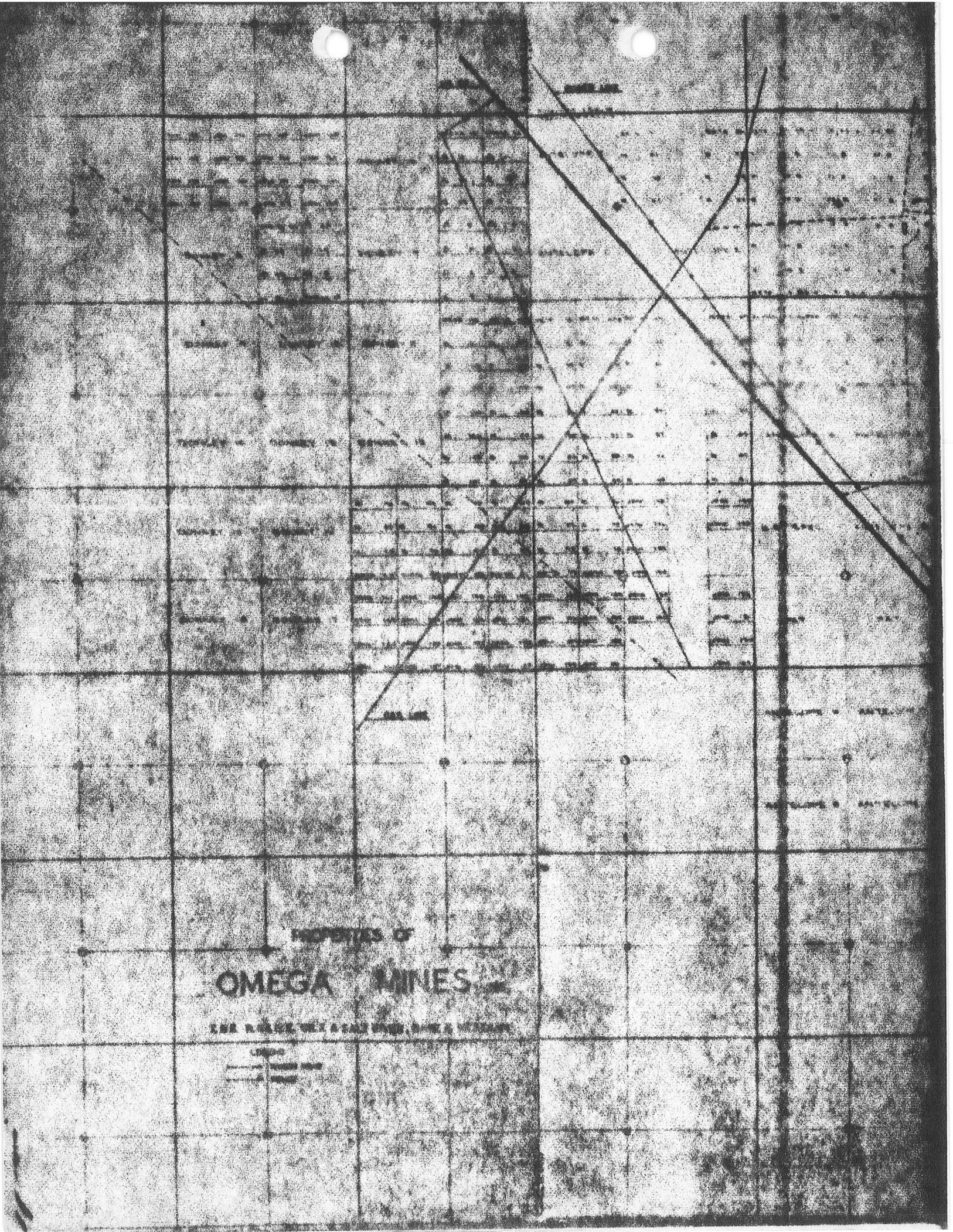
◇ DR. SCHMITT TEST PITS

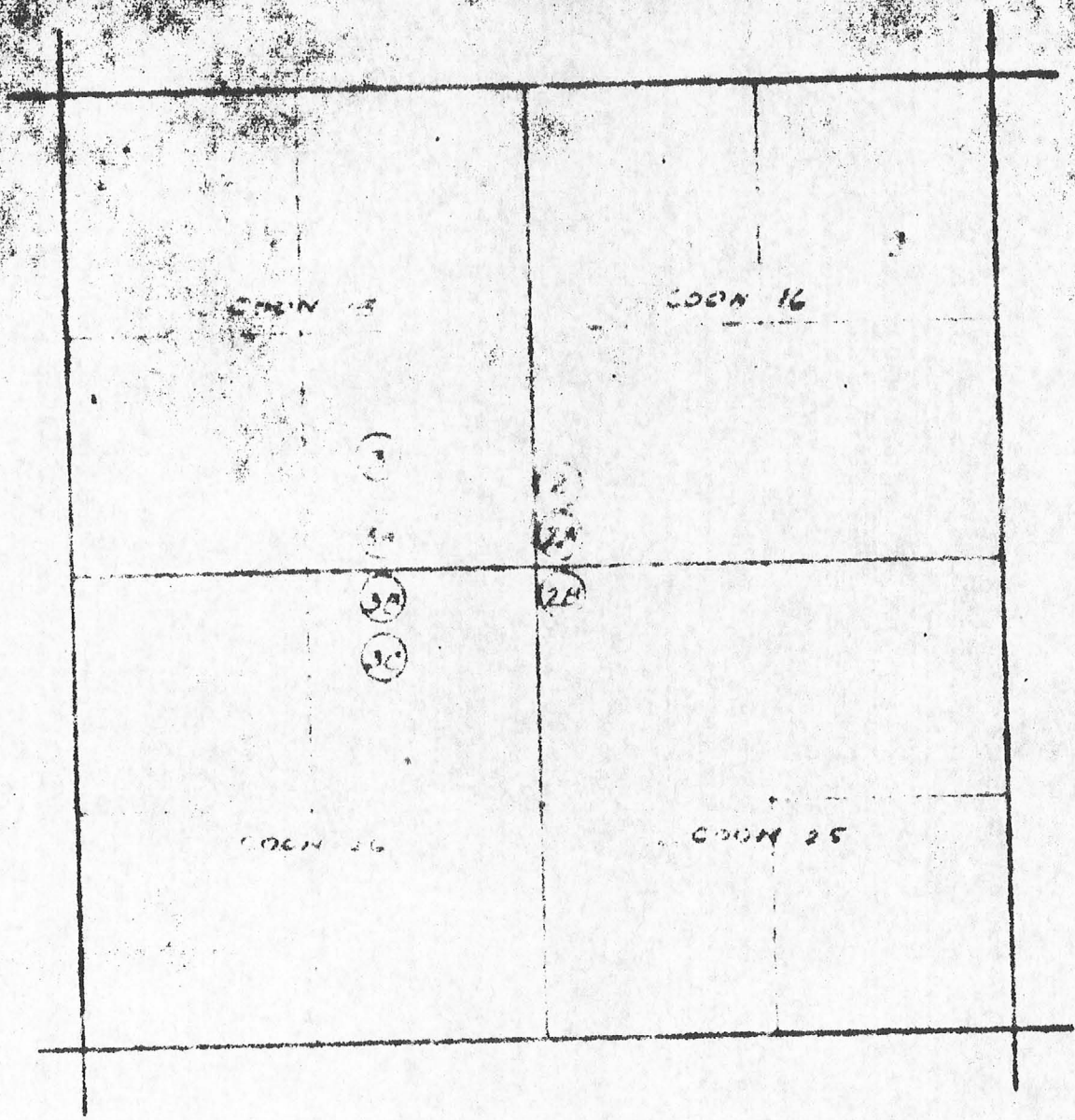
T 83, R 8 E, SECTION



○ B.H. MARTIN - TEST LOCATIONS.

