



CONTACT INFORMATION  
Mining Records Curator  
Arizona Geological Survey  
3550 N. Central Ave, 2nd floor  
Phoenix, AZ, 85012  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

The following file is part of the Walter E. Heinrichs, Jr. Mining Collection

### **ACCESS STATEMENT**

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

### **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

### **QUALITY STATEMENT**

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

# **GALIGHER**

## **THE GALIGHER COMPANY**

**HOME OFFICE: 545-585 West 8th South — P. O. Box 209 — Salt Lake City 10, Utah**

**EASTERN OFFICE: 921 Bergen Ave. (Room 1128), Jersey City 6, N.J.**

**U.S.A.**



CERRO DE PASCO CORPORATION  
TUCSON, ARIZONA

LABORATORY REPORT ON TEST WORK  
CONDUCTED ON SEVENTY SAMPLES OF IRON ORE  
SAMPLES DESIGNATED AS OUR LOT NO. 1428

February 25, 1960

# THE GALIGHER COMPANY

ESTABLISHED 1901



CABLE ADDRESS  
GALSAL

TELEPHONE  
ELGIN 9-8731

545-585 WEST EIGHTH SOUTH STREET

P. O. BOX 209

SALT LAKE CITY 10, UTAH

U. S. A.

February 25, 1960

Cerro de Pasco Corporation  
Arizona Exploration Unit  
3656 East Speedway  
Tucson, Arizona

Attention Mr. R. R. Reynolds  
Chief, Arizona Exploration Unit

LABORATORY REPORT ON TEST WORK  
CONDUCTED ON SEVENTY SAMPLES OF IRON ORE  
SAMPLES DESIGNATED AS OUR LOT NO. 1428

In accordance with the arrangements made with you, we are pleased to submit herewith our laboratory report covering the test work conducted on seventy (70) samples of iron ore. These samples were designated as our Lot No. 1428 and were received at our laboratory on December 21, 1959.

The seventy samples were drill cuttings from various portions of the mine. It was the object of this test work to determine the relative amenability of the iron contained in these samples to magnetic concentration.

TESTING PROCEDURE - Each of the above samples were treated individually as follows:

1. The sample was taken as received and was split, one-half of the sample being crushed through 10 mesh with a pulverizer. The other half sample was retained in its original state.
2. From the minus 10 mesh material, a head sample of about 50 grams was split for assay. All assaying was conducted by the Union Assay Office of this city. A further 50 gram sample was split and this was crushed through 20 mesh with an agate mortar and pestle.

*Supplies and Equipment for Every Industry*

Manufacturers · Mining · Milling · Laboratory Equipment · Ore Testing · Plant Designing · Construction · Operation

THE GALIGHER COMPANY

Cerro de Pasco

-2-

February 25, 1960

3. From the minus 20 mesh material, two 10 gram samples were weighed, these being tested in a Dings Davis Magnetic Tube Tester. The magnetic concentrates from the two samples were weighed individually (if they did not check within 0.10 gram, the tests were repeated) and combined for assay. The tailings assay was calculated based on the assays of the head and the concentrate.
4. The Davis Tube was operated at approximately 85 to 90 strokes per minute for 5 minutes during each test at 110 volts and 2.1-2.3 amps.

TEST RESULTS - The results obtained when treating the seventy samples to the above procedure are outlined in Tables I and II. In Table I the results are presented according to the sample numbers listed in numerical order and, in Table II, according to descending concentrate grades.

TABLE I

Sample No.	% Fe			Fe Rec.	% Wt. Rec.
	Conc.	Tail (Calc)	Head		
# 1303	46.1	1.23	15.3	94.4	31.30
# 1313	55.3	7.5	45.7	96.7	80.00
1317	52.4	13.1	44.9	94.4	80.90
1318	50.5	1.4	33.7	98.6	65.80
1320	40.0	0.0	27.0	100.0	67.50
1321	58.0	0.2	50.2	99.9	86.50
1322	52.0	3.5	39.6	97.7	74.40
1323	50.4	4.1	34.5	95.9	65.75
1324	29.8	3.2	18.1	92.3	56.10
1325	23.0	1.5	14.4	95.8	59.90
1326	38.8	0.6	24.0	99.0	61.25
# 1327	46.4	3.3	36.1	97.8	76.15
1328	37.1	5.4	24.4	91.2	60.00
1329	43.1	4.0	21.6	89.8	45.10
1330	34.3	3.3	26.0	96.5	73.15
1331	29.8	0.5	18.8	99.0	62.50
1332	36.7	1.3	25.5	98.4	68.50
1333	22.6	0.9	17.0	98.6	74.20
1334	24.6	2.5	18.3	96.4	71.65
1335	12.1	5.9	8.5	59.6	41.85
1336	53.6	6.4	34.8	92.7	60.20
1337	30.6	5.2	20.4	89.7	59.90

## THE GALIGHIER COMPANY

Cerro de Pasco

-3-

February 25, 1960

Sample No.	% Fe			Fe Rec.	% Wt. Rec.
	Conc.	Tail (Calc)	Head		
#3 1338	45.9	2.3	19.0	92.6	38.40
1339	44.3	6.5	20.0	79.2	35.75
1340	42.3	4.3	12.3	72.0	20.95
1341	36.7	4.0	13.8	79.6	29.90
1342	33.4	2.7	11.9	84.2	30.00
<del>1343</del>	<del>54.8</del>	<del>5.0</del>	<del>44.8</del>	<del>97.8</del>	<del>80.00</del>
1345	60.0	4.6	41.4	96.2	66.40
#1 1347	47.1	2.6	32.6	97.4	67.40
1348	35.1	2.8	24.2	96.1	66.25
1349	52.8	3.9	47.1	99.2	88.45
1350	46.3	5.7	34.8	95.4	71.80
2048	58.2	8.4	40.4	92.6	64.25
2049	50.1	5.6	23.2	85.6	39.70
2053	55.3	8.3	33.3	88.3	53.15
#9 2055	47.3	1.9	31.9	98.0	66.10
2057	47.3	2.8	31.7	96.7	64.90
2058	43.2	5.7	34.3	96.1	76.25
2100	62.2	3.8	57.0	99.4	91.10
#1 2101	65.0	5.4	61.0	99.4	93.30
2102	63.4	15.9	59.8	98.0	92.45
2103	65.8	0.0	57.9	100.0	88.05
#1 2104	67.9	13.8	62.4	97.8	89.85
2105	54.9	2.1	30.6	96.8	53.95
2107	66.7	6.3	52.5	97.2	76.50
2117	62.6	7.3	52.1	97.3	81.00
2118	59.0	10.3	46.6	94.4	74.65
2119	59.8	4.5	44.9	97.3	73.05
2120	50.9	5.0	38.8	96.6	73.80
2123	63.4	16.1	48.7	90.0	69.00
2124	63.8	9.7	46.0	93.0	67.10
2125	48.5	4.3	31.4	94.8	61.35
#9 2126	57.4	6.2	42.4	95.8	71.00
2127	44.4	1.3	34.3	99.1	76.55
2128	42.0	7.5	31.1	92.4	68.45
2129	51.7	3.5	39.2	97.7	74.10
2130	60.2	16.0	52.7	94.9	83.10
2131	61.8	6.9	52.5	97.8	83.05
2132	52.1	6.4	42.2	96.7	78.35
2133	59.0	7.3	46.5	96.2	75.85
2134	45.2	3.0	31.2	96.8	66.80
2135	50.1	4.0	38.6	97.4	75.10
2137	43.0	5.4	27.7	92.1	59.30
2138	49.3	2.1	36.1	98.3	72.00
2140	48.2	0.65	30.7	99.2	63.20



## THE GALIGHER COMPANY

Cerro de Pasco

-4-

February 25, 1960

<u>Sample No.</u>	<u>Conc.</u>	<u>% Fe</u>		<u>Fe Rec.</u>	<u>% Wt. Rec.</u>
		<u>Tail (Calc)</u>	<u>Head</u>		
2142	61.0	10.0	51.5	96.4	81.40
#9 2143	56.1	2.3	35.2	97.5	61.20
2144	53.7	6.4	36.1	93.4	62.80
2145	53.3	3.9	36.1	96.3	65.20
Arithmetical Average	48.7	5.0	35.0	94.4	66.9

TABLE II

<u>Sample No.</u>	<u>Conc.</u>	<u>% Fe</u>		<u>Fe Rec.</u>	<u>% Wt. Rec.</u>
		<u>Tail (Calc)</u>	<u>Head</u>		
2104	67.9	13.8	62.4	97.8	89.85
2107	66.7	6.3	52.5	97.2	76.50
2103	65.8	0.0	57.9	100.0	88.05
2101	65.0	5.4	61.0	99.4	93.30
2124	63.8	9.7	46.0	93.0	67.10
2123	63.4	16.1	48.7	90.0	69.00
2102	63.4	15.9	59.8	98.0	92.45
2117	62.6	7.3	52.1	97.3	81.00
2100	62.2	3.8	57.0	99.4	91.10
2131	61.8	6.9	52.5	97.8	83.05
2142	61.0	10.0	51.5	96.4	81.40
2130	60.2	16.0	52.7	94.9	83.10
1345	60.0	4.6	41.4	96.2	66.40
2119	59.8	4.5	44.9	97.3	73.05
2118	59.0	10.3	46.6	94.4	74.65
2133	59.0	7.3	46.5	96.2	75.85
2048	58.2	8.4	40.4	92.6	64.25
1321	58.0	0.2	50.2	99.9	86.50
2126	57.4	6.2	42.4	95.8	71.00
2143	56.1	2.3	35.2	97.5	61.20
1313	55.3	7.5	45.7	96.7	80.00
2053	55.3	8.3	33.3	88.3	53.15
2105	54.9	2.1	30.6	96.8	53.95
1343	54.8	5.0	44.8	97.8	80.00
2144	53.7	6.4	36.1	93.4	62.80
1336	53.6	6.4	34.8	92.7	60.20
2145	53.3	3.9	36.1	96.3	65.20
1349	52.8	3.5	47.1	99.2	88.45
1317	52.4	13.1	44.9	94.4	80.90

## THE GALIGHER COMPANY

Cerro de Pasco

-5-

February 25, 1960

Sample No.	% Fe			Fe Rec.	% Wt. Rec.
	Conc.	Tail (Calc)	Head		
2132	52.1	6.4	42.2	96.7	78.35
1322	52.0	3.5	39.6	97.7	74.40
2129	51.7	3.5	39.2	97.7	74.10
2120	50.9	5.0	38.8	96.6	73.80
1318	50.5	1.4	33.7	98.6	65.80
1323	50.4	4.1	34.5	95.9	65.75
2049	50.1	5.6	23.2	85.6	39.70
2135	50.1	4.0	38.6	97.4	75.10
2138	49.3	2.1	36.1	98.3	72.00
2125	48.5	4.3	31.4	94.8	61.35
2140	48.2	0.65	30.7	99.2	63.20
2055	47.3	1.9	31.9	98.0	66.10
2057	47.3	2.8	31.7	96.7	64.90
1347	47.1	2.6	32.6	97.4	67.40
1327	46.4	3.3	36.1	97.8	76.15
1350	46.3	5.7	34.8	95.4	71.80
1303	46.1	1.2	15.3	94.4	31.30
1338	45.9	2.3	19.0	92.6	38.40
2134	45.2	3.0	31.2	96.8	66.80
2127	44.4	1.3	34.3	99.1	76.55
1339	44.3	6.5	20.0	79.2	35.75
2058	43.2	5.7	34.3	96.1	76.25
1329	43.1	4.0	21.6	89.8	45.10
2137	43.0	5.4	27.7	92.1	59.30
1340	42.3	4.3	12.3	72.0	20.95
2128	42.0	7.5	31.1	92.4	68.45
1320	40.0	0.0	27.0	100.0	67.5
1326	38.8	0.6	24.0	99.0	61.25
1328	37.1	5.4	24.4	91.2	60.00
1332	36.7	1.3	25.5	98.4	68.50
1341	36.7	4.0	13.8	79.6	29.90
1348	35.1	2.8	24.2	96.1	66.25
1330	34.3	3.3	26.0	96.5	73.15
1342	33.4	2.7	11.9	84.2	30.00
1337	30.6	5.2	20.4	89.7	59.90
1324	29.8	3.2	18.1	92.3	56.10
1331	29.8	0.5	18.8	99.0	62.50
1334	24.6	2.5	18.3	96.4	71.65
1325	23.0	1.5	14.4	95.8	59.90
1333	22.6	0.9	17.0	98.6	74.20
1335	12.1	5.9	8.5	59.6	41.85

# THE GALIGHER COMPANY

Cerro de Pasco

-6-

February 25, 1960

## SUMMARY OF OBSERVATIONS

1. It is seen from Table I that the arithmetical average results of the seventy tests showed an average recovery of 94.4% of the iron from an average head value of 35.0% Fe. The average concentrate grade was 48.7% Fe. With the recovery of 94.4% of the iron, it is indicated that this percentage of the total iron is recoverable by magnetic concentration under the above test conditions.
2. The above results suggest that it would be necessary to grind finer than 20 mesh to obtain high grade iron concentrates (in the range of 60-65% Fe). An additional test was conducted on Sample 1342 in which the sample was stage ground through 65 mesh prior to testing. The test results, presented below, illustrate the benefit of this finer grinding.

### SAMPLE 1342

Product	20 Mesh Grinding			65 Mesh Grinding		
	Wt. %	% Fe	% Dist.	Wt. %	% Fe	% Dist.
Mag.Conc.	30.0	33.4	84.2	19.3	48.9	79.4
Tailing	70.0	2.7	15.8	80.7	3.0	20.6
Head	100.0	11.9	100.0	100.0	11.9	100.0

By finer grinding, the concentrate grade was raised from 33.4% Fe to 48.9% Fe. It is indicated that even finer grinding would be required to raise the concentrate grade to the 60% Fe range. In the above test results, it is also seen that the tailing assays of the two tests are nearly identical. This suggests the possibility of concentrating the magnetic iron at a coarse grind (20 mesh or coarser), this to be followed with concentrate regrinding and further magnetic concentrations. In the above illustration, 70% of the weight of the feed could be rejected at the coarse grind, thereby greatly reducing grinding costs. Even with the relatively high grade samples (e.g., Samples 2107, 2124, 2123, etc.), considerable tonnage of gangue could be eliminated at the coarse grind. This procedure is common practice in the treatment of the Minnesota magnetic taconites.

3. In Table II it is seen that high grade concentrates were produced only from high grade ores, some notable exceptions being Samples 2124, 2123, 1345, and 2048. As pointed out above, finer grinding would undoubtedly have resulted in higher concentrate grades with the other relatively low grade samples.



THE GALIGHER COMPANY

Cerro de Pasco

-7-

February 25, 1960

4. Several of the samples had relatively high non-magnetic iron content, these being Samples 1329, 1335, 1337, 1339 to 1342, 2049, 2053, and 2123.
5. An analysis was conducted on the magnetic concentrate produced from Sample 1318 to determine the amount of undesirable elements which may be present. The result was as follows:

Magnetic	% Fe	% SiO <sub>2</sub>	% TiO <sub>2</sub>	% P	% S	% CaO
Conc, 1318	50.0	12.74	None	Trace	0.019	0.62

The above assays show the impurity levels in titanium, phosphorous, and sulfur content to be quite low.

6. In checking through Tables I and II, it is seen that certain samples have yielded what may seem to be unreasonably high recoveries. Repeat assays were conducted on head and concentrate samples (Samples 1318, 1320, 1326, 1331, 1333, 2057, 2103, and 2140) and the results reported above were confirmed.
7. At the present time we are not in a position to discuss just what might be considered as the cut-off point in differentiating ore from waste. (It is to be noted that even the low grade samples, below 20% Fe content, gave high iron recoveries when subjected to magnetic concentration.) Such a cut-off point could only be determined by taking into account all of the various economic aspects of the project.

RECOMMENDATIONS - Further testing is indicated in the event that you wish to obtain concentrates of higher iron content. This testing would involve grinding studies used in conjunction with the Davis Tube Tester to determine the correlation between mesh of grind and concentrate grade. For this work it is suggested that a general composite sample be prepared from the desired samples now in our laboratory. Following the development of a flowsheet based on this sample, then the individual samples could be tested with this flowsheet to determine the response of various sections of the mine to same.

It has been a pleasure for us to conduct these preliminary tests for you. We look forward to the continuation of this interesting test program, but will hold in abeyance further testing until authorization is received from you.

Respectfully submitted,

THE GALIGHER COMPANY

*R. O. Huch*  
R. O. Huch  
Metallurgist

ROH/fh



WIRE TESTING DEPARTMENT

CABLE  
"GALVAL"

THE GALIGHER COMPANY  
P. O. BOX 209 -- 245-205 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH -- U.S.A.

TELEPHONE  
BL-01N 9-9731

Our Lot No. 1428  
Date 12-30-59  
By DEN - MIS

Testing No. 1  
Sample #1303

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe	ASSAY	Fe	DISTRIBUTION	GRINDING	
							Mesh	Qua. %
10 Mesh Mag. Conc. Non-Mag. Heads	3.28	32.8	39.5		84.6		+ 48	
	6.01	67.2	3.5	(Calc)	15.4		+ 65	
	9.29	100.0	15.3		100.0		+ 100	
1A 20 Mesh Mag. Non-Mag. Heads	3.15	31.3	46.1		94.4		+ 150	
	6.26	68.7	1.23	(Calc)	5.6		+ 200	
	9.41	100.0	15.3		100.0		+ 325	
1B Mag. Non-Mag. Heads	3.12							
	6.22							
1 1A 1B	110		2.2	10	85			
	110		2.2	10	84			
	110		2.2	10	86			
(continued next page)								

135. PER TON

"GALGAL"  
 GALGAL

**THE GALIGHER COMPANY**  
P. O. BOX 209 --- 640-585 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

157-6 N1871  
W. LIN 8-8731

Our Lot No. 1428  
Date 12-30-59  
By DEN

Testing No. 1C  
Sample #1303

Name \_\_\_\_\_ Page Two

சென்னை, 11 பிப்ரவரி

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 548-868 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"GALILEO"

Our Lot No. 1428  
Date 1-4-60  
By DEN

Testing No. 1  
Sample #1317

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe		DISTRIBUTION	
			Fe	Fe	Time	Strokes per min.	Fe	Fe	Fe	Fe
1A Mag. Conc	8.11	80.9	52.4							
Non-Mag	1.40	19.1	13.1							
Heads	9.51	100.0	44.9							
1B Mag. Conc	8.07									
Non-Mag.	1.53									
Heads	9.60									
1C Mag. Conc	8.34	83.4	52.4							
Non Mag.	1.45	16.6	7.2							
Heads	9.79	100.0	44.9							
100 PER CENT										
	V	A	Time	Strokes per min.						
1A	108	2.3	10	86						
1B	108	2.3	10	82						
Mag. Conc 1A and 1B combined for assay										
-20 mesh - 1C Hand Magnet										



CABLE  
"CALSAL"

**THE GALIGHER COMPANY**  
P. O. BOX 200 --- 345-555 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

TELEPHONE  
DLGIN 9-8791

Our Lot No. 1428  
Date 1-4-60  
By DEN

Testing No. 1  
Sample #1318

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe		Time	Strokes per min.	LBS. PER TON	GRINDING	
			Fe	DISTRIBUTION				Mash	% Conc.
1A Mag.	6.54	65.8	50.5						
Non-Mag.	2.97	34.2	1.4	(Calc)					
Heds	9.51	100.0	33.7						
1B Mag.	6.62								
Non-Mag.	2.91								
Heds	9.53								
1C Mag.	6.75	67.5	50.0						
Non-Mag.	2.95	32.5	0.2						
Heds	9.70	100.0	33.8						
1A		V	A						
1B		108	2.3	10'	83				
		109	2.3	10'	88				
Mag. Conc. 1A and 1B comb. for assay.							-20 mesh - 10 Hard Magnet. Original assay heads	33.8 Conc.	50.0
Repeat assay heads							33.7 Conc.	50.5	

# THE GALIGHER COMPANY

CABLE  
"GALBAL"

TELEPHONE  
KLEIN 9-9733

Our Lot No. 1428  
Date 1-25-60  
By DEN

## ORE TESTING DEPARTMENT

Testing No. 2  
Sample #1318 - 2 charges 50 grs. each, magnetically separated

Name Carron de Pazon

PRODUCT	Weight	Percent Weight	ASSAY					DISTRIBUTION				
			SiO <sub>2</sub>	P	TiO <sub>2</sub>	S	CaO	Fe	Fe			
Mag. Conc.	65.72	65.72	12.74	Trace	None	.019	.62	50.0	97.5			
Non-Mag.	31.42	31.42						2.4	2.5			
Heads	97.14	100.00						33.7	100.0			
With hand magnet. Cleaned once and cleaner tails combined with rougher tails												
100% PER TON												
GRINDING												
									Mesh	%	Over	%
									+ 48			
									+ 65			
									+ 100			
									+ 150			
									+ 200			
									+ 250			
									+ 325			
									- 325			

**THE GALIGHER COMPANY**  
P. O. BOX 200 — 542-556 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Our Lot No. 1428  
Date 1-4-60  
By DEN

Cerro de Pasco

Oct 17 1963

PRODUCT	Weight	Percent Weight	ASSAY			Fe	DISTRIBUTION	
			%	Time	Strokes per min.		Mesh	%
1A Mag. Conc.	6.73	67.5	40.0			100.0		
Non-Mag.	2.70	32.5	.0			0.0		
Reads	9.43	100.0	27.0			100.0		
1B Mag. Conc.	6.77							
Non-Mag.	2.40							
Reads	9.17							
LBS. PER TON								
	V	A	Time	Strokes per min.			Mesh	%
1A	108	2.3	10	85			+ 48	
1B	108	2.3	10	85			+ 65	
							+ 100	
							+ 150	
							+ 200	
							+ 325	
							+ 325	
Mag. Conc 1A and 1B combined for assay								
	heads	conc.						
Original assay	27.0	40.7						
Repeat assay	27.0	40.0						



**THE GALIGHER COMPANY**  
P. O. BOX 209 --- 345-508 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH -- U.S.A.

CABLE  
"CABLE"

82415

TELEPHONE  
EUGEN 9-8731

Date 7-4-60

By \_\_\_\_\_ DEF.

7

German Shepherd

Name \_\_\_\_\_

Testing No. 1

Sample #7321

PRODUCT	Weight	Percent Weight	Fe	ASSAY				Tg	DISTRIBUTION	
				V	A	Time	Strokes per min.		Mech	%
1A Mag. Conc. Non-Mag. Heads	8.65	86.5	58.0							
	1.00	13.5	.2			(Calc)			99.9	
	9.65	100.0	50.2						.1	
									100.0	
1B Mag. Conc Non-Mag. Heads	8.65									
	1.08									
	9.73									
LBS. PER TON										
	V	A	Time	Strokes per min.						
1A	108	2.3	10	83						
1B	108	2.4	10	88						

ORE TESTING DEPARTMENT

CABLE  
"GALCAL"

THE GALIGHER COMPANY  
P. O. BOX 500 — 249-929 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
SLGIN 9-8781

Our Lot No. 1428  
Date 1-5-60  
By DEN

Testing No. 1  
Sample # 322

Name Cerro de Pasco

PRODUCT	Weight	Percent Weigh	Fe	ASSAY				Fe	DISTRIBUTION			
1A Mag. Conc	7.44	74.4	52.0					97.7				
Non-Mag.	2.02	25.6	3.5	(Calc)				2.3				
Heads	9.46	100.0	39.6					100.0				
1B Mag. Conc	7.44											
Non-Mag.	2.10											
Heads	9.54											
LOS PER TON												
	V	A	Time	Strokes per min.								
1A	108	2.3	5	90								
1B	108	2.3	5	90								
Mag. Conc A and B combined for assay												
GRINDING												
									Mesh	%	Com. %	
									+ 48			
									+ 65			
									+ 100			
									+ 150			
									+ 200			
									+ 325			
									— 325			



**CABLES**

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 248-598 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Our Lot No. 1428  
Date 1-5-60  
By DEN

TELEPHONE  
PLAIN 8-9731

Testing No. 1  
Sample #1323

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

[illegible]

ON TESTING DEPARTMENT

CABLE  
"CALHAL"

Our Lot No. 1428  
Date 1-5-60  
By DEN

THE WOMEN  
TEAM 9-8781

Testing No. 1  
Sample #1324

Cerro de Pasco

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 545-506 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Our Lot No. 1428  
Date 1-5-60  
By DEN

Name Cerro de Pasco

[illegible]



WIRE TESTING DEPARTMENT

CABLE  
"GALVAL"

THE GALIGHER COMPANY  
P. O. BOX 108 — 845-885 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
WGLN 9-8781

Our Lot No. 1428  
Date 1-5-60  
By DEN

Testing No. 1  
Sample #1326

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe	ASSAY		Fe	DISTRIBUTION	
1A Mag. Conc	6.10	61.25	38.8			99.0		
Non-Mag.	3.51	38.75	0.6	(Calc)		1.0		
Heads	9.61	100.00	24.0			100.0		
1B Mag. Conc	6.15							
Non-Mag.	3.33							
Heads	9.48							
LAB. FEB. 1960								
	V	A	Time	Strokes per min.			GRINDING	
1A	108	2.3	5	88			Mach %	
1B	108	2.3	5	86			+ 48	
							+ 65	
							+ 100	
							+ 150	
							+ 200	
							+ 335	
							-- 525	
Mag. A and B combined for assay								
	heads	conc						
Original assay	23.9	38.7						
Repeat assay	24.0	38.8						

**THE GALIGHER COMPANY**  
P.O. BOX 209 -- 543-586 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH -- U.S.A.

SALB  
"SALB"

TEL. 272-7731  
MILWAUKEE 3-2731

Our Lot No. 1428  
Date 1-6-60  
By DAN

Testing No. 1

Cerro de Pasco

Test 1C Dried before weighing in.

[illegible]



ORE TESTING DEPARTMENT

THE GALIGHER COMPANY  
P. O. BOX 208 - 248-252 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

CABLE  
"GALZAL"

TELEPHONE  
BLCH 9-5751

Our Lot No. 1428  
Date 1-6-60  
By DEN

Testing No. 1

Name Cerro de Pasco

Sample #1328 10 sample dried before weighing in.

PRODUCT	Weigh	Percent Weigh	Fe	ASSAY	Fe	DISTRIBUTION	GRINDING	
							Mesh	%
1A Mag. Conc	6.04	60.0	37.1				+48	
Non-Mag.	3.41	40.0	5.4	(Calc)			+65	
Reeds	9.45	100.0	24.4				+100	
1B Mag. Conc	5.96						+150	
Non-Mag.	3.52						+200	
Reeds	9.48						+250	
1C Mag. Conc	6.04						+300	
Non-Mag.	3.64						+350	
Reeds	9.68						+400	
10g. Conc from 1A and 1B combined for assay								
1A		108	2.3	5	86			
1B		106	2.3	5	84			
1C		108	2.3	5	88			

100 PER TON

## CABLE "SALON"

**THE GALIGHER COMPANY**  
P. O. BOX 209 --- 343-535 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

TELEPHONE  
ELGIN 2-6731

Our Lot No. 1428  
Date 1-25-60  
By DEN

Testing No. 1  
Comp. 1324, 25, 26, 27, 28.

Name \_\_\_\_\_  
City and State \_\_\_\_\_[illegible]



Our Lot No. 1428

CABLE  
"CABLE"

YELLOW  
GLASS 0.3731

FOR TESTING DEPARTMENT

P. O. BOX 206 — 542-595 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Testing No. 1  
Sample #1329

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

[illegible]



ORE TESTING DEPARTMENT

CABLE  
"GALCAL,"

Our Lot No. 1428  
Date 1-8-60  
By DEN

TEL. 257-0112  
BEN 9-6781

**Name** **Cerro de Pasco**

Testing No. 1  
Sample #2330

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe	DISTRIBUTION	
1A Mag. Conc	7.27	73.15	34.3				96.5		
Non-Mag.	2.23	26.85	3.3		(Calc)		3.5		
Reads	9.50	100.00	26.0				100.0		
1B Mag. Conc	7.36								
Non-Mag.	2.16								
Reads	9.52								
<div style="display: flex; justify-content: space-between;"> <div> <p>1A</p> <p>1B</p> </div> <div> <p>Mag. Conc A and B combined for assay</p> </div> </div>									

**THE GALIGHIER COMPANY**  
P. O. BOX 209 — 345-535 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Our Lot No. 1428  
Date 1-8-60  
By DEN

**TSL, INC.**  
**PLAN 2-8791**

Testing No. 1  
Sample #1331

Name \_\_\_\_\_ Cerro de Pasco

[illegible]

Our Lot No. 1428  
Date 1-8-60  
By DEW

“GALILEO”

TESTING DEPARTMENT

Testing No. 1

Sample #1332

Name Cerro de Pasco

[illegible]



THE GALIGHIER COMPANY

CALCAL  
"CALCAL"

**TALAPPOUR**  
**TEL. 0-8781**

Our Lot No. 1428  
Date 1-8-60  
By DEN

Testing No. 1  
Sample #2333

**Nano**  
**Cerro de Pasco**

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 208 — 545-585 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE "GALCAL"

Our Lot No. 1428  
Date 1-8-60  
By DEN

TEL. 9-8731

Testing No. 1  
Sample #1334

Name Cerro de Pasco

[illegible]

CABLE  
"CABLE"

**THE GALIGHER COMPANY**  
P. O. BOX 209 --- 800-504 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

TEL: 010-630-0721

Our Lot No. 1428  
Date 1-8-60  
By DEN

Carro di Piacenza

Case No.

## Thames

Sample #1335 Page Two

PRODUCT	Weight	Percent Weight	ASSAY				DISTRIBUTION
1D Mag. Conc	4.19						
Non-Mag.	5.20						
Heads	9.39						
<div style="text-align: center;">           LBS. PER TON            STROKES PER MIN.            GRINDING         </div>							
	V	A	Time	Strokes per min.	Mesh	%	Grind, %
1D	110	2.3	5	84	+ 48		
					+ 65		
					+ 100		
					+ 150		
					+ 200		
					+ 325		
					---325		
Mag. Conc B and D combined for assay							



Our Lot No. 1428  
Date 1-8-60  
By DEN

TELEPHONE  
5-8731

CABLE  
"GALSAL"

FORE TESTING DEPARTMENT

Testing No. 1  
Sample #1336

Name Cerro de Pasco

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 345-536 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLES  
"CABLES"

Our Lot No. 1428  
Date 1-11-  
By DEW

TEL: 0940 0781

10-1

Cerro de Pasco

Sample #1337

[illegible]



CABLE  
"GALGAL"

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 245-595 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TEL: 0311 267 267

1428

Our Lot No.

Date 1-12-60

By \_\_\_\_\_ TEN

Testing No. 1

Sample #1338

Cerro de Pasco

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 208 --- 248-228 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH --- U.S.A.

ORE TESTING DEPARTMENT

CABLE  
"GALCAL"

TELEPHONE  
PLAIN 9-8721

Our Lot No. 1428  
Date 1-12-60  
By DEN

Testing No. 1  
Sample #1339

Name Cerro de Pasco

PRODUCT	Weight	Percent Weights	Fe	ASSAY	Fe	DISTRIBUTION	GRINDING	
							Mash	Qu. %
1A Mag. Conc	3.60	35.75	44.3		79.2		+ 43	
Non-Mag.	5.91	64.25	6.5	(Calc)	20.8		+ 86	
Heads	9.51	100.00	20.0		100.0		+ 100	
1B Mag. Conc	3.55						+ 150	
Non-Mag.	6.01						+ 200	
Heads	9.56						+ 325	
							- 825	
Mag. Conc 1A and 1B combined for assay								

LBS. PER TON

Time Strokes per min.

1A  
1B

85  
83

**THE GALIGHER COMPANY**  
P. O. BOX 209 ---- 545-505 WEST 9TH STREET  
SALT LAKE CITY 10, UTAH -- U.S.A.

CABLE  
"GALCAL"

Our Lot No. 1-12-60  
Date  
By DEN

TELEPHONE  
W. 514 9-9731

Testing No. 1

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

Sample #1340

[illegible]



ORE TESTING DEPARTMENT

CABLE  
"GALSAL"

THE GALIGHER COMPANY  
P. O. BOX 200 — 543-885 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
MLGIN 2-8731

Our Lot No. 1428  
Date 1-12-60  
By JEN

Testing No. 1

Name Cerro de Pasco

Sample #1341

PRODUCT	Weight	Percent Weight	Fe	ASSAY	Fe	DISTRIBUTION	GRINDING	
							Mech	Omms
1A Mag. Conc Non-Mag. Heads	3.03	29.2	36.7			79.6	+ 48	
	6.61	70.1	4.0	(Calc)		20.4	+ 65	
	9.64	100.0	13.8			100.0	+ 160	
1B Mag. Conc Non-Mag. Heads	2.95						+ 150	
	6.51						+ 200	
	9.46						+ 325	
							- 325	
1A 1B		110	2.2	5				
		110	2.2	5				
Mag. Conc 1A and 1B combined for assay								

1 LB. PER TON

Time Strokes per min.

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 243-825 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE "CALCAL"

Our Lot No. 1428  
Date 1-12-60  
By DEN

TELEPHONE  
BLGIN 9-8739

Testing No. 1

Name Cerro de Pasco

Sample #1342

PRODUCT	Weight	Percent Weight	ASSAY			DISTRIBUTION		
			Fe			Fe		
1A Mag. Conc.	3.01	30.0	33.4			84.2		
Non-Mag.	6.18	70.0	2.7		(Calc.)	15.8		
Heads	9.19	100.0	11.9			100.0		
1B Mag. Conc.	2.99							
Non-Mag.	6.41							
Needs	9.40							
LBS. PER TON								
1A	V	A	Time	Stroke per min.				
1B	110	2.2	5'	87				
	110	2.2	5'	88				
GRINDING								
				Mesh	%			
				+ 48				
				+ 65				
				+ 100				
				+ 150				
				+ 200				
				+ 325				
				- 325				
Mag. Conc. 1A and 1B comb. for assay.								

CABLE  
"GALCAL"

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 245-595 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

**TELEPHONE**  
**BLUM 9-8781**

Our Lot No. 1428  
Date 1-14-60  
By DEN

Logging No. 2

Name Cerro de Pasco

Sample #1342 Stage Ground through 65 Mesh

PRODUCT	Weight	Percent Weight	ASSAY			DISTRIBUTION		
			Fe			Fe		
1A Mag. Conc.	1.93	19.3	48.9					
Non-Mag.	7.52	80.7	3.0	(Calc.)				
Heads	9.45	100.0	11.9					
1B Mag. Conc.	1.93							
Non-Mag.	7.58							
Heads	9.51							

		LBS. PER TON		GRINDING			
	V	A	Time	Strokes per min.	Mesh	%	Over. %
1A	110	2.2	5'	85	+ 48		
1B	110	2.2	5'	88	+ 65		
					+ 100		
					+ 150		
					+ 200		
					+ 325		
					+ 325		

500 Gr. sample dry screened on 65 mesh. Oversize to ball mill for 3 minutes. Wet screened on 65. Oversize back to ball mill for 3 minutes. Wet screened and oversize ground with mortar and pestle until it passed through 65 mesh.