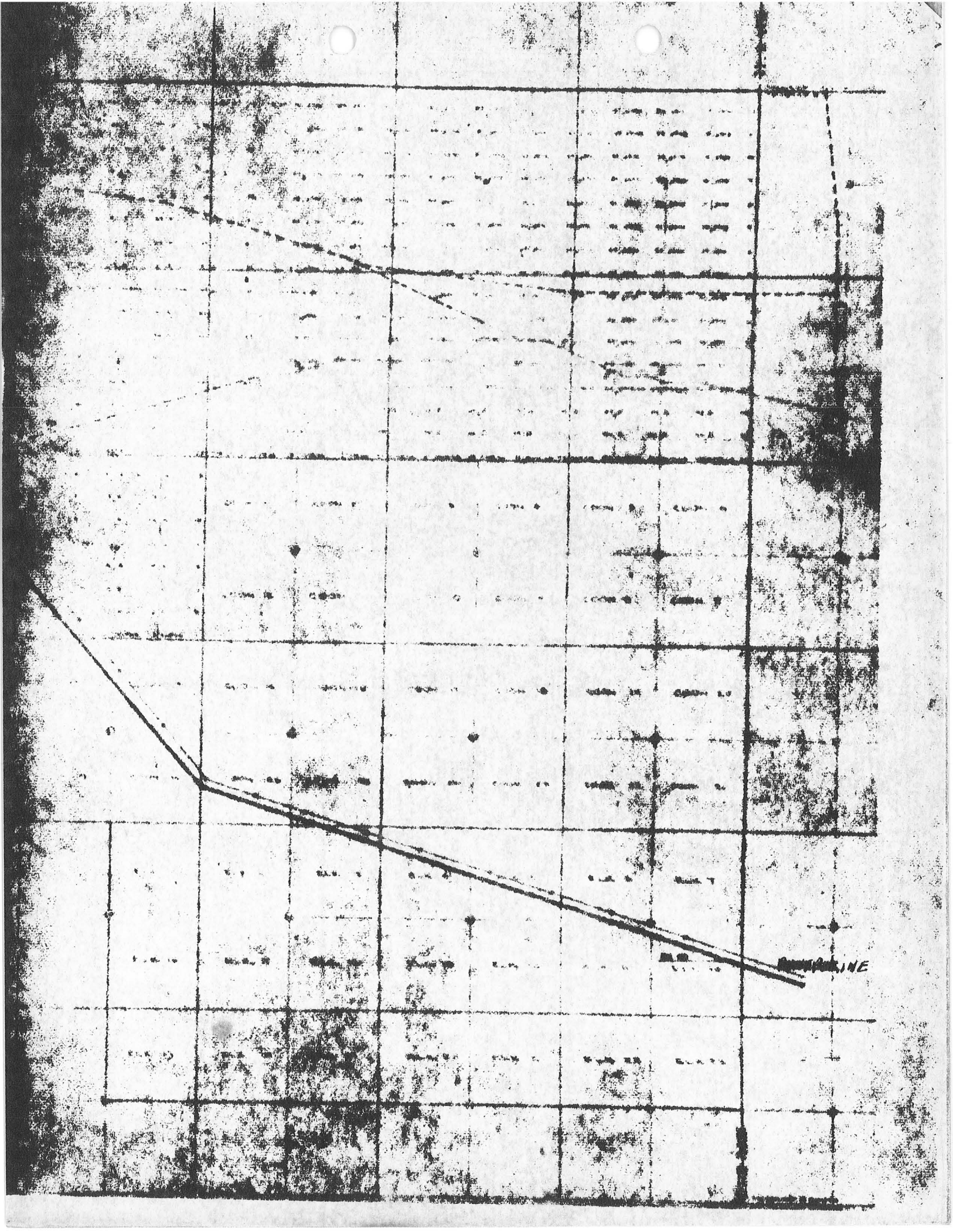
T 8 S, R 2 E, SECTION 23

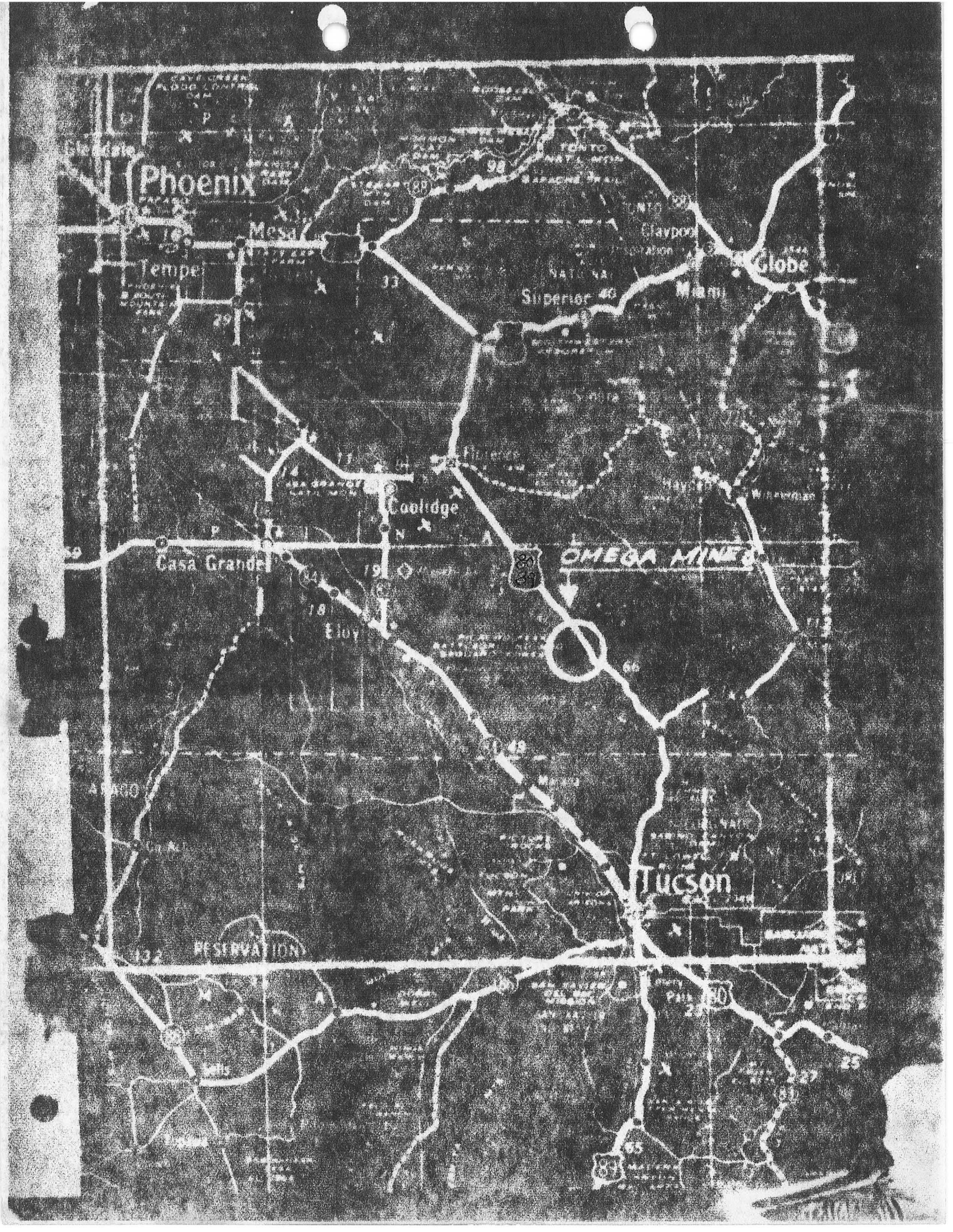

PROPERTIES OF
OMEGA MINES

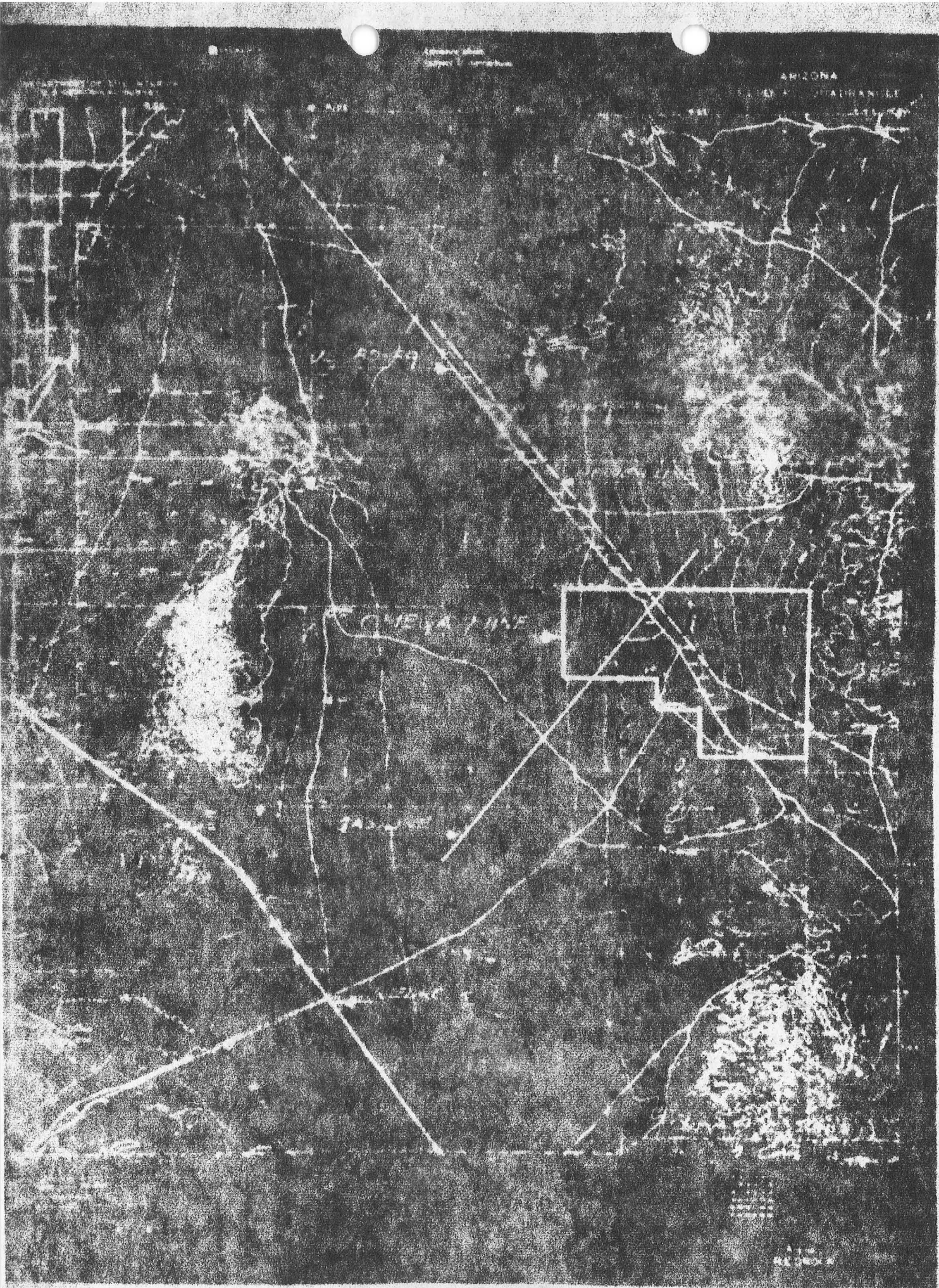


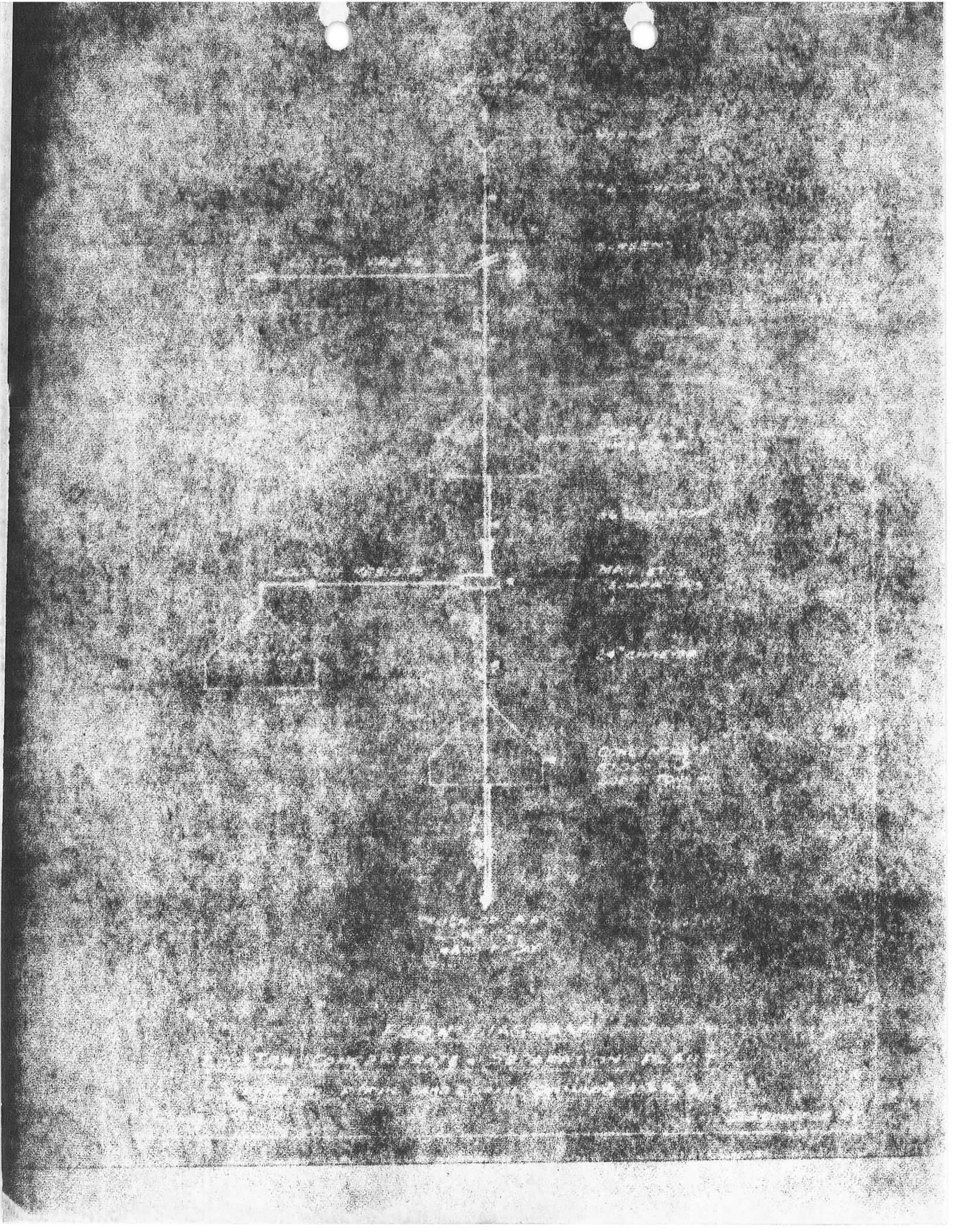
EXAMPLE LOST LOCATIONS

T 8 S, R 2 E, SECTION




Phoenix
Mesa
Tempe
Superior
Miami
Globe
Coolidge
Casa Grande
OMEGA MINE
Eloy
Tucson
RESERVATION


ARIZONA



Omega Mines, Inc.

3419 SOUTH 4TH - SUITE 11
LAS VEGAS, NEVADA

Phone DU 2-3998
2-4364

COPY

COPY

Description of holes drilled by the Long Drilling Company, of 17 West Camelback Road, Phoenix, Arizona.

Hole #1 1/4 mile West and 300 ft. South of West Gate on the El Paso Natural Gas Company Road — 49 ft. deep

Hole #2 600 ft. North and 700 ft. West of No. 1 — 49 ft. deep

Hole #3 N 34° East, 200 ft. from 1/4 Sr. Sec. 8-9 — 32 ft. deep

Hole #4 S 30° East, 90 ft. from Sr. Secs. 8-9-4-5 — 91 ft. deep

Hole #5 S 55° West, from Sr. Secs. 5-6-7-8, dist. 81 ft. — 91 ft. deep

Hole #6 S 65° East from 1/4 Sr. Sec. 9-16, dist. 28 ft. — 74 ft. deep

Hole #7 N 70° East from 1/4 Sr. Sec. 16-17, dist. 11 ft. — 50 ft. deep

Hole #8 N 23° East from 1/4 Sr. Sec. 10-11, dist. 210 ft. — 45 ft. deep

Hole #9 N 80° West from 1/4 Sr. Sec. 9-10, dist. 68 ft. — 50 ft. deep

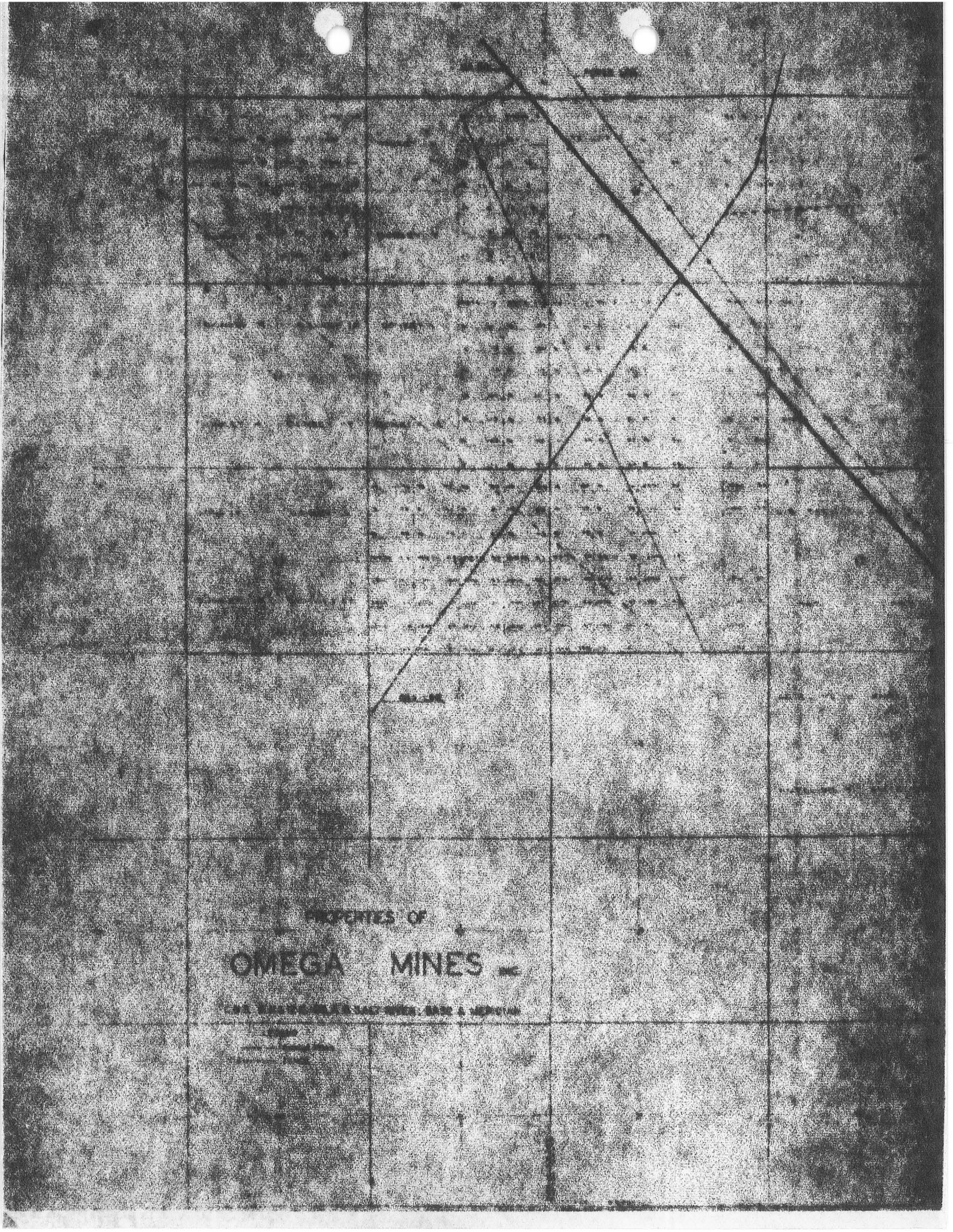
The assays on these holes were run by Joe B. Linn, of Henderson, Nevada

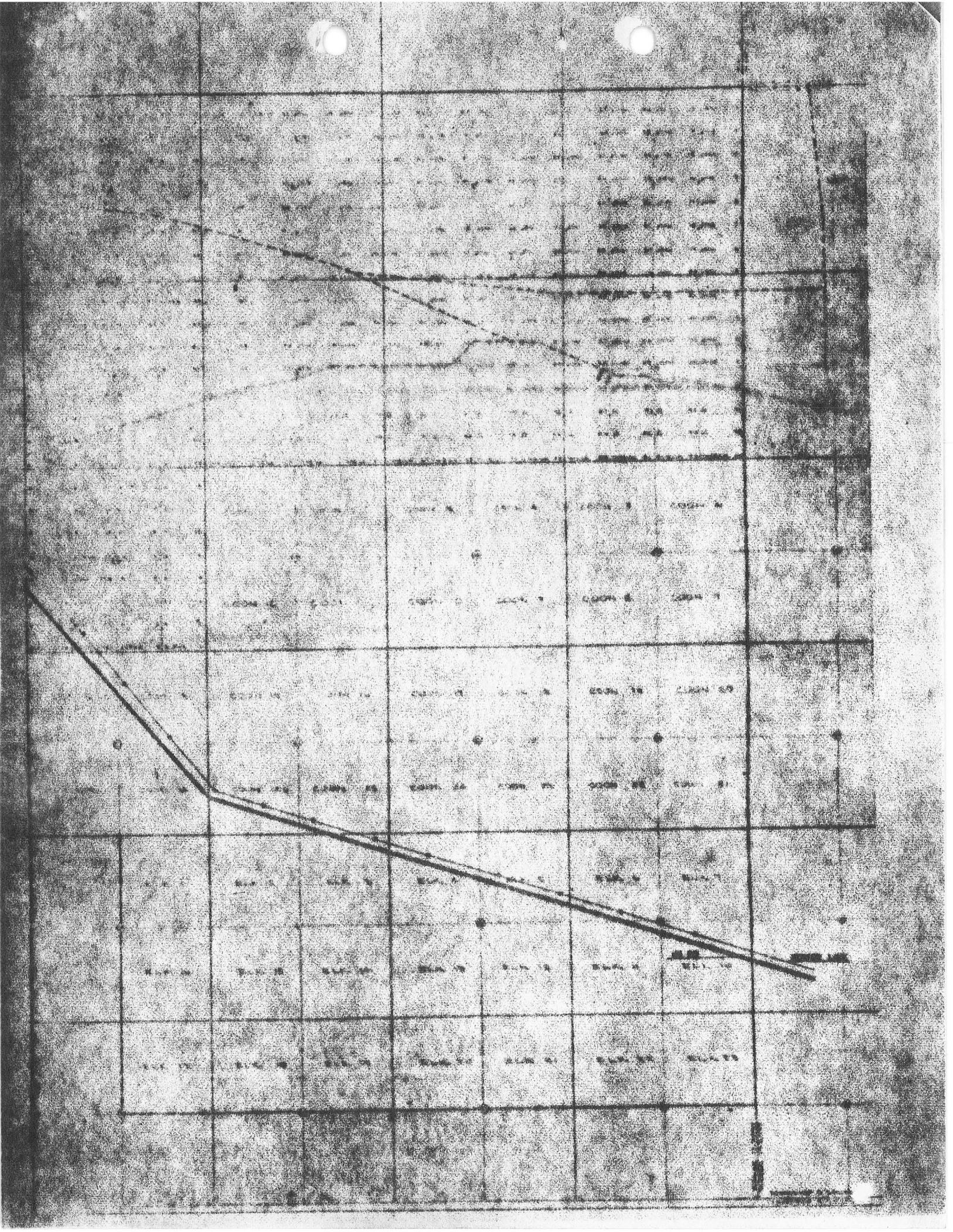
ANALYST: _____ DATE 9/17/56

SUBMITTED BY: Jones REGISTERED BY: _____

SAMPLE No.	Description	wt. Heads	wt. tails	total wt Sample	% Heads	% FE in Heads	% Fe in total Sample
	# 1	20.7613	64.3115	85.0738	24.4	62.1	15.15
	# 2	25.7976	85.4609	111.2585	23.2	65.0	15.1
	# 3	28.6258	111.1805	139.8063	20.42	57.6	11.78
	# 4	26.2571	88.8427	115.0998	22.8	59.3	13.5
	# 5	21.1297	102.8199	123.9496	17.05	60.5	10.3
	# 6	28.3758	112.6695	140.9454	20.3	66.7	13.5
	# 7	15.8428	95.7688	111.6116	13.65	71.6	9.8
	# 8	35.5882	154.3451	189.9333	18.72	70.3	13.1
	# 9	22.3207	104.2052	126.5259	17.6	71.6	12.55

DISTRIBUTION:


PROPERTIES OF
OMEGA MINES



COPY

SMITH-EMERY COMPANY

CHEMISTS - ENGINEERS
METALLURGICAL AND TESTING ENGINEERS
[illegible] EAST WASHINGTON BOULEVARD
LOS ANGELES 21
CALIFORNIA

LABORATORY No. [illegible] Date May 29, 1956

Sample Pulp

Received [illegible] Marked "AB-60"

Submitted by Nevada Testing Laboratory,
[illegible] West [illegible] Avenue,
Las Vegas, Nevada.

REPORT OF QUALITATIVE SPECTROGRAPHIC EXAMINATION

Element	Approximate Quantity	
Iron	Major Constituent.	
Aluminum, Silicon, Titanium	Intermediate Constituents.	
	Minor Constituents	
Calcium	[illegible]	1%
Manganese	[illegible]	0.5%
Magnesium	[illegible]	0.1
Sodium	[illegible]	0.1
Vanadium	0.1[illegible]	0.1
[illegible]	0.1[illegible]	0.1
Barium	0.01[illegible]	0.01
Chromium	0.01[illegible]	0.01
Copper	0.00[illegible]	0.005
Nickel	0.00[illegible]	0.005
Cobalt	0.001[illegible]	0.001
Rare Earths	Trace	
Boron	None found	
Gallium	None found	
Lead	None found	
Potassium	None found	
Strontium	None found	
Tungsten	None found	

Respectfully submitted,

Smith-Emery Co.

CHEMISTS AND ENGINEERS

All reports are submitted as the confidential property of clients. Authorization for publication of our reports, conclusions, or extracts from or regarding them is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

(See statements on reverse side regarding qualitative spectrographic examination)

COPY

LABORATORY REPORT

SMITH-EMERY COMPANY

CHEMISTS - ENGINEERS

[redacted] EAST WASHINGTON BOULEVARD

LOS ANGELES 31, CALIFORNIA

LABORATORY
No. A19536-AM

Date June 4, 1956

Sample Pulp

Received 5/24/56 Marked "AM-pp"

Submitted by Nevada Testing Laboratory,
300 Las Vegas Avenue,
Las Vegas, Nevada.

Report of Determination

RESULT OF DETERMINATION

Aluminum Oxide (Al_2O_3)	[redacted]	10.06%
Titanium Oxide (TiO_2)	[redacted]	1.62%

Respectfully submitted,

Smith-Emery Co.

CHEMIST AND METALLURGIST

G.L.C.

Dings magnetic separator company

4740 West Electric Avenue · Milwaukee 46, Wisconsin

Testing Laboratory Report [illegible]

MAGNETIC SEPARATION TEST No. [illegible] - 9446

TEST MADE FOR [illegible]

ADDRESS [illegible] Suite 11 Las Vegas, Nevada

MATERIAL TESTED [illegible] WT. OF [illegible] PER CU. FT. [illegible]

SCREEN ANALYSIS

Plus 20 Mesh	[illegible] %	29.0
Minus 20 Mesh plus 65 Mesh	34.2	54.2
" 65 " " 100 "	[illegible]	2.5
" 100 " " 150 "	[illegible]	2.4
" 150 " " 200 "	[illegible]	1.9
" 200 "	[illegible]	3.0
	100.0%	100.0%

TYPE OF MAGNETIC SEPARATOR USED FOR TEST

[illegible]

PROD.	WEIGHT IN Pounds	% OF TOTAL WT.	REMARKS
A	2.00	4.2	Magnetic Discharge — Magnetic Discharge
B	45.75	95.8	Non-Magnetic Discharge — Non-Magnetic "
C			
D			
E			
F			
G			
H			Gap Setting 1/4" [illegible]
I			
J			
TOTALS	47.75	100.0	

ALL PRODUCTS RETURNED TO ABOVE VIA: EXPRESS

NOTES:

E.J. [illegible]/hk

[redacted]

MAGNETIC SEPARATORS · PERMANENT MAGNETS · LIFTING MAGNETS · METAL DETECTORS · [illegible]

MAGNETIC SEPARATION HEADQUARTERS SINCE [illegible]

Dings magnetic separator company

4740 WEST ELECTRIC AVENUE MILWAUKEE 46, WISCONSIN

Testing Laboratory Report 7-6-56

MAGNETIC SEPARATION TEST No. [illegible]

TEST MADE FOR [illegible], Inc.