CABLE  
"GALGAL"

**THE GALIGHER COMPANY**  
P. O. BOX 209 --- 245-528 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH --- U.S.A.

TELEPHONE  
212-697-31

Our Lot No. 1428  
Date 1-14-60  
By DEN

Testing No. 3

Sample #1342 - 65 Mesh

Cerro de Pasco

PRODUCT	Weight	Percent Weight	ASSAY	DISTRIBUTION
10 Grs. stirred 1 hr. filtered on buckner filter wt. only				
In at	10.00			
Out at	9.65			
Loss	.35			

LBS. PER TON		GRINDING	
		Mesh %	Oma. %
		+ 48	
		+ 65	
		+ 100	
		+ 150	
		+ 200	
		+ 325	
		-- 525	

# THE TESTING DEPARTMENT

Our Lot No. 1428  
Date 1-12-60  
By DEN

TELEPHONE  
E-911 9-3781

Testing No. 1  
Sample #1343

Name Cerro de Pasco

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 243-598 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"CABLE"

Our Lot No. 1428  
Date 1-12-60  
By DEN

TEL: 011-261-0731

1

Cerro de Pasco

Name \_\_\_\_\_

Testing No. 1  
Sample #1345

[illegible]



**THE GALIGHER COMPANY**  
P. O. BOX 309 — 148-598 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

DATE \_\_\_\_\_  
PAGE \_\_\_\_\_

TELEPHONE  
2-3781

Our Lot No. 1428  
Date 1-12-60  
By DEN

Testing No. 1  
Sample #1347

Carro de Pasco

[illegible]

CARLE  
"CALGAL"

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 243-585 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TEL: 011 277 90791

Our Lot No. 1428  
Date 1-12-66  
By DEN

Testing No. 8467  
Sample #1348

**Name** **Cerro de Pasco**

[illegible]

GALE  
GALE

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 535-885 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
DLGN 2-9731

Our Lot No. 1428  
Date 1-12-60  
By DSN

Testing No. 1  
Sample # 349

Name Cerro de Pasco

Cerro de Pasco

[illegible]



ORE TESTING DEPARTMENT

CABLE  
"GALSAL"

THE GALIGHER COMPANY  
P. O. BOX 202 — 245-585 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
HUN 5-9751

Our Lot No. 149\* 1428  
Date 1-13-60  
By DEB

Testing No. 1  
Sample # 1350

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	ASSAY				DISTRIBUTION			
			Fe				Fe			
1A Mag. Conc	7.21	71.8	46.3				95.4			
Non-Mag.	2.44	28.2	5.7		(Calc)		4.6			
Heads	9.65	100.0	34.8				100.0			
1B Mag. Conc	7.15									
Non-Mag.	2.36									
Heads	9.51									

LBS. PER TON					GRINDING	
V	A	Min.	Strokes per min.		Mach	%
1A	110	5	85		+ 48	
1B	110	5	84		+ 65	
					+ 100	
					+ 150	
					+ 200	
					+ 325	
					— 325	

Mag. Conc 1A and 1B combined for assay

ORE TESTING DEPARTMENT

CABLE "CABLE"

Our Lot No. 1428  
Date 12-30-59  
By *NEW*

**TELEPHONE**  
**BLON 9-0731**

Testing No. 1

Name  Curso de Psico

Hand Magnet Test #1 - Davis Tube 1A and 1B

[illegible]

WALSH & COMPANY  
ALAN D. WALSH

Our Lot No. 1428  
Date 1-13-60  
By DEN

CABLE  
"GALILEO"

Testing No. 1  
Sample #2048

Cerro de Pasco

Cerro de Pasco

PRODUCT	Weirich	Percent Weirich	Fe	ASSAY		Fe	DISTRIBUTION	
				Min.	Strokes per min.		%	Oun. %
1A Mag. Conc	6.43	64.25	58.2			92.6		
Non-Mag.	2.99	35.75	8.4	(Calc)		7.4		
Heads	9.42	100.00	40.4			100.0		
1B Mag. Conc	6.42							
Non-Mag.	3.06							
Heads	9.48							
LBS PER TON								
	V	A	Min.	Strokes per min.		Mach	% Oun. %	
1A	110	2.3	5	84		+ 48		
1B	110	2.3	5	86		+ 65 + 160 + 180 + 200 + 225 - 325		
Mag. Conc 1A and 1B combined for assay								



“GALILEO”

8'EX. EPPHONE  
ELGIN 9-8731

Our Lot No. 1-14-60  
Date  
By DEN

Testing No. <sup>2</sup>	Name	Cerro de Pasco
Sample # 2048	10 Gr Stirred 1 hr. filtered	Buckner filter

[illegible]

CABLE  
"CABLE"

**THE GALIGHER COMPANY**  
P. O. BOX 209 ---- 545-555 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH -- U.S.A.

TELEPHONE  
EUGEN 5-8731

Our Lot No. 1428  
Date 1-13-60  
By DEN

Testing No. 1  
Sample #2049

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 200 --- 248-566 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

CALL  
"CALL 661"

Our Lot No. 1428  
Date 1-13-60  
By DEN

TEL. 9-9722

Testing No. 1  
Sample #2053

Name Cerro de Pasco

[illegible]



**THE GALIGHIER COMPANY**  
P. O. BOX 209 ---- 545-555 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH--U.S.A.

...CALIF. ...  
...CALIF. ...

Our Lot No. 1428  
Date 1-14-60  
By DEN

Testing No. 1  
Sample #2055

Name Cerro de Pasco[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 109 --- 243-365 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH --- U.S.A.

CABLE  
"RECAP"

Our Lot No. 1428  
Date 1-14-60  
By DEN

TELEPHONE  
PLAIN 2-5751

Testing No. 1  
Sample #2057

Name Cerro de Pasco

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 --- 345-585 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

2570142  
CALIFORNIA

Our Lot No. 1428

TELEPHONE  
DIN 9-2791

Date 7-14-69

By \_\_\_\_\_ NEW

Testing No. 1  
Sample #2058

Cerro de Pasco

[illegible]



**THE GALIGHER COMPANY**  
P. O. BOX 200 — 242-584 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"CABLE"

Our Lot No. 1428  
Date 1-15-60  
By DEN

TEL. EPHONE  
BLGIN 3-8731

Testing No. 1  
Sample #2100

Cerro de Pasco

[illegible]

FOR TESTING DEPARTMENT

"GABRIEL"  
"GALBAL"

Our Lot No. 1428  
Date 1-15-  
By DWN

TEL: 0-972-  
550-1100

Testing No. 1  
Sample #2101

Name Cerro de Pasco

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 545-585 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"GALSAI."

Our Lot No. 1428  
Date 1-15-60  
By DEN

TEL: 2320002  
BLGIN 9-0731

Testing No. 1  
Sample #2102

Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe	DISTRIBUTION	
			Fe	Fe					
1A Mag. Conc	9.24	92.45	63.4				98.0		
Non-Mag.	0.41	7.55	15.9	(Calc)			2.0		
Heads	9.65	100.00	59.8				100.0		
1B Mag. Conc	9.25								
Non-Mag.	0.40								
Heads	9.65								
LOS PER TON									
			V	A	Min.	Strokes per min.			
1A		110		2.3	5	87			
1B		110		2.3	5	88			
GRINDING									
								Mesh	Qual. %
								+ 45	
								+ 65	
								+ 100	
								+ 150	
								+ 200	
								+ 325	
								+ 500	
Mag. Conc 1A and 1B combined for assay									



**THE GALIGHER COMPANY**  
P. O. BOX 200 — 343-555 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Our Lot No. 1428  
Date 1-15-60  
By DEN

TEL. 973-8741

Name	Cerro de Pasco
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 ---- 545-555 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH -- U.S.A.

CABLE  
"CABLE"

**TELEPHONE**  
**ELGIN 3-8781**

Our Lot No. 1428  
Date 1-15-60  
By DEN

Testing No. 3  
Sample #2104

Name Cerro de Pasco

[illegible]

Our Lot No. 1428  
Date 1-15-60  
By DEN

TEL: 01875 818181  
FAX: 01875 818181

CABLE  
"GALBAL"

Testing No. 1

Name Cerro de Pasco

Sample #2105

[illegible]



**THE GALIGHER COMPANY**  
P. O. BOX 209 — 243-255 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CALY  
"CALBAL"

**TELEPHONE**  
BLGIN 5-5731

Our Lot No. 1428  
Date 1-18-60  
By DEN

Testing No. 1

Sample #2107

May

Cerro de Pasco

[illegible]

ORE TESTING DEPARTMENT

TELEPHONE  
MAIN 9-8731

Our Lot No. 1428  
Date 7-18-60  
By DEN

Name Cerro de Pasco

PRODUCT	Weights	Percent Weight	ASSAY				DISTRIBUTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			Re				Re																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
1A Mag. Conc	8.10	81.0	62.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

TESTING DEPARTMENT

CABLE  
"CALCAL"

700.274.6738  
www.d-6738

Our Lot No. 1428  
Date 1-18-60  
By DEN

Testing No. 1

Sample #218

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

SAMPLE #	PRODUCT	Weight	Percent Weight	Fe		ASSAY	LBS. PER TON	GRINDING	
				Fe	DISTRIBUTION			Mesh	% Over 25
1A	Mag. Conc	7.46	74.65	59.0					
	Non-Mag.	1.76	25.35	10.3	(Calc)				
	Heads	9.22	100.00	46.6					
1B	Mag. Conc	7.47							
	Non-Mag.	1.90							
	Heads	9.37							
1A									
1B									
Mag. Conc 1A and 1B combined for assay									



Our Lot No. 1428  
Date 1-18-60  
By DEN

TELEPHONE  
BLM 5-8731

CABLE  
"CABLESAL"

Testing No. 1.....

Name Cerro de Pasco

Sample #2119

PRODUCT	Weight	Percent Weight	ASSAY			Fe	DISTRIBUTION	
			Fe	Min.	Strokes per ml.		Mesh	Grass. %
1A Mag. Conc	7.30	73.05	59.8			97.3		
Non-Mag.	2.06	26.95	4.5			2.7		
Heads	9.36	100.00	14.9			100.0		
1B Mag. Conc	7.31							
Non-Mag.	2.14							
Heads	9.45							
<p>100.00 LBS. FEE TON</p> <p>Grinding</p>								
	V	A	Min.	Strokes per ml.			Mesh	Grass. %
1A	110	2.2	5	88			+ 48	
1B	110	2.1	5	83			+ 65	
							+ 100	
							+ 150	
							+ 200	
							+ 325	
							- 325	
<p>Mag. Conc 1A and 1B combined for assay</p>								

DRUG TESTING DEPARTMENT

CALCAL  
"CALCAL"

THE GALIGHER COMPANY

P. O. BOX 207 — 845-885 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TEL: 274-0971  
1676-3 MID-LEVEL

Our Lot No. 1428

Date 1-18-60

By DEW

Testing No. 7  
Sample #2120

Name Cerro de Pasco[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 309 — 245-985 WEST 57th SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"CABLE"

Our Lot No. 8247E

**TOLL FREE**  
**1-800-9-8779**

Date 7-18-60

By \_\_\_\_\_ DEN

Resting No. 1

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

Sample #2123

[illegible]



Our Lot No. 1428  
Date 1-18-60  
By DEN

CABLE  
"CABLE"

1520-6 HIRTS  
ZINOMATZ.

ORE TESTING DEPARTMENT

Testing No. 1  
Sample #2124

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

[illegible]

# THE GALIGHER COMPANY

CABLE  
"GALCAL"

TELEPHONE  
EL-611 9-8781

P. O. BOX 802 — 545-535 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

Our Lot No. 1428  
Date 1-18-60  
By DEN

Name Cerro de Pasco

Testing No. 1  
Sample #2125

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe		DISTRIBUTION	
			V	A	Min.	Strokes per min.	Fe	Fe	Mach	Cum. %
1A Mag. Conc	6.12	61.35	48.5					94.8	+ 48	
Non-Mag.	3.16	38.65	4.3					5.2	+ 65	
Resids	9.28	100.00	31.4					100.0	+ 100	
1B Mag. Conc	6.31								+ 150	
Non-Mag.	3.10								+ 200	
Resids	9.41								+ 325	
1C Mag. Conc	6.15								+ 325	
Non-Mag.	3.05								— 325	
Resids	9.20									
1A	110	2.1	5	86						
1B	110	2.1	5	84						
1C	110	2.3	5	85						
Mag. Conc 1A and 1C combined for assay.										

LAB. PPS TON

Strokes per min.

Our Lot No. 1428  
Date 1-13-60  
BY DWM

722.72540512  
55.4m 9-8737

CALBES  
"GALBA."

Testing No. 1  
Sample #2126

Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe	ASSAY			Fe	DISTRIBUTION	
				V	A	Min.		Strokes per min.	Mesh
1A Mag. Conc	7.09	71.0	57.4				96.0		
Non-Mag.	2.47	29.0	5.9			(Calc.)	4.0		
Tails	9.56	100.0	42.4				100.0		
1B Mag. Conc	7.11								
Non-Mag.	2.45								
Tails	9.56								
LBS. PER TON									
	V	A	Min.	Strokes per min.				Mesh	% Over, %
1A	110	2.3	5	83				+ 48	
1B	110	2.3	5	83				+ 65	
								+ 100	
								+ 160	
								+ 200	
								+ 250	
								+ 325	
								+ 385	
GRINDING									
Mag. Conc 1A and 1B combined for assay									



## THE TESTING DEPARTMENT

Our Lot No. 1428  
Date 1-19-60  
By DEN

Cerro de Pasco

[illegible]

CAMEL  
"GAL GAL"

**THE GALIGHER COMPANY**  
P. O. BOX 203 — 845-555 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
DIN 2-6731

Our Lot No. 1428  
Date 1-19-60  
By DEW

Testing No. 1  
Sample #2128

Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe	ASSAY						DISTRIBUTION
1A Mag. Conc.	6.83	68.45	42.0							
Non-Mag.	2.76	31.55	7.5	(Calc)						
Heads	9.59	100.00	31.1							
1B Mag. Conc.	6.86									
Non-Mag.	2.69									
Heads	9.55									
<b>LBS PER TON</b>										
	V	A	Min.	Strokes per min.					Mch	% Com. %
1A	110	2.2	5	86					+ 48	
1B	110	2.2	5	87					+ 65	
									+ 100	
									+ 150	
									+ 200	
									+ 325	
									-- 325	
Mag. Conc 1A and 1B combined for assay										

Our Lot No. 1428  
Date 1-20-60  
By DEN

CABLE  
"GALBAL"

ORE TESTING DEPARTMENT

Cerro de Pasco

Name \_\_\_\_\_

Testing No. 1

Sample #2129

[illegible]



**THE GALICHER COMPANY**  
P. O. BOX 209 — 543-555 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"CABLE"

Our Lot No. 1428  
Date 1-20-60  
By DEN

TELEPHONE  
BLAIN 5-0731

Testing No. 1

Sample #2130

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 243-555 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"CABLESAL"

Our Lot No. 1428  
Date 1-20-60  
By DEN

**TOLL FREE  
800-6-9791**

Testing No. 1  
S2 mole #2131

Name Cerro de Pasco

[illegible]

# THE GALIGHIER COMPANY

P. O. BOX 200 — 242-222 WEST 5TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"GALSAL"

Our Lot No. 1428  
Date 1-20-60  
By DEN

TESTING DEPARTMENT

Name Cerro de Pasco

Testing No. 1  
Sample #2132

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe		DISTRIBUTION	
1A Mag. Conc Non-Mag. Heads	7.84	78.35	52.1				96.7			
	1.80	21.65	6.4	(Calc)			3.3			
	9.64	100.00	42.2				100.0			
1B Mag. Conc Non-Mag. Heads	7.83									
	1.75									
	9.58									
LBS PER TON										
1A	V	A	Min.	Strokes	per min.					
	110	2.3	5	88						
1B	V	A	Min.	Strokes	per min.					
	110	2.2	5	87						
GRINDING										
Mag. Conc 1A and 1B combined for assay.	Mash	%								
	+ 48									
	+ 65									
	+ 100									
	+ 150									
	+ 200									
	+ 325									
	+ 825									



Our Lot No. 1428  
Date 1-20-60  
By DEN

GALILEO  
"GALILEO"

FOR TESTING DEPARTMENT

Testing No. 1  
Sample #2133

Name \_\_\_\_\_ Cerro de Pasco \_\_\_\_\_

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe		DISTRIBUTION	
1A Mag. Conc	7.58	75.85	59.0							
Non-Mag.	1.82	24.15	7.3 (Calc)							
Heads	9.40	100.00	46.5							
1B Mag. Conc	7.59									
Non-Mag.	1.68									
Heads	9.27									
<div> <div> <div>1A</div> <div>1B</div> </div> <div> <div>Mag. Conc 1A and 1B combined for assay.</div> </div> </div>										

REF TESTING DEPARTMENT

CABLE  
"GALAXY"

P. O. BOX 209 --- 345-538 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

TELEPHONE  
21414 9-9731

Our Lot No. 1428

Date 1-20-60

By \_\_\_\_\_ Date \_\_\_\_\_

Testing No. 1

Sample #2134

Name ..... Carro de Pasco

[illegible]

THE GALIGHIER COMPANY

CABLES  
"CABLE"

P. O. BOX 209 — 243-585 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TEL. 951.400K  
BLGIN 9-8721

Our Lot No. 1428  
Date 1-20-60  
By DEN

Testing No. 1  
Sample #2135

Cerro de Pasco

[illegible]



**THE GALIGHER COMPANY**  
P. O. BOX 269 — 845-505 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"GALCAL"

Our Lot No. 1428  
Date 1-21-60  
By DEN

TELEPHONE  
ELGIN 9-9731

ORE TESTING DEPARTMENT

Testing No. 1  
Sample #2137

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe	ASSAY	Fe	DISTRIBUTION
1A Mag. Conc	6.09					
Non-Mag.	3.32					
Heads	9.41					
1B Mag. Conc	5.92	59.3	43.0		92.1	
Non-Mag.	3.23	40.7	5.4 (Calc)		7.9	
Heads	9.15	100.0	27.7		100.0	
1C Mag. Conc	5.94					
Non-Mag.	3.35					
Heads	9.29					
LBS. PER TON						
				Strokes per min.		
1A		V	A	Min.		GRINDING
1B		110	2.3	5		Mesh
1C		110	2.3	5		+ 48
		110	2.3	5		+ 65
						+ 100
						+ 150
						+ 200
						+ 325
						- 325
Mag. Conc 1B and 1C combined for assay.						
Original assay						
Repeat assay						
		Heads	Conc			
		25.3	43.2			
		27.7	43.0			

ORE TESTING DEPARTMENT

TELEPHONE  
BLGIN 3-6731

Our Lot No. 1428  
Date 1-21-60  
By DEN

Name Cerro de Pasado[illegible]

**THE GALIGHER COMPANY**  
P. O. BOX 109 — 545-555 WEST 6TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"CABLE"

Our Lot No. 1428  
Date 1-21-60  
By DEN

**TELEPHONE**  
**BLGIN 9-6731**

Testing No. 04127  
Sample #2140  
1

Name Cerro de Pasco

[illegible]



ORE TESTING DEPARTMENT

THE GALIGHER COMPANY  
P. O. BOX 100 — 845-385 WEST 9TH SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

CABLE  
"GALCAL"

TELEPHONE  
ML311 9-8731

Our Lot No. 1428  
Date 1-21-60  
By DEN

Testing No. 1  
Sample #2142

Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe		ASSAY	Fe		DISTRIBUTION
1A Mag. Conc Non-Mag. Heads	8.14	81.4	61.0					96.4
		18.6	10.0 (Calc)					3.6
		100.0	51.5					100.0
1B Mag. Conc	8.14							
LBS PER TON								
		V	A	Min.	Strokes per min.			
1A		110	2.2	5	84			
1B		110	2.2	5	86			
LBS PER TON								
GRINDING								
							Mesh	%
							+ 43	
							+ 65	
							+ 100	
							+ 150	
							+ 200	
							+ 325	
							-- 325	
Mag. Conc 1A and 1B combined for assay.								

1 LB PER TON

Strokes per min.

84  
86

Min.  
5  
5

A  
2.2  
2.2

V  
110  
110

1A  
1B

**PROD CORE TESTING DEPARTMENT**

CABLE  
"GALVAL"

Our Lot No. 1428  
Date 1-21-60  
By DEN

TELEPHONE  
TELEX 9-0781

Testing No. 1  
Sample #2143

Name Cerro de Pasco

[illegible]

ORE TESTING DEPARTMENT

CABLE  
"CABLE"

**THE GALIGHER COMPANY**  
P. O. BOX 209 — 542-565 WEST 2ND SOUTH STREET  
SALT LAKE CITY 10, UTAH — U.S.A.

TELEPHONE  
616-9-0731

Our Lot No. 1428  
Date 1-21-60  
By DEN

Testing No. 1  
Sample #2144

Name Cerro de Pasco

[illegible]



ORE TESTING DEPARTMENT

CABLE  
"GALVAL"

THE GALIGHIER COMPANY  
P. O. BOX 203 --- 843-598 WEST 8TH SOUTH STREET  
SALT LAKE CITY 10, UTAH - U.S.A.

TELEPHONE  
RLGIN 2-8751

Our Lot No. 1428  
Date 1-21-60  
By DSN

Testing No. 1  
Sample #2145

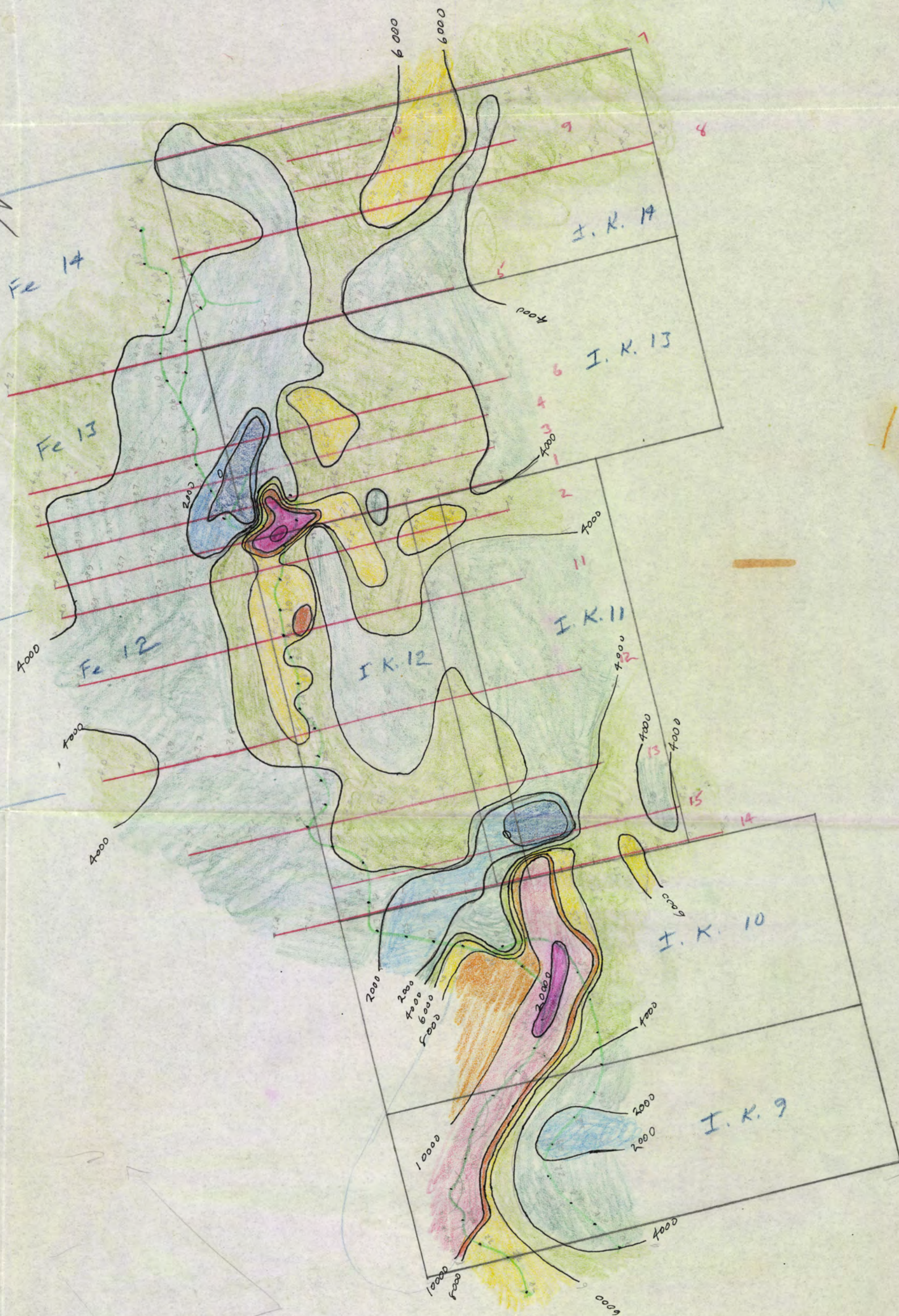
Name Cerro de Pasco

PRODUCT	Weight	Percent Weight	Fe		ASSAY		Fe	DISTRIBUTION	
			A	Min.	Strokes per min.			Mesh	Per Cent
1A Mag. Conc	6.53	65.2	53.3				96.3	+ 48	
Non-Mag.	2.87	34.8	3.9	(Calc)	87		3.7	+ 45	
Heads	9.40	100.0	36.1		88		100.0	+ 100	
1B Mag. Conc	6.51							+ 160	
Non-Mag.	2.87							+ 200	
Heads	9.38							+ 325	
								-- 825	
Samples 1A and 1B combined for assay.									

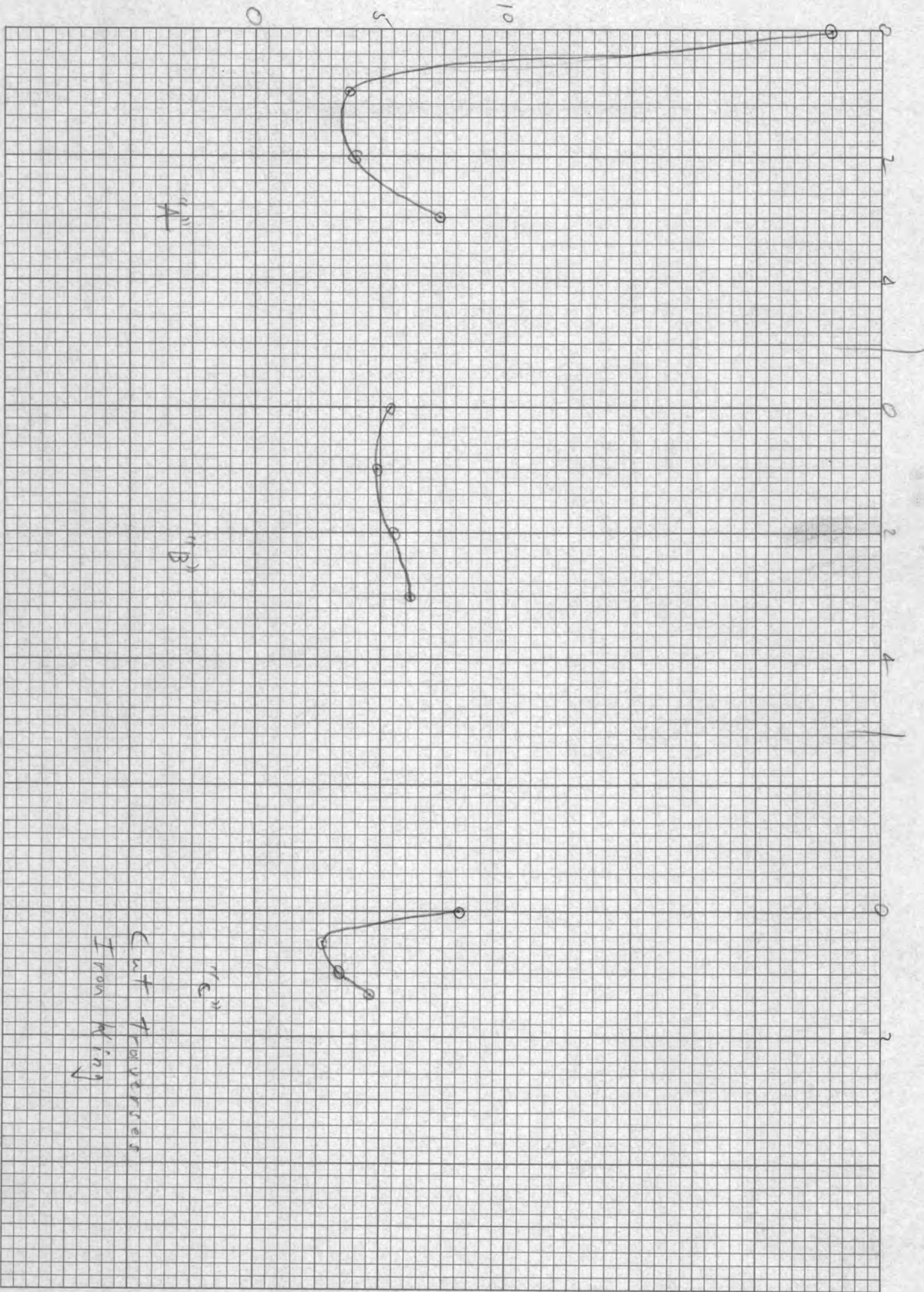
100.0 PER CENT

GRINDING









Cut Traverses  
Iron King



← N.W.

2W

0 Hundreds of feet

2E

4E

6E

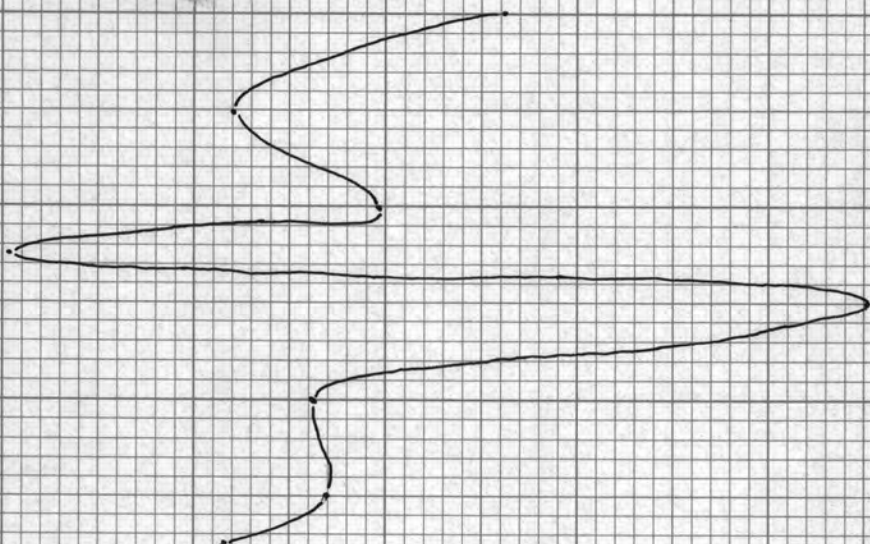
Thousands of gammas

0

5

10

15



LINE 17  
IRON KING PROSPECT  
MAGNETIC PROFILE  
A.E.M. INSTRUMENT

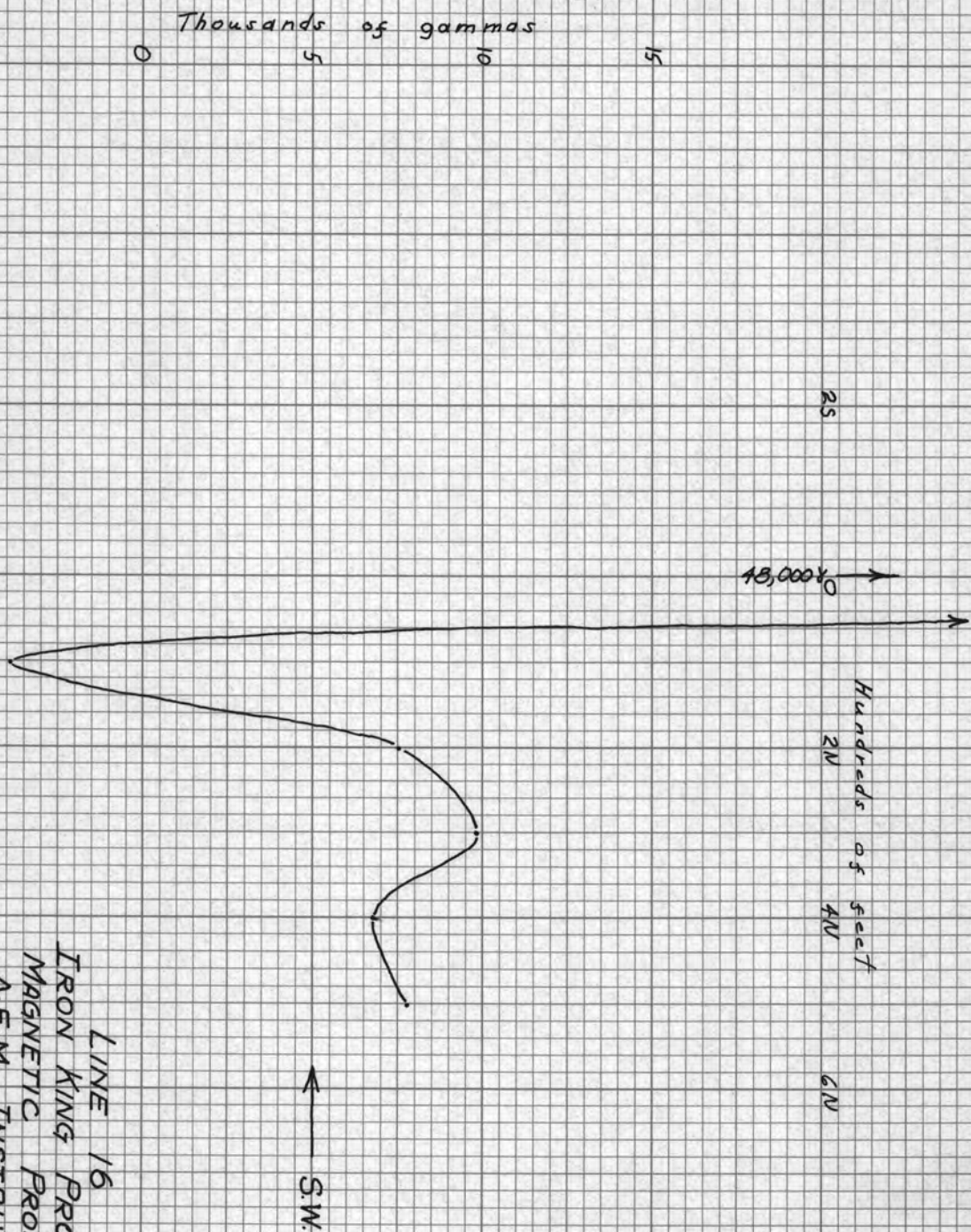
for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICHS GEOEXPLORATION CO.



LINE 16  
IRON KING PROSPECT  
MAGNETIC PROFILE  
A.E.M. INSTRUMENT  
for  
ARIZONA IRON MINES INC.  
SEPT., 1961  
by  
HEINRICHS GEOEXPLORATION CO.



← N.W.