ADDRESS [illegible] St. [illegible] Suite 11 Las Vegas, Nevada

MATERIAL TESTED [illegible] No. 1 WT. IN LBS. PER CU. FT. [illegible]

SCREEN ANALYSIS

Plus 20 Mesh		19.0%	29.0
Minus 20 Mesh plus 65 Mesh		34.2	54.2
" 65 " " 100 "		9.5	9.5
" 100 " " 150 "		3.4	2.4
" 150 " " 200 "		1.9	1.9
" 200 "		[illegible]	3.0
		100.0%	

TYPE OF MAGNETIC SEPARATOR USED FOR TEST

[illegible]

PROD.	WEIGHT IN Pounds	% OF TOTAL WT.	REMARKS
A	15.75	24.8	Magnetic Discharge
B	47.75	75.2	Non-magnetic Discharge
C			
D			
E			
F			
G			Air Gap 1" to 3/4"
H			
I			
J			
TOTALS	63.50	100.0	

ALL PRODUCTS RETURNED TO ABOVE VIA: EXPRESS

NOTES:

Non-magnetic discharge [illegible] and results given on [illegible].

[illegible] amperes D.C., capacity 4-5 ton/hr/foot.

[illegible]/bk

Dings magnetic separator company
4740 West Electric Avenue · Milwaukee 46 Wisconsin

Testing Laboratory Report 7-6-56

MAGNETIC SEPARATION TEST No. [illegible]

TEST MADE FOR [illegible] Inc.

ADDRESS [illegible] Street Suite 11 Las Vegas, Nevada

MATERIAL TESTED Sand No. 1 WT. IN LBS. PER CU. FT. 104

SCREEN ANALYSIS

Plus 20 Mesh	31.7%	31.7
Minus 20 Mesh plus 65 Mesh	53.5	53.5
" 65 " " 100 "	8.1	8.1
" 100 " " 150 "	3.8	3.8
" 150 " " 200 "	1.2	1.2
" 200 "	1.7	0.7
	100.0%	

TYPE OF MAGNETIC SEPARATOR USED FOR TEST

Double Pass Drum

PROD.	WEIGHT IN Pounds	% OF TOTAL WT.	REMARKS
A	2.0	4.78	Magnetic Discharge
B	39.625	95.22	Non Magnetic Discharge
C			
D			Gap Setting 1/4" on feed rate
E			
F			
G			
H			
I			
J			
TOTALS	41.625	100.00	

ALL PRODUCTS RETURNED TO ABOVE VIA: EXPRESS

NOTES:

R.F. Szaborsik/kz

[redacted]

Dings magnetic separator company
[illegible] WEST ELECTRIC AVENUE · MILWAUKEE 46 WISCONSIN

Testing Laboratory Report

[illegible]

MAGNETIC SEPARATION TEST No. [illegible]

TEST MADE FOR [illegible]

ADDRESS [illegible] Las Vegas, Nevada

MATERIAL TESTED [illegible] WT. IN LBS. PER CU. FT. 104

SCREEN ANALYSIS

Plus 20 Mesh	31.7%	31.7
Minus 20 Mesh plus 65 Mesh	53.5	53.5
" 65 " " 100 "	8.1	8.1
" 100 " " 150 "	2.8	2.8
" 150 " " 200 "	1.2	1.2
" 200 "	2.7	2.7
	100.0%	

TYPE OF MAGNETIC SEPARATOR USED FOR TEST

Ball Norton

PROD.	WEIGHT IN POUNDS	% OF TOTAL WT	REMARKS
A	8.375	16.7	Magnetic Discharge — Magnetic Discharge
B	41.625	83.3	Non-Magnetic Discharge — Non-Magnetic "
C			
D			
E			Air Gap 1" to 3/4"
F			
G			
H			
I			
J			
TOTALS	50.00	100.0	

ALL PRODUCTS RETURNED TO ABOVE VIA: EXPRESS

NOTES:
Non-magnetic Discharge rerun & results given on 9464.
12 Amper D.C.
Capacity 4-5 ton/hr/foot.

R.F. [illegible]/ss

NEVADA TESTING LABORATORY

TESTING
INSPECTING
RESEARCH
DEVELOPMENT

800 W. BONANZA AVENUE
LAS VEGAS, NEVADA
TELEPHONE DUDLEY 2-4055

MEMBER
AMERICAN SOCIETY FOR
TESTING MATERIALS

LABORATORY

NO. A-20k

SAMPLE Pulp

RECEIVED

SUBMITTED BY W. A. Martin

DATE May 22, 1956

MARKED

Determination

REPORT OF DETERMINATION

Iron (Fe) Iron (Fe) 64.307%

Sulphur (S) Sulphur (S) ..... .359%

Silica (Si) Silica (Si) 6.007%

NEVADA TEST... LABORATORY

BY

C. V. Fulcher, P.E.

O.J. Scherer P.E.

From the desk of

FRANK P. KNIGHT

Dec. 1957

Omega Mine

W. W. Zeigler, formerly with Garpac, and still in consulting capacity.

Zeigler said things were quiet with Omega - Garpac awaiting S.E.C. approval of stock issue (about 30M ?) They did not come to terms with Clint Murchison and he is out but others are interested.

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS

DL = Day Letter

NL = Night Letter

LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LD1 16

(55)

L TSA081 PD=TUCSON ARIZ 30 1053AMM= 1956 SEP 30 AM 11 01

ROGER MANNING=

235 WEST BETHANY HOME ROAD PHOENIX ARIZ=

OMEGA MINES INC WOULD APPRECIATE YOUR PRESENCE FOR A FIELD TRIP AND PRESS CONFERENCE AT WHICH OUR ENGINEER WILL DEMONSTRATE METALLURGY, SHOW PROPERTY AND ANSWER QUESTIONS. WE WILL ASSUME YOUR EXPENSES. PARTY LEAVES WESTERNER HOTEL TUCSON 1115AMM MONDAY OCT 1ST=

J W MARTIN PRESIDENT OMEGA MINES=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

da 1125.45
Da 2328E
Da 3080E.
Ap 425 Jn

am
58220

NO____
BY____
CALLS____

1956 SEP 30 PM 4 35

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS
DL=Day Letter
NL=Night Letter
LT=International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA068 (53)

L TSA078 PD=TUCSON ARIZ 30 1051AMM=

1956 SEP 30 AM 10 59

=AXEL JOHNSON=

2520 EAST HELEN TUCSON ARIZ=

=OMEGA MINES INC WOULD APPRECIATE YOUR PRESENCE FOR A FIELD TRIP AND PRESS CONFERENCE AT WHICH OUR ENGINEERS WILL DEMONSTRATE METALLURGY, SHOW PROPERTY AND ANSWER QUESTIONS PARTY LEAVES WESTERNER HOTEL TUCSON 1115 AM MONDAY OCT 1ST=

J W MARTIN PRESIDENT OMEGA MINES=

Omega Field

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

C-O-P-Y

July 11, 1956

Report # 3022

Garpac, Inc.
Las Vegas, Nevada

Magnetite, Sand and Gravel

The samples of the above material weighing approximately 100 pounds each were received at the STEARNS Laboratory for magnetic tests. The purpose of the test work is to concentrate the magnetite and ilmarite values by dry magentic separation equipment.

Magnetic separation equipment is used quite extensively in magnetite concentrating problem. The material can be treated dry or wet, and coarse to fines, depending on the ore deposit and water supply.

The nature and size of your ore indicates that moderate intensity magnetic drum separators can be applied to your problem. We elected to run tests on the Type "MD" Magnetic Drum Separator, illustrated and described in Bullentin # 85. This unit is-corporates a fined electre magnetic assembly having a series of magnet poles varying in polarity around the circumference and each pole is essentially the same magnetic intensity screen the entire drum width. The unit provides agitating and deorientation effect on the material which serves to shake and entrapped non-magnetic particles, and accordingly produces a close high iron magnetic concentrates.

The principal points of control for the drum separators are feed rate, magnet intensity and splitter settings. Normally, the lower the feed rate the more complete iron removal. Splitters can be positioned depending on your purity and recovery requirements. As you save the splitter toward the stream of material coming off the cylinder, recovery will improve with a slight decrease in purity. Lowering the magnet intensity will drop additional middlings and high iron ilmenite particles, consequantly improving the final iron product.

Magnetic Properties:

The samples contained highly responsive magnetite particles and moderately to weakly responsive ilmenite and serisite particles. Middlings and iron silicates were also present.

Preliminary investigation indicated that very little magnetic values were present in the +10 mash fraction and a small percent was found in the -10+28 mesh product. The bulk of the magnetic values were below 28 mesh.

Sizing will aid in producing a better final concentrate. Closely sized material dould provide a better feed condition, consequently assisting magnetic separation equipment to make a better split betweeen the values and gangue.

The type "MD" used in magnetite concentration will handle feed from 1½" to fines and should produce a grade over 60% Fe on your material. However, for the ilmenite concentration the material must be fed to high intensity separator. T_h is unit will require the bulk of the feed to range from 20 to 100 mesh for good separation.

As it was pointed out that the +10 mesh material was considered waste, this material was screened out and untreated. This procedure would increase separation performance and cut down the capacity to the separator by approximately 25%. Also, we crushed the -10+28 mesh fraction in both samples to -28 mesh to improve the ilmenite concentration.

Results fo Sample # 1 are as follows:

Sample was labeled: North South line between Sec. 21-22
T 8 S, R 12 E 275 ft. N from ¼ brass

Screen Analysis

Product	% Wt.	Comments
+10 Mesh	26.642	Sample to customer
-10 Mesh	73.358	further treatment
Total	100.000	

We ran a double pass treatment on the Type "MD". The -10 mesh was treated on the first drum to remove the maximum iron from the sample. The magnetic concentrate produced on the first drum was retreated on the Type "MD" at a low magnet intensity to give the final iron concentrate. The tails from the first MD drum were passed through a high intensity separator for ilmenite concentration.

MD Test #1 (-10 mesh fraction)

Product	% Wt.	% Orig. Wt.
Mag. Co	30.686	22.511
Tails	69.314	50.847
Total	100.000	73.358

MD Test #2 (Mag. conc. from MD Test # 1)

Products	% Wt.	% Orig. Wt.	Comments
Mag. Conc.	57.469	12.937	Iron Conc.
Midds	25.490	5.738	Iron Conc.
Tails	17,041	3.836	Iron & Ilmenite

Your analysis of the magnetic concentrate and middling products should indicate the performance of the Type "MD" in producing an iron concentrate on your material.

For the ilmenite concentrate we crushed the tails of MD Test #1 andpassed the material through the STEARNS Type "R" Cross Belt Magnetic Separator, illustrated and described in Bulletin # 86. The unit concentrates by direct lift against the force of gravity and is capable of removing particles of low magnetic suseptibility with the least amount of entrapment.

Results are as follows:

Products	% Wt.	% Orig. Wt.	Comments
Combined #1 to #4 Mag.	15.670	7.968	Ilmenite
Non-Magnetic	84.330	42.879	
	100.000	50,847	

The ilmenite values do contain some iron silicates which lie in the same magnetic susceptibility range. The non-magnetic from R test #1 was passed through the separator again at a high magnet intensity to remove the remaining magnetic material found in your sample.

R Test #1-a (non-mag. from R test #1)

Products	% Wt.	% Orig. Wt.	Comments
Combined #1 to #4 mag.	9,503	4.075	Serisite &
Non-magnetic	90.497	38.804	Ilmenite
Total	100.000	42.879	

The second pass on the Type "R" was accomplished to show the type of remaining magnetics present which is mostly sericite. The non-magnetic product should be rather free from any magnetic particles.