3W

1W

0

1E

3E

Hundreds of feet  
5E

7E

9E

11E

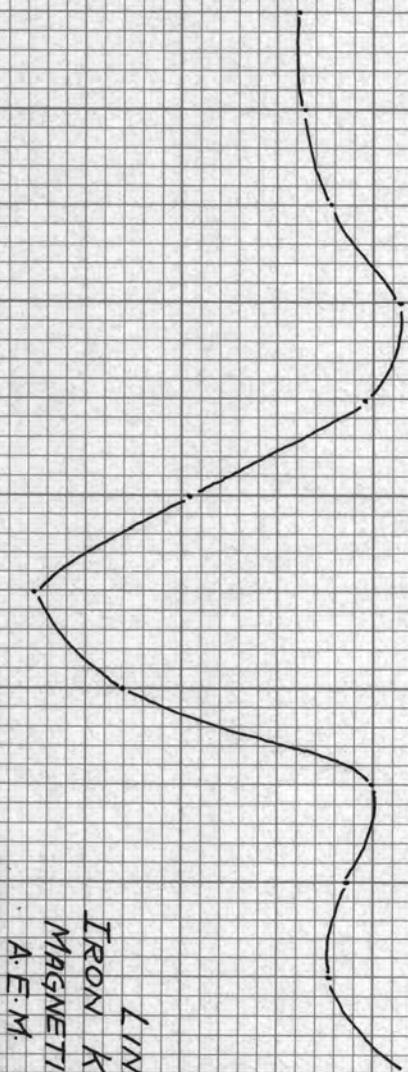
Thousands of gammas

15

10

5

0



LINE 15  
IRON KING PROSPECT  
MAGNETIC PROFILE  
A.E.M. INSTRUMENT

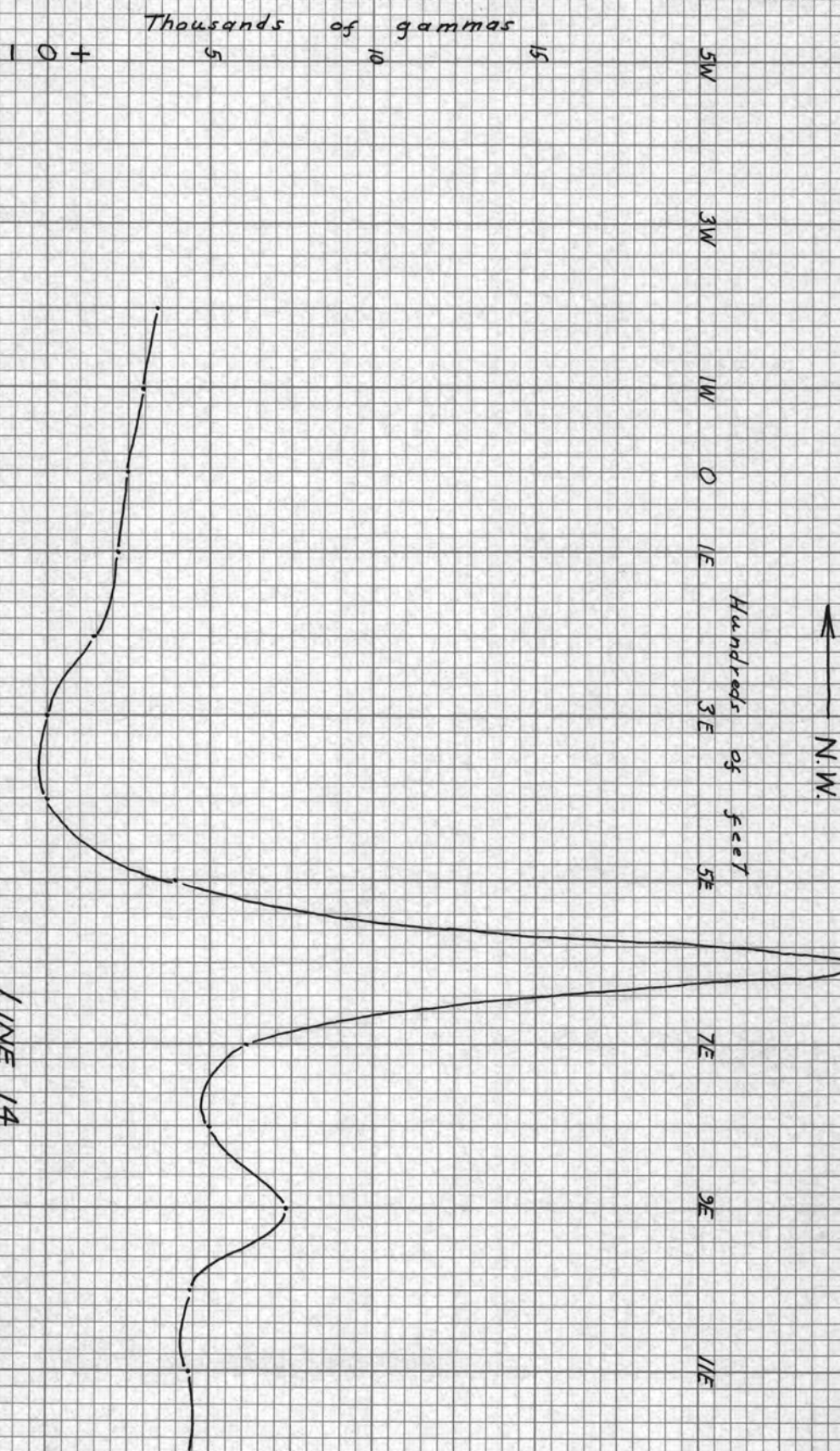
for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICHS GEOEXPLORATION CO.



LINE 14  
IRON KING PROSPECT  
MAGNETIC PROFILE  
A.E.M. INSTRUMENT

for  
ARIZONA IRON MINES INC.  
SEPT., 1961  
by

HEINRICHS GEOEXPLORATION CO.



← N.W.

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Hundreds of feet

Thousands of gammas

15

10

5

0



LINE 13

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT., 1961

by

HEINRICHS GEOEXPLORATION CO.

← N.W. →

Hundreds of feet

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Thousands of gammas

0

5

10

15



LINE 12

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT., 1961

by

HEINRICHS GEOEXPLORATION CO.



← N.W. →

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Hundreds of feet

Thousands of gammas

0

5

10

15



LINE 11

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT. 1961

by

HEINRICHS GEOEXPLORATION CO.

Thousands of gammas

0

5

10

15

2W

0

2E

4E

6E

8E

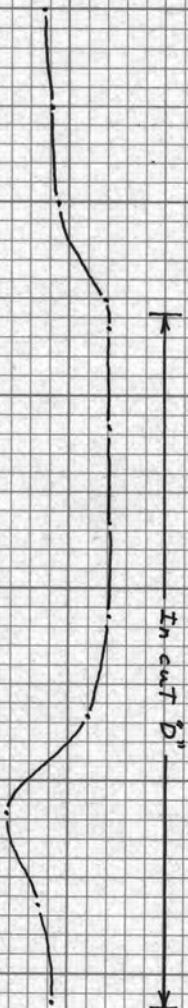
10E

12E

14E

N.W.

Hundreds of feet



LINE 10

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICHS GEOEXPLORATION CO.



← N.W.

2W

0

2E

4E

6E

8E

10E

12E

14E

Hundreds of feet

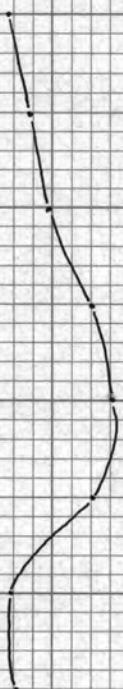
Thousands of gammas

15

10

5

0



LINE 9

IRON KING PROSPECT  
MAGNETIC PROFILE  
A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICH'S GEOEXPLORATION CO.

← N.W. →

2W

0

2E

4E

6E

8E

10E

12E

14E

Hundreds of feet

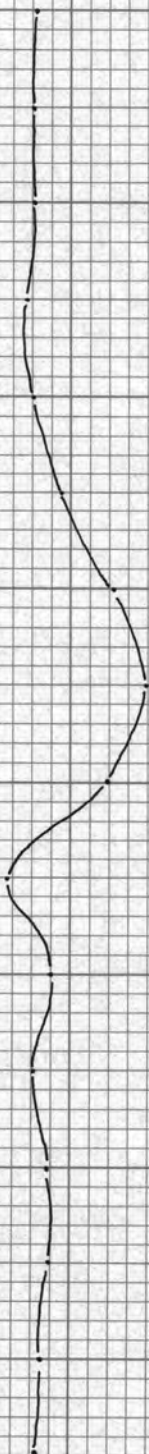
Thousands of gammas

0

5

10

15



LINE 8

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICH'S GEOEXPLORATION CO.



← NW

2W

0

2E

4E

6E

8E

10E

12E

14E

Hundreds of feet

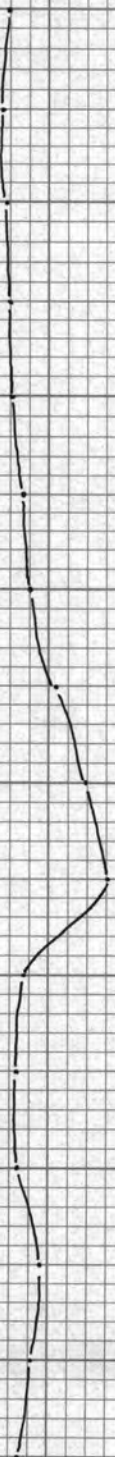
Thousands of gammas

15

10

5

0



LINE 7

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICHS GEOEXPLORATION CO.

← NW

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Hundreds of feet

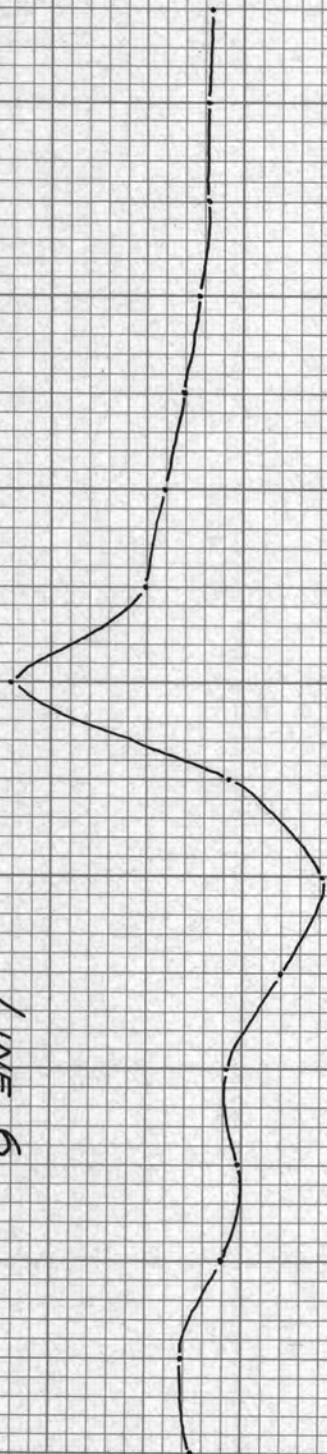
Thousands of gammas

0

5

10

15



LINE 6

IRON KING PROSPECT  
MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICH'S GEOEXPLORATION CO.



← N.W.

Hundreds of feet

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Thousands of gammas

15

10

5

0



LINE 5

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICH'S GEOEXPLORATION CO.

← NW

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Hundreds of feet

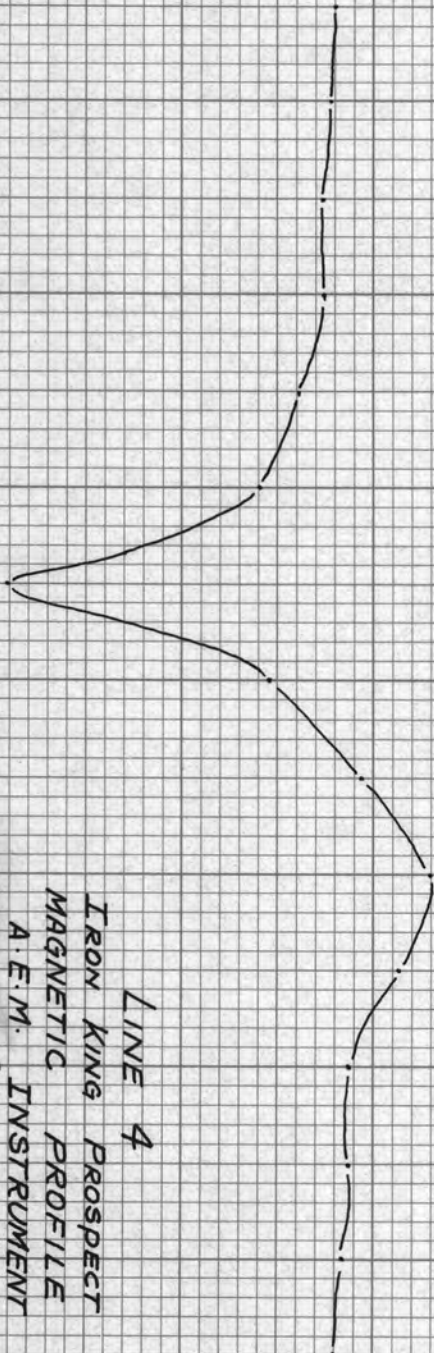
Thousands of gammas

15

10

5

0



LINE 4

IRON KING PROSPECT

MAGNETIC PROFILE

A.E.M. INSTRUMENT

for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICHS GEOEXPLORATION CO.



← NW. →

Hundreds of feet

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Thousands of gammas

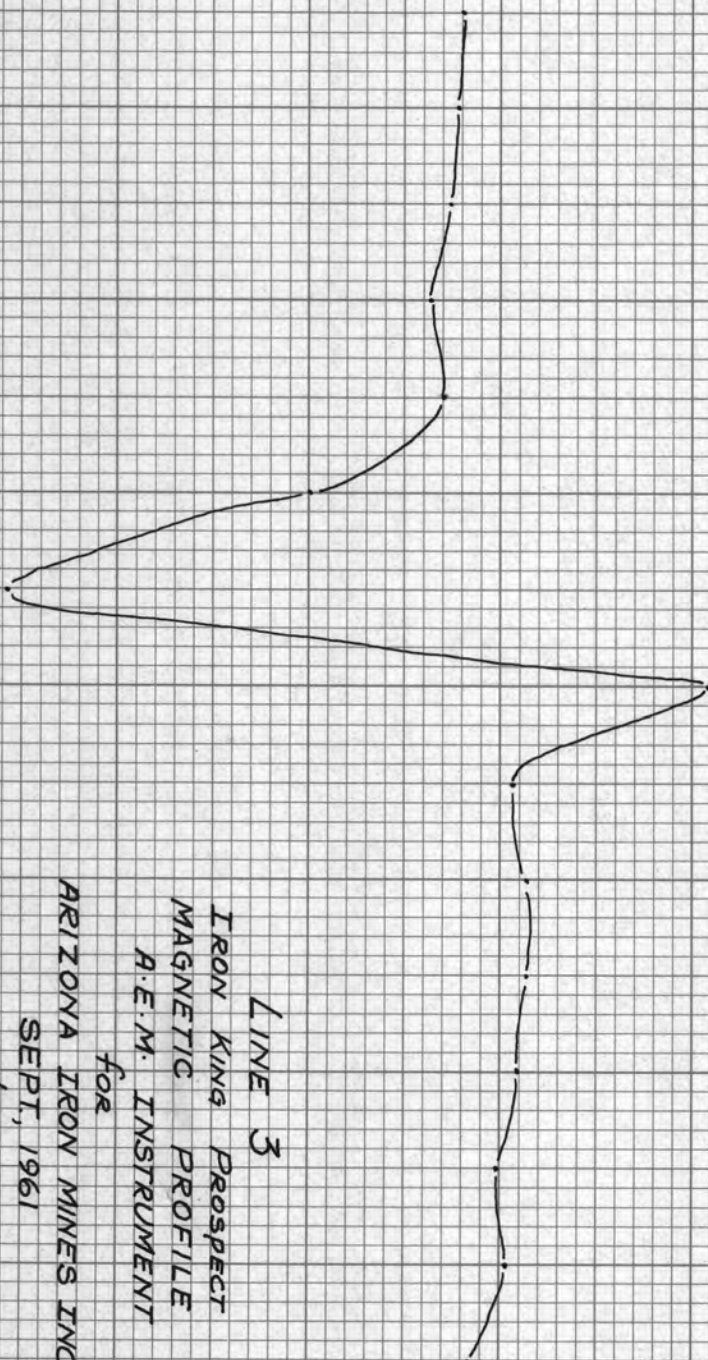
15

10

5

0

-5



LINE 3

IRON KING PROSPECT  
MAGNETIC PROFILE

A.E.M. INSTRUMENT  
for

ARIZONA IRON MINES INC.

SEPT, 1961

by

HEINRICHS GEOEXPLORATION CO.

← NW.

Hundreds of feet

7W

5W

3W

1W

0

1E

3E

5E

7E

9E

Thousands of gammas

15

10

5

0



LINE 2

IRON KING PROSPECT  
MAGNETIC PROFILE

A.E.M. INSTRUMENT  
for

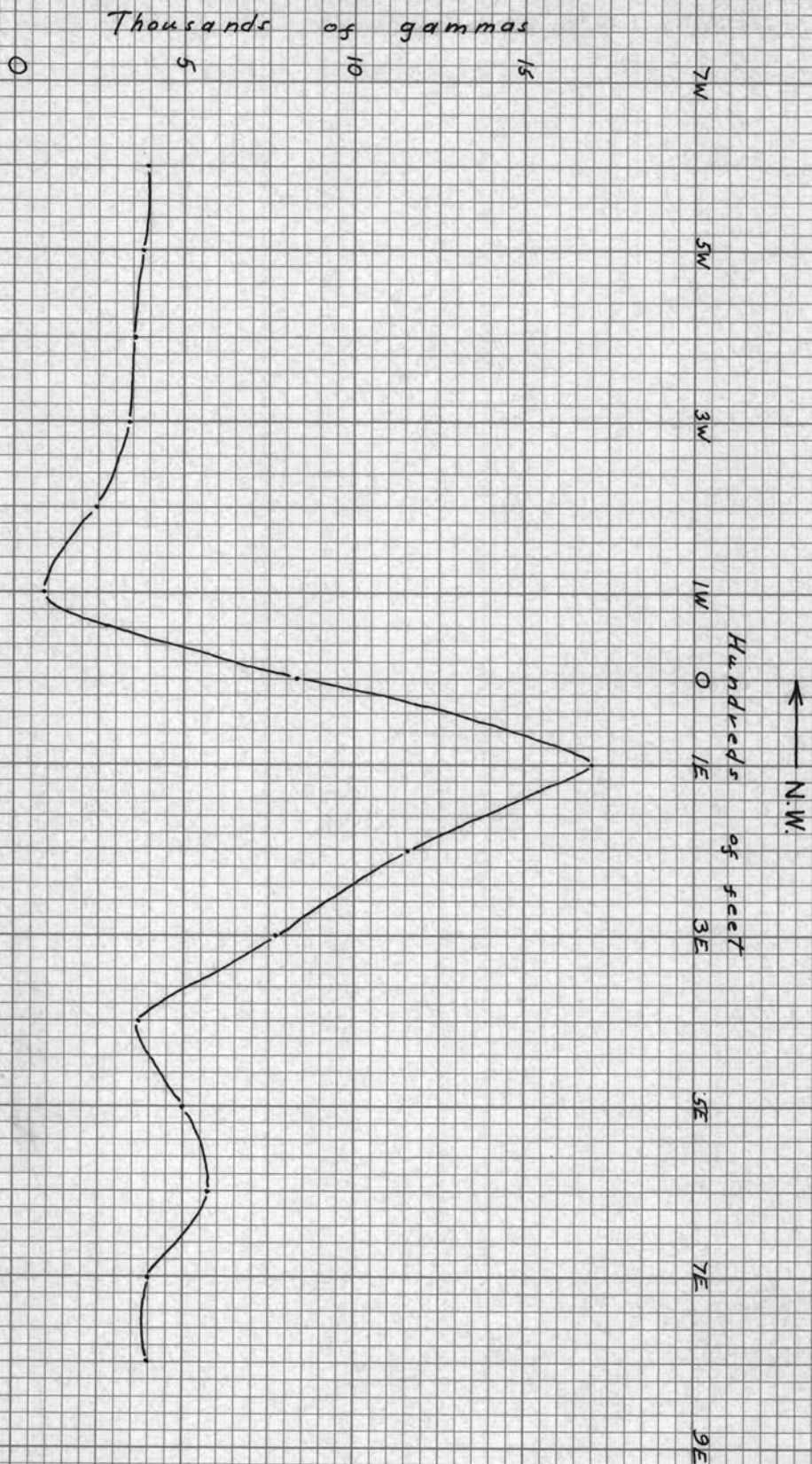
ARIZONA IRON MINES INC.

SEPT., 1961

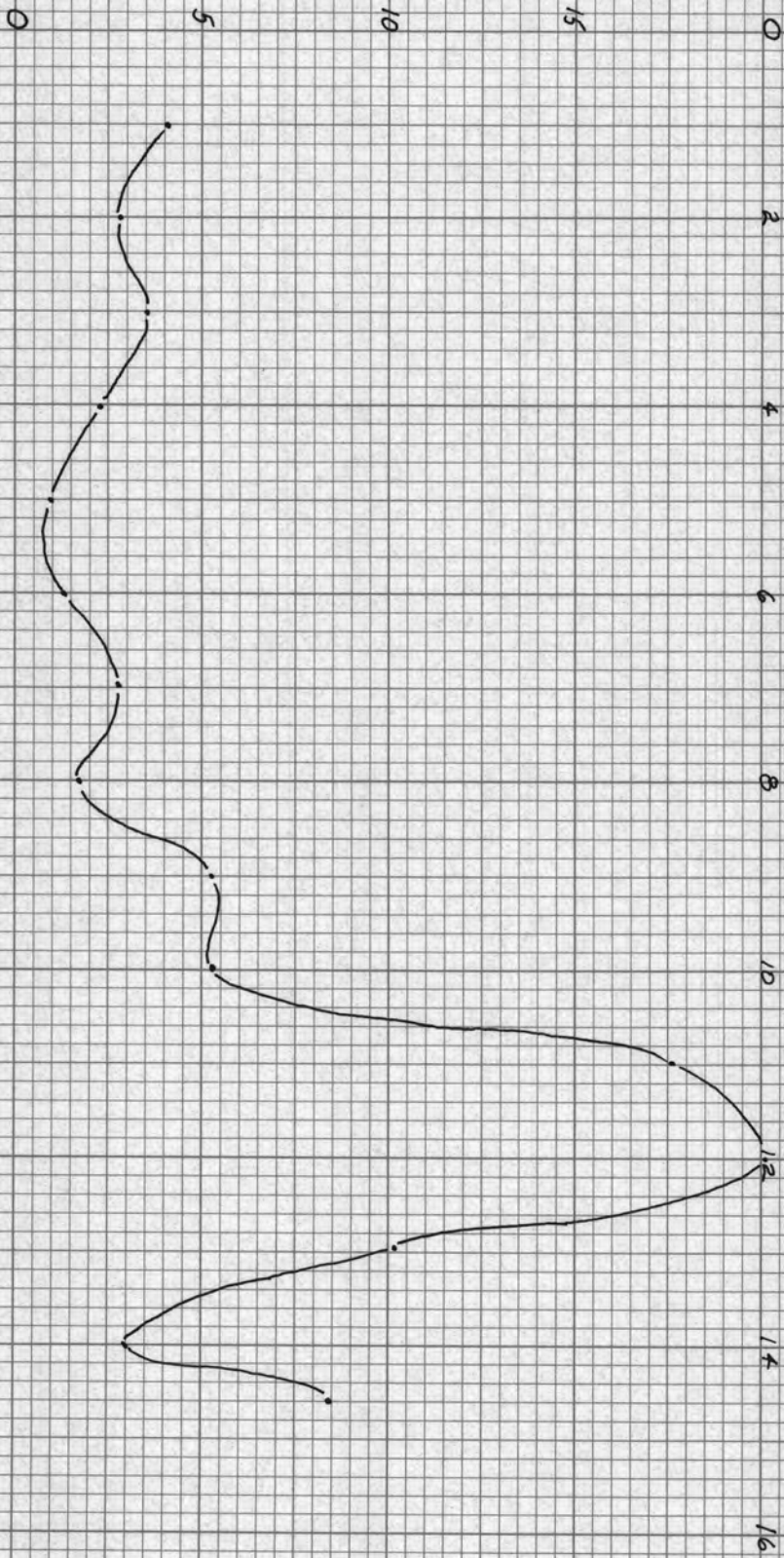
by

HEINRICH'S GEOEXPLORATION CO.



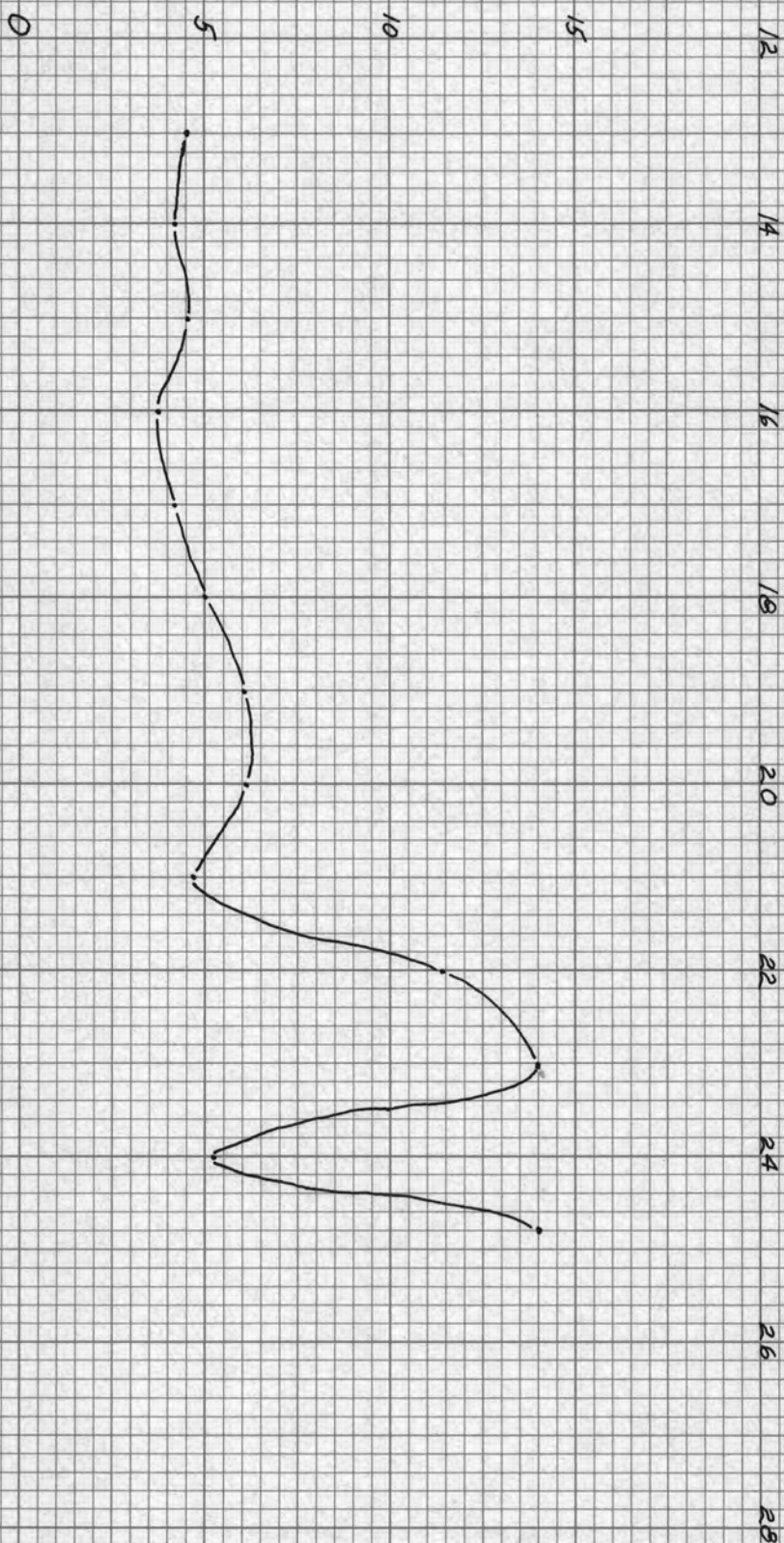


LINE 1  
IRON KING PROSPECT  
MAGNETIC PROFILE  
A.E.M. INSTRUMENT  
FOR  
ARIZONA IRON MINES INC.  
SEPT, 1961  
by  
HEINRICHS GEOEXPLORATION CO.

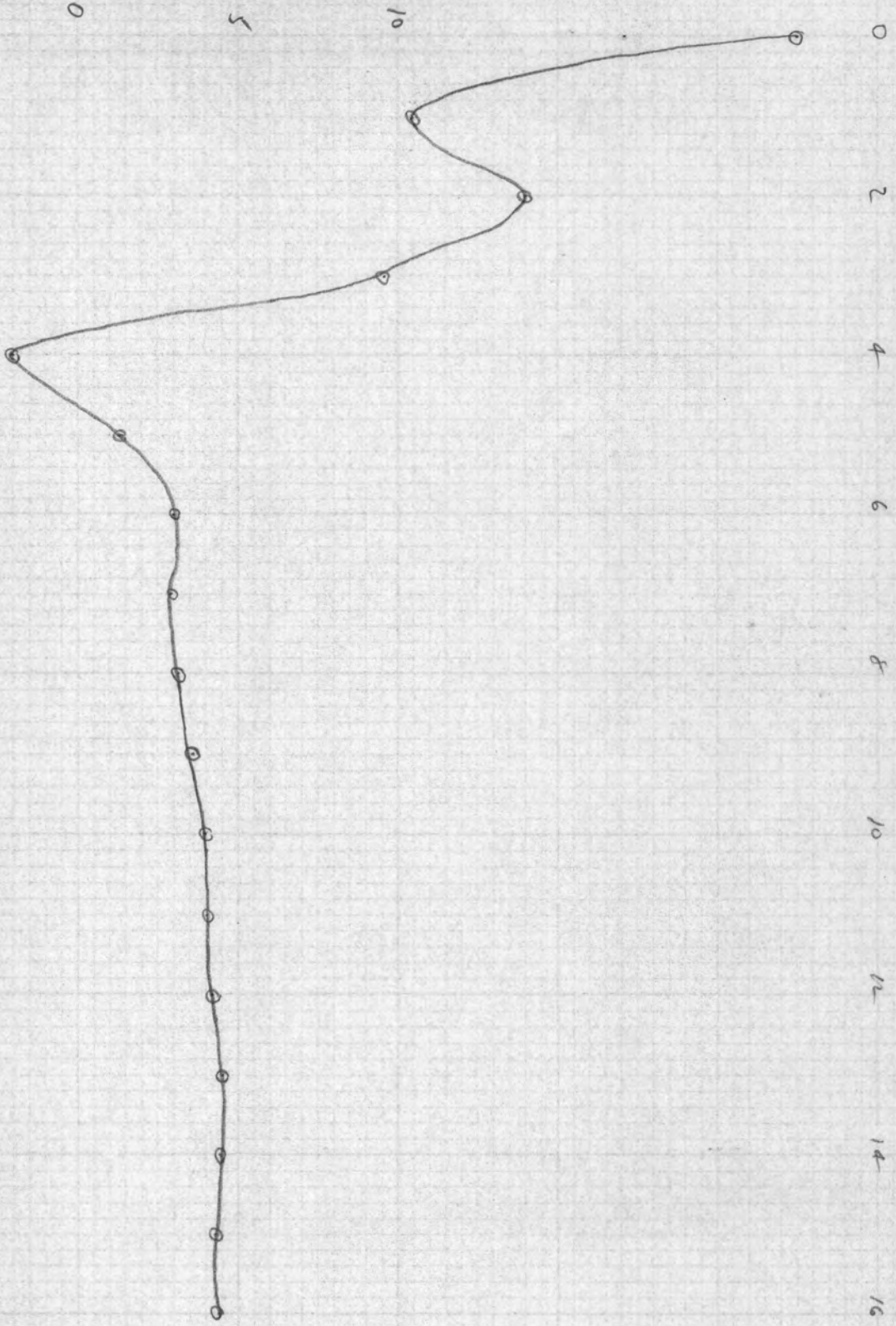


R, T, B  
looking westward





PT, 21  
looking  
westwardly

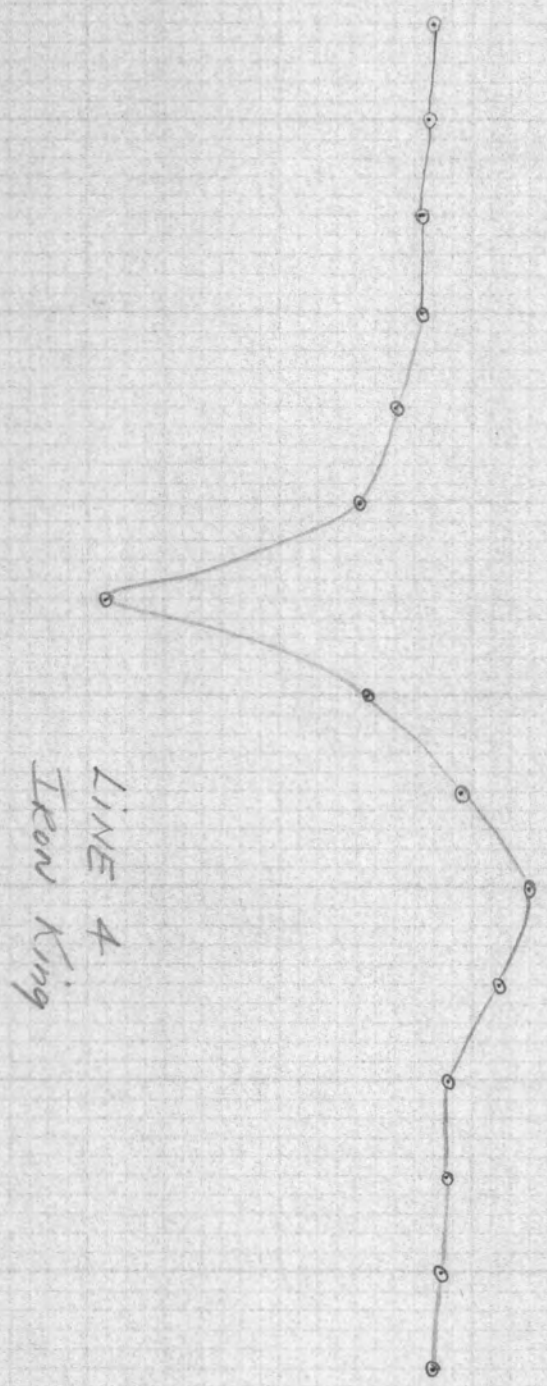


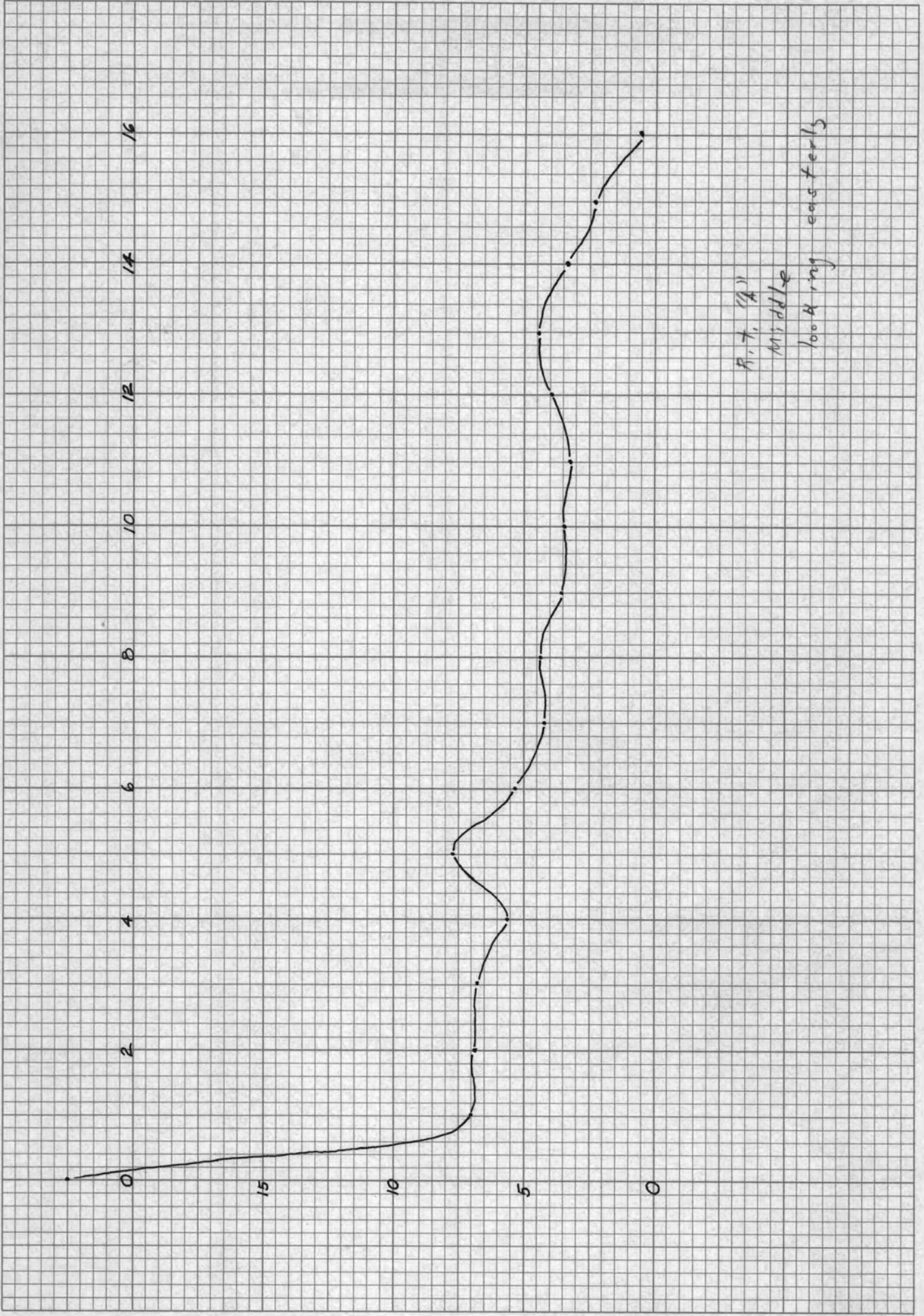
- Road Traverse "A" cont. .