Results of Sample # 1

Product	% Orig. Wt.	Comments
+10 Mesh	26.642	Untreated
MD Test #2 Mag. Conc.	12.937	Iron Conc.
" Midds	5.738	" "
" Tails	3.836	Iron & Ilmenite
R Test # 1 #1-#4 Mag.	7.968	Ilmenite
R Test #1-a #1-#4 Mag.	4.075	Mostly Sericita
#1-2 Non-magnetic	38.804	
Total	100.000	

Sample #2 was handled approximately the same as Sample #1 with the exception of treating the -28 mesh and -10+28 mesh products separately.

Sample labeled 175 ft. South from No. 1
Results are as follows:

Screened

Product	% Wt.	Comments
+10 Mesh	22.197	Untreated
-10 +28 Mesh	27.375	Crushed to -28 mesh
- 28 mesh	50.428	
Total	100.000	

-28 Mesh Fraction

MD Test #3 (-28 Mesh)

Product	% Wt.	% Orig. Wt.
Mag. Conc.	48.135	24.274
Tails	51.865	26.154
Total	100.000	50.428

MD Test #4 (mag. conc. from MD Test #3)

Product	% Wt.	% Orig. Wt.	Comments
Mg. Conc.	71.442	17.342	Iron Conc.
Midds	17.660	4.287	Iron Conc.
Tails	10.898	2.645	Iron & Ilmenite
Total	100.000	24.274	

Your analysis of the magnetic concentrate and middling projects should indicate the performance of the Type "MD" and whether different sizing from our Sample #1 influences the separation made.

R Test #2 (Tails from MD Test #3)

Product	% Wt.	% Orig. Wt.	Comments
Combined #1 - #4 Mag.	21.360	5.586	Ilmenite
Non-magnetic	78.640	20.568	
Total	100.000	26.154	

R Test #2-a (non-mag. from R Test #2)

Product	% Wt.	% Orig. Wt.	Comments
Combined #1-#4 Mag.	10.768	2.215	Sericite & Ilmenite
Non-magnetic-	89.232	13.353	
Total	100.000	20.568	

-10 +28 Mesh Fraction crushed to -28 Mesh

MD Test #5 (-10+28 Mesh crushed to -28 Mesh)

Product	% Wt.	% Orig. Wt.
Mag. Conc.	15.359	4.205
Tails	84.641	23.170
Total	100.000	27.375

MD Test #6 (mag. conc. from MD test #5)

Product	% Wt.	% Orig. Wt.	Comments
Mag. Conc.	64.731	2.722	Iron Conc.
Midds	17.913	0.753	" "
Tails	17.356	0.730	Iron & Ilmenite
Total	100.000	4.205	

R Test #3 (Tails from MD test #5)

Product	% Wt.	% Orgi. Wt.	Comments
Combined #1-#4 Mag.	5.287	1.225	Ilmenite
Non-Magnetic	94.713	21.945	
Total	100.000	23.170	

R Test #3-a (Non-mag. from R test #3)

Product	% Wt.	% Orig. Wt.	Comments
Combined #1-#4 mag.	4.040	0.887	Sericite & Ilmenite
Non-Magnetic	95.960	21.058	
Total	100.000	21.945	

Results of Sample #2

Product	% Orig. Wt.	Comments
+10 Mesh	22.197	Untreated
MD Test #4 mag. conc.	17.342	Iron Conc.
" Midds	4.287	" "
" Tails	2.645	Iron & Ilmenite
R Test #2 #1 - #4 Mag.	5.586	Ilmenite
" #2-a #1-#4 Mag.	2.215	Sericite & Ilmenite
" " Non-Mag.	18.353	
MD Test #6 Mag. Conc.	2.722	Iron Conc.
" Midds	0.753	" "
" Tails	0.730	Iron & Ilmenite
R Test #3 #1-#4 Mag.	1.225	Ilmenite
R Test #3-a #1-#4 Mag.	0.887	Sericite & Ilmenite
R Test #3-2 Mon-Mag.	21.058	
Total	100.000	

All the separated products are being returned via railway express to Garpac, Inc. 2419 South 5th Street, Las Vegas, Nevada, marked to the attention of Mr. J. W. Martin. Your analyis of the returned products should be a better basis to evaluate the performance of the units tested.

The test results do indicate that magnetic separation can be well adapted to give a clean magnetite concentrate. The ilmenite concentrate did appear to contain some iron silicates, consequently your analysis is the only way to determine the grade of ilmenite which be be produced. Our test work indicates the approximate percent of values found in the samples.

Sample #1 (-10 mesh fraction)	% Orig. Wt.
Magnetite	19 - 23%
Ilmenite	8 - 10%

Sample #2 (-10+28 mesh fractor)	
magnetite	2 - 4%
Ilmenite	11%

(-28 Mesh Fraction)	
Magnetite	20 - 24%
Ilmenite	5 - 6%

Capacity requirements were reported at 400 tons per hour. Our largest size unit manufactured will handle the following capacities:

Type	Size	No. of Units	Capacity
MD	30 x 48	1	30 to 40 tons/hr
R	#38	1	1 ton/hr

Approximately 50 pounds of each sample remains and is being retained at the STEARNS Lab. in the event further test work is required.

M. H. Palassari

C-O-P-Y C-O-P-Y

July 11, 1956

Garpac, Inc.
2419 South 5th Street
Suite 11
Las Vegas, Nevada

Attention: Mr. W. H. Martin

Dear Mr. Martin:

Enclosed you will find our Laboratory Report # 3022 covering magnetite tests made on your ganetite, sand and gravel samples. Tests were conducted on the STEARNS Type "MD" Magnetic Drum Separator, illustrated and described in the enclosed Bulletin # 85. This unit is used quite extensively in dry magnetite concentrating operations and is capable of handling material from 1½" to fine. The pole construction wit numerous points of separator controls permits the necessary flexibility to meet your separations needs. Test results indicated that the Type "MD" will produce a magnetite concentrate with an assay over 60% Fe.

To investigate the concentration of T102 values we treated the tails from the "MD" seperator on the STEARNS Type "R" Cress Belt separator, illustrated and described in the enclosed Bulletin # 86. The high intensity separator is capable of removing particles of low magnetic susceptiability with a minimum amount of entrapment.

All the separated products are being returned via railway express marked to your attention. Your analysis of the separated products would be a better basis to evaluate the performance of the units tested.

We are pleased to be of service and trust that the enclosed invoice covering laboratory charges meets with your approval. We would appreciate receiving your findings so we can comment further on the test work. Do call on us if any additional information is required.

MRP/gw

Yours very truly,

Encs.

CC Willard Engineering Co.

M. R. Palassari

REPORT ON THE S. M. S. PLACER MINING PROJECT

TO WHOM IT MAY CONCERN: I, P. H. Lund, of Phoenix, Arizona, a duly authorized and registered mining engineer and disinterested party, do herewith submit the following report made from a personal examination of a group of placer mining claims covering that certain mineralized locality known to me as the S.M.S. placer mining project.

This examination was made for the purpose of determining mineral bearing formation, obtain assay samples from surface deposits and creek beds and from holes bored at various places covering the locality and to recommend development of the mineralized locality.

Accompanying the writer on this esamination were Messrs. L. H. Shoemaker, J. W. Martin and E. W. Sturgeon, all of Coolidge, Arizona and owners of the placer mining project examined.

The examination was performed during the latter part of April, 1952.

PROPERTY AND LOCATION

The property examined consists of numerous unpatented placer mining claims situated in an area extending about 12 miles northerly and southerly and about 18 miles easterly and westerly. The area contains approximately 13,800 acres of mineralized lands.

The area is located immediately west from the Black Mountains in Townships 7 and 8 South and Ranges 11, 12, and 13 East, Gila and Salt River Base and Meridian, Pinal County, Arizona.

TOPOGRAPHY AND GEOLOGY

This locality embraces low laying plateaus traversed by numerous shallow creeks and washes, the most prominent of which is the Tom Mix, Bogard and Brady wash which, with their immediate tributaries, contain an enormous yardage of mineralized sand and gravel.

The existing geology covering this area consists of a mass of alluvials containing augite, feldspar, quartz, rutile, zircon, apatite, magnetite and iron. The iron consists of magnetite (magnetic iron oxide) commonly called "Black Iron" or "Black Sand".

The magnetic iron (black sand) in this alluvial deposit contains mineral values which include itianium, ilmenite and silica. (for complete analysis see results given in this report).

ACCESSIBILITY

The locality under discussion is easily reached by traveling over State Highway and U. S. Highway 80-89 leading from Florence to Tucson, which traverse diagonally northwesterly southeasterly across the locality examined. Ungraded country roads exist in many places and the entire locality can easily be reached by automobile and trucks.

VOLUME OF MINERAL BEARING MATERIALS

The tract examined covers approximately 13,800 acres. The depth to bedrock was unobtainable but numerous erosion cuts in the many shallow creeks and washes showed as much as 30 feet of alluvials in thickness. It is, therefore, safe to estimate that the entire tract will average more than 20 feet of mineral bearing formation in thickness.

Using the 20 foot average as a basis of estimate, the S. M. S. placer area examined contains over 360 million cubic yards of mineral bearing formation.

For the purpose of obtaining assay samples test holes were dug at many places with a post hole, auger to an average depth of 10 feet and one unit, 20 pounds of material thus removed was carefully weighed and the iron mineals extracted by magnetic process. (for magnetic iron contents see tabulation given herewith).

ANALYSIS AND ASSAYS

Analytical tests were made by the Control Laboratories, Las Vegas, Nevada. Assay tests were made by the Arizona Testing Laboratories, Phoenix, Arizona as follows:

Sample # 1. Rock in Place, Antimony, Trace. Silica, 50%. Magnetic Iron 48%. Manganese, 0.1%. Titanium, 1.5%. Tungston, 0.05%. Tin, 0.02%. Mercury, trace.

Sa Sample # 2. Antimony, trace. Magnetic Iron, 52%. Silica, 40%. Manganese, 0.08%. Titanium, 2.8%. Tungsten, Trace. Tin, 0.005%. Mercury, trace.

Sample #3. Copper, 0.01%. Magnetic Iron, 80%. Titanium, 5%. Manganese, 0.01%. Tungsten, trace. Siliva, 2%. Calcium, 0.01%. Aluminum, 0.2%.

Sample # 4. Arizona Testing Laboratories, Magnetic Iron, 54.8%.

This assay was a composite sample of magnetic iron recovered by magnetic separation.

MAGNETIC SEPARATION TESTS

These samples are from material extracted with post hole auger in holes ranging from 8 feet to 10 feet. in depth.

All the material, sand, gravel and alluvials taken out of the test holes were quartered to 20 pounds, one unit, by weight and the mineral contents recovered by magnetic separation as follows:

Test	hole #	1	yield	½	pound	magnetic	iron.
"	"	2	"	4½	"	"	"
"	"	3	"	1¼	"	"	"
"	"	4	"	3/4	"	"	"
"	"	5	"	3/4	"	"	"
"	"	6	"	1	"	""	"
"	"	7	"	½	"	"	"
"	"	8	"	1½	"	"	"
"	"	9	"	¼	"	"	"
"	"	10	"	1¼	"	"	"

MAPS

The Herewith submitted map indicates the locality examined, showing, the highway and several of the most prominent washes as well as approximate location of test holes made for assay sampling.

CONCLUSION

The mineral contents of this huge body of alluvial deposit is admirable adopted to dry magnetic separation and extration and mineral recoveries are limited only by the capacity of reduction plants installed. Transporatation of finished products can be done over highways by truck haulage to railroad points within 20 miles of the examined locality.

Respectfully submitted

(orginial signed by)

P. H. Lund, Registered Mining Engineer

C-O-P-Y

REPORTS AND ANALYSIS

OF

PROPOSED

MINING AND SEPARATION PLANT OPERATION

OF THE

OMEGA MINE AND EXPLORATION COMPANY, INC.

AND

GARPAC, INC.

TABLE OF CONTENTS

INTRODUCTION

OMEGA MINES, main office in the Leuhrs Building at Phoenix, Arizona, are the owners, by virtue of twenty-year renewable leases of approximately 15,000 acres of State Lands, and 15,000 of unpatented mining claims in Arizona, located between Tucson and Phoenix, Favorable opinion as to a good title to these lands has been rendered by J. H. Page & Company, Leuhrs Bldg., Phoenix, Arizona. Assessment work and lease payments have been made to and including June 30, 1957. The Mineral Lands contain magnetite, rutile and ilmenite and other minerals. The principal minerals occur in the form of granules not exceeding 1/8" in diameter. Commonly, the minerals are know as Black Sand.

In the absence of completed quanity surveys, it is estimated that not less than fifty million tons and possibly as much as five hundred million tons can be recovered from the alluvial deposit containing from 10% to 60% Magnetite and other minerals. Omega Mines propose to mine and recover the minerals by a separate corporation known as the Omega Mine & Exploration Co., Inc., main office in the Leuhrs Building, Phoenix, Arizona, L. H. Page, President.

THE OMEGA MINE & EXPLORATION CO., INC. proposes to subcontract the excavation and hauling of alluvial ore to a qualified excavating and transporation company at a unit price per yard basis. They also propose to build a separation plant of sufficient capacity to produce 100,000 tons of Magnetite containing 60% Iron per month. The Magnetite product from this separation plant will be sold to Garpac, Incorporated, 2419 South Fifth Street, Las Vegas, Nevada, Mr. Pace Foster, President, at $3.30 per ton of 60% Fe concentrate, netting a profit in EXCESS OF $200,000 PER MONTH.

THE GARPAC, INC., in the initial stages of this operation, will take delivery of the Magnetite product at the processing plant, transport and load into the railroad cars and ship direct to the consumer.

The Garpac, Inc. has negotiated through a brokerage firm, B. Franklin Soffe & Associates, 1914 South Raymond Avenue, Los Angeles, California, an initial sale of 100,000 tons per month of magnetite ore to Japan. Additional overseas sales aggregating a minimum of 250,000 tons per month can be effected after delivery of the initial 100,000 tons has started.

Garpac, Inc., will, at a later date, further process the Magnetite sand and produce Magnetite Briquettes and Sintered Magnetite for domestic and foreign sales.

Since some of the alluvial sands contain as much as 15% Rutile and Ilmenite, it is proposed to build Titanium ore recovery plants at a later date.

From the initial sale of 100,000 tons per month, Garpac, Inc. will NET a PROFIT OF APPROXIMATELY $200,000 PER MONTH.

SCOPE OF REPORT

This report is primarily concerned with the evaluation of mineal deposits as reported by other consulting engineers and geologists, recommendation and design of processing plants, mining and processing cost, and profit and loss analysis of a proposed initial 100,000 tons per month production.

PROPERTY LOCATION

The property is located on U. S. Highway 80-89 approximately thirty miles north of Tucson. (See Exhibits A & B).

TOPOGRAPHY AND GEOLOGY

For information on this subject, I am referring to reports made by consulting engineers and geologists, P. H. Martin Engineering Company, Phoenix, Arizona and P. H. Lund Engineering Company, Phoenix, Arizona.

The entire mineral deposit of the Omega Mining Company from which the minerals are to be recovered consists of alluvial sand and gravel containing Magnetite in proportions varying from 5% to 60%. The depth of the deposit varies from ten feet to more than one hundred feet. The elevation of the mining claims varies from between 2,800 to 3,100 feet.

ACCESSIBILITY

The mining property is bisected by U. S. Highway 80-89 (Exhibit B) and therefore only relatively minor roads will have to be constructed from the highway to the processing plant.

Climatic CONDITIONS

The yearly rainfall for the area averages 3" and will, in no way, affect the mining and plant operation. Temperatures vary from an occasional 30°F. in winter to 130°F. in the summer.

UTILITIES

Power: The Arizona Public Service Company owns an active power line within 12 miles of the proposed separation plant (Exhibit B). Power is available at a maximum rate of $.005 kwh. A power line approximately two miles long is to be constructed to the proposed plant by Omega Mine and Exploration Company.

Natural Gas: The El Paso Natural Gas Company's 24" pipe line traverses the mining property (Exhibit B) and natural gas is available for future sintering and processing plants.

UTILITIES (Cont'd)

Water: Three wells approximately 540 feet deep are located on the property, and each well will yield approximately 1,000 gallons per hour.

Railroad Facilities: The town of Redrock (Exhibit B) is located approximately seventeen miles southwest of the property and is located on the Southern Pacific Railfoad. Another branch of the Southern Pacific Railraod is also located approximately twenty-two miles to the north of the property. Extension of railroad facilities to the property presents no technical problem since the maximum grade will not exceed 2% and the haul from the property will be downgrade.

METALLURGY AND PROCESSING PLANT

The Iron contained in the mineral claims is in the form of Magnetite (Fe_3O_4), also known as Magnetic Iron. By atomic weight, the Magnetite contains a maximum of approximately 72% Iron (Fe).

By magnetic separation a concentrate of 65% Fe can readily be made. The principal contaminating mineral is silica. By microscopic examination, it is determined that some silica granules contain very small amounts of Magnetite, thereby making them susceptible to the magnetic field.

Contract stipulations for the first 100,000 tons per month limits the silica content of the concentrates to 6%. Separation tests indicate that no difficulty will be encountered by this stipulation.

The flow diagram (Exhibit C) shows the complete processing plant consisting of conveyors and magnetic separators of standard manufacture.

OMEGA MINE AND EXPLORATION CO., INC.
ESTIMATED MONTHLY PROFIT & LOSS

(Based on 100,000 tons/month of Magnetite Concentrate
Containing 60% Fe and Sand and Gravel Containing 30% Fe_3O_4)*

Income:		
Sale of Concentrate, 100,000 Tons @ $3.30		$330,000
Expenses:		
Mining, cost f.o.b. Plant Hopper 100,000 Tons @ $.40 (See Detail, Page 6)	$40,000	
Separation Cost 100,000 Tons @ $.325 (See Detail, Page 7)	32,500	
Depreciation (3-yr. basis) 100,000 Tons @ $.1525 (See Detail, Page 8)	15,250	
Total Expense		$ 87,750
Gross Profit:		
Estimated Monthly Gross Profit		242,250
Royalty to Property Owner, State and Federal Gov't. Mac 10%		24,225
Net Profit:		$218,025

Above figures are exclusive of salaries to Corporation Officers and Exceutive Management.

*The 30% Fe_3O_4 content mineral bearing of sand and gravel is based on samples submited to the Nevada Testing Laboratory and Reports by Engineers sampling the property. This figure can be considered as very conservative.

OMEGA MINE AND EXPLORATION CO., INC.

OPERATING COST PER TON OF 60% Fe CONCENTRATE AT 200 TONS PER HOUR

(Based on 100,00 Tons/month of magnetite concentrate Containing 60% Fe and Sand and Gravel Containing 30% Fe_3O_4)

MINING COST

Q uotation for the excavation and delivery of alluvial sand and gravel containing Fe_3O_4 has been submitted at a price of $.11 per yard. For purpose of this estimate, $.20 per yard is used.

The following Table No. 1 indicates values used in the computation of yardage to be delivered to plant hopper:

TABLE I

Magnetite Content of Sand & Gravel % Fe_3O_4	Estimated Weight Loose Sand & Gravel Lbs/cu. ft.	Lbs/cu. yd.	Fe_3O_4 Lbs/cu.yd.	Yds. Reg'd. for One Ton Fe_3O_4 Concentrate
20%	122	3,300	660	3
30%	126	3,400	1,020	2
40%	131	3,540	1,416	1.41
50%	136	3,670	1,835	1.09
60%	141	3,800	2,180	.92

The following Table No. 2 indicates the mining cost per ton of 60% Fe concentrate with yardages required as shown in Table No. 1 to produce one ton of concentrate at a cost of $.20 per yd. f.o.b. plant hopper.

TABLE 2

Fe_3O_4 Content	20%	30%	40%	50%	60%	
Cost/ton Fe_3O_4	$.60	.40	.282	.218	.184	
Total Mining Cost						$.40

OMEGA MINE AND EXPLORATION CO., INC.
OPERATING COST

(Based on 100,000 tons/month of Magnetite Concentrate Containing 60% Fe and Sand and Gravel Containing 30% Fe_3O_4)

Separation Plant

Power:		
Electric Motors - maximum 300 h.p., - 224 kwh @ $.005 approx.		$.015
Magnetic Separators		.010
Maintenance Lighting & Replacement		.005
Belting Maintenance		.050
Labor:		
Shift Foreman	$ 4.00 per hr.	
Separator Operator	3.50 per hr.	
Maintenance (2 men)	7.00 per hr.	
Car Loading (2 men)	6.00 per hr.	
Auxiliary Equip. Operators (2 men)	7.00 per hr.	
	$27.50 per hr.	
Insurance & Taxes - 15%	4.10	
Total	$31.60 per hr.	
Cost per Ton $\frac{31.60}{200}$ =		.158
Control Laboratory:		
Control Laboratory Labor and Supplies, estimated		.050
Plant Management:		
General Manager	$1,000.00 per mo.	
General Superintendent	750.00 per mo.	
Shift Superintendent (3)	1,800.00 per mo.	
Clerical (2)	700.00 per mo.	
Total	$3,650.00 per mo.	
Cost per Ton $\frac{3,650.00}{100,000}$ =		.037
Total Separation Cost		$0.325

OMEGA MINE AND EXPLORATION CO., INC.
COST PER TON OF 60% Fe CONCENTRATE AT 200 T/HR.

(Based on 100,000 Tons/Month of Magnetite Concentrate
Containing 60% Fe and Sand and Gravel Containing 30% Fe_3O_4)

Plant Depreciation

For preliminary estimate, plant depreciation is based on 100,000 Tons Sales per month on Three-Year Contract.

Total Contract Tons:	3 x12 x 100,000	3,600,000
Estimated Cost of Plant:		$550,000.00

Depreciation Cost per Ton $\frac{\$550,000}{3,600,000}$ = $.1525

GARPAC, INC.
ESTIMATED MONTHLY PROFIT AND LOSS

(Based on 100,000 Tons/Month of Magnetite Concentrate Containing 60% Fe and Sand and Gravel Containing 30% Fe_3O_4)

Income:			
Sales 100,000 Tons @ $14.24 f.o.b. Long Beach Harbor (See page 10)			$1,424,000
Expenses:			
Railroad Freight to Long Beach 100,000 Tons @ 6.25 (See Page 10)		$ 625,000	
Trucking to Railroad 100,000 Tons @ 1.25 (See Page 10)		125,000	
Loading at Railroad Siding 100,000 Tons @ .05		5,000	
Commission to Broker 100,000 Tons @ 1.25 (See Page 10)		125,000	
Management & Labor, Incl. Taxes			
General Manager	$1,000.00		
Superinendent	750.00		
Accountant	650.00		
Clerical (2)	700.00	3,100	
Utilities		2,000	
Total Expenses			884,100
Gross Profit:			539,900
Royalty to Mining Corporation 100,000 Tons @ $3.30/ton			330,000
NET MONTHLY OPERATING PROFIT			$ 209,000

INCOME FROM CONCENTRATE SALES

This analysis is primarily concerned with an initial contract for 100,000 tons of concentrate per month to be shipped to Japan. This contract is predicated on delivery of concentrates containing 60% Iron, with a maximum of 6% silica. A contract price of $14,24 per ton has been agreed upon with stipulated additional return of $.75 per ton per 1% iron content over and above the 60% Fe content. Since concentrates containing 64% have been made, additional revenue is very possible.

RAILROAD TRANSPORTATION

The Southern Pacific Railroad quoted an existing freight rate of $6.25 per ton to Long Beach, California. Comparing this rate with ton/ mile rates of similar commodities from other areas moving west, it is anticipated that this rate may be reduced at least $1.00 upon application and hearing before the Railroad Commission. This assumption is also based on the fact that nearly 100 railroad cars per day will be required for five days each week to comply with contract requirements.

TRUCK TRANSPORATION

During the interim period of the start of operation and the time when a 17-mile railroad track may be built to the separation plant, it is proposed to truck the concentrate to the railroad at Redrock. Trucking costs are based on prevailing truck rates of $.06 per ton mile. A saving of $1.00 per ton should be effected when a railroad spur is constructed to their property.