7W 5W 3W 1W 0 1E 3E 5E 7E 9E

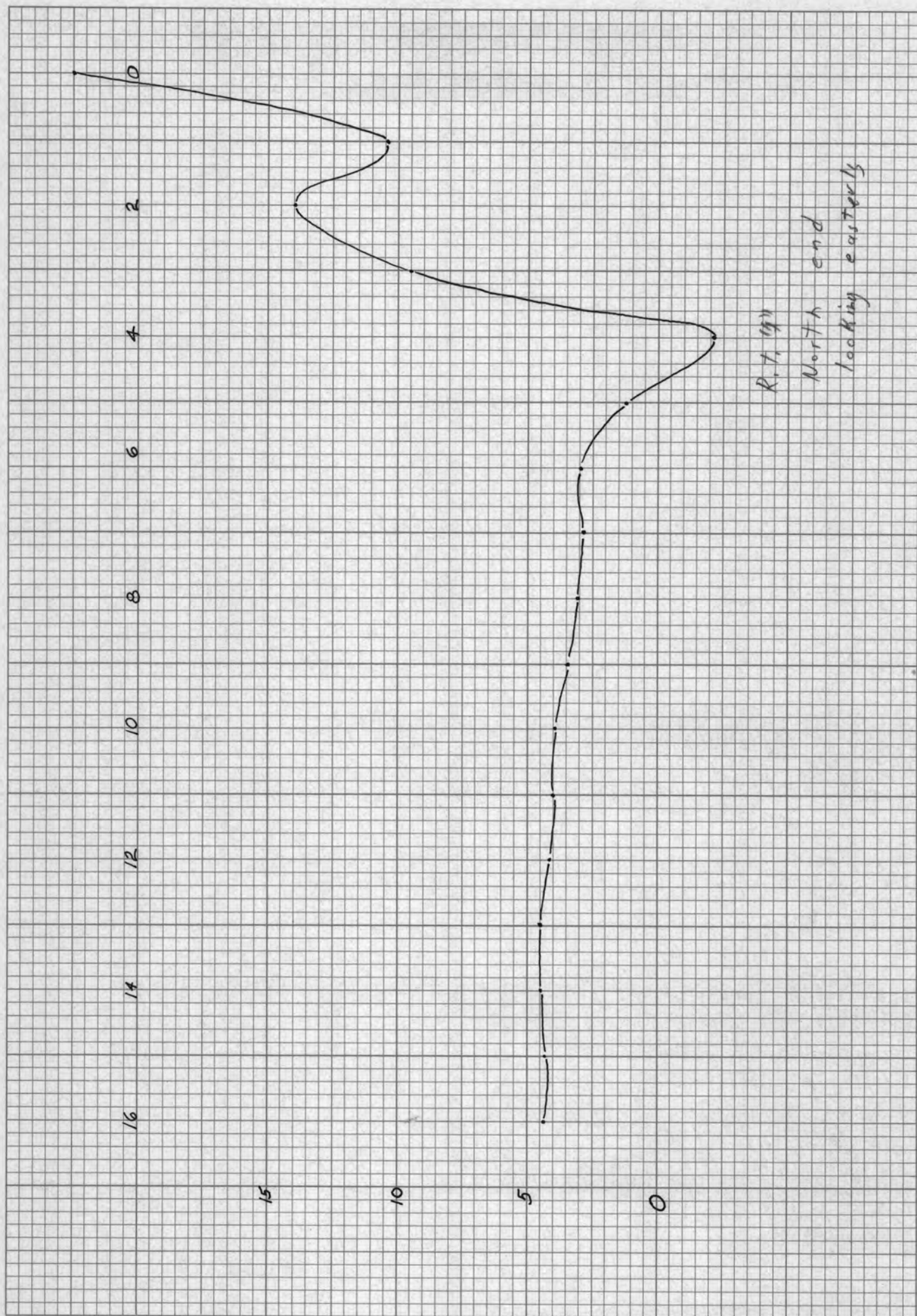
10  
5  
0

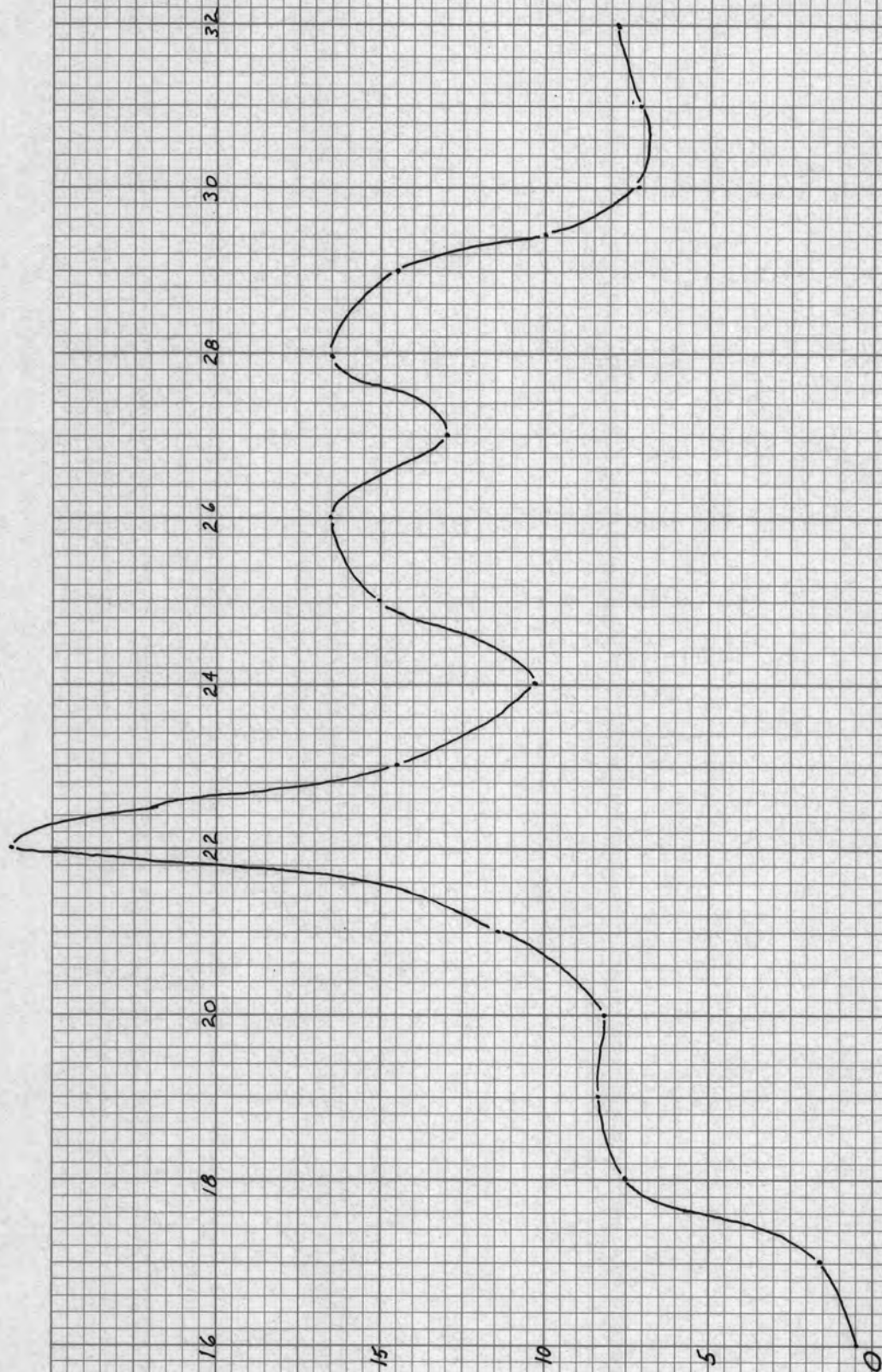




Plot, "A"  
middle  
looking eastward







P.T. "A"  
South end  
looking easterly

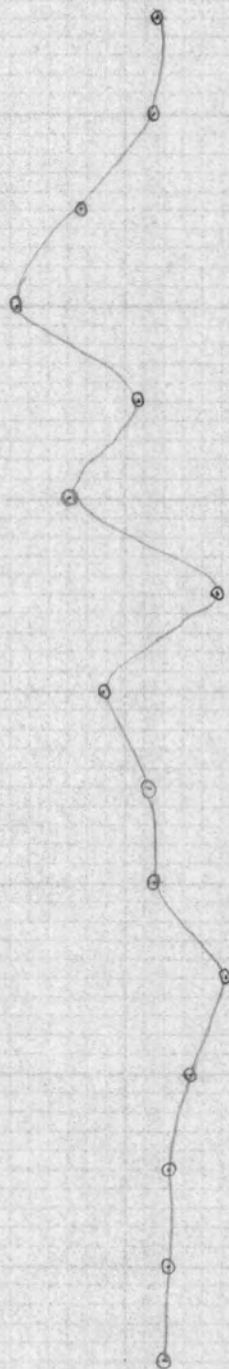


7W 5W 3W 1W 0 1E 3E 5E 7E 9E

10

5

0



Line 2  
Iron King

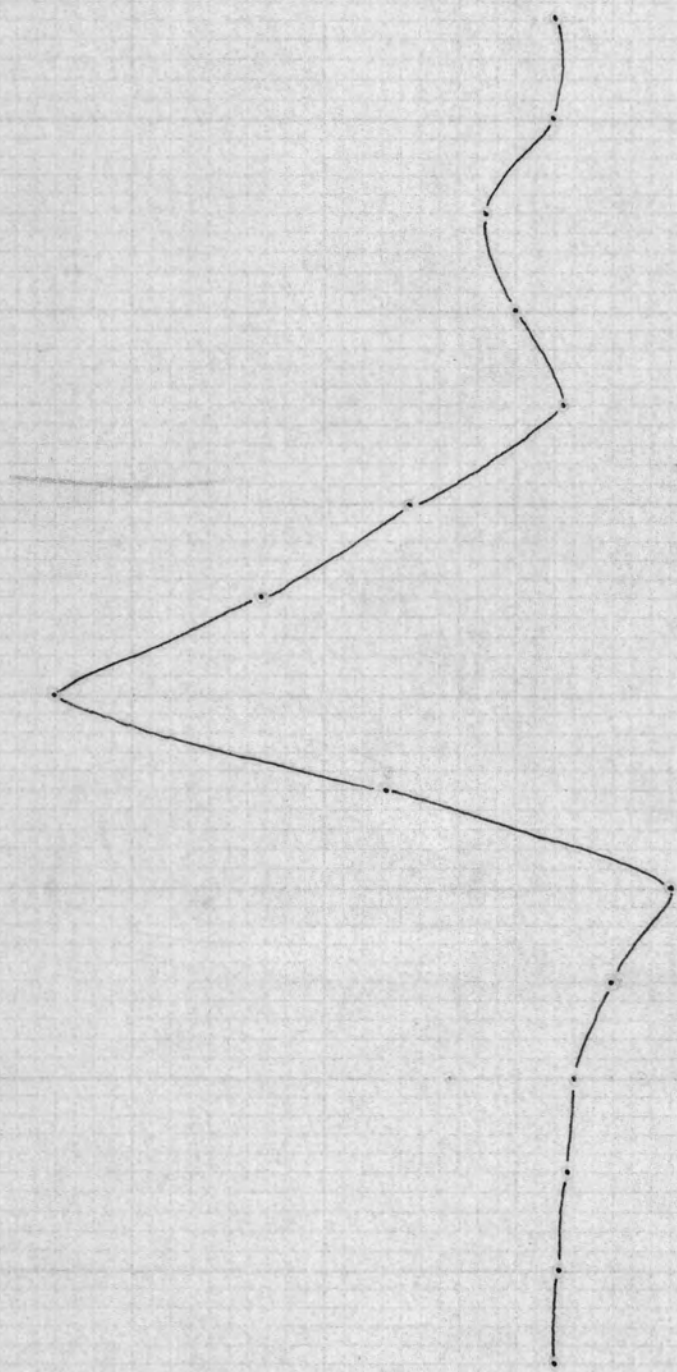
7W | 5W | 3W | 1W | 0 | 1E | 3E | 5E | 7E | 9E |

15 —

10 —

5 —

0 —



LINE 1  
Scale 1" = 2' H  
1" = 5000' V  
Iron King Prospect  
Akiz Iron Mines Inc.  
DATE \_\_\_\_\_ by \_\_\_\_\_



7W

SW

3W

1W

0

1E

3E

5E

7E

9E

10

5

0



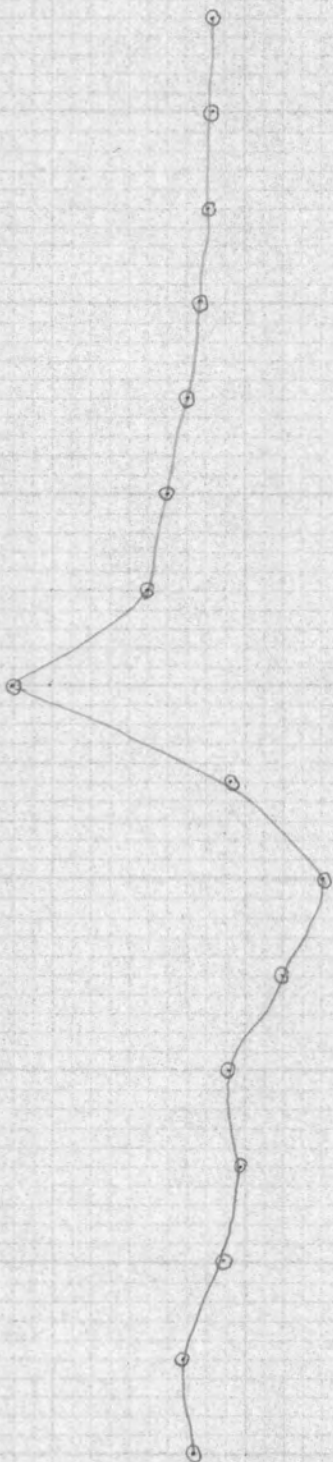
Line 5  
Iron King

7W 5W 7W 1W 0 1E 3E 5E 7E 9E

10

5

0



Line 6  
Iron King



2W

0°W

2E

4E

6E

8E

10E

12E

14E

16E

10

5

0



Line  
Iron  
King

2W 0 2E 4E 6E 8E 10E 12E 14E 16E

10

5

0



Line &  
Iron King



2W

0

RE

4E

6E

8E

10E

12E

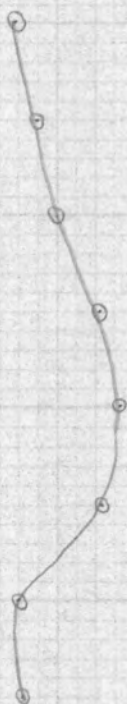
14E

16E

10

5

0



Line 9  
Iron King

2W 0 2E 4E 6E 8E 10E 12E 14E 16E

10

5

0

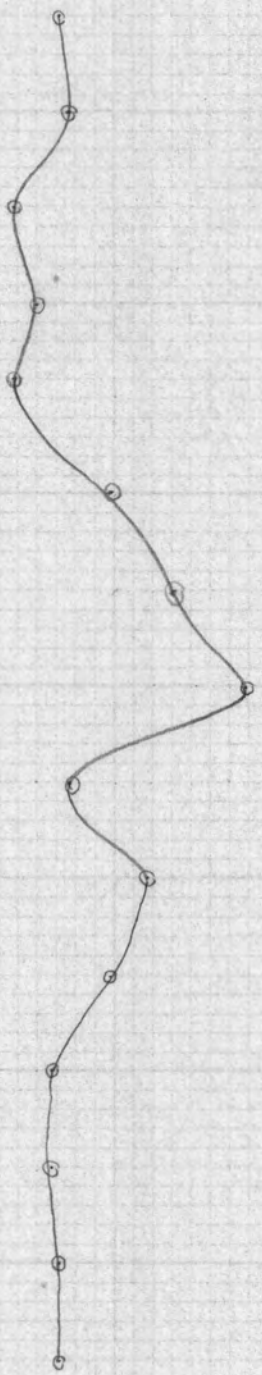


Line 10  
Iron King



7W 5W 3W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E

0 5 10



Line 11  
Iron King

7W 5W 3W 1W 0 1E 3E 5E 7E 9E 11E

10

5

0



Line 12  
Iron King



7W 5W 3W 1W 0 1E 2E 3E 4E 5E

10  
5  
0

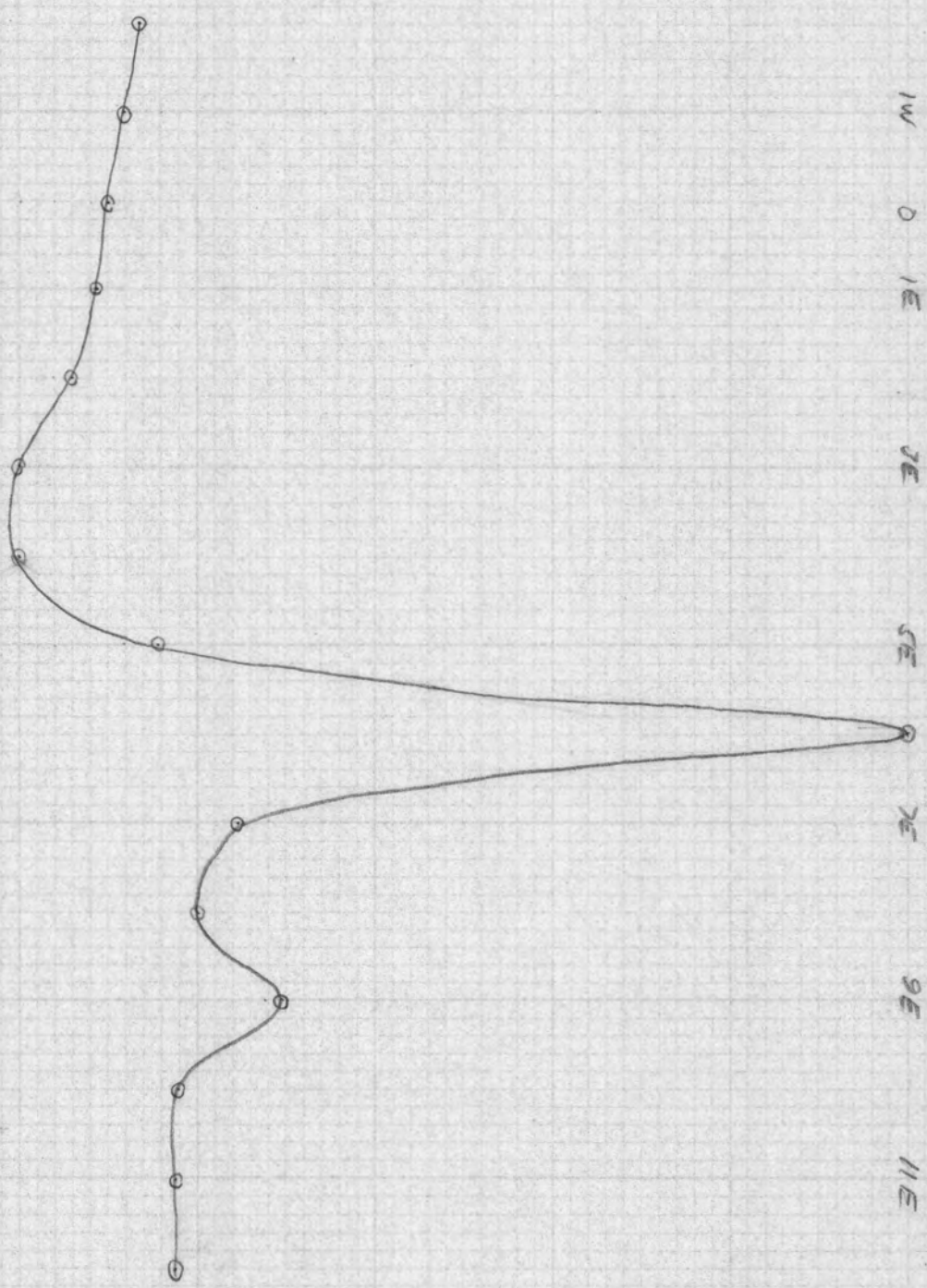


Line 13  
Iron King

7W 5W 3W 1W 0 1E 2E 3E 4E 5E 7E 9E 11E

0 5 10

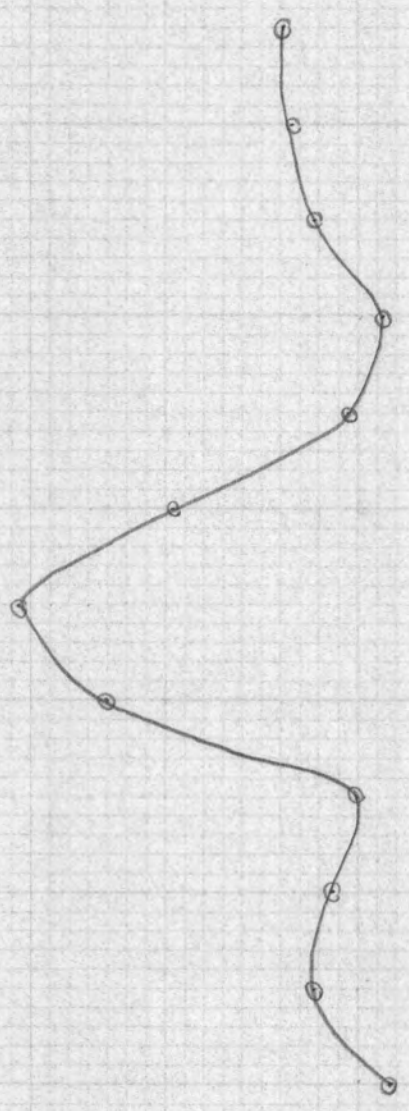
Line 14  
Iron King



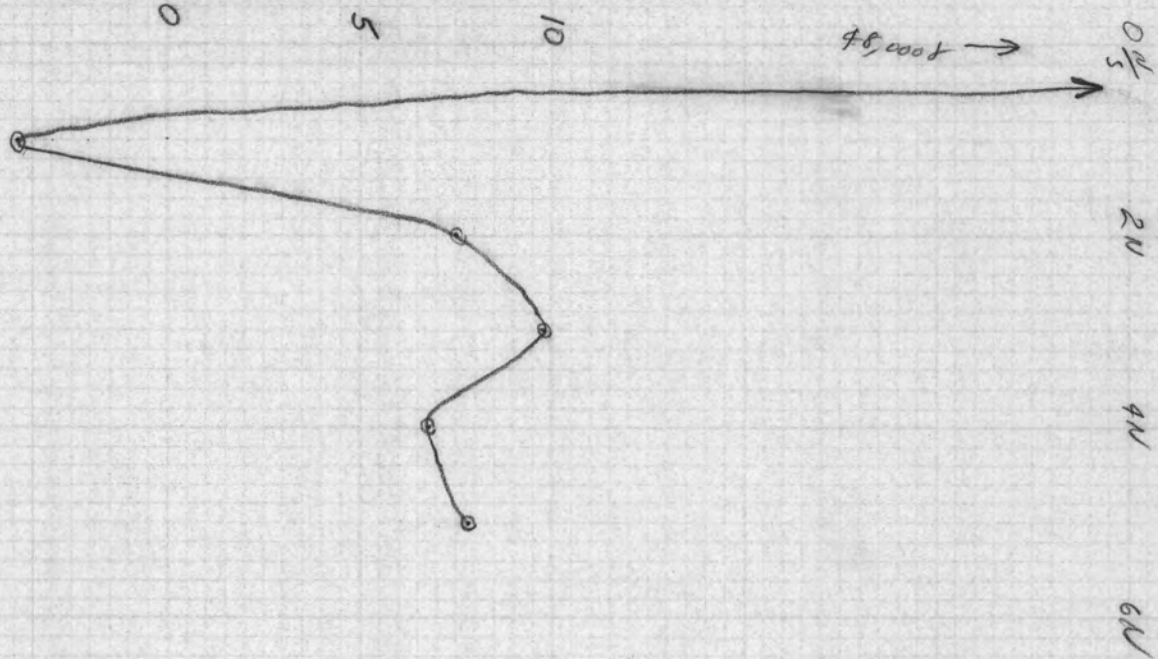


7W 5W 3W 1W 0 1E 3E 5E 7E 9E 11E

0 5 10

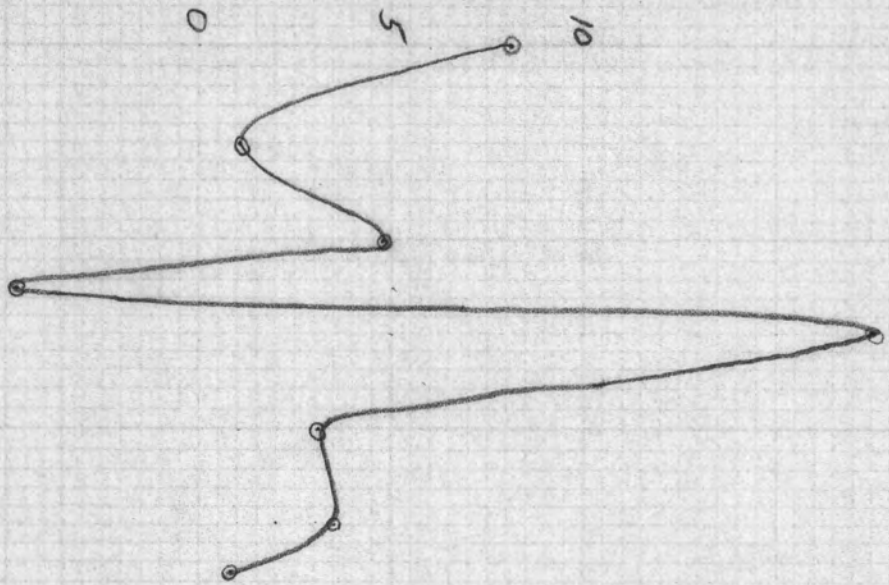


Line 15  
Iron King



Line 16  
Iron King





Line 17  
Iron King

THOUSANDS OF GAMMAS

0—

5—

10—

15—

12

14

16

18

20

22

24

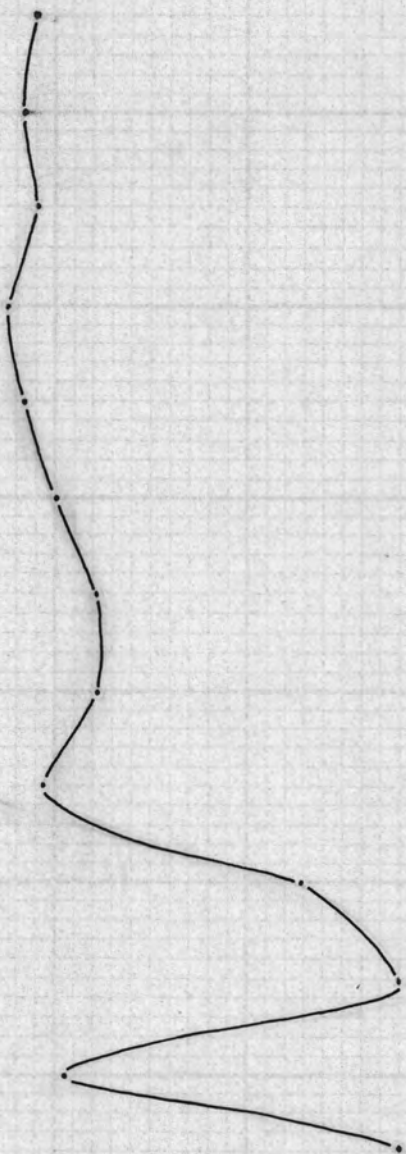
26

28

HUNDREDS

OF

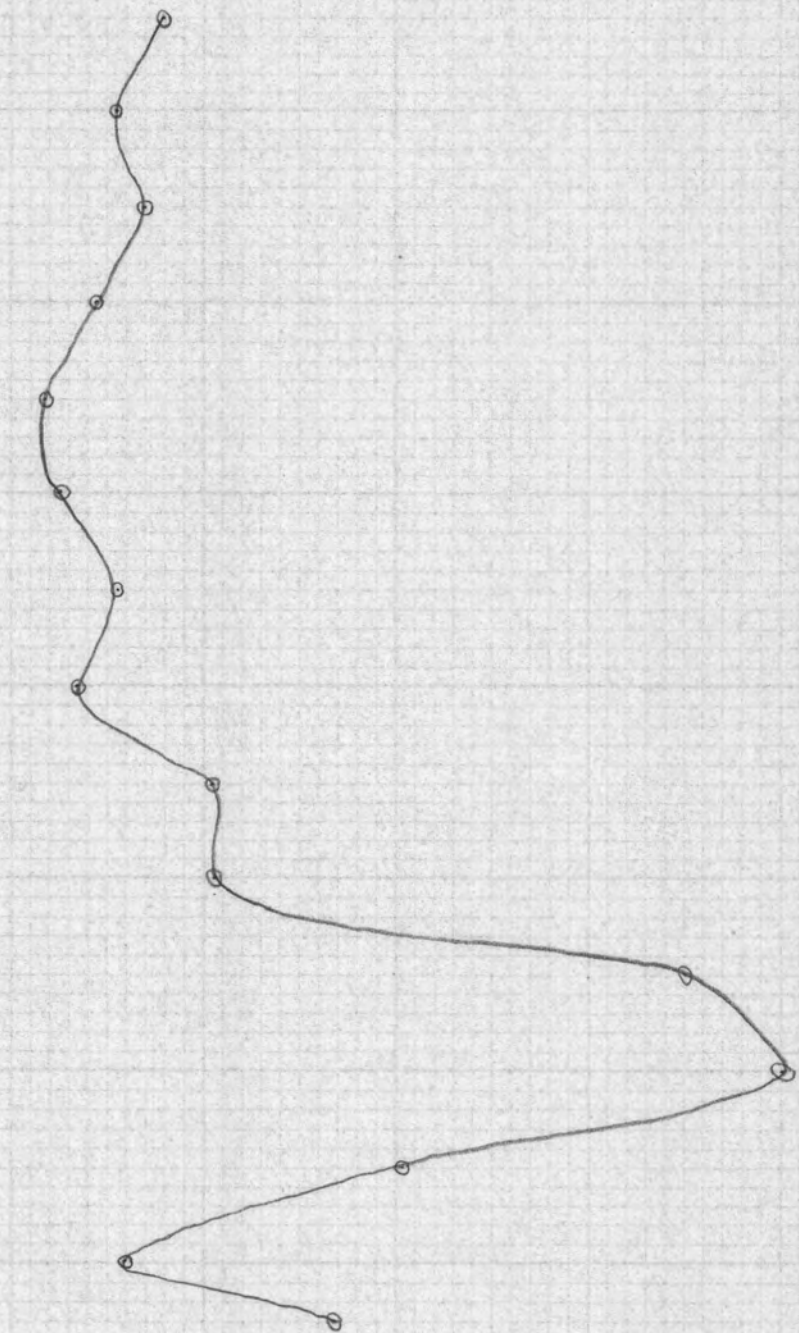
FEET



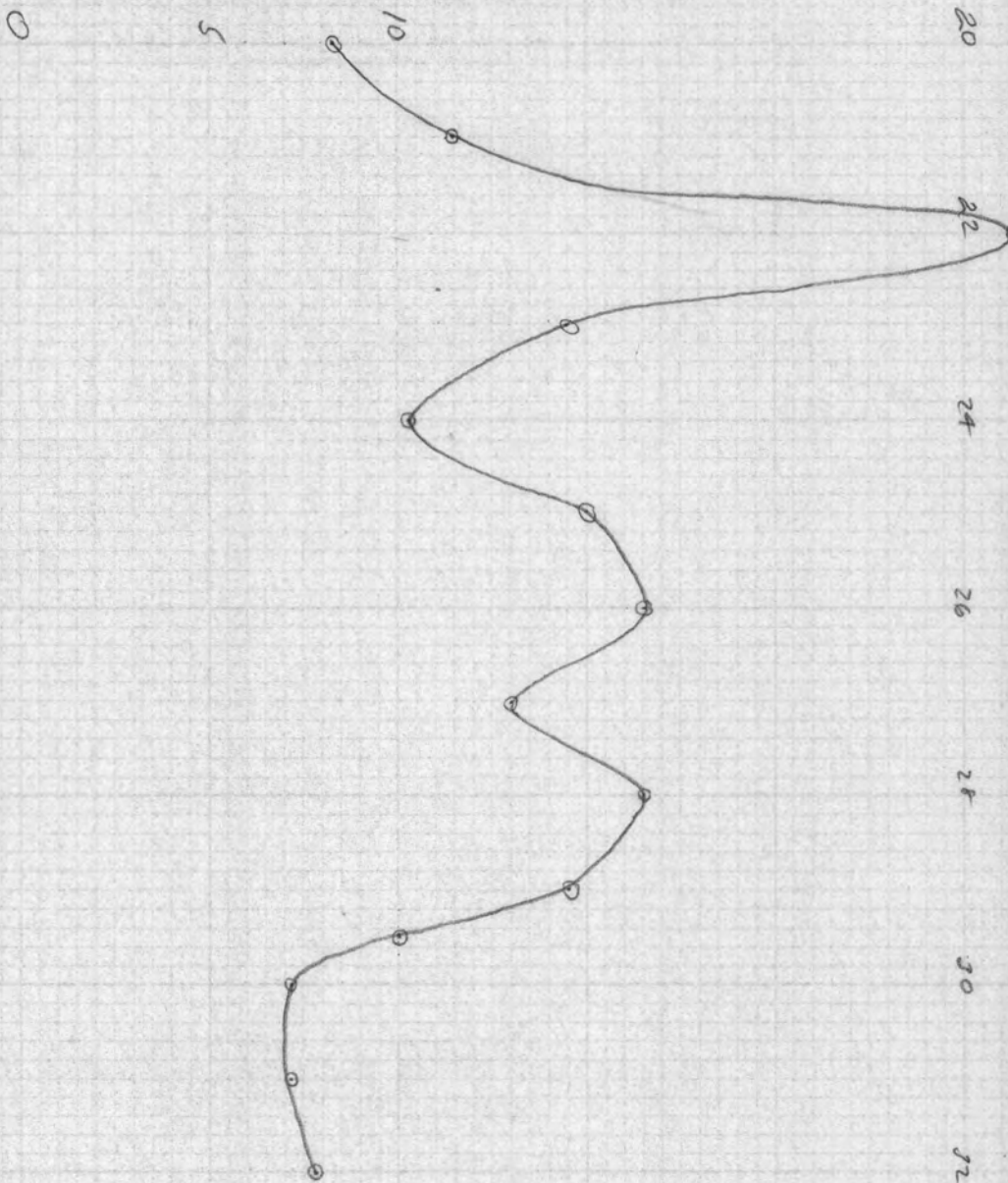
Road Traverse "D"



0 2 4 6 8 10 12 14 16 18 20



Rd Traverse "B"



Rd. Traverse "A" cont.  
Iron King

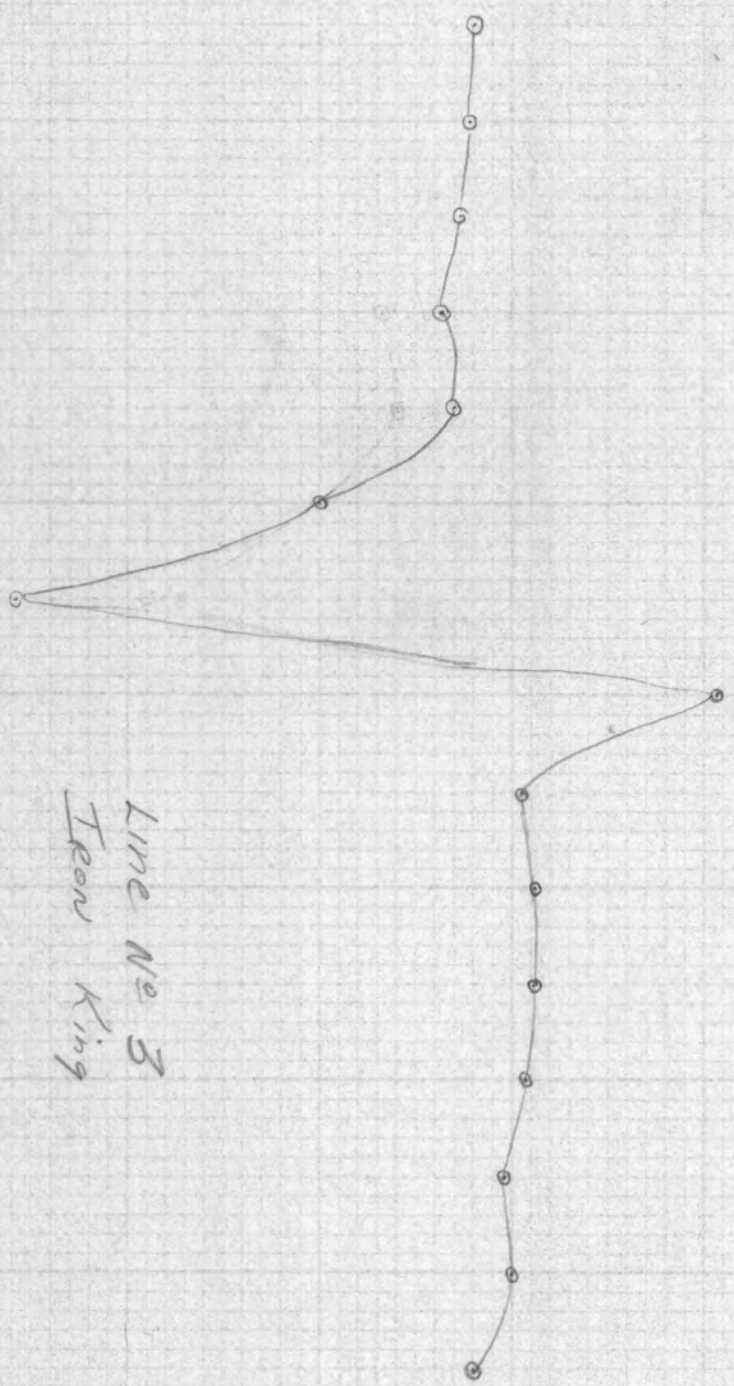




Rd. Traverse "A"  
Iron King

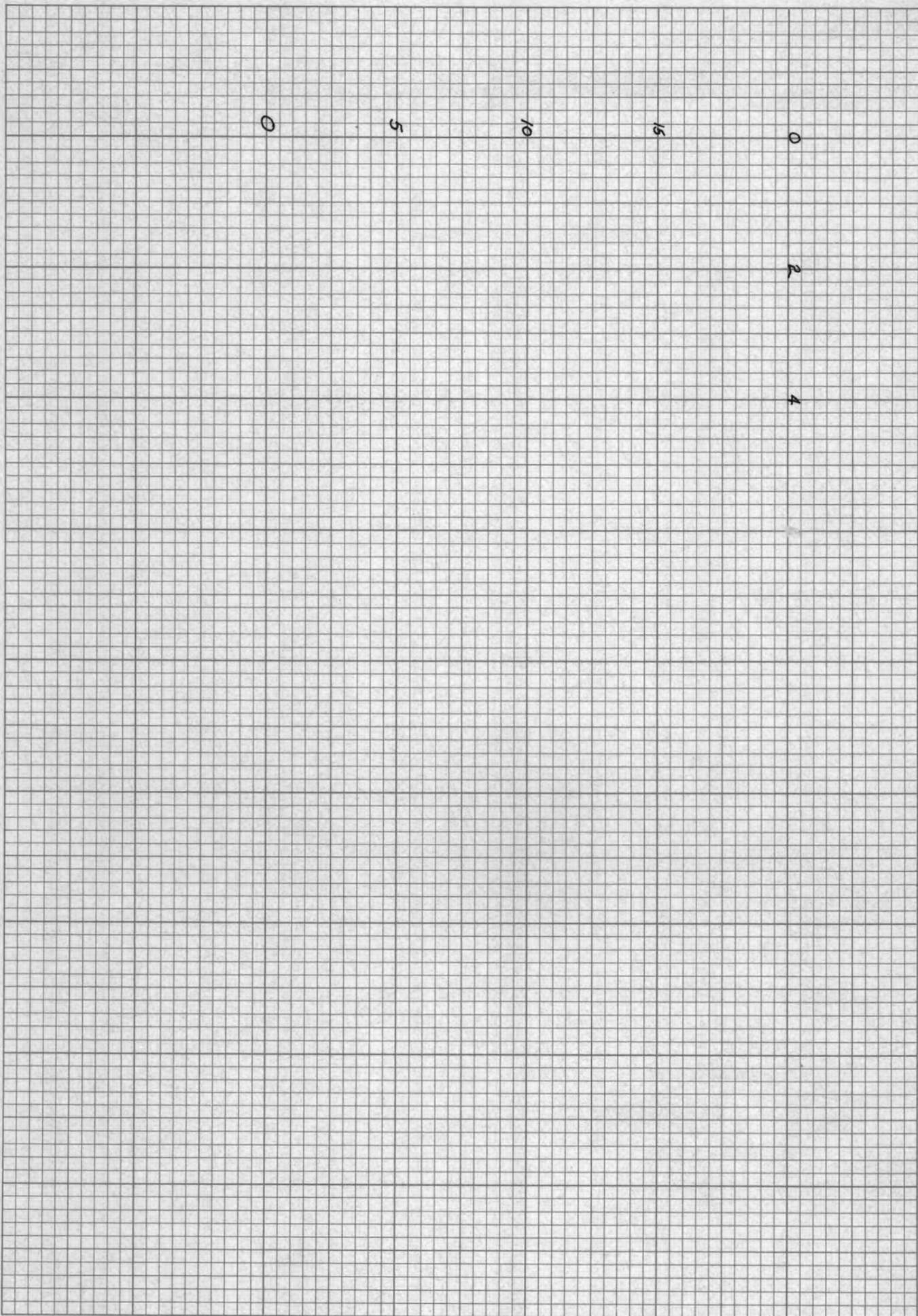
7W 5W 3W 1W 0 1E 3E 5E 7E 9E

10  
5  
0



Line No 3  
Iron King





NO. 340R-10 DIETZGEN GRAPH PAPER  
10 X 10 PER INCH

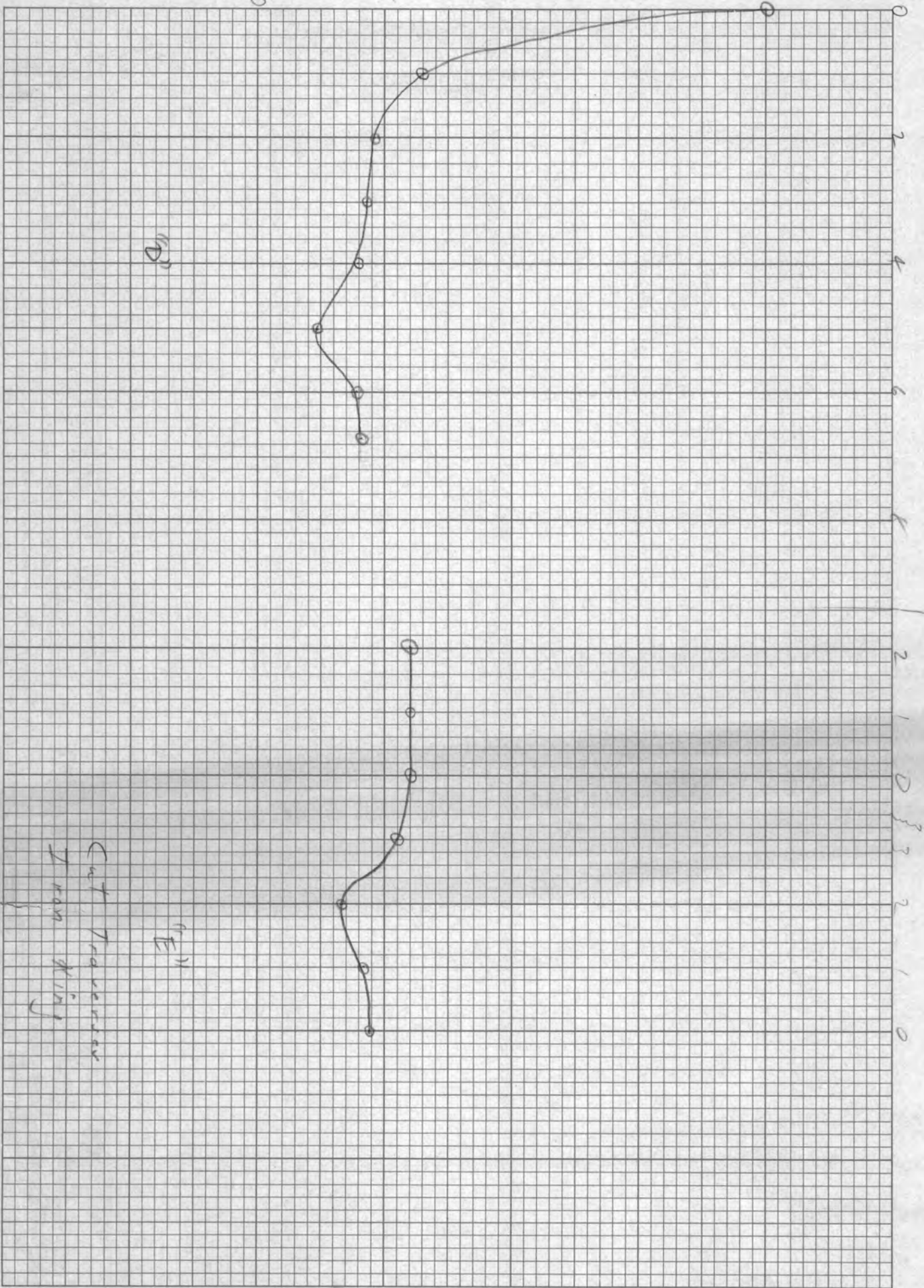
EUGENE DIETZGEN CO.  
MADE IN U. S. A.



"D"

"E"

Cut Taper  
I ran King



ASSAY LOG DDH #1 - IRON KING

<u>Footage</u>	<u>Assay</u>	
25.5 - 27.5	44.8	
27.5 - 33	22.0	
33 - 35	41.4	
35 - 39	10.3	
39 - 41	32.6	
41 - 43	24.2	
43 - 45	47.1	
45 - 47	34.8	
47 - 49	57.0	
49 - 51	61.0	Interval 25.5' - 54.0'
51 - 54	59.0	28.5' of 36.0% Fe
54 - 84.5	0.0*	
84.5 - 90	21.6	
90 - 96	15.3	
96 - 98	57.9	
98 - 100	62.4	Interval 84.5' - 115.5'
100 - 102	5.4	31' of 24.8% Fe
102 - 104.5	30.6	
104.5 - 106.5	12.9	
106.5 - 109	5.8	
109 - 111.5	52.5	
111.5 - 115.9	14.9	

\*Estimated grade because interval is too low to assay.



ASSAY LOG DDH #3 - IRON KING

<u>Footage</u>	<u>Assay</u>	
90.5 - 93	45.7	
93 - 95	8.1	
95 - 97	18.2	
97 - 100	14.0	
100 - 102	44.9	
102 - 104	33.7	
104 - 107	13.6	
107 - 130.5	0.0*	Interval 90.5' - 107'
130.5 - 132.5	27.0	16.5' of 24.7% Fe
132.5 - 134.5	50.2	
134.5 - 136.5	39.6	
136.5 - 139	34.5	
139 - 150.5	0.0*	Interval 130.5' - 139.0'
150.5 - 152.5	18.1	8.5' of 37.6% Fe
152.5 - 154.5	14.4	
154.5 - 156.5	24.0	
156.5 - 158.5	36.1	
158.5 - 162	24.4	
162 - 166	21.6	
166 - 169.5	26.0	
169.5 - 172	18.8	Interval 150.5' - 217'
172 - 176	17.0	65.5' of 19.9% Fe
176 - 179.7	18.3	
179.7 - 182	8.5	
182 - 186	34.8	
186 - 190	20.4	
190 - 195	19.0	
195 - 200	20.0	
200 - 205	12.3	
205 - 210	13.8	
210 - 217	11.9	

\* Estimated grade because interval not assayed due to low grade.

ASSAY LOG CDH #4 - IRON KING

<u>Footage</u>	<u>Assay</u>	
100 - 105	11.3	
105 - 140	5.0*	
140 - 145	15.6	Interval 140' - 330' 190' of 18.8% Fe
145 - 150	17.2	
150 - 155	18.6	
155 - 160	20.9	
160 - 165	17.2	
165 - 170	23.8	Interval 140' - 175' 35' of 19.3% Fe
170 - 175	21.7	
175 - 180	43.0	
180 - 185	32.5	
185 - 190	34.0	
190 - 195	37.4	Interval 175' - 220' 45' of 31.7% Fe
195 - 200	14.5	
200 - 205	29.1	
205 - 210	41.3	
210 - 215	27.7	
215 - 220	26.0	Interval 175' - 285' 110' of 17.9% Fe
220 - 225	21.2	
225 - 230	18.1	
230 - 235	20.0	
235 - 240	17.1	
240 - 245	12.7	Interval 295' - 330' 35' of 21.8% Fe
245 - 250	14.9	
250 - 255	19.6	
255 - 260	13.9	
260 - 265	13.0	
265 - 270	15.5	
270 - 275	12.0	
275 - 280	12.8	
280 - 285	14.7	
285 - 290	0.0*	
290 - 295	0.0*	
295 - 300	22.2	
300 - 305	22.1	
305 - 310	29.8	
310 - 315	25.7	
315 - 320	16.5	
320 - 325	19.5	
325 - 330	17.2	

\*Estimated grade because interval is too low to assay.



5  
ASSAY LOG DDH #6 - IRON KING

<u>Footage</u>	<u>Assay</u>	
136.5 - 139.5	41.1	Interval 136.5 - 226'
139.5 - 142.5	15.2	Wtd. Assay = 89.5' of 30.7% Fe
142.5 - 146	16.6	
146 - 149	29.4	
149 - 152	25.3	
152 - 154	24.6	
154 - 158	7.3	
158 - 160	37.2	Interval 158' - 218'
160 - 162	34.7	Wtd. Assay = 60.0' of 35.6% Fe
162 - 164	47.5	
164 - 167	28.2	
167 - 169	45.1	
169 - 171	48.0	
171 - 174	55.0	
174 - 177	33.9	
177 - 180	48.1	
180 - 184	19.7	Interval 158' - 180'
184 - 187	34.2	Wtd. Assay = 22.0 of 41.8% Fe
187 - 190	36.3	
190 - 193	29.4	
193 - 197	26.8	
197 - 201	24.8	
201 - 204	44.2	
204 - 207	51.5	
207 - 209	33.0	
209 - 216	23.2	
216 - 218	46.5	Interval 201' - 218'
218 - 226	18.8	Wtd. Assay = 17' of 37.5% Fe

ASSAY LOG DDH #6 - IRON KING

<u>Footage</u>	<u>Assay</u>	
104 - 106	35.9	Interval 104-206
106 - 109	4.0	Wt. Assay 102' of 21.1% Fe
109 - 112	19.0	
112 - 114	6.7	Interval 104-121
114 - 118	31.8	Wt. Assay 17' of 19.9% Fe
118 - 119	3.6	
119 - 121	26.9	Interval 126-159.5
121 - 126	8.0	Wt. Assay 33.5' of 28.7% of Fe
126 - 128.5	37.6	
128.5 - 131	32.7	Interval 126-131
131 - 139	13.6	Wt. Assay 5' of 35.1% Fe
139 - 142	27.3	
142 - 145	39.6	Interval 139-148
145 - 148	47.5	Wt. Assay 9' of 38.1% Fe
148 - 149.5	9.3	
149.5 - 151.5	23.0	Interval 149.5-159.5
151.5 - 154	26.0	Wt. Assay 10' of 31.9% Fe
154 - 157	38.5	
157 - 159.5	37.0	Interval 159.5-206
159.5 - 164	7.7	Wt. Assay 46.5' of 17.4% Fe
164 - 167	27.5	
167 - 168	6.2	Interval 181-189
168 - 172	35.1	Wt. Assay 8' of 28.4% Fe
172 - 174	7.5	
174 - 176.5	21.8	Interval 272-294
176.5 - 178	5.9	Wt. Assay 22' of 22.1% Fe
178 - 180	16.5	
180 - 181	5.9	Interval 272-279
181 - 184	48.7	Wt. Assay 7' of 27.4% Fe
184 - 187	12.4	
187 - 189	22.0	Interval 288-294
189 - 196	8.0	Wt. Assay 6' of 21.8% Fe
196 - 199	24.8	
199 - 203	17.0	
203 - 204	6.2	
204 - 206	17.4	
206 - 242	None	
242 - 244	16.3	
244 - 264	None	
264 - 266	32.9	
266 - 272	None	
272 - 274	34.6	
274 - 275	8.1	
275 - 279	28.6	
279 - 281	10.3	
281 - 285	30.7	
285 - 288	7.0	
288 - 290	26.1	
290 - 292	3.6	
292 - 294	35.7	



ASSAY LOG CDH #7 - IRON KING

<u>Footage</u>	<u>Assay</u>
115 - 120	11.1
120 - 125	10.7
125 - 130	12.7
130 - 135	5.0
135 - 140	3.4
140 - 145	3.0
145 - 150	3.4
150 - 155	4.5
155 - 160	6.0

Interval 115 - 160  
No plus 20% iron

ASSAY LOG DDH #8 - IRON KING

<u>Footage</u>	<u>Assay</u>	
50 - 55	10.6	
55 - 60	7.6	
60 - 65	7.8	
65 - 70	7.4	Interval 50' - 88' No plus 20% Fe
70 - 75	14.9	
75 - 80	6.4	
80 - 84	5.5	
84 - 88	11.3	



ASSAY LOG DDH #9 - IRON KING

<u>Footage</u>	<u>Assay</u>	
20 - 24	52.1	
24 - 34	5.0*	
34 - 36	46.6	
36 - 38	44.9	
38 - 40	38.8	
40 - 42	16.4	
42 - 44	17.6	
44 - 46	48.7	
46 - 48	41.7	
48 - 50	29.6	
50 - 52	40.1	
52 - 54	34.3	
54 - 56	29.4	
56 - 58	39.2	
58 - 60	52.7	
60 - 62	52.5	
62 - 64.8	42.2	
64.8 - 70	46.5	
70 - 72	31.2	
72 - 74	38.6	
74 - 76	21.4	
76 - 78	27.7	
78 - 80	36.1	
80 - 82	19.8	
82 - 85	5.0*	
85 - 87	30.7	
87 - 89	23.2	
89 - 91	51.5	
91 - 93	35.2	
93 - 95	36.1	
95 - 97	5.0*	
97 - 99	36.1	
99 - 100	5.0*	
100 - 102	19.0	
102 - 105	5.0*	
105 - 107	40.4	
107 - 109	23.2	
109 - 111	18.8	
111 - 113	23.1	
113 - 116	5.0*	
116 - 118	19.7	
118 - 119	5.0*	
119 - 121	31.6	
121 - 184	0.0*	
184 - 186	17.3	
186 - 187	5.0*	
187 - 189	31.9	
189 - 191	26.2	
191 - 192	5.0*	
192 - 194	31.7	
194 - 196	5.0*	

Interval 20' - 220'  
200' of 16.9% Fe

Interval 20' - 72'  
52' of 31.0% Fe

Interval 72' - 121'  
49' of 23.0% Fe

Interval 187' - 202'  
15' of 22.8% Fe

Assay Log DDH #9 (Cont'd.)

Iron King

<u>Footage</u>	<u>Assay</u>
196 - 198	34.3
198 - 199	5.0*
199 - 202	24.3
202 - 206	10.9
206 - 211	16.1
211 - 213	16.4
213 - 216	5.0*
216 - 218	16.5
218 - 220	23.8

\*Estimated grade for intervals too low to assay.



ASSAY LOG DDH #10 - IRON KING

<u>Footage</u>	<u>Assay</u>
0 - 210	None
210 - 211	Med.
211 - 262	None
262 - 263	Med.
263 - 332	None

No assays because there is essentially no iron to assay.

ASSAY LOG DDH #12 - IRON KING

<u>Footage</u>	<u>Assay</u>	
168 - 174	33.2	
174 - 176	5.0*	
176 - 178	35.1	Interval 168' - 190' 22' of 19.2% Fe
178 - 180	5.0*	
180 - 182	21.4	
182 - 188	5.0*	
188 - 190	30.6	

\*Estimated grade because interval is too low to assay.



ASSAY LOG DDH #14 - IRON KING

Footage

Assay

0-167

None

ASSAY LOG DDH #1 - IRON KING

Footage	
25.5 - 27.5	44.8
27.5 - 33	22.0
33 - 35	41.4
35 - 39	10.3
39 - 41	32.6
41 - 43	24.2
43 - 45	47.1
45 - 47	34.8
47 - 49	57.0
49 - 51	61.0
51 - 54	59.0
54 - 84.5	0.0*
84.5 - 90	21.6
90 - 96	15.3
96 - 98	57.9
98 - 100	62.4
100 - 102	5.4
102 - 104.5	30.6
104.5 - 106.5	12.9
106.5 - 109	5.8
109 - 111.5	52.5
111.5 - 115.9	14.9

Assay	
44.8	
22.0	
41.4	
10.3	
32.6	
24.2	
47.1	
34.8	
57.0	
61.0	
59.0	
0.0*	
21.6	
15.3	
57.9	
62.4	
5.4	
30.6	
12.9	
5.8	
52.5	
14.9	

Interval 25.5' - 54.0' 28.5' or 36.0% Fe

Interval 84.5' - 115.5' 31' or 24.8% Fe

\*Estimated grade because interval is too low to assay.



ASSAY LOG DDH #3 - IRON KING

<u>Footage</u>	<u>Assay</u>	
90.5 - 93	45.7	
93 - 95	8.1	
95 - 97	18.2	
97 - 100	14.0	
100 - 102	44.9	
102 - 104	33.7	
104 - 107	13.6	
107 - 130.5	0.0*	Interval 90.5' - 107'
130.5 - 132.5	27.0	16.5' of 24.7% Fe
132.5 - 134.5	50.2	
134.5 - 136.5	39.6	
136.5 - 139	34.5	
139 - 150.5	0.0*	Interval 130.5' - 139.0'
150.5 - 152.5	18.1	8.5' of 37.6% Fe
152.5 - 154.5	14.4	
154.5 - 156.5	24.0	
156.5 - 158.5	36.1	
158.5 - 162	24.4	
162 - 166	21.6	
166 - 169.5	26.0	
169.5 - 172	18.8	Interval 150.5' - 217'
172 - 176	17.0	65.5' of 19.9% Fe
176 - 179.7	18.3	
179.7 - 182	8.5	
182 - 186	34.8	
186 - 190	20.4	
190 - 195	19.0	
195 - 200	20.0	
200 - 205	12.3	
205 - 210	13.8	
210 - 217	11.9	

\*Estimated grade because interval not assayed due to low grade.

ASSAY LOG CDH #4 - IRON KING

<u>Footage</u>	<u>Assay</u>	
100 - 105	11.3	
105 - 140	5.0*	
140 - 145	15.6	Interval 140' - 330'
145 - 150	17.2	190' of 18.8% Fe
150 - 155	18.6	
155 - 160	20.9	
160 - 165	17.2	
165 - 170	23.8	Interval 140' - 175'
170 - 175	21.7	35' of 19.3% Fe
175 - 180	43.0	
180 - 185	32.5	
185 - 190	34.0	
190 - 195	37.4	Interval 175' - 220'
195 - 200	14.5	45' of 31.7% Fe
200 - 205	29.1	
205 - 210	41.3	
210 - 215	27.7	
215 - 220	26.0	Interval 175' - 285'
220 - 225	21.2	110' of 17.9% Fe
225 - 230	18.1	
230 - 235	20.0	
235 - 240	17.1	
240 - 245	12.7	Interval 295' - 330'
245 - 250	14.9	35' of 21.8% Fe
250 - 255	19.6	
255 - 260	13.9	
260 - 265	13.0	
265 - 270	15.5	
270 - 275	12.0	
275 - 280	12.8	
280 - 285	14.7	
285 - 290	0.0*	
290 - 295	0.0*	
295 - 300	22.2	
300 - 305	22.1	
305 - 310	29.8	
310 - 315	25.7	
315 - 320	16.5	
320 - 325	19.5	
325 - 330	17.2	

*40/79.53 119.09 average for 230'*  
*40 39 32 350*  
*" over Burdine 1/2 of 100' = 50'*

\*Estimated grade because interval is too low to assay.



ASSAY LOG DDH #5 - IRON KING

<u>Footage</u>	<u>Assay</u>	
136.5 - 139.5	41.1	Interval 136.5 - 226' Wtd. Assay = 89.5' of 30.7% Fe
139.5 - 142.5	15.2	
142.5 - 146	16.6	
146 - 149	29.4	
149 - 152	25.3	
152 - 154	24.6	
154 - 158	7.3	
158 - 160	37.2	
160 - 162	34.7	Interval 158' - 218' Wtd. Assay = 60.0' of 35.6% Fe
162 - 164	47.5	
164 - 167	28.2	
167 - 169	45.1	
169 - 171	48.0	
171 - 174	55.0	
174 - 177	33.9	
177 - 180	48.1	
180 - 184	19.7	Interval 158' - 180' Wtd. Assay = 22.0' of 41.8% Fe
184 - 187	34.2	
187 - 190	36.3	
190 - 193	29.4	
193 - 197	26.8	
197 - 201	24.8	
201 - 204	44.2	
204 - 207	51.5	
207 - 209	33.0	
209 - 216	23.2	
216 - 218	46.5	Interval 201' - 218' Wtd. Assay = 17' of 37.5% Fe
218 - 226	18.8	

ASSAY LOG CDH #7 - IRON KING

<u>Footage</u>	<u>Assay</u>	
115 - 120	11.1	
120 - 125	10.7	
125 - 130	12.7	
130 - 135	5.0	
135 - 140	3.4	Interval 115 - 160 No plus 20% iron
140 - 145	3.0	
145 - 150	3.4	
150 - 155	4.5	
155 - 160	6.0	



ASSAY LOG DDH #6 - IRON KING

<u>Footage</u>	<u>Assay</u>	
104 - 106	35.9	Interval 104-206
106 - 109	4.0	Wt. Assay 102' of 21.1% Fe
109 - 112	19.0	
112 - 114	6.7	Interval 104-121
114 - 118	31.8	Wt. Assay 17' of 19.9% Fe
118 - 119	3.6	
119 - 121	26.9	Interval 126-159.5
121 - 126	8.0	Wt. Assay 33.5' of 28.7% of Fe
126 - 128.5	37.6	
128.5 - 131	32.7	
131 - 139	13.6	Interval 126-131
139 - 142	27.3	Wt. Assay 5' of 35.1% Fe
142 - 145	39.6	
145 - 148	47.5	Interval 139-148
148 - 149.5	9.3	Wt. Assay 9' of 38.1% Fe
149.5 - 151.5	23.0	
151.5 - 154	26.0	
154 - 157	38.5	Interval 149.5-159.5
157 - 159.5	37.0	Wt. Assay 10' of 31.9% Fe
159.5 - 164	7.7	
164 - 167	27.5	Interval 159.5-206
167 - 168	6.2	Wt. Assay 46.5' of 17.4% Fe
168 - 172	35.1	
172 - 174	7.5	
174 - 176.5	21.8	Interval 181-189
176.5 - 178	5.9	Wt. Assay 8' of 28.4% Fe
178 - 180	16.5	
180 - 181	5.9	
181 - 184	48.7	Interval 272-294
184 - 187	12.4	Wt. Assay 22' of 22.1% Fe
187 - 189	22.0	
189 - 196	8.0	
196 - 199	24.8	Interval 272-279
199 - 203	17.0	Wt. Assay 7' of 27.4% Fe
203 - 204	6.2	
204 - 206	17.4	
206 - 242	None	Interval 288-294
242 - 244	16.3	Wt. Assay 6' of 21.8% Fe
244 - 264	None	
264 - 266	32.9	
266 - 272	None	
272 - 274	34.6	
274 - 275	8.1	
275 - 279	28.6	
279 - 281	10.3	
281 - 285	30.7	
285 - 288	7.0	
288 - 290	26.1	
290 - 292	3.6	
292 - 294	35.7	

ASSAY LOG DDH #8 - IRON KING

<u>Footage</u>	<u>Assay</u>	
50 - 55	10.6	
55 - 60	7.6	
60 - 65	7.8	
65 - 70	7.4	Interval 50' - 88' No plus 20% Fe
70 - 75	14.9	
75 - 80	6.4	
80 - 84	5.5	
84 - 88	11.3	



ASSAY LOG DDH #2 - IRON KING

<u>Footage</u>	<u>Assay</u>	
20 - 24	52.1	
24 - 34	5.0*	
34 - 36	46.6	
36 - 38	44.9	
38 - 40	38.8	
40 - 42	16.4	
42 - 44	17.6	
44 - 46	48.7	
46 - 48	41.7	
48 - 50	29.6	
50 - 52	40.1	
52 - 54	34.3	
54 - 56	29.4	
56 - 58	39.2	Interval 20' - 220'
58 - 60	52.7	200' of 16.9% Fe
60 - 62	52.5	
62 - 64.8	42.2	
64.8 - 70	46.5	
70 - 72	31.2	
72 - 74	38.6	
74 - 76	21.4	
76 - 78	27.7	
78 - 80	36.1	Interval 20' - 72'
80 - 82	19.8	52' of 31.0% Fe
82 - 85	5.0*	
85 - 87	30.7	
87 - 89	23.2	
89 - 91	51.5	
91 - 93	35.2	
93 - 95	36.1	
95 - 97	5.0*	
97 - 99	36.1	Interval 72' - 121'
99 - 100	5.0*	49' of 23.0% Fe
100 - 102	19.0	
102 - 105	5.0*	
105 - 107	40.4	
107 - 109	23.2	
109 - 111	18.8	
111 - 113	23.1	
113 - 116	5.0*	
116 - 118	19.7	Interval 187' - 202'
118 - 119	5.0*	15' of 22.8% Fe
119 - 121	31.6	
121 - 184	0.0*	
184 - 186	17.3	
186 - 187	5.0*	
187 - 189	31.9	
189 - 191	26.2	
191 - 192	5.0*	
192 - 194	31.7	
194 - 196	5.0*	

ASSAY LOG DDH #2 - (Cont'd.)

<u>Footage</u>	<u>Assay</u>
196 - 198	34.3
198 - 199	5.0*
199 - 202	24.3
202 - 206	10.9
206 - 211	16.1
211 - 213	16.4
213 - 216	5.0*
216 - 218	16.5
218 - 220	23.8

Estimated grade for intervals too low to assay.



ASSAY LOG DDH #10 - IRON KING

<u>Footage</u>	<u>Assay</u>
0 - 210	None
210 - 211	Med.
211 - 262	None
262 - 263	Med.
263 - 332	None

No assays because there is essentially no iron to assay.

ASSAY LOG DDH #12 - IRON KING

<u>Footage</u>	<u>Assay</u>	
168 - 174 6'	33.2	
174 - 176 2'	5.0*	
176 - 178 2'	35.1	Interval 168' - 190' 22' of 19.2% Fe
178 - 180 2'	5.0*	
180 - 182 2'	21.4	
182 - 188 6'	5.0*	
188 - 190 2'	30.6	
22		

\*Estimated grade because interval is too low to assay.