BROKERAGE COMMISSION

Garpac, Inc. have negotiated a contract with the firm of B. Franklin Soffe & Associates of 1915 South Raymond Avenue, Los Angeles, California, to market the entire output of Magnetite concentrates, Magnetite briquettes and sintered Magnetite for a commission of $1.25 per ton for all foreign markets favorable to the United States and eleven western states and Texas. All sales are contingent upon acceptance by Garpac, Inc.

SEPARATION PLANT DESIGN DATA

PLANT CAPACITY

To produce 100,000 tons magnetite concentrates per month based on two hundred sixty (260) twenty-four (24) working days per year, the plant capacity is based on twenty-two (22) twenty-four (24) hours days per month, or a total of five hundre twenty-eight (528) hours.

Tons of Magnetite Concentrate per month: $\frac{100,000}{528}$ = 189 tons

For Plant design, use 200 Tons/hr. = 10,600 tons/month

Technical Handbooks give a density value for magnetite of 4.9 to 5.2 grams per cm^3. Using the average of 5.05 gr/cm^3;

Weight of Fe_3O_4 = $\frac{5.05 \times 28,317 \times 2.2}{1,000}$ = 314.5 lbs./cu. ft.

Laboratory determination indicates that the Fe_3O_4 concentrate after magnetic separation consists of 45% to 50% voids depending on the fineness of the Fe_3O_4 concentrate.

Using an average of 47.5% voids or 52.5% Fe_3O_4;

Average weight = $\frac{314.5 \times 52.5}{100}$ = 16 lbs./cu.ft.

This value is somewhat high since no consideration is given to the silica content of approximately 6%.

By actual laboratory weight determination with 1/10 cu. ft. measure, one cubic foot Fe_3O_4 concentrates = 160 lbs. ±

All plant capacity calculations will be based on Fe_3O_4 concentrates weighing 160 lbs./cu.ft. = 12.3 cu. ft./ton.

SEPARATION PLANT DESIGN (Con'td)

The following Table No. 3 indicates the pit run tonnage required to yield 200 tons Fe_3O_4 per hour with Sand and Gravel containing 20% to 65% Fe_3O_4.

TABLE NO. 3

Percent Fe_3O_4 Content in Sand & Gravel	Tons Pit Run Req'd.	Tons Fe_3O_4	Tons to Waste and Stockpile
20	1,000	200	800
25	800	200	600
30	666	200	466
35	572	200	372
40	500	200	300
45	445	200	245
50	400	200	200
55	374	200	174
60	334	200	134
65	308	200	108

ANALYSIS OF
PIT RUN SAMPLES SUBMITTED TO THE NEVADA TESTING LABORATORY

(Minus #8 U. S. Standard Screen)

Sample Number	Measured W ight per cu. Foôt	Percent Fe_3O_4 by Weight	Percent Waste
1	153	65.8%	34.2%
2	137	52.3%	47.7%
3	126	38.6%	61.4%

Average weight Waste Sand separated by magnetic separations = 112 lbs./cu.ft.

This average may vary in proportion to non-magnetic mineral content in pit run such as Ilmenite, Rutile, Garnet, Silica and others. This variation is negligible if the Fe_3O_4 content approximates 50% of the pit run.

SEPARATION PLANT DESIGN DATA (cont'd)

CONVEYOR CAPACITY

All conveyors are designed for Class B loading, with belt speeds of 400 ft. per minute, and materials at 150 lbs. per cu. ft. Automatic weight scales, x-ray spectometer, and automatic samplers are to be incorporated in the conveyor system to record and control the entire processing plant. The design of the conveyor system allows for sufficient capacity should the Magnetite content of the pit run sand and gravel drop to 10%.

MAGNETIC SEPARATOR

In the absence of the final separation data from three separator manufacturers, the plant cost estimate includes eight separators of sufficient capacity for effective separation. If necessary, a middling product could be mad and stockpiled for later processing.

OMEGA MINE & EXPLORATION CO., INC.
CAPITAL REQUIREMENT

Separation Plant		
Engineering, Supervision	$ 5,000.	
Conveyors & Superstructure (Conveyor Co.)	266,000	
Freight to Plant Site	8,500	
Concrete Foundation	11,440	
Erection Superstructure & Equipment	29,000	
Electric Installation: Motor	6,450	
Electric Installation: Lighting	5,000	
Excavation	3,000	
X-Ray Sepctrometer	15,000	
Magnetic Separators, incl. Freight	55,000	$404,390
Ten Percent (10%) Contingency		40,400
		$444,790
Auxiliary Equipment		
Wagner Tractors (2)	34,000.	
Dump Trucks (2) @ $10,000	20,000	
Pickup Trucks (4) @ 2,500	10,000	
Maintenance Shop Equip.	5,000	69,000
Buildings		
Plant Office & Laboratory, 3,000 sq. ft. @ 8.00	24,000	
Change house, Lockers, and Showers, 1,500 sq. ft. @ 6.00	9,000	
Maintenance Shop	5,000	28,000
Laboratory and Office Equipment		
Laboratory, Furniture, Furance, Glassware, etc.	15,000	
Office, Furniture, Calculators, Typewriters, etc.	8,000	23,000
Water Well		
Well at Plant Site: Drilling and Casing	5,000	
Pumping Equipment	2,500	7,500
Power Line		
Approximately two (2) miles @$5,000		10,000
Miscellaneous		
Legal and Tax Counsel		2,000
Operating Capital		
Payroll Construction Period, 2 months -$5,000	15,000	
Payroll Operation Separation Plant, 2 months - $42,500	65,000	
Subcontractor, Mining, 2 months - $40,000	80,000	160,000
Reserve Capital		200,000
TOTAL CAPITAL REQUIREMENT		$ 944,290

GARPAC, INC.
CAPITAL REQUIREMENT

EQUIPMENT		
Trucks:		
Garpac, Inc. proposes to purchase trucks to haul concentrate to the railroad loading site.		
Estimated cost of equipment (down payment)	$ 50,000.	
Loading Facility:		
Loading Ramp or Elevator, 300 tons per hour	15,000	
Auxiliary Equipment:		
Grader for road maintenance	15,000	
Pickup trucks, (3) @ 2,500	7,500	
Radio Communication system	4,000	$109,000.
OPERATING CAPITAL:		
Trucking Labor, 30 days @ 500	15,000	
Fuel, estimated	5,000	
Truck Maintenance, labor, etc.	5,000	
Management, Clerical, Utilities, Rents	7,600	
Travel, miscellaneous Expenses	6,000	38,600
Reserve Capital		20,000
TOTAL CAPITAL REQUIREMENT		$167,600

CONCLUSION

The three-year sales contract for the initial 100,000 tons per month provides for payment of $14.24 per ton of 60% Fe concentrate f.O.b. Long Beach Harbor.

Total Sales 3,600,000 Tons @ 14.24 = $51,264,000

In order to perform to contract conditions, the Omega Mine & Exploration Company, Inc. requires capital in the amount of $1,000,000. The earnings of the Corporation, based on an initial Sales Contract for a three-yaar period, will effect a Net Earning of:

Thirty-six Months @ $218,000 = $7,748,000

Garpac, Inc. requires capital in the amount of approximately $200,000. The earnings of Garpac, Inc., based on the initial contract will effect a Net Earning of:

Thirty-six months @ $209,000 = $7,524,000

I consider these estimates as conservative and believe that bonuses, stipulated in the initial contract, should provide additional earnings.

Consideration must be given to the fact that no complicated metallurgy to recover the magnetite is involved in the separation process. All magnetite recovered is composed of a uniform iron content, affected only by the percentage of concentration. Analysis of a concentrate sample submitted to the Nevada Testing Laboratory resulted in the following determination:

Laboratory No. A-204

Iron (Fe)	64.30%
Sulphur (S)	.035%
Silica (Si)	6.00%

I have not made a personal inspection of the Omega Mine and therefore rely on the report of other qualified engineers for an estimate of total available magnetite. It is my understanding that to date at least 50,000,000 tons of Magnetite have been blocked out from a relatively small area.

Respectfully submitted,

(orignal signed)

D. J. Schefer
Consulting Engineer, Nevada #383

Las Vegas, Nevada
July 7, 1956

C-O-P-Y

July 5, 1956

1324 E.Lemon

Tempe, Arizona

Omega Mining & Exploration Company

Luhrs Building, Room 516

Phoenix, Arizona

Dear Sirs:

The following is an interim report on that portion of the company's property represented by Sections 1 to 24 inclusive of Township 8 South, Range 12 East, Gila and Salt River Base and Meridian, in Pinal County, Arizona. Sections 1 to 24 inclusive are covered by the following placer claim designations:

Antelope 1 - 11 incl. & #21

Alpha 1 - 112 incl.

Beta 1 - 77 incl.

Joni 1 - 148 incl.

Omega 25 - 96 incl.

Coon 1 - 26 incl.

The total area of the above claims is 15,360 acres.

The writer recently examined this area for the purpose of ascertaining the probable extent of the alluvial material overlying the area and to estimate the potential of this alluvium with regard to magnetite content. No effort has been made to evaluate the deposit from the standpoint of any valuable mineralization except magnetite. It is know however that accessory minerals such as rare earths, titanium, etc. accompany magnetite in significant quantities in the area. Such is the subject of other reports.

Location, description, geology and other related subjects have been touched on in the writer's report of June 24, 1956 and will not be repeated here. It should be mentioned however that the area under discussion is traversed by 3 major washes in a NE-SW direction and called Brady, Bogard and Durham Washes. The true channel widths of these washes vary from less than 100 feet to in excess of 1,000 feet in some instances and represent concentrations of mineral values which in some cases are observed to be as high as 50%. These high values are however not considered in estimating the total potential since their net effect is at this moment incalculable. It is expected however that the overall effect of these concentrations will be a significant upgrading of the whole.

It is apparent that the entire area is blanketed by an alluvial deposit. We are at the moment concerned only with Sections 1 - 24 incl. An examination of the

C-O-P-Y

attached map showing test holes scattered at random over this area incicates depths of from 15 to 53 feet. On the basis of these test holes, borrow pits, water wells and erosional features it is believed that the deposit will average in excess of 30 feet in depth over its entire extent. This observation is also made in a report by P. H. Lund dated April 1952. For a sample calculation however a lesser figure of 21 feet (7 yards) will be used which allows some factor of safety. In addition, attached assays indicate a magnetite content of from 3.2% to 29.5% by weight but a figure of 5% will be employed in the estimate. Although 5% is believed to be well on the conservative side it probably is close to the minimum commercial grade and therefore its use constitutes an additional factor of safety. A previous estimate by this writer used a factor of 7 cu. feet to the ton for magnetite. Laboratory work indicates that this figure is low due to the high percentage of voids in magnetite concentrate. This factor has accordingly been increased to 12.5 cu. feet of magnetite per ton. The estimate is derived as follows:

Area: Sections 1 - 24 inc.

24 (sections) x 640 (acres) x 4,840 (sq. yads/acre) = 74,342,400 sq. yds.

Volume: (using 21 feet or 7 yards depth)

74,342,400 sq. yds. x 7 yds = 520,396,800 cu. yds.

520,396,800 x 5% (assumed magnetite content) = 26,019,840 cu.yds. magnetite

$$\frac{26,019,840 \times 27 \text{ (cu. feet/yard)}}{12.5 \text{ cu. ft/ton}} = 56,202,854 \text{ tons magnetite}$$

C_O_P_Y

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This estimate of 56,202,854 tons of magnetite is based on approximately 1/2 of the available area, and ignores the effect of known high concentrations of mineral as well as a very likely greater workable depth.

Very truly yours,

(orginial signed by)

B. H. Martin
Mining Engineer and Geologist

A T L

817 West Madison Street

Phoenix, Arizona

FOR: Omega Mining & Exploration Co.
Flamingo Hotel
Tucson, Arizona

Date: June 26, 1956

Lab. No: T-1532-T-1541 (incl.)