Why discontinued



ASSAY LOG DDH #14 - IRON KING

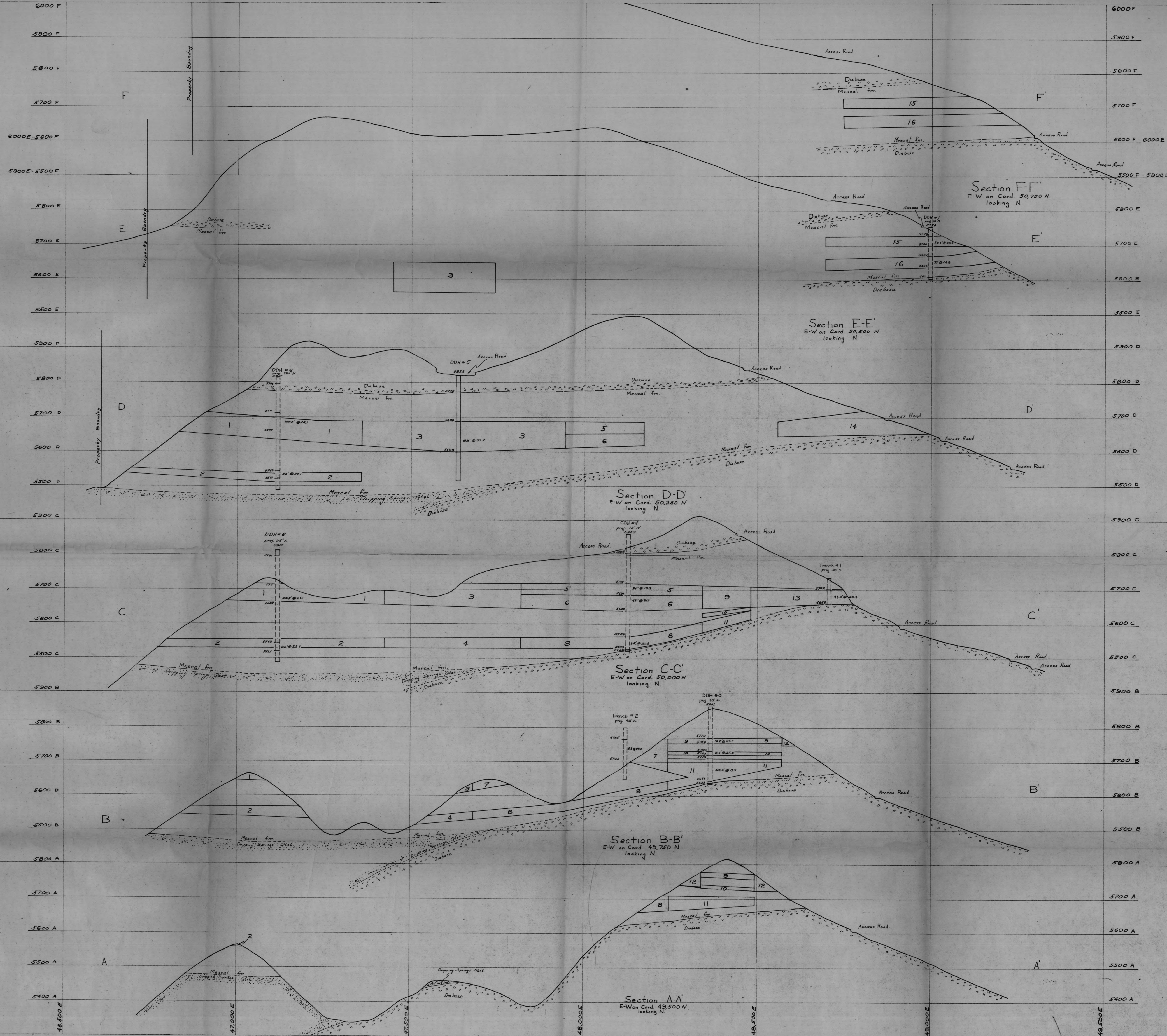
Footage

0 - 167

Assay

None





REVISIONS	SURVEY	DATE	CERRO DE PASCO CORPORATION	BLOCK
	GEOLOGY	DATE 5-60	IRON KING	EAST-WEST SECTIONS
	DRAWN	DATE 5-60	PRELIMINARY DRILLING	DRAWING NUMBER
	TRACED	DATE 5-60	SCALE	COORD.
			DATUM	



Cross Sections  
↓  
Picks  
South End





LEGEND

- Survey Station
- Claim Monument
- Location Pit or Cut
- Claim Monument
- Witness Corner
- Permanent Survey Point
- Temporary Survey Point & Elevation

This Map Complete  
March 1959  
SAC  
Revision

Note: Coordinates & Bearings of all Points Need to be Corrected  
to Conform to Dec. 1968 Transition

Stadia Survey

PLANT UNIT NO.	REVISIONS	SURVEY BY	DATE	CERRO DE PASCO CORPORATION	NEW YORK	BLOCK
		GEOLOGY BY	DATE	IRON KING - CLAIM & SURVEY MAP		DRAWING NO.
		DRAWN BY	DATE	SCALE - 1" = 300'	COORD - 1,000'	DATUM - SL
		TRACED BY	DATE			1K-4-2-E-ABU







NE.  
J. S.END-TRENCH №2

N. S.END-OUTCROP SAMPLING-PEUGH POINT

W. S.END-TRENCH N<sup>o</sup>1, (Near N.Sideline Iron King N<sup>o</sup>4).

PLANT UNIT No.	REVISIONS	SURVEY BY <u>RR</u>	DATE <u>5-58</u>	CERRO DE PASCO CORPORATION	NEW YORK	BLOCK
		GEOLOGY BY	DATE	IRON KING-PROFILES OF TRENCHES & ASSAY RESULTS		DRAWING No. <u>IK-10-2-J-AEU</u>
		DRAWN <u>RR</u>	DATE <u>5-58</u>			
		TRACED <u>RA</u>	DATE <u>5-58</u>	SCALE - 1" TO 10'	COORD -	DATUM -



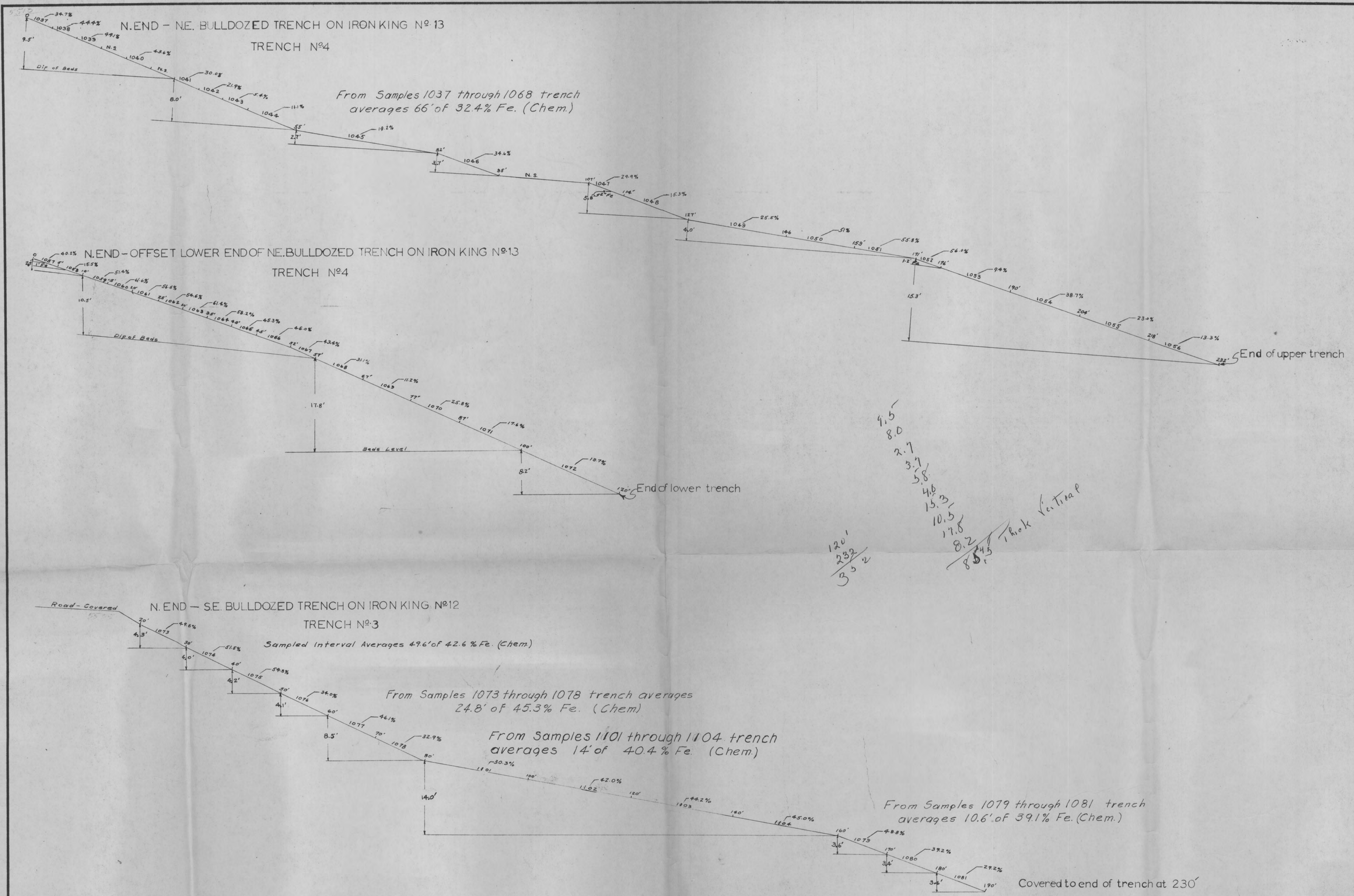
South End outc.

Trenches #1 & #2 & Trench

Scale 1" = 10'

DATE	BY	SCALE	PROJECT	NO.
1954	W. H. H. H.	1" = 10'	W. H. H. H.	1
1954	W. H. H. H.	1" = 10'	W. H. H. H.	1
1954	W. H. H. H.	1" = 10'	W. H. H. H.	1
1954	W. H. H. H.	1" = 10'	W. H. H. H.	1







Trenches #3 & #4

6" Iron Ring #12 & #13

Scale 1" = 10'

North end of pipe





LEGEND  
--- Iron Out crops  
--- Claim Boundaries  
--- Road  
--- 5000 --- Contour from USGS sheet 1:62500

Note: Coordinates & Bearings of all Points Used in this Survey are given in D.M.S. 1925 Transformation

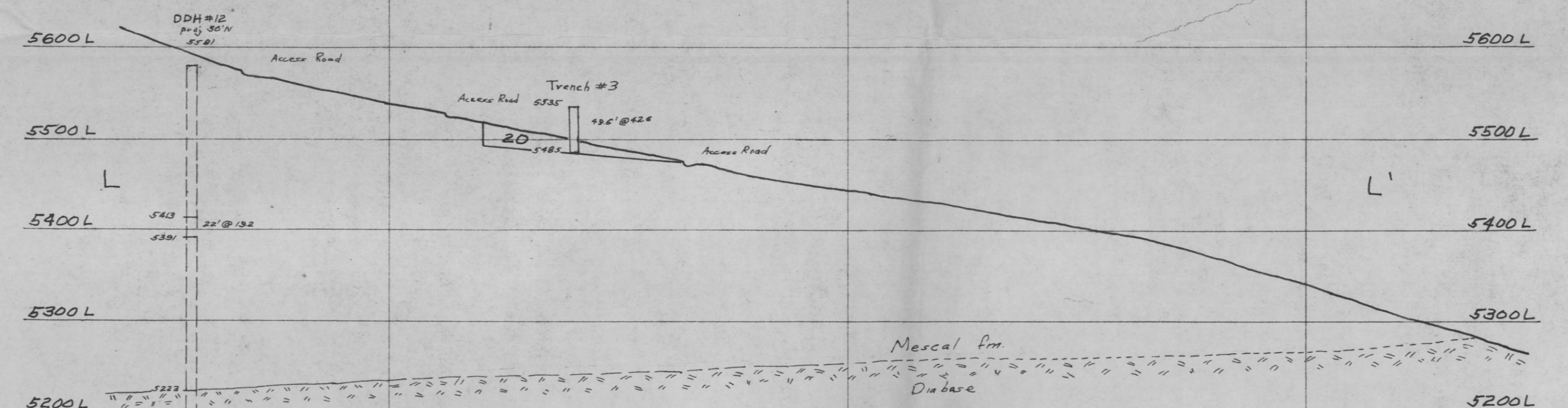
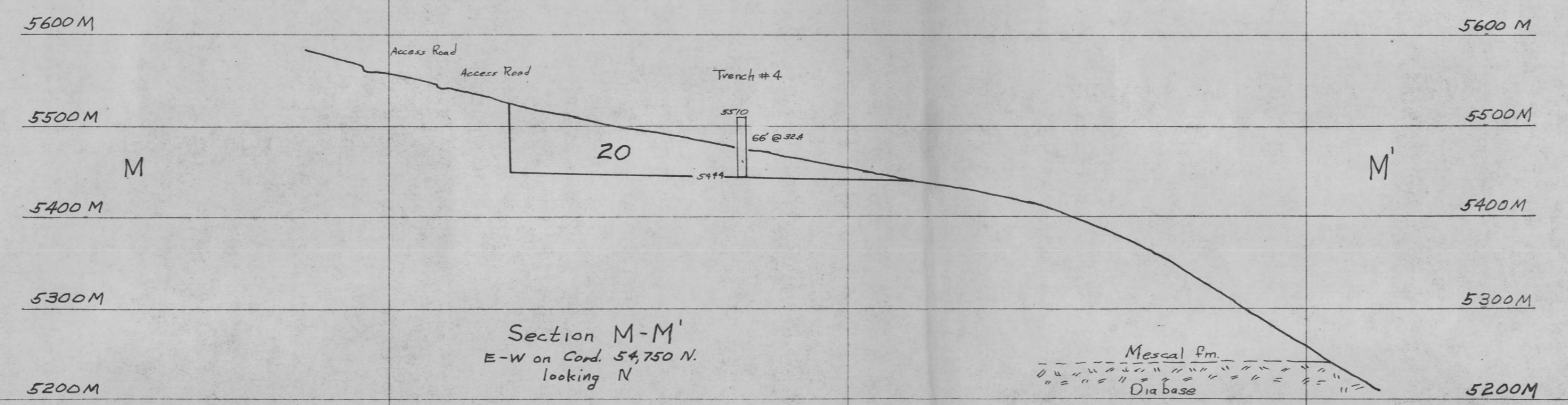
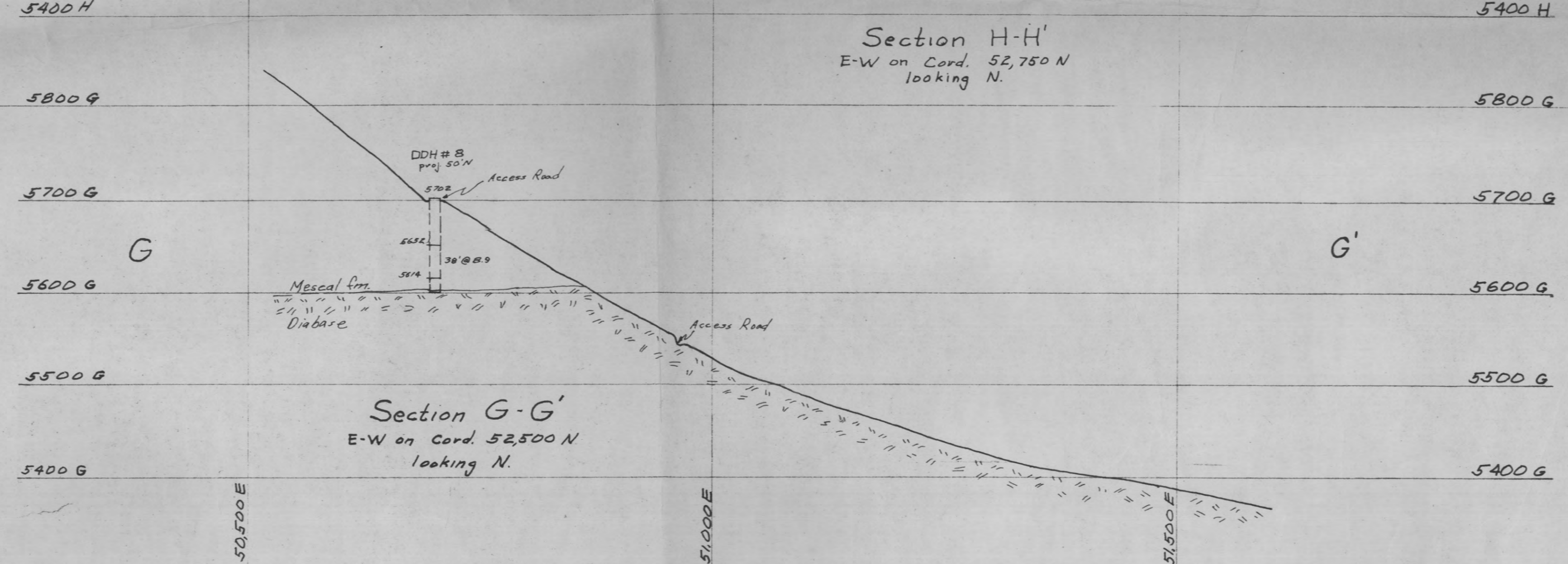
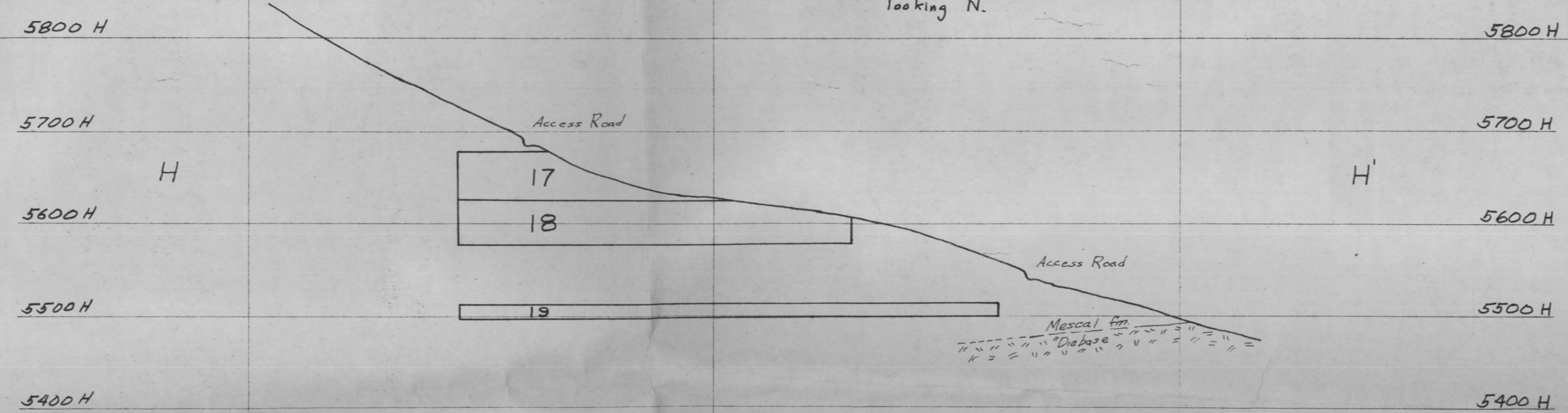
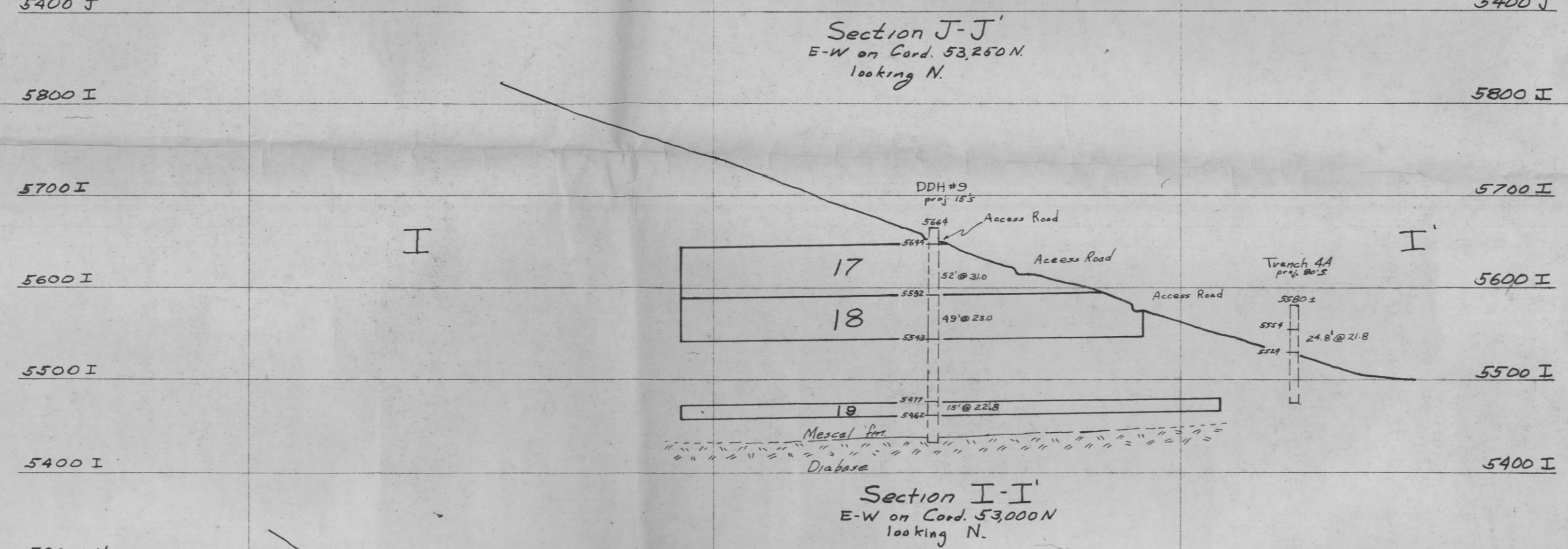
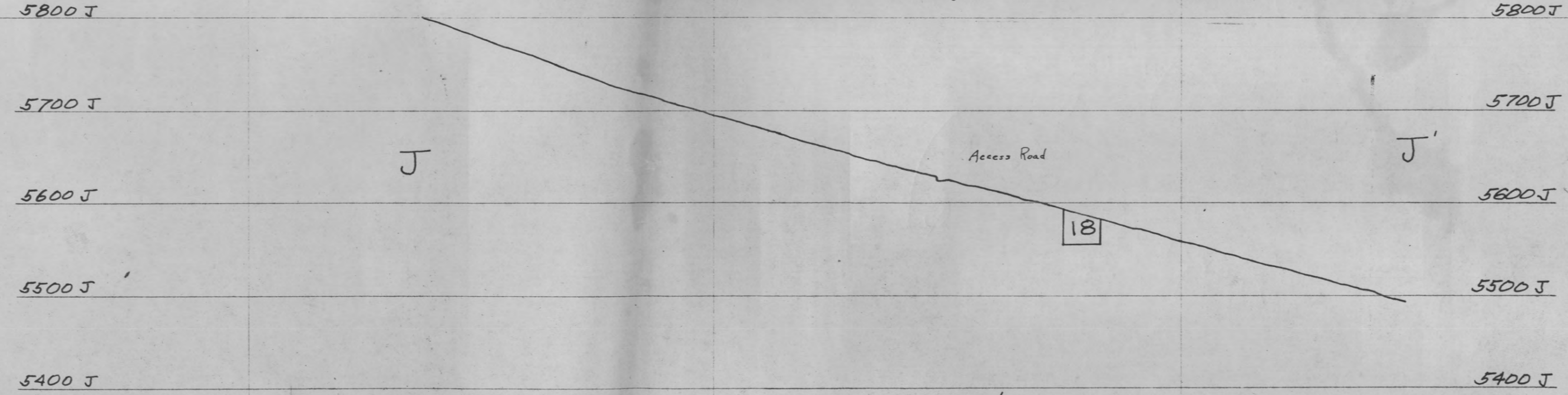
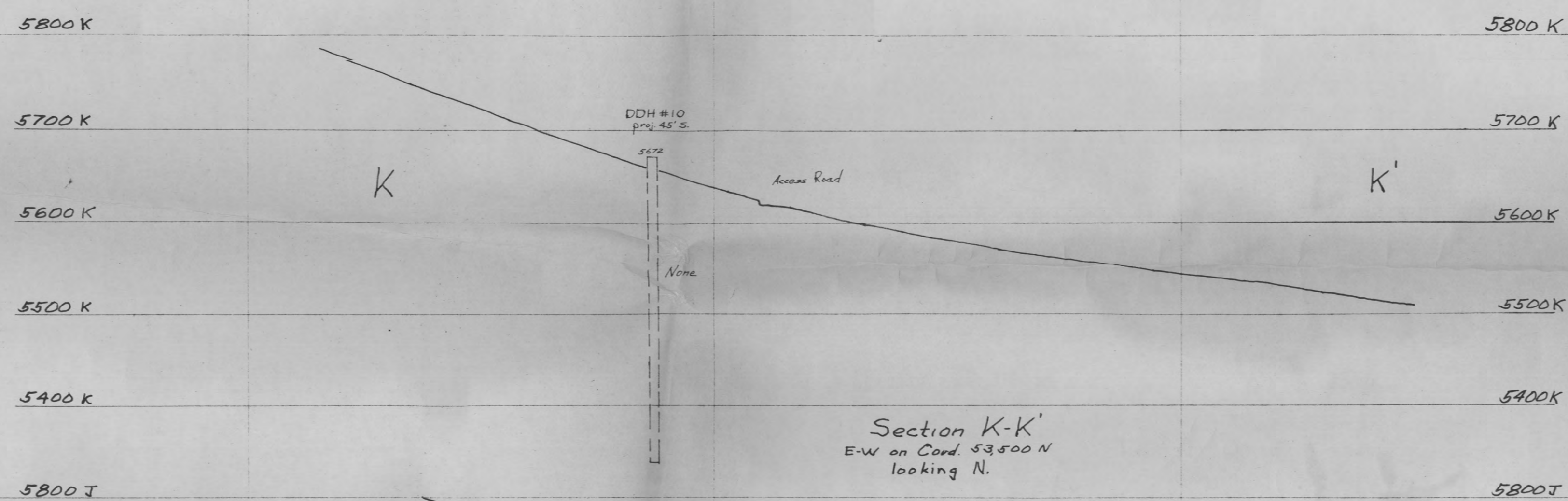
PLANT UNIT NO.	REVISIONS	SURVEY BY: R.A.	DATE: 1-21-58	CERRO DE PASCO CORPORATION	NEW YORK	BLOCK
		GEOLOGY BY: R.A.	DATE: 1-21-58	IRON KING AREA		
		DRAWN: R.A.	DATE: 1-23-58			DRAWING NO.
		TRACED: RA	DATE: 11-3-58	SCALE: 1" TO 300'	COORD: 1,000'	DATUM: S.L.
						1K-2-7-N-AEU



Contours & Surface  
outcrops  
No. 9  
Scale 1" = 300'

Contours & Surface outcrops





REVISIONS	SURVEY	DATE	CERRO DE PASCO CORPORATION	BLOCK
	GEOLOGY	5-60	IRON KING EAST-WEST SECTIONS	
	DRAWN	5-60	PRELIMINARY DRILLING	DRAWING NUMBER
	TRACED	5-60	SCALE	COORD. DATUM



Cross Sections  
of  
Blocks  
No End

Box 3671

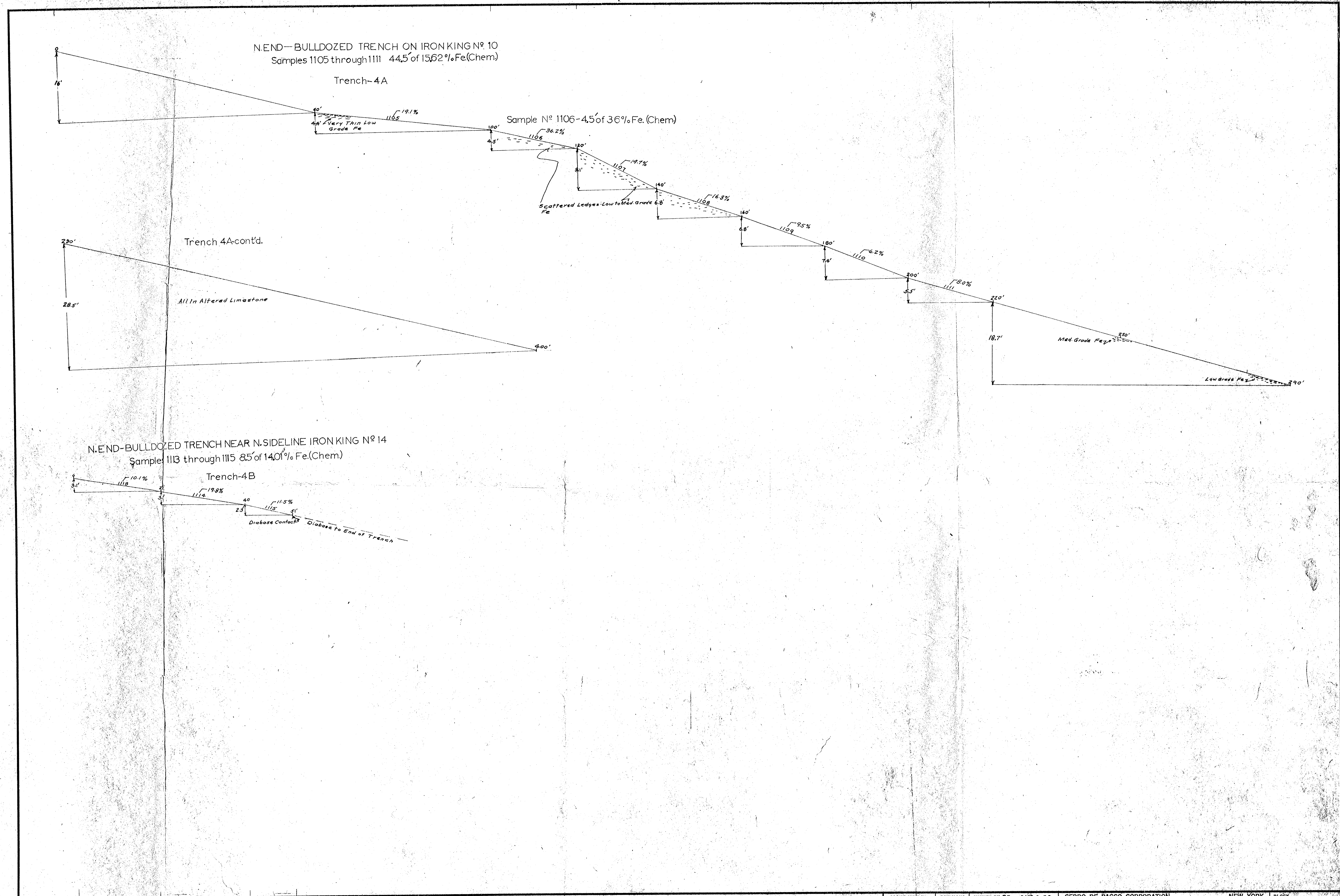






Correct Hole  
Pinpoints ~  
OS Boundaries  
1" = 100'

Correct Hole  
Pinpoints ~ OS Boundaries





Trancho 4 A + 4 B

Trm King #10

" " #14

Scale 1" = 10'



PLANT UNIT NO.	REVISIONS	SURVEY BY	DATE	CERRO DE PASCO CORPORATION	NEW YORK	BLOCK
	10-21-58 R A	GEOLGY BY	DATE 4-58	IRON KING — GENERAL GEOLOGY		4-85 N 445 E
		DRAWN - R R	DATE 4-58			DRAWING NO.
		TRACED R R	DATE 4-58	SCALE - 1" TO 100'	COORD - 500	1K-5-6-E-AEU (2)
				DATUM - SL		

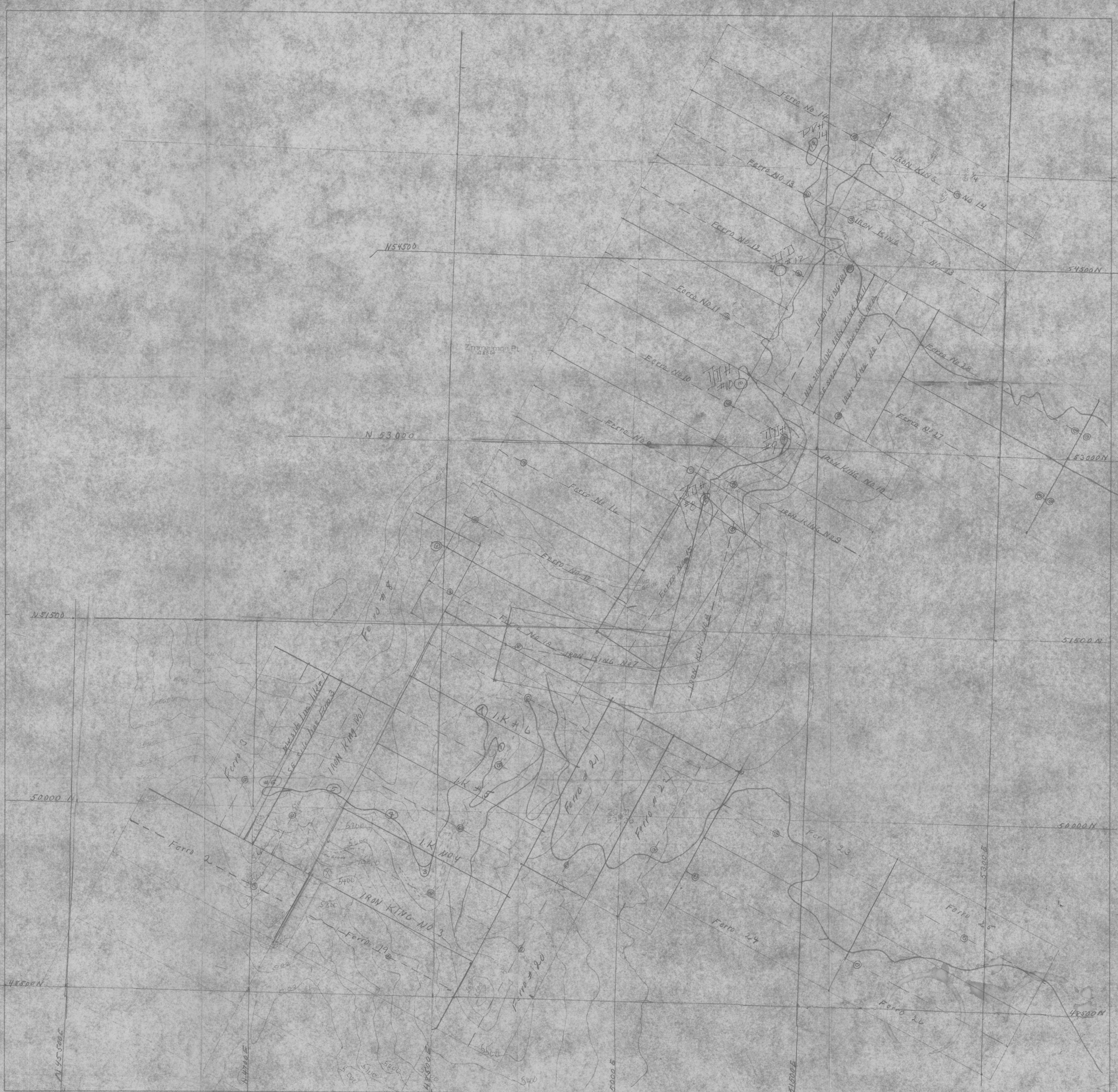


Trenches &  
Geology  
of outcrops  
Sault Ste. Marie

Scale  
1" = 100'

Geology Trenches Sault Ste. Marie





PLANT UNIT NO.	REVISION SURVEY BY	DATE	CERRO DE PASO CORPORATION	NEW YORK BLOCK
	GEOLOGY BY	DATE	IRON KING AREA	
	DRAWN BY	DATE		DRAWING NO.
	TRACED BY	DATE	SCALE 1" = 300'	1K-2-4-L AEU



Pontour

Proper Annotated  
Drill Holes

Scale - 1" = 300'

M. P. Ton  
Pearce  
Paine May







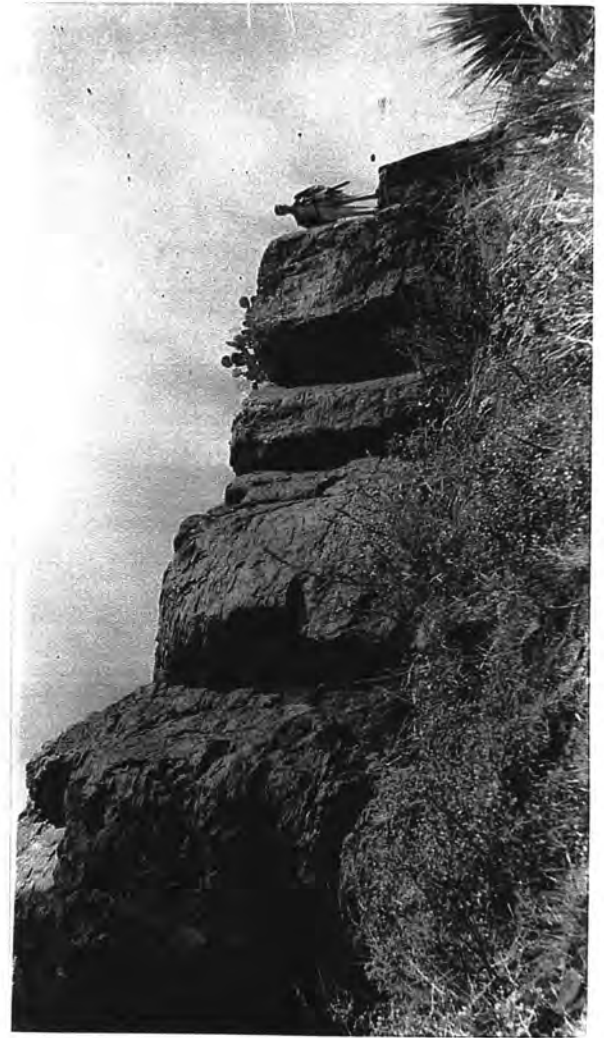
Madison  
2/11/23

Palms Roads & Drive Hwy

Palms Map  
Roads  
& DMS  
Scale 1"=300'







# KAISER STEEL CORPORATION

P O N T I A N A W O R K S  
P. O. Box 217 Fontana, California  
T e l e p h o n e V A L L E Y 2-5311

August 22, 1957

Mr. Charles H. Jonas  
Sands Hotel  
Phoenix, Arizona

Dear Mr. Jonas:

The report of analysis as determined by our Laboratory on the sample of iron ore, which you brought in recently, showed the following composition:

Fe %	P %	Mn %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	CaO %	MgO %	S %
66.7	.086	.10	1.60	1.01	.67	2.23	.011

The analysis showed that the sample was of good quality iron ore. May we suggest that you complete the two enclosed property sheet forms, returning one to us by mail and retaining the other property sheet for your own records.

After reviewing the information as shown on the property sheet, we will then advise in regard to any interest we might have to investigate the property with you or your representative, as a source of supply of open hearth iron ore.

We wish to thank you for the interest shown by bringing the sample to us for analysis.

Very truly yours,

K. B. Powell  
Superintendent  
Raw Materials

KBP:nkf  
Enclosures - 2



ARIZONA IRON MINES, INC.

( Iron King Group)

NORTH END

A type sample representing a considerable portion of the ore body at the North End of the Iron King Group was crushed to 100 Mesh.

Using a hand magnet, <sup>12 2 75</sup> if impossible to separate the magnetic portion as the entire mass adheard.

The sample at the laboratory at the Hibbing Lab. in Minn. was unquestionably run on a variable intensity wheel.

To clean up our sample, we made a slurry and decanted gangue material. This gave us a 69.10 iron content returned.

However, under the microscope you could see free particles of gangue.

For this reason, I am willing to assume the accuracy of the 69.6 Hibbing sample.

-----  
Mr. Charles Older

Dear Charles and Bob.

Bob Peugh is typing this letter, so enough excuses!

I spent a year and  $\frac{1}{2}$  research on Ferro Oxide, with the ultimate goal of producing a 99.5 to 99.9 non-synthetic iron oxide, in the hope that it would fill a field competitively with oxides of comparable grade made by electrolysis calcining and by chemical solution.

This being done on the gamble that an unchange from nature's form product would have electronic and microwave characteristics that would affect the product and bring about phenomena different than the synthetic.

It may prove crazy and valueless, but I've had a lot of encouragement from several scientist who say, " If you can get rid of the silica, and get it pure enough, it would be of tremendous interest to us, for a study of Xray diffraction, Lattice structure, surface transfiguration, and geometric pattern.

MAIN OFFICE:  
400 TORREY BUILDING.  
DULUTH 2, MINNESOTA

TELEPHONES:  
HIBBING AM 3-3613  
DULUTH RA 7-5068  
RENO FA 2-8818

## W. S. MOORE CO.

MINING AND CONTRACTING  
545 SOUTH CENTER STREET  
RENO, NEVADA

March 9, 1961

Mr. Charles H. Jonas  
4131 East Van Buren  
Phoenix, Arizona

Dear Mr. Jonas:

It was a pleasure meeting you in Phoenix last week and having a chance to look over some of the Arizona iron deposits.

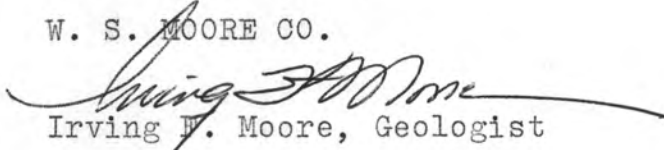
{ After due consideration it seems to me that the Iron King prospect north of Globe is the only one with sufficient tonnage potential to be of future interest to us. As we discussed in our field trip post mortem, this property has several defects but none are necessarily fatal in view of a fairly sizeable quantity of magnetite.

{ I am sending some of the grab samples I cut to our office in Hibbing, Minnesota, for analyses and concentration tests. These will probably take a couple of weeks but please bear with us as the results should provide a sound basis for coming to a decision on the prospect. I will see that copies of all such tests are furnished you.

Kindest personal regards,

Very truly yours,

W. S. MOORE CO.

  
Irving W. Moore, Geologist

cc: W.S.M.



# KAISER STEEL CORPORATION

F O N T A N A   W O R K S  
P. O. Box 217 Fontana, California  
T e l e p h o n e   V A l l e y   2 - 8 3 1 1

August 22, 1957

Mr. Charles H. Jonas  
Sands Hotel  
Phoenix, Arizona

Dear Mr. Jonas:

The report of analysis as determined by our Laboratory on the sample of iron ore, which you brought in recently, showed the following composition:

Fe %	P %	Mn %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	CaO %	MgO %	S %
66.7	.086	.10	1.60	1.01	.67	2.23	.011

The analysis showed that the sample was of good quality iron ore. May we suggest that you complete the two enclosed property sheet forms, returning one to us by mail and retaining the other property sheet for your own records.

After reviewing the information as shown on the property sheet, we will then advise in regard to any interest we might have to investigate the property with you or your representative, as a source of supply of open hearth iron ore.

We wish to thank you for the interest shown by bringing the sample to us for analysis.

Very truly yours,

K. B. Powell  
Superintendent  
Raw Materials

KBP:nkf  
Enclosures - 2

MAIN OFFICE:  
400 TORREY BUILDING,  
DULUTH 2, MINNESOTA

TELEPHONES:  
HIBBING AM 3-3613  
DULUTH RA 7-5068  
RENO FA 2-8818

## W. S. MOORE CO.

MINING AND CONTRACTING  
545 SOUTH CENTER STREET  
RENO, NEVADA

August 6, 1962

Mr. Charles H. Jonas  
Dynamic Research, Inc.  
1444 S. 27th St.  
Phoenix, Arizona

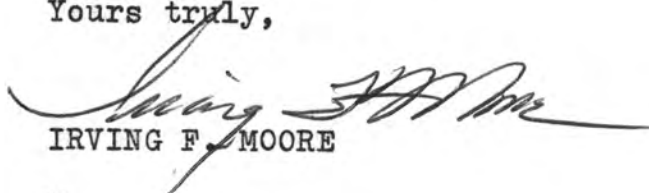
Dear Mr. Jonas:

I have copied off the figures available from my files that pertain to the Iron King mine and the results are attached herewith. I trust they will meet your requirements.

Inasmuch as we remain interested in any possible use for iron ore under a practical approach, either as a raw material or as a manufactured product, your continuing experiments are of more than academic interest to us. I expect to be in Arizona later this fall and I will stop in Phoenix so we can discuss the iron ore picture at greater length.

Kindest personal regards.

Yours truly,

  
IRVING F. MOORE

m



RESULTS OF TESTS ON IRON ORE FROM THE IRON KING MINE  
NEAR GLOBE, ARIZONA

Tests conducted by the Erie Laboratory of Pickands  
Mather, Hibbing, Minnesota, for the W. S. Moore Co.

CRUDE ANALYSIS

Sample	Fe	SiO <sub>2</sub>	P	S	TiO <sub>2</sub>
1. South Outcrop	53.57	9.57	0.72	0.007	0.04
2. South Low Grade	13.02	5.536	0.348	(High in CaCO <sub>3</sub> )	
3. North Trenches	58.99	5.84	0.021	0.003	0.11

MAGNETIC TUBE TESTS

Sample	Size	Product	% weight	Assay % Iron	% Silica	% Total Iron
1.	-100 mesh	Mag. Conc.	79.06	66.23		98.11
		Non-mag Tails	20.94	4.82		1.89
		Total	100.00	53.37	9.57	100.00
2.	-100 mesh	Mag. Conc.	22.12	54.33		92.32
		Non-mag Tails	77.88	1.29		77.68
		Total	100.00	13.02	5.36	100.00
3.	-100 mesh	Mag. Conc.	82.69	69.60		97.6
		Non-mag Tails	17.31	8.32		2.4
		Total	100.00	58.99	5.84	100.00

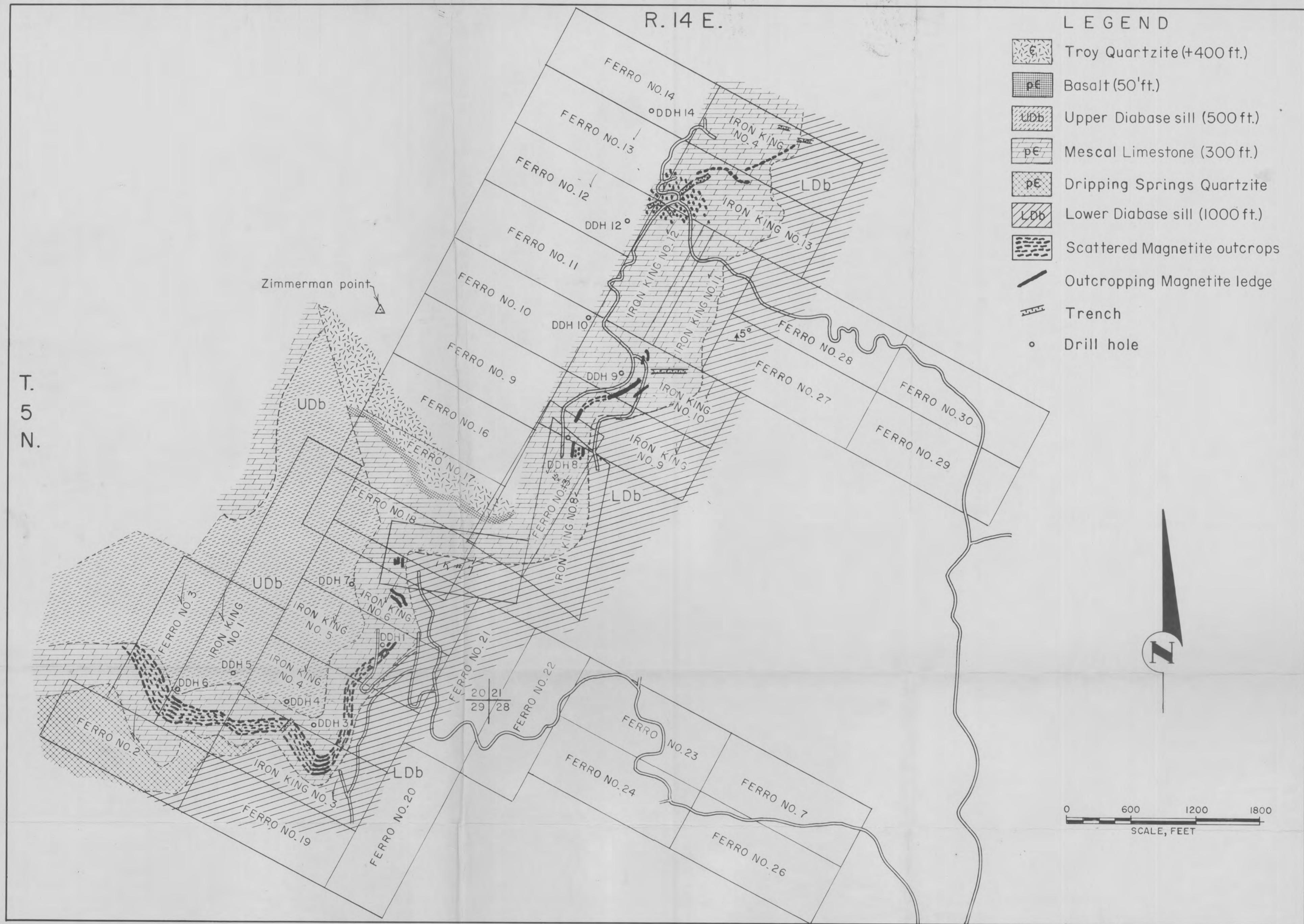


FIGURE 17.- Iron King-Ferro Magnetite Deposit, Gila County, Ariz.





UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

REGION III

DIVISION OF MINERAL RESOURCES

BUILDING 20, FEDERAL CENTER  
DENVER 25, COLORADO

August 30, 1962

Mr. Charles H. Jonas, Mining Engineer  
Dynamics Research, Inc.  
4131 East Van Buren  
Phoenix 34, Ariz.

Dear Mr. Jonas:

Enclosed is a copy of a chapter describing the iron occurrences at Zimmerman-Asbestos Points and your Iron King property in Gila County, Arizona which I hope to include in a Bureau of Mines publication titled "Reconnaissance of Iron Occurrences in Arizona". The text is based on personal observations and your kind information.

I would appreciate any revision of this text and map to a form most acceptable to you for publication and a statement to the effect that it can be published. A return envelope is enclosed.

Cordially yours,

*C. M. Harrer*

C. M. Harrer, Mining Engineer  
Division of Mineral Resources  
Region III  
U. S. Bureau of Mines, Bldg. 20  
Denver Federal Center  
Denver, Colo

### Zimmerman-Asbestos Points Magnetite

Magnetite occurs extensively between and beyond Zimmerman and Asbestos Points (location 44, fig. 1) in the Sierra Ancha (fig. 10) in secs. 20, 21, and 29, T. 5 N., R. 14 E. The deposits comprise the Howard group of claims previously mentioned and the Zimmerman Point deposits comprising the Iron King 1-14 claims, the Ferro 1-34 claims, the Ferrous 1-34 claims, and the Ferric 1-4 claims that are the property of the Arizona Mines, Inc., controlled by Chas. Jonas and Robert Peugh of Phoenix, and Chas. S. Older of Los Angeles. The Zimmerman Point deposits are reached by driving 4 miles northwesterly from Globe on U. S. Highway Nos. 60-70 to its junction with the Apache Trail (Arizona Highway No. 88), then 15 miles northwesterly on the Apache Trail to its junction with the Young road (Arizona Highway No. 288), then northerly 15.7 miles on Arizona Highway No. 288 to the junction with access roads leading north-easterly towards Zimmerman Point and the property.

Magnetite occurs as irregular contact-metamorphic and pyrometasomatic replacements of serpentinized, chloritized, and silicified Precambrian Mescal limestone that is 100 to 300 feet thick and sandwiched between 2 large diabase sills; the upper sill being about 500 feet thick and the lower about 1,000 feet thick. The magnetite (figs. 10, 17) occurs as massive and high-grade bodies separated by disseminated and low-grade areas. The magnetite zone is as much as 100 feet thick and can be traced intermittently for over 2 miles northeasterly in the vicinity of Zimmerman Point; about a mile northeasterly and southwesterly; along the steep western flank of the Sierra Ancha. Character samples of the better magnetite (table 36) contained:



TABLE 36. - Analyses of samples, Iron King Magnetite, Gila County, Ariz.

Sample Number	Fe	Mn	TiO <sub>2</sub>	P	S	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	Source
1.	50.8	0.02	0.05	0.03	0.09	12.4	2.72	0.04	9.87	Cerro de Pasco Corp. Nov. 1959
2.	68.4	0.2	<0.1	0.06	0.11	1.4	--	--	--	Bureau of Mines Dec. 1959

In addition, spectrographic analyses indicate traces of lead, zinc, and copper. Crushing to minus 100 mesh liberates 75 percent of the magnetite.

There has been no production from the property to date. (1961)

The potential of the deposit is inferred as several million tons of 30- to 50-percent iron content.

Magnetite of similar origin crops out on the Globe asbestos claims on the steep west slope of Asbestos Peak. The outcrops are poorly defined and the deposit appears small.

(Personal communication from Chas. Jonas, Phoenix, Ariz., 1961)

TABLE 30. - Analyses of asbestos, Iron Hill, Arizona, and Globe, Arizona.

Sample No.	SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	Total	Remarks
1	50.3	0.02	0.02	0.00	12.7	0.00	0.00	63.04	Iron Hill, Arizona, Nov. 1930
2	55.5	0.02	0.01	0.00	1.4	0.00	0.00	56.93	Globe, Arizona, Dec. 1930

In addition, spectrographic analyses indicate traces of lead, zinc, and copper. According to some 100 assay laboratories 75 percent of the sample. There has been no production from the property to date. (1931) The potential of the deposit is believed to be several million tons of 30 to 50 percent iron content.

Magnetite of similar origin crops out on the Globe asbestos claims

on the steep west slope of Asbestos Peak. The outcrops are poorly

defined and the deposit appears small.

(Personal communication from Chas. Jones, Phoenix, Ariz., 1931)





2-11-60  
m. g. 121

W. m. m. m.  
Point Is. Is.  
King Is.

January 8, 1964

Mr. Charles Jonas  
Iron King Mines, Inc.  
535 S. Grand Avenue  
Los Angeles, California

Re: Iron King & Ferro Mining  
Claim Group, Gila County  
Arizona

Dear Charley:

As some time has elapsed since we worked on your project I found it necessary to refresh my memory by referring to the file. The following is revealed:

Project commenced Aug. 29, 1962

Project completed Sept. 10, 1962

Type work done: Magnetic survey and interpretation

The following GEOEX personnel performed work on the claims: Walter E. Heinrichs, Jr., E. Grover Heinrichs, Chris S. Ludwig, Franklin A. Seward, Jr., John Patten and J. W. Marlatt.

Balance due on account: \$586.70

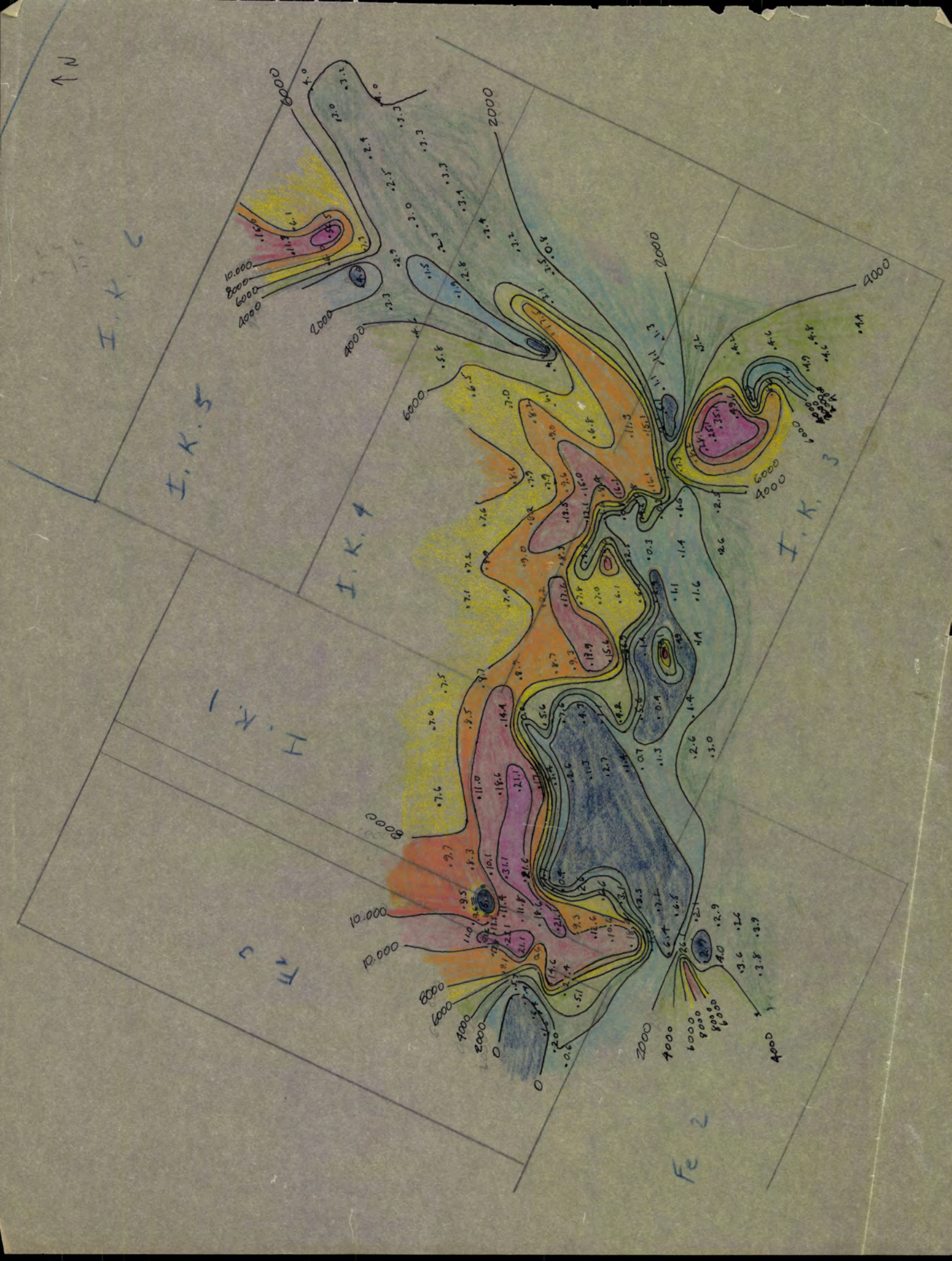
I trust this will serve your needs.

Sincerely yours,

E. Grover Heinrichs  
Vice-President

EGH: jh







Iron King Prospect

ARIZONA Iron  
Mines Inc.

A.E.M. Magnetic  
Notes

by E.G.H.  
C.S.L.

Sept. 1961



①

Jonas - Anz. IRON

TR. MK. REG. U.S. PAT. OFF.

8/29/61

Sta.	Scale	Read.	Read &
Base			
a Cabin	1	4.9	4900

Line 1 @ NW Cor. IK-12  
bearing N 80° E

0+00	1	+8.4	8400
1+00	5	+3.4	17000

@ West cut & Rd

2+00	1	+11.6	11600
3+00	1	+7.7	7700

@ NEC IK-12

4+00	1	+3.7	3700
5+00	1	+5.0	5000
6+00	1	+5.8	

NE IK-12

7+00	1	+4.0	
8+00	1	+4.0	

NEC IK-11

Turn S 30° W 100' to Line 2  
Sta 9+00

Line 2

8+00	1	+4.2	
9+00	1	+4.3	

OUTCROP Pioneer Shale

8/29/61

Sta	Scale	Reading		X
6400	1	6.2		6200
5400	1	7.7		7700
		20' E. of Rd.		
4400	1	4.6		4600
		base of pit or cut		
		pioneer shale outcrop		
3400	1	6.5		6500
		10' S of cut		
2400	1	2.6		2600
1400	1	5.6		5600
		20' W of Rd.		
0400	1	4.3		4300
		20' W. of Rd.		
Tie back to 100' NW cor				
± K R Line 3				
0200	1	8.7	at Line 2 + 100' N of	
10400	1	(7.6)	20' N of road	
1400	1	10.3	on road	
2400	1	5.2	cut	
3400	1	5.6		
4400	1	5.6		
5400	1	5.3		
6400	1	4.8		
7400	1	5.0		
8400	1	4.0		
Turning N Line 4				



8/29/61

TR. MK. REG. U.S. PAT. OFF.

line 4 going W

SLA Scale R.

8+00 E | 4.00

7+00 E | 4.2

6+00 E | 4.3

5+00 E | 4.3

4+00 E | 5.7

3+00 E | 6.5

2+00 E | 4.7

Center of cut NS

1+00 E | 2.3

0+00 E | (4.5)

20' W road cut

1+00 W | 2.1

On road

2+00 W | 3.0

3+00 W | 3.7

30' S of road

turned S to line 3 here<sup>2+00</sup>

Line 3

3+00 W | 3.2

40' to N to road

" " E " "

2+00 W | 3.5

1+00 W | 0.0

40' W of road

0+00 E | (7.8)

inside hairpin curve

&amp; 20' E of center

8/29/61

5

TR. MK. REG. U.S. PAT. OFF.

Sta Scale R

LINE 1

1+00W 1 +1.0

Rd 20' W pioneer sh.

2+00W 1 +2.6

3+00W 1 +3.5

LINE 2

3+00W 1 +3.3

2+00W 1 +2.4

pioneer SHALE

1+00W 1 +4.2

E 20' to Rd.

0+00 1 +6.0

Base @ Cabin

1 4.9

LINE 4

8/30/61

4+00W 1 3.7

10' W of Rd.

5+00W 1 3.9

6+00W 1 4.0

LINE 3

6+00W 1 4.0

5+00W 1 3.9

4+00W 1 3.7

→ Dripping Springs Qtz. Float

LINE 1

→ 4+00W 1 3.7



ORIGINAL COPY. 1910 BY J. C. PARKER.

8/30/61

	(4)

TR. MK. REG. U.S. PAT. OFF.

Sta Scale Read

{ 5+00W 1 3.9  
 { 6+00W 1 4.0

DRIPPING Springs Qtz. Float

LINE R

→ 6+00W 1 4.0

→ 5+00W 1 3.9

4+00W 1 3.9

3+00 1 3.0

— 4+75W N 40° E 4° W dip

pioneer SHALE OUT CROP

Traverse along rd. from  
 Junction @ Cut and Y

Rd. Trav. A

0+00 5 4.5

1+00 1 7.0

2+00 1 6.9

2+80 West E.C. I.K 12?

3+00 1 6.8

4+00 1 5.7

5+00 1 7.8

6+00 1 5.4

7+00 1 4.3

8+00 1 4.4

9+00 1 3.6

10+00 1 3.5

11+00 1 3.3

Rd Y & CLAIM Cor. E.C. No. 11

12+00 1 4.0

LEFAX, PHILADELPHIA 7, PA., MADE IN U.S.A.

8/30/61

(5)

TR. MK. REG. U.S. PAT. OFF.

Sta. Scale Read.

13+00 1 4.5

14+00 1 3.4

15+00 1 2.3

Rd Y

16+00 1 0.5

17+00 1 1.7

18+00 1 7.6

19+00 1 8.4

Rd Y

20+00 1 8.3 upper rd.

21+00 1 11.5 " "

22+00 5 5.3 " "

23+00 5 2.9 " "

23+30 1 Rd

24+00 1 10.3 " "

25+00 5 3.0 " "

26+00 5 3.3 " "

27+00 5 2.6 " "

28+00 5 3.3 " "

DIABASE OUTCROP (?)

29+00 5 2.9 Qtzite

30+00 1 7.2

31+00 1 7.2

32+00 1 7.8 END Rd.

29+50 1 10.0



8/30/01

(6)

TR. MX. REG. U.S. PAT. OFF.

Sta. Scale Read.

Rd Traverse "B" - Lower Rd.

1+00 1 4.0

2+00 1 2.8

3+00 1 3.5

4+00 1 2.2

5+00 1 0.9

6+00 1 1.2

7+00 1 2.8

8+00 1 1.7

9+00 1 5.2

10+00 1 5.3

10+50 Mag out crop

11+00 5 3.5

12+00 5 4.0

Wend of Trench cut

13+00 1 10.2

14+00 1 3.0

14+60 1 8.4

Junction tie with Sta.

19+00 on "A" Traverse

BASE 4.9

Time  
2:30

8/30/61

TR. MK. REG. U.S. PAT. OFF.

Cut traverse "A"  
 @ rd Y & start of rd  
 traverse "A" - going easterly

0+00	5	4.6
same as 0+00 on rd. trav. "A"		
1+00	1	3.7
2+00	1	4.0
3+00	1	7.3
On cut dump		

Cut traverse "B"  
 Starts at station 2+00 E line 3

0+00	1	5.4
Station 2+00 E line 3		
1+00	1	4.9
2+00	1	5.5
3+00	1	6.1
On cut dump		

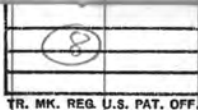
Cut traverse "C" starts at "B" dump  
 40' NE of Cut traverse "B"

0+00	1	8.1
1+00	1	3.3
1+36	1	4.6
on cut dump		

0+50 Fe outcrop  
 2700 X



8/30/61



Cut traverse "D"  
 going E from station 12+00  
 on road "B"

0+00	5	4.00
1+00	1	6.5
2+00	1	4.6
3+00	1	4.3
4+00	1	4.0
5+00	1	2.3
6+00	1	3.9
6+72	1	4.1

On cut dump

Road traverse "A"  
 going North from 0+00 on  
 Road traverse "A"

1+00	1	10.5
2+00	5	2.8

30' W of Jun.

3+00	1	9.6
4+00	1	(2.0)

On Harper turn

5+00	1	1.3
6+00	1	3.0
7+00	1	2.9
8+00	1	3.1
9+00	1	3.6

at Y going left fork

8/30/61

TR. MK. REG. U.S. PAT. OFF.

10+00 1 4.0

11+00 1 4.0

12+00 1 4.2

corner out of Harris turn

13+00 1 4.5

14+00 1 4.4

going two h.p. turn

15+00 1 4.3

16+00 1 4.4

drill hole

Road Trans. "C"

Going on right fork of Road

Traverse "A" at 9+00

X 10+00 1 4.0

X 11+00 1 4.0

Y 12+00 1 3.9

left fork 20' from Y (Road T. "D")

X 13+00 1 4.0

50' S and C IK #14

RT "E" right fork of Jun. 20' from 12+00

13+00 1 4.5

14+00 1 4.2

15+00 1 4.5

16+00 1 3.8

17+00 1 4.2

30' N of D &amp; 14

18+00 1 5.0

19+00 1 6.1

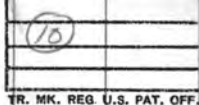
20+00 1 6.1

21+00 1 4.7

30' N of IK #14 disc



8/30/61



22+00	1	11.4
23+00	5	2.8
	Left	fork
24+00	1	5.2
30'	5	of cut
24+78	5	2.8

Cut Transverse "E"  
on dump going W  
cut + to line between 24+00, 24+78  
RT "E" <

0+00	1	4.4
1+00	1	4.2
2+00	1	3.3
3+00	1	5.5

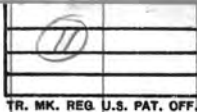
End of cut

25' N + 50' E cut going W

0+00	1	6.0
1+00	1	6.0
2+00	1	6.0

End of cut

8/31/61



Sta. Scale Read  
Base 1 4.9

Line 5

6+00 W 1 4.2

5+00 W 1 4.2

4+00 W 1 4.2

3+00 W 1 4.1

2+00 W 1 4.0

1+00 W 1 3.8 Road S'E

0+00 W 1 3.8

SW Cor IK # 14

1+00 E 1 3.7

2+00 E 1 3.5

3+00 E 1 3.7

4+00 E 1 5.4

5+00 E 1 3.9

6+00 E 1 4.0

7+00 E 1 3.5

8+00 E 1 4.0

Line 6

300' S of Line 5

9+00 E 1 3.7

8+00 E 1 3.4

7+00 E 1 4.5

6+00 E 1 4.9

5+00 E 1 4.6

4+00 E 1 6.0

3+00 E 1 7.1

25' W of cut traverse "C"



8/31/61

12

TR. MK. REG. U.S. PAT. OFF.

2+00 E 1 4.7  
 1+00 E 1 (1.0)  
 0+00 E 1 2.5  
 W end C 1K #13

1+00 W 1 3.0

on rd.

2+00 W 1 3.5

3+00 W 1 3.8

Disc. F. 13

4+00 W 1 4.1

5+00 W 1 4.2

6+00 W 1 4.2

Line #7

NW Corn.

1K #14

Starting at

0+00 E W 1 4.0

1+00 E 1 3.9

2+00 E 1 4.0

3+00 E 1 4.1

4+00 E 1 4.2

5+00 E 1 4.4

6+00 E 1 4.7

7+00 E 1 5.3

8+00 E 1 6.1

9+00 E 1 6.6

72' N of 24+78 on Road tra

"A" (lay out "E")

10+00 1 4.5

11+00 1 4.3

12+00 1 4.3

9/31/61

TR. MK. REG U.S. PAT. OFF.

13+00	E 1	4.9
14+00	E 1	4.7
15+00	E 1	4.3
NE Corn.		1K #14

Line #8 Starting at E and center.

15+00	E 1	4.2
14+00	E 1	4.3
13+00	E 1	4.5
12+00	E 1	4.5
11+00	E 1	4.2
10+00	E 1	4.5
9+00	E 1	3.4

10' E of Road to corner E 1/2

8+00	E 1	6.0	E #14
7+00	E 1	7.0	

6+00	E 1	6.2
5+00	E 1	4.8
4+00	E 1	4.1
3+00	E 1	3.8
2+00	E 1	4.1
1+00	E 1	4.0
0+00	E 1	4.2

W end cent. 1K #14

Line 9 100' N of Line #8

11+00	E 1	4.1
10+00	E 1	4.0



9/31/61

TR. MK. REG U.S. PAT. OFF.

9+00	E 1	6.2
8+00	E 1	6.7
40'	S $\frac{1}{4}$	$\frac{56}{821}$
7+00	E 1	6.2
6+00	E 1	5.0
5+00	E 1	4.5
4+00	E 1	4.0

Line 10 100' S of line 9

4+00	E 1	4.3
5+00	E 1	4.5
6+00	E 1	4.7
7+00	E 1	5.9

30' SW of cut tra "E" at 2+00

Calvin 14.9

10/1/61

Calvin 14.5

TR. MK. REG. U.S. PAT. OFF.

Line 11

0+00 EW 1 6.5

W. end of old IK #12

1+00 W 1 4.9

2+00 W 1 2.4

3+00 W 1 3.0

4+00 W 1 2.4

5+00 W 1 3.8

6+00 W 1 3.6

1+00 E 1 8.4

40' E of Road Trg "A"

2+00 E 1 3.8

3+00 E 1 5.8

4+00 E 1 4.9

5+00 E 1 3.4

6+00 E 1 3.4

10' W of curve in road

7+00 E 1 3.6

8+00 E 1 3.6

Line 12

300' S of line 11

9+00 E 1 3.8

8+00 E 1 3.9

7+00 E 1 3.5

6+00 E 1 3.9

5+00 E 1 4.1

4+00 E 1 2.8

3+00 E 1 3.5

2+00 E 1 2.9



10/1/61

TR. MK. REG. U.S. PAT. OFF.

1+00 E 1 5.0

5' E of R.T. "A"

0+00 EW 1 6.3

NW cor. #11 + SW cor. #12 of "Old" IK

1+00 W 1 5.4

2+00 W 1 3.8

3+00 W 1 3.7

4+00 W 1 3.9

5+00 W 1 4.0

Pioneer Well Out crop

6+00 W 1 4.0

Salt Flow

Line #13

E of Old IK #11 300' S of line #12

0+00 EW 1 3.5

1+00 E 1 4.3

2+00 E 1 5.0

3+00 E 1 4.0

4+00 E 1 4.8

5+00 E 1 5.6

6+00 E 1 5.2

7+00 E 1 3.7

8+00 E 1 3.8

9+00 E 1 4.3

Line #14

300' S of line #13

9+00 E 1 6.5

10' S of Cut Trn. "D"

10/1/61

TR. MK. REG. U.S. PAT. OFF.

10+00 E 1 4.2

11+00 E 1 4.3

12+00 E 1 4.1

13+00 E 1 4.5

8+00 E 1 4.9

7+00 E 1 (0.7)

off course

Line #14

300' Soft Line #13

0+00 EW 1 2.5

NW #10 45 W #11 "000"

1+00 E 1 2.2

15' from R. Tra. "A" for

2+00 E 1 1.5

3+00 E 1 0.0

S &amp; IK #12 amended

4+00 E 1 0.0

5+00 E 1 3.9

6+00 E 5 5.0

SW Cor of amended IK #11

7+00 E 1 6.2

8+00 E 1 5.0

&amp; IK #11 Amended

9+00 E 1 7.4 cut T. D. 9+50

10+00 E 1 4.5

11+00 E 1 4.3

SE Cor IK #11 Amended

12+00 E 1 4.3



10/1/61

TR. MK. REG. U.S. PAT. OFF.

Line # 15

100	N	of line	
11+00	E	1	5.8
10+00	E	1	3.9
9+00	E	1	4.4
8+00	E	1	5.0
7+00	E	1	(1.5)
6+00	E	1	(3.8)
5+00	E	1	0.2
4+00	E	1	4.8
3+00	E	1	5.7
2+00	E	1	3.9
1+00	E	1	3.3
0+00	E	1	3.1

Line # 14

1+00	W	1	3.0
2+00	W	1	3.4

Line # 13

1+00 W 1 3.3

On Road Not T "A"

2+00 W 1 3.5

3+00 W 1 3.5

4+00 W 1 3.7

Base @ Cabin 4.9

10/2/61

Base 4.9

TR. MK. REG. U.S. PAT. OFF.

N from discov. 1K<sup>H</sup>3  
Sine #16

0+00 NS 5 9.6

Fe out crop

1+00 N 1 (3.9)

2+00 N 1 7.5

3+00 N 1 9.8

4+00 N 1 6.8

5+00 N 1 7.8

Road T. "F"

Heading ~~W~~ <sup>E</sup> from drill hole

0+00 1 3.1

1+00 1 9.2

2+00 1 8.5

3+00 1 7.9

4+00 1 8.3

5+00 1 8.0

6+00 1 7.4

7+00 1 7.5

8+00 1 -7.2

9+00 1 7.1

10+00 1 8.1

11+00 1 8.0

12+00 1 8.1

13+00 1 8.1



10/2/61

TR. MK. REG. U.S. PAT. OFF.