SAMPLE: MARKED: Material: Sand

RECEIVED: 6-25-56

SUBMITTED BY: Mr. W. H. Martin

Report of Laboratory Tests

Lab. No.	Identification	% Magnetite
T-1532	# 1 Top 3' NE¼ Sec. 23 Cl. Coon # 17	15.1
T-1533	# 2 Taken from N. wall of wash. Cut 1' back from & across one ft. Cut 5'6" vert.	10.4
T-1534	# 2-A From wash 15' S. from #2	10.6
T-1535	# 2-B 25' from 2-A hole 3 ft.	11.8
T-1536	# 3 3/4 mile W. from #1 3' hole	9.2
T-1537	# 3-A 200' N. of #3 hole 4'	16.0
T-1538	# 3-B 400' N. of #3 hole 3'	22.7
T-1539	# 3-C N. 600' from #3 hole 3'	25.1
T-1540	#4 NE¼ of Coon 13 Hole 3' deep	8.8
T-1541	# 4-A Taken from bottom of #4 hole, Hole #4 + 3'	5.0

NORE: Material screened on # 16 sieve before magnatite separation.

C. N. Nelsen

C-O-P-Y

C-O-P-Y

June 24, 1956
1324 Lemon
Tempe, Arizona

Omega Mining and Exploration Company
Luhrs Building, Room 516
Phoenix, Arizona

Dear Sirs:

The following is a preliminary report on a portion of approximately 30,000 acres of mineral property lying in Townships 7 and 8 South, Ranges 11, 12 and 13 East in Pinal County, Arizona. This property is adjacent to States and Federal Highway No. 80, is approximately 45 miles N.W. of Tucson, and lies at an approximate elevation of 3300 above mean sea level. The climate of the area is arid, with an average of 3" rainfall per year, and with the typical vegetation of the Sonoran Desert, such as various forms of cacti, mesquite, palo verde, etc. The portion of the area examined lies in Sections 21, 22 and 23 of Township 8 South, Range 12 East referred to the Gila and Salt River Base Meridian, and is approximately 15 miles east of the Southern Pacific Railroad at Red Rock, Arizona.

Geologically the area seems to represent a destructional plain or pediment derived from a granite pegmatitic mountain range to the east, the residues of which are the sources of concentrated mineral now evident. Virtually the entire area is a nearly flat plain whose drainage consists of a series of stream courses or washes divided by low eolian hummocks. The depths of the alluvial material (gravel)which contains the values is, at this stage, unknown, but has been observed up to 30 feet at various points. The length and width are thought to be virtually continuous for a matter of miles, although no accurate estimate can be made at this time.

Some degree of stratification as to size seems apparent in certain cuts, although no boulders have been observed in depths presently attained nor does concentration of values seem associated with any particular strata. The principal mineralization is black sand or magnetite along with significant amounts of titanium and rare earth mineralization. The magnetite is highly magnetic, attains a content of up to 72% Fe and has a specific gravity of 5.2.

For a preliminary estimate of available yardage, an area approximately 10,000' long by approximately 1,000' wide was selected. This area is described earlier in this report as to locations and is believed to represent a leaner than average area (gradewise), ten samples were taken in this area and are so indicated on the attached map. These samples were taken either by drive pipe, earth auger, or a channel sample on a trench wall, and the entire amount of the sample was either saved or else it was carefully cut down. The arithmetical average of these 10 samples was 13.47% magnetite by weight as determined by a commercial assay laboratory whose report is attached.

POTENTIAL YARDAGE ESTIMATE (FOR ABOVE AREA ONLY)

10,000' (length) x 1,000' (width) = 10,000 sq. ft.

10,000,000 sq. ft. x 20' (arbitrary depth) = 200,000,000 cu. ft.

$\frac{200,000,000}{27}$ = 7,400,000 cu. yds

7,400,000 x 13.47 (% magnetite) = Approximately 1,000,000 cu yds. magnetite

Magnetite tonnage factor = 12.5 cu. ft./ton

$\frac{27,000,000}{12.5}$ = 2,160,000 tons magnetite

2,160,000 x 95% (Probable recovery in plant) = 2,054,000 magnetite tons

It will be observed that the above figure of 3,650,000 tons of magnetite represents to potential for a single area 10,000' long x 1000' wide only and in no way reflects the potential for the entire property. It is believed that the depth of gravle for example will increase on the west and on the north end of the property, and therefore the ultimate potential cannot be evaluated until something of these depths are known.

A discussion of projected operating costs must necessarily be based on an assumed tonnage per unit length of time. A comparison of open pit mining costs, which involves drilling, blasting, and moving of rock for something like $0.30 per ton of ore for a large scale operation, indicates that the gravel should be delivered to a processing plant for $0.12 to $0.15 per yard. This is of course assuming a reasonably large scale of operation. Inasmuch as this property is bisected by a high voltage transmission line of the Arizona Public Service Company, power plant operation will be no problem. Concentration of values will be achieved by magnetic separation and will amount to only a matter of a few cents per ton. A pelletizing process will require both electric power and a fuel source of which the latter may be provided by a pipe line of the El Paso Natural Gas Company which also bisects the property. This pipe line supplies gas too, among other things, the A.S. & R. Co. copper smelter at Hayden and it is assured that sufficient will be available at the property under discussion. The operation should in no way be affected by changing weather conditions.

Very truly yours,

(signed)

B. H. Martin
Mining Engineer and Geologist

Attachments:

1. Map (Sample locations)
2. Assay reports

C-O-P-Y

Harrison Schmitt
Mining Geologist
Cottage Sanatorium Road
Silver City, New Mexico

July 14, 1956

Omega Mining & Exploration Company
516 Luhrs Building
Phoenix, Arizona

Subject: Owlhead Magnetite Prospect, Arizona

The Owlhead magnetite prospect lies principally in R12E, T8S, and R11E, T8S. The area you control is covered by placer claims and is eight miles east and west by about four miles north and south. The prospect is 42 miles northwest of Tucson and lies astride highway 80-89. The nearest railroad is the Southern Pacific which is 15 miles west at Red Rock, Arizona. An electric power line and a natural gas line cross the property.

The area is an alluvial plain traversed by several large washes. The drainage is toweard the west. The surface rock is largely unconsolidated, moderately-sorted, cross-bedded alluvium ranging from fine sand to coarse gravel. There apparently has been a good deal of reworking during a history of many erosional and depositional cycles. The unconformities resulting from these cycles are visible in shallow pits that have been dug. The rock material was largely derived from a granite, schist, and volcanic rock terrane to the east. These rocks supplied the magnetite which is always fine grained compared with the rock particles in the gravel which may reach three inches in diameter. There is some local, layered, cementation of the gravel by caliche. This appears in depth as shallow as 15 ft. as revealed by at least two test pits, but may have poor continuity and cause only local trouble when

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the ground is exacavated.

The magnetite is distinctly segregated in the fine sandy layers. Little to none is seen in the gravel layers. The coarse material represents a deposition of gravel at stream velocities too great to permit the deposition of fine magnetite. The segregated magnetite layers are often relatively rock and may in cases be composed of up to 50% magnetite. Apparently the ground has been eroded and redeposited many times. The cycles of erosion and deposition have presumably increased the concentration of the magnetite to greater than the amount normally found in sands.

The preliminary drilling test pitting and surface observations have given a qualitative to rough quantitative idea of the distribution of the magnetite. After discussing the work done to date it was concluded that the best and most rapid method of sampling probably would be by drilling with an auger-type drill. To avoid handling a great deal of spoil all the material would be tested as it came out of the hole by means of a truck mounted concentration plant with screen, magnetic pully and sample cutter. The latter would be needed to cut a sample from the minus screen product. All products would be weighed and all but the plus screen product would be analyzed for their magnetite content. Possibly a sample cut should be taken from the tailings also although the magnetite in the tailings could be arrived at indirectly.

The first problem appears to be to determine the area or areas of magnetite concentration that have the best economic possibilities. The possibilities may be narrowed down by surface observation and a few test pits and then further delimited by drilling. It is suggested that the drill holes be around 12 inches in diameter and placed on an equilateral

triangle pattern at 2500 ft. intervals. When a desirable ore body is found these intervals may be reduced to 1250 ft. or less. The samples at first, at least, should be taken at not more than three foot vertical intervals. The holes should penetrate to around 100 ft. but every seventh hole (center of the hexagon developed by the equilateral pattern) should go down to at least 200 ft. The magnetite concentrations can conceivably have formed at considerable depth, since the alluvial plain has been built over a long period of time. Possibly several test holes should go down deeper than 200 ft. to test for ore and to find water if possible.

Everything being equal, the most desireable ore body would seem to be one of some thickness (depth), say, up to a hundred feet or more and, of course, as high a grade in magnetite as possible, and with a minimum of caliche beds. In order to find the ideal situation and extensive drilling campaign would seem to be justified.

The deeper and richer the ore body the less moving about of equipment would be necessary. It may be and probably is possible to stack or return the mill tailings to those areas from which the ore has been removed. If in the beginning, however, some considerable tonnage must be stacked on the surface, some effort by drilling may be advisable to find a low grade or waste area for tailing storage.

The test drilling should penetrate through the caliche layers if they are not so thick as to make the area obviously non-commercial. Each hole should be carefully logged for caliche layers, thickness, and character of the gravel and sand, water, etc.

In order to arrive at some idea of the tonnage and grade necessary to constitute a commercial operation it is no doubt worth while, even at this early stage, to make some rough estimates of probable costs. A

number of methods of course are used to move large volumes of gravel. Hydraulicing and wet dredging would seem to be out of the question because of the porosity of the gravel and sand and lack of suffieient water. Of course, if on the off chance much water is encountered at a depth at, say, not greater than 150 feet, a dredge might be feasible.

Joy loaders with an especially great width and carrying or dragging a screening, concentrating and waste disposal plant might be considered. The gravel could be assisted by bulldozers and a roughed-out concentrate could be pumped to a central plant for cleaning. Such an outfit might have advantages for small production such as at the beginning and/or for scavenging the rich streaks in the arroyos, etc. This would have about the same function as the dry land dredge that has been suggested. The latter, presumably, would have a greater capacity.

Probably the cheapest known method of moving large volumes of dry gravel is by dragline and next to this shovels and trucks. The dragline should show direct costs not exceeding $.08 a ton (or $.12 a yard) including delivery to the mill by belt conveyors, and the shovels and trucks not over $.15 a ton (or $.225 a yard) if the haul to the mill is not over a mile and does not have grades over, say, 3.5%. The tailing probably should be disposed of by belt when using either method. Belt conveyance may cost around $.03 a ton mile.

The first cost for the dragline as compared with shovels and trucks should get started very soon with, say, a 5 1/2 yard shovel and several 30-ton trucks. The shovel would cost around $200,000 and the trucks around $50,000 apiece. Two 60 inch 3000 ft. belt conveyors would cost around $500,000.

A dragline plant which is likely to be favored for large tonnages and for a period of operation of many years would require much less labor,

power, and original capital than trucks and shovels. The following costs are estimated:

Mining (1,000,000) tons conc. year)	$.05
Delivery to plant possibly by belt (?)	.03
Concentration	.20
Tailing disposal	.03
Capital charge including R.R. ($2,000,000)	.0200
Overhead	.0125
Taxes	.0250
	$.3675

One ton of magnetite concentrate would require 1.2 tons of magnetite in the equivalent head feed if the recovery is taken at 80% where a siliceous middling must be wasted to keep the silica low enough to allow for the use of cement for pelletizing.

If the concentrate is worth $11.00 F.O.B. mill, the tailing and middling loss would reduce this to $9.16 ($\frac{\$11.00}{1.2}$) in terms of value in the raw ore. This divided by $037 (the cost) gives 24.5 therefore the minimum tons of ore required to break even for one ton of concentrate. That is the concentration ratio is $\frac{24.5}{1}$. A concentrate that assays 64.0% iron is said to be possible according to tests so a mill head or ore value that assays $\frac{64.0\% \text{ Fe}}{24.5}$ = 2/61% Fe which is the estimated break-even grade. This is equivalent to 3.62% magnetite so it would seem that in blocking out ore 5% or better grade of magnetite would be the target to aim for.

Besides the production of magnetite the plant should be able to make clean, sized gravel and sand as a low cost by-product. A large quantity of this should have a market in southern Arizona for road building and construction work.

A square mile of gravel that assays 3/60% Fe (5.0% magnetite) would produce 1,000,000 tons of concentrate if mined to a depth of 24 ft. One square mile foot contains about 1,000,000 tons of gravel.

Original signed
Harrison Schmitt