Time #17 Going E from sharp bend  
 0+00 E 1 8.1 500N of dec. I.R.  
 1+00 E 1 6.1 J along N side  
 2+00 E 1 4.8 line of I.R. J  
 2+50 E 1 (4.8)

Fe oc  
 3+00 E 5 3.5

lime oc  
 4+00 E 1 3.1  
 5+00 E 1 3.5

diabase  
 5+50 E 1 0.8  
 on road

Road T G { Starting at 5+50  
 line #17

0+00 1 0.8

1+00 1 3.2

2+00 1 3.4

3+00 1 3.4

4+00 1 3.3

5+00 1 3.3 \*

6+00 1 3.3

7+00 1 4.0

8+00 1 3.2

9+00 1 4.0

10+00 1 3.0 \*

11+00 1 2.4

12+00 1 2.5

13+00 1 3.0

14+00 1 2.3

15+00 1 2.8 \*

15+50 sharp turn

sharp turn

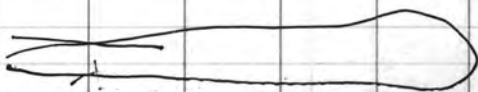
10/2/61

TR. MK. REG. U.S. PAT. OFF.

16+00	1	1.9
17+00	1	1.5
18+00	1	2.9
19+00	1	7.3
20+00	5	11.3
Fe co		
21+00	1	6.1
22+00	5	3.0
23+00	1	11.3
24+00	1	6.0
25+00	1	(4.0)
On turn		
26+00	1	3.3
27+00	1	3.5
28+00	1	3.6
29+00	1	4.6
30+00	1	6.3
30+50	turn	
31+00	1	6.5
32+00	1	5.8
33+00	1	6.3
34+00	1	6.5
35+00	1	6.8
36+00	1	7.0
37+00	1	8.2
38+00	1	8.2

31+50 turn

Cabin Base 4.9





Ferro 2

Ferro 3

HK 1

IK 3

IK 4

IK 5

Ferro No 4  
out

IK 6

IK 7

Ferro 8  
out

Ferro 7  
out

Ferro 15

HK 2

Ferro 16  
out

Ferro 9  
out

Ferro 1  
T-8-11-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100

Ferro 10  
out

Ferro 11  
out

Ferro No 12

Ferro No 13

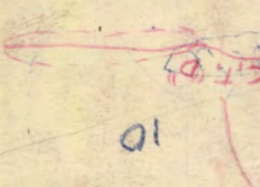
Ferro 14  
out



Line 11

Line 12

Line 14



Line 15

Line 13

Line 12

Line 11

Line 10

Line 9

Line 8

Line 7

Line 6

Line 5

Line 4

Line 3

18 pp  
Retained

Claims

HK 3

HK 4

HK 5

HK 6

IK 13

IK 14



**MAGNETIC GEOPHYSICAL SURVEY**

**Iron King and Ferro Mining Claim Group  
Sierra Ancha Mining District  
Gila County, Arizona**

**for  
ARIZONA IRON MINES INCORPORATED**

**August - September 1961 and August 1962**



## TABLE OF CONTENTS

	Page
Introduction-----	1
Conclusions & Recommendations-----	1
Procedures-----	2
Results-----	3
Personnel-----	5

Photos: IN ORIGINAL COPY ONLY

Map: One Composite Map:-----Attached

## INTRODUCTION

At the request of Mr. Charles H. Jonas of Phoenix, Arizona, Heinrichs GEOEXploration Co. conducted a vertical intensity magnetometer survey from August 29 to September 2, 1961 and again from August 29 to August 31, 1962 on the Iron King and Ferro Mining Claim Group.

These claims are a contiguous group and this work was done in several places on the group for the benefit of each and every claim of the group. Cost of the work done exceeded \$1,100.00 in 1961 and \$600.00 in 1962.

The objective of this survey was to delineate and possibly extend the known magnetic mineralization. These mining claims are located about 35 miles north of Globe in T 5 N, R 14 E, G & S R B & M, Sections 16, 20, 21, 28 and 29 in Gila County Arizona and are accessible by road.

## CONCLUSIONS AND RECOMMENDATIONS

This survey essentially confirmed and substantiated what was known already from previous work done by owners of the claims, Cerro de Pasco Corp., and the U. S. Bureau of Mines. The magnetite occurrences are somewhat spotty and irregular in grade. There is a considerable tonnage of low grade, not yet entirely delineated by either magnetics or drilling.



The amount of high grade, direct shipping material is relatively small and because of the distance to present markets is not considered very economic at this time. Further exploration on this property should be undertaken by extensive drilling and metallurgical studies to see if sufficient tonnage of beneficiable low grade exists. Analysis of samples by others would indicate the composition is favorable, as phosphorous, sulfur, titanium and other deleterious components are low enough to be within allowable limits.

#### PROCEDURES

An Arvela Everyman vertical intensity station reading magnetometer was used for the survey. Base station readings were made several times daily to determine the diurnal drift. An arbitrary base level of 5,000 gammas was established at the cabin.

The lines were tied to claim corners, roads, drill holes and to  $\frac{1}{4}$  corner 16/21 found near Line 9.

The magnetic results were plotted in color on the attached composite base map showing geology, topography, claim boundaries, drill holes and roads, etc., compiled from maps supplied by Mr. Jonas.

## RESULTS

The magnetic high zones correspond to the surface outcroppings of magnetite. Some of these zones appear to extend indefinitely (?) into the hillside and others appear quite limited in extent.

No lateral extensions of the known outcrop were found. The magnetite outcropping on Iron King 1, 3, 4 and Ferro 3 extends indefinitely northward into the hillside. Also the outcrop near DDH #1 on Iron King #5 extends westerly into the hill. The outcropping in the northern portion of Iron King 9 and 10 also appears, magnetically, to extend northward into the hillside.

North of Iron King 10 the only zone of interest magnetically is just southeast of the north corner of Iron King 12. This however, is a much smaller zone than the others and does not appear to extend very far into the hill from its outcrop.

Aside from this small zone, all magnetic lines and traverses north of Iron King 10 showed no significant magnetite; however, the outcrop pattern of the iron bearing formation was well defined.

On the composite plan map the significant magnetite zones are interpreted as those areas over 8,000 gammas. These zones are represented by the orange and red colors.

The magnetic intensities seem to correspond, in general,



to the magnetite concentrations; the greater the magnetic reading, the greater concentration of magnetite. Therefore in addition to mapping the magnetite outcropping, the results also represent an integrated combination of effect due to depth, grade and thickness, which unfortunately, especially without considerably more detail study and maybe even then with limited or no success, cannot be individually separated.

The highest grade zone found was over the cliff of magnetite in Iron King 3. This zone is approximately 15,000 sq. ft.

The outcrop in the southern half of Iron King 1 is of fairly high grade and encompasses approximately 25,000 sq. ft.

Except for some very small, local high grade zones, the only other fairly extensive zone is in Iron King 10 which covers about 9,000 sq. ft.

These high grade zones were somewhat arbitrarily considered magnetically as those zones over 20,000 gammas and were represented as the heliotrope colored areas. Of course, these zones could extend indefinitely into the hillside. It is difficult to determine the extent of these zones because of the topographic effect. The further away from the deposit the readings are taken, the smaller in magnitude the observed magnetic intensity. Therefore, since the deposit is flat lying, as readings are taken up hill above the outcrop, they become less intense because of the greater distance from the deposit.

Magnetic polarization effects also contribute to the strength or weakness of any particular reading and consequently affect size and grade interpretation. Since, in this work we did not notice any strong polarization, we feel it may be essentially absent, and therefore it was ignored in the interpretation. Nevertheless, it must be mentioned as a technical contingency possibility in interpretation of the results especially as to combination grade, depth and thickness.

#### PERSONNEL

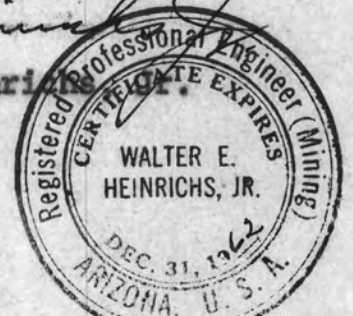
Walter E. Heinrichs, Jr., E. Grover Heinrichs, Chris S. Ludwig, Franklin A. Seward, Jr., David F. Graff, John Patten and John W. Marlatt, all employees of Heinrichs GEOEXploration Co. of Tucson, Arizona were the men who performed the said work and these personnel represent a total of approximately 70 years of training and/or experience as graduate geophysical engineers, geologists and/or technicians working under the direct supervision of Mr. Walter E. Heinrichs, Jr., Registered Professional Engineer, President & General Manager of Heinrichs GEOEXploration Company.

Respectfully submitted,



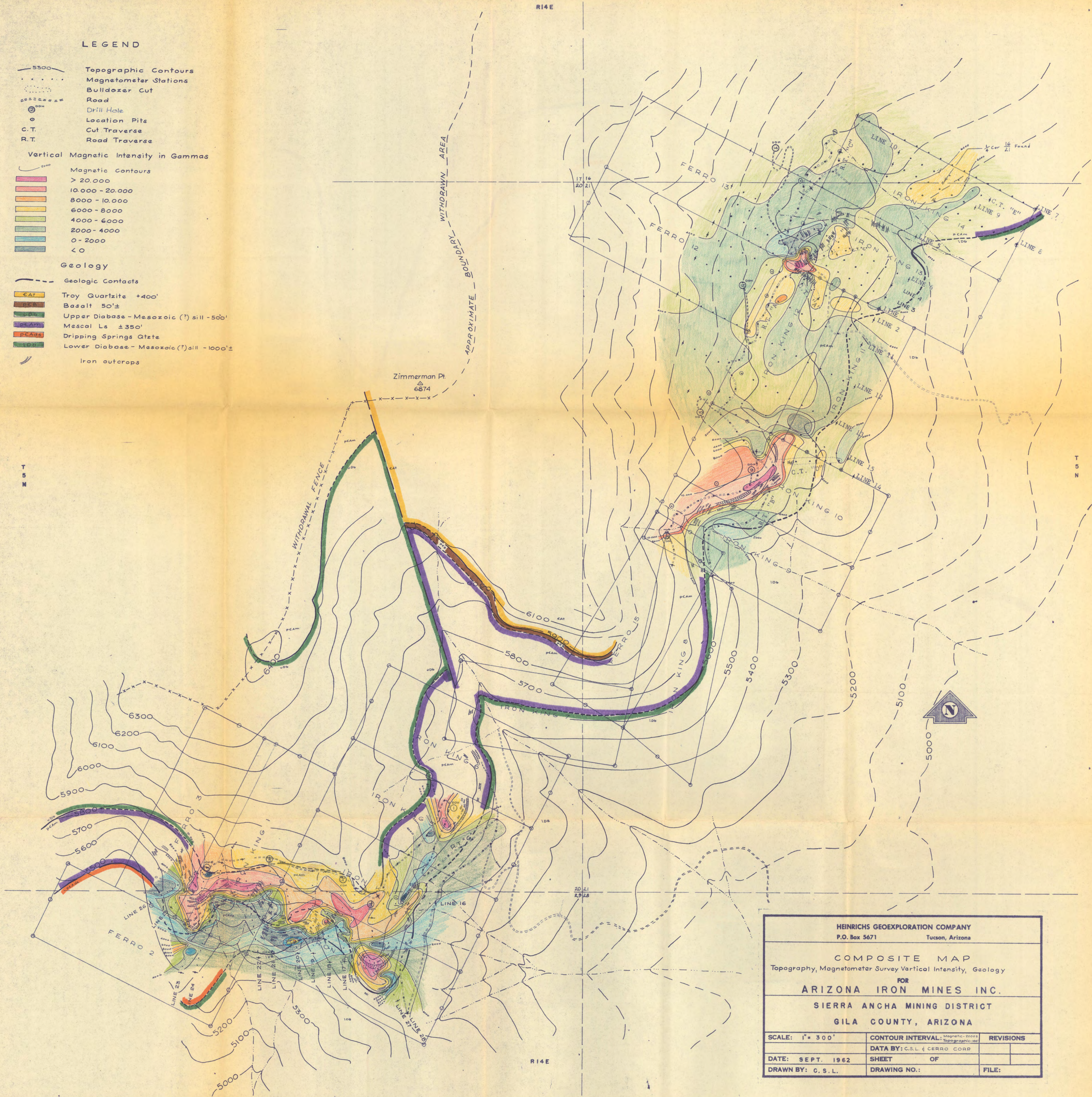
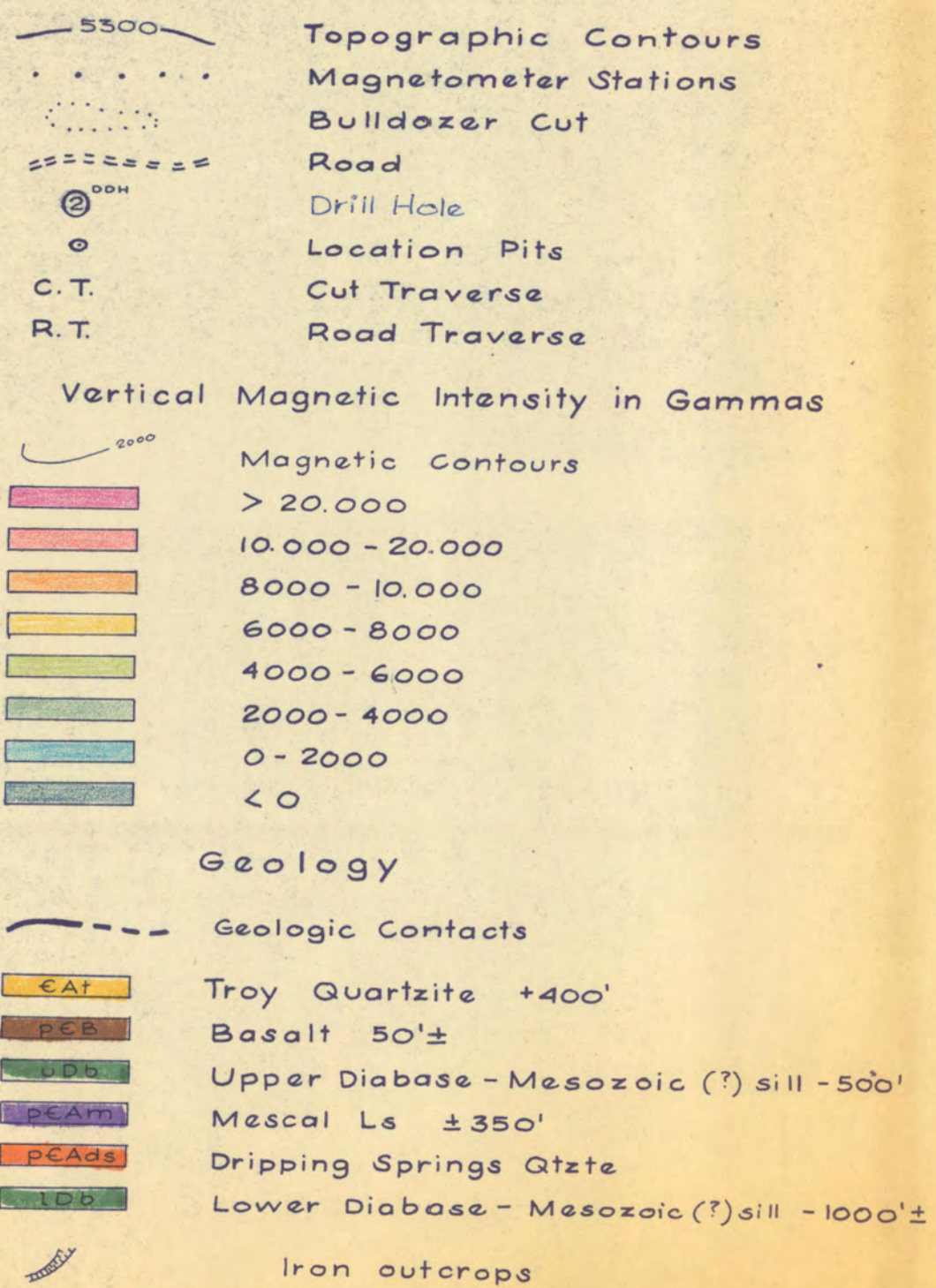
Walter E. Heinrichs, Jr.

September 11, 1962  
P. O. BOX 5671  
Tucson, Arizona





# LEGEND



HEINRICHS GEOEXPLORATION COMPANY P.O. Box 5671 Tucson, Arizona		
COMPOSITE MAP Topography, Magnetometer Survey Vertical Intensity, Geology		
FOR ARIZONA IRON MINES INC.		
SIERRA ANCHA MINING DISTRICT GILA COUNTY, ARIZONA		
SCALE: 1" = 300'	CONTOUR INTERVAL: Magnetic - 2000x Topographic - 100'	REVISIONS
DATE: SEPT. 1962	DATA BY: C.S.L. & CERRO CORP	
	SHEET OF	
DRAWN BY: C.S.L.	DRAWING NO.:	FILE:



**MAGNETIC GEOPHYSICAL SURVEY**

**Iron King and Ferro Mining Claim Group  
Sierra Ancha Mining District  
Gila County, Arizona**

**for  
ARIZONA IRON MINES INCORPORATED**

**August - September 1961 and August 1962**

**by  
HEINRICHS GEOEXPLORATION COMPANY  
P. O. BOX 5671 TUCSON, ARIZONA**



## TABLE OF CONTENTS

	Page
<b>Introduction-----</b>	<b>1</b>
<b>Conclusions &amp; Recommendations-----</b>	<b>1</b>
<b>Procedures-----</b>	<b>2</b>
<b>Results-----</b>	<b>3</b>
<b>Personnel-----</b>	<b>5</b>

**Photos: IN ORIGINAL COPY ONLY**

**Map: One Composite Map-----Attached**

## INTRODUCTION

At the request of Mr. Charles H. Jonas of Phoenix, Arizona, Heinrichs GEOEXploration Co. conducted a vertical intensity magnetometer survey from August 29 to September 2, 1961 and again from August 29 to August 31, 1962 on the Iron King and Ferro Mining Claim Group.

These claims are a contiguous group and this work was done in several places on the group for the benefit of each and every claim of the group. Cost of the work done exceeded \$1,100.00 in 1961 and \$600.00 in 1962.

The objective of this survey was to delineate and possibly extend the known magnetic mineralization. These mining claims are located about 35 miles north of Globe in T 5 N, R 14 E, G & S R B & M, Sections 16, 20, 21, 28 and 29 in Gila County Arizona and are accessible by road.

## CONCLUSIONS AND RECOMMENDATIONS

This survey essentially confirmed and substantiated what was known already from previous work done by owners of the claims, Cerro de Pasco Corp., and the U. S. Bureau of Mines. The magnetite occurrences are somewhat spotty and irregular in grade. There is a considerable tonnage of low grade, not yet entirely delineated by either magnetics or drilling.



The amount of high grade, direct shipping material is relatively small and because of the distance to present markets is not considered very economic at this time. Further exploration on this property should be undertaken by extensive drilling and metallurgical studies to see if sufficient tonnage of beneficiable low grade exists. Analysis of samples by others would indicate the composition is favorable, as phosphorous, sulfur, titanium and other deleterious components are low enough to be within allowable limits.

#### PROCEDURES

An Arvela Everyman vertical intensity station reading magnetometer was used for the survey. Base station readings were made several times daily to determine the diurnal drift. An arbitrary base level of 5,000 gammas was established at the cabin.

The lines were tied to claim corners, roads, drill holes and to  $\frac{1}{4}$  corner 16/21 found near Line 9.

The magnetic results were plotted in color on the attached composite base map showing geology, topography, claim boundaries, drill holes and roads, etc., compiled from maps supplied by Mr. Jonas.

## RESULTS

The magnetic high zones correspond to the surface outcroppings of magnetite. Some of these zones appear to extend indefinitely (?) into the hillside and others appear quite limited in extent.

No lateral extensions of the known outcrop were found. The magnetite outcropping on Iron King 1, 3, 4 and Ferro 3 extends indefinitely northward into the hillside. Also the outcrop near DDH #1 on Iron King #5 extends westerly into the hill. The outcropping in the northern portion of Iron King 9 and 10 also appears, magnetically, to extend northward into the hillside.

North of Iron King 10 the only zone of interest magnetically is just southeast of the north corner of Iron King 12. This however, is a much smaller zone than the others and does not appear to extend very far into the hill from its outcrop.

Aside from this small zone, all magnetic lines and traverses north of Iron King 10 showed no significant magnetite; however, the outcrop pattern of the iron bearing formation was well defined.

On the composite plan map the significant magnetite zones are interpreted as those areas over 8,000 gammas. These zones are represented by the orange and red colors.

The magnetic intensities seem to correspond, in general,



to the magnetite concentrations; the greater the magnetic reading, the greater concentration of magnetite. Therefore in addition to mapping the magnetite outcropping, the results also represent an integrated combination of effect due to depth, grade and thickness, which unfortunately, especially without considerably more detail study and maybe even then with limited or no success, cannot be individually separated.

The highest grade zone found was over the cliff of magnetite in Iron King 3. This zone is approximately 15,000 sq. ft.

The outcrop in the southern half of Iron King 1 is of fairly high grade and encompasses approximately 25,000 sq. ft.

Except for some very small, local high grade zones, the only other fairly extensive zone is in Iron King 10 which covers about 9,000 sq. ft.

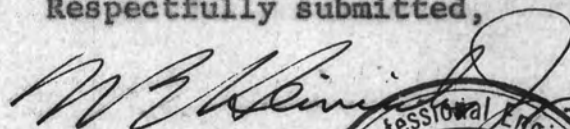
These high grade zones were somewhat arbitrarily considered magnetically as those zones over 20,000 gammas and were represented as the heliotrope colored areas. Of course, these zones could extend indefinitely into the hillside. It is difficult to determine the extent of these zones because of the topographic effect. The further away from the deposit the readings are taken, the smaller in magnitude the observed magnetic intensity. Therefore, since the deposit is flat lying, as readings are taken up hill above the outcrop, they become less intense because of the greater distance from the deposit.

Magnetic polarization effects also contribute to the strength or weakness of any particular reading and consequently affect size and grade interpretation. Since, in this work we did not notice any strong polarization, we feel it may be essentially absent, and therefore it was ignored in the interpretation. Nevertheless, it must be mentioned as a technical contingency possibility in interpretation of the results especially as to combination grade, depth and thickness.

#### PERSONNEL

Walter E. Heinrichs, Jr., E. Grover Heinrichs, Chris S. Ludwig, Franklin A. Seward, Jr., David F. Graff, John Patten and John W. Marlatt, all employees of Heinrichs GEOEXploration Co. of Tucson, Arizona were the men who performed the said work and these personnel represent a total of approximately 70 years of training and/or experience as graduate geophysical engineers, geologists and/or technicians working under the direct supervision of Mr. Walter E. Heinrichs, Jr., Registered Professional Engineer, President & General Manager of Heinrichs GEOEXploration Company.

Respectfully submitted,



Walter E. Heinrichs, Jr.

September 11, 1962  
P. O. BOX 5671  
Tucson, Arizona





**MAGNETIC GEOPHYSICAL SURVEY**

**Iron King and Ferro Mining Claim Group  
Sierra Ancha Mining District  
Gila County, Arizona**

**for  
ARIZONA IRON MINES INCORPORATED**

**August - September 1961 and August 1962**

**COPY**

**by  
HEINRICHS GEOEXPLORATION COMPANY  
P. O. BOX 5671 TUCSON, ARIZONA**

TABLE OF CONTENTS

	Page
Introduction-----	1
Conclusions & Recommendations-----	1
Procedures-----	2
Results-----	3
Personnel-----	5

Photos: IN ORIGINAL COPY ONLY

Map: One Composite Map-----Attached

COPY



## INTRODUCTION

At the request of Mr. Charles H. Jonas of Phoenix, Arizona, Heinrichs GEOEXploration Co. conducted a vertical intensity magnetometer survey from August 29 to September 2, 1961 and again from August 29 to August 31, 1962 on the Iron King and Ferro Mining Claim Group.

These claims are a contiguous group and this work was done in several places on the group for the benefit of each and every claim of the group. Cost of the work done exceeded \$1,100.00 in 1961 and \$600.00 in 1962.

The objective of this survey was to delineate and possibly extend the known magnetic mineralization. These mining claims are located about 35 miles north of Globe in T 5 N, R 14 E, G & S R B & M, Sections 16, 20, 21, 28 and 29 in Gila County Arizona and are accessible by road.

## CONCLUSIONS AND RECOMMENDATIONS

This survey essentially confirmed and substantiated what was known already from previous work done by owners of the claims, Cerro de Pasco Corp., and the U. S. Bureau of Mines. The magnetite occurrences are somewhat spotty and irregular in grade. There is a considerable tonnage of low grade, not yet entirely delineated by either magnetics or drilling.

The amount of high grade, direct shipping material is relatively small and because of the distance to present markets is not considered very economic at this time. Further exploration on this property should be undertaken by extensive drilling and metallurgical studies to see if sufficient tonnage of beneficiable low grade exists. Analysis of samples by others would indicate the composition is favorable, as phosphorous, sulfur, titanium and other deleterious components are low enough to be within allowable limits.

#### PROCEDURES

An Arvela Everyman vertical intensity station reading magnetometer was used for the survey. Base station readings were made several times daily to determine the diurnal drift. An arbitrary base level of 5,000 gammas was established at the cabin.

The lines were tied to claim corners, roads, drill holes and to 4 corner 16/21 found near Line 9.

The magnetic results were plotted in color on the attached composite base map showing geology, topography, claim boundaries, drill holes and roads, etc., compiled from maps supplied by Mr. Jonas.



## RESULTS

The magnetic high zones correspond to the surface outcroppings of magnetite. Some of these zones appear to extend indefinitely (?) into the hillside and others appear quite limited in extent.

No lateral extensions of the known outcrop were found. The magnetite outcropping on Iron King 1, 3, 4 and Ferro 3 extends indefinitely northward into the hillside. Also the outcrop near DDH #1 on Iron King #5 extends westerly into the hill. The outcropping in the northern portion of Iron King 9 and 10 also appears, magnetically, to extend northward into the hillside.

North of Iron King 10 the only zone of interest magnetically is just southeast of the north corner of Iron King 12. This however, is a much smaller zone than the others and does not appear to extend very far into the hill from its outcrop.

Aside from this small zone, all magnetic lines and traverses north of Iron King 10 showed no significant magnetite; however, the outcrop pattern of the iron bearing formation was well defined.

On the composite plan map the significant magnetite zones are interpreted as those areas over 8,000 gammas. These zones are represented by the orange and red colors.

The magnetic intensities seem to correspond, in general,

to the magnetite concentrations; the greater the magnetic reading, the greater concentration of magnetite. Therefore in addition to mapping the magnetite outcropping, the results also represent an integrated combination of effect due to depth, grade and thickness, which unfortunately, especially without considerably more detail study and maybe even then with limited or no success, cannot be individually separated.

The highest grade zone found was over the cliff of magnetite in Iron King 3. This zone is approximately 15,000 sq. ft.

The outcrop in the southern half of Iron King 1 is of fairly high grade and encompasses approximately 25,000 sq. ft.

Except for some very small, local high grade zones, the only other fairly extensive zone is in Iron King 10 which covers about 9,000 sq. ft.

These high grade zones were somewhat arbitrarily considered magnetically as these zones over 20,000 gammas and were represented as the heliotrope colored areas. Of course, these zones could extend indefinitely into the hillside. It is difficult to determine the extent of these zones because of the topographic effect. The further away from the deposit the readings are taken, the smaller in magnitude the observed magnetic intensity. Therefore, since the deposit is flat lying, as readings are taken up hill above the outcrop, they become less intense because of the greater distance from the deposit.



Magnetic polarization effects also contribute to the strength or weakness of any particular reading and consequently affect size and grade interpretation. Since, in this work we did not notice any strong polarization, we feel it may be essentially absent, and therefore it was ignored in the interpretation. Nevertheless, it must be mentioned as a technical contingency possibility in interpretation of the results especially as to combination grade, depth and thickness.

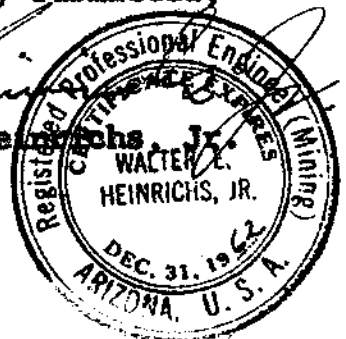
PERSONNEL

Walter E. Heinrichs, Jr., E. Grover Heinrichs, Chris S. Ludwig, Franklin A. Seward, Jr., David F. Graff, John Patten and John W. Marlatt, all employees of Heinrichs GEOEXploration Co. of Tucson, Arizona were the men who performed the said work and these personnel represent a total of approximately 70 years of training and/or experience as graduate geophysical engineers, geologists and/or technicians working under the direct supervision of Mr. Walter E. Heinrichs, Jr., Registered Professional Engineer, President & General Manager of Heinrichs GEOEXploration Company.

Respectfully submitted,

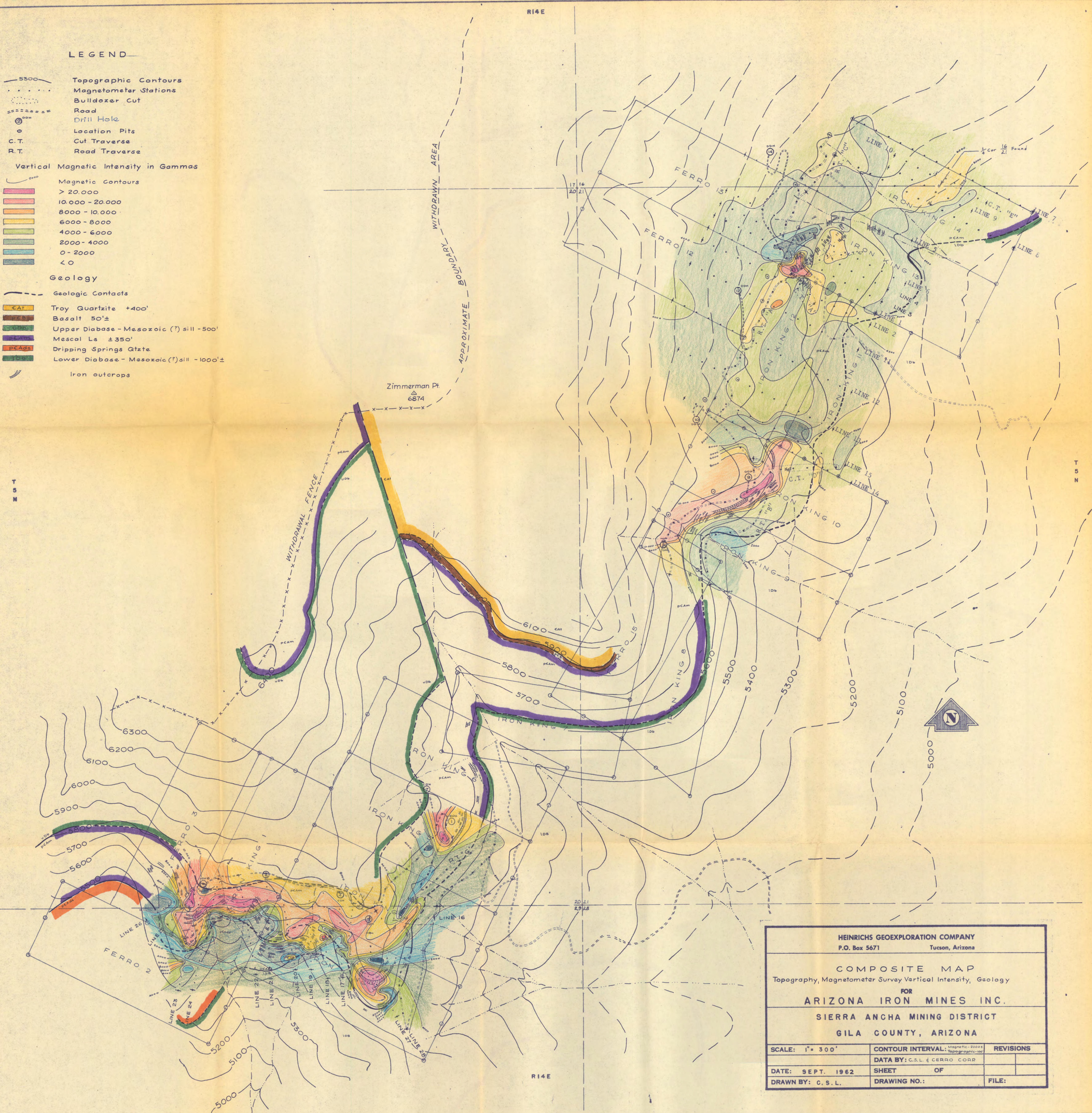
  
Walter E. Heinrichs, Jr.  
WALTER E.  
HEINRICH, JR.

September 11, 1962  
P. O. BOX 5671  
Tucson, Arizona





# LEGEND



HEINRICH'S GEOEXPLORATION COMPANY P.O. Box 5671 Tucson, Arizona		
COMPOSITE MAP Topography, Magnetometer Survey Vertical Intensity, Geology		
FOR ARIZONA IRON MINES INC.		
SIERRA ANCHA MINING DISTRICT GILA COUNTY, ARIZONA		
SCALE: 1" = 300'	CONTOUR INTERVAL: Magnetic - 2000' Topographic - 100'	REVISIONS
DATE: SEPT. 1962	SHEET OF	
DRAWN BY: C. S. L.	DRAWING NO.:	FILE:



**CERRO DE PASCO CORPORATION**  
AND SUBSIDIARIES  
NEW YORK

**INTERNAL MEMORANDUM**

OTHER ADDRESSEES — FOR INFORMATION

N. Y. Central

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

New York, N. Y., Nov. 22, 1960  
Date

**To:** R. R. Reynolds, Chief, Arizona Exploration Unit

**From:** S. B. Keith, Chief Geologist, Cerrocorp

**Subject:** Iron King, Arizona

Enclosed is the information which you sent us with your memo of August 3, 1960 on the above subject and which you wished returned.

Stau  
S. B. Keith

SBK/mv/Cerrocorp

CHECK ASSAY COMPARISONS

*JK*  
✓

Check assays on 9 samples (No. 1510-1518) which were assayed by Jacobs were made by Union Assay Office. One of these samples, No. 2163, should be omitted because of the obvious error in the Jacobs' assay. Thus if the 8 samples are averaged, the results show an average of 35.5% iron for Jacobs and 36.1% iron for Union. The difference of 0.6% is negligible.

If all 17 samples (No. 1510-1518 and 1520-1528) are averaged, then an average of 37.1% iron is calculated for Jacobs' assays and 37.1% iron is calculated for Union's assay. This shows that both assayers' results are reliable and that the margin of error between them is negligible.

As a further check 9 samples (Nos. 1520-1528) were sent to Hawley & Hawley at Douglas, Arizona, and the triple check shows that the three assays are reliable and check within 1% in iron content.

The 9 samples by Jacobs averaged 38.5% iron; by Union 38.1% iron and by Hawley and Hawley 37.3% iron.

*John S. Skarbek*  
\_\_\_\_\_  
John S. Skarbek

JSS:db/cerrocorp  
5-25-60



# CHECK ASSAY COMPARISONS

Sample No. Jacobs	Union	Drill Hole	% Fe Assay			Footage		Interval
			Jacobs	Union	Hawley	From	To	
2017	1510	CD #4	21.7	21.2		170	175	5'
2018	1511		43.0	42.7		175	180	5'
2020	1512		34.0	34.4		185	190	5'
2068	1513	DDH #6	26.9	27.4		119	121	2'
2077	1514		37.0	36.2		157	159.5	2.5
2082	1515		48.7	50.7		181	184	3
2154	1516	DDH #5	24.6	27.2		152	154	2'
*2163	1517		*33.9	*53.9		174	177	3
2161	1518		48.0	48.7		169	171	2
			8/283.9	8/288.5				
			35.5%	36.1%				
1520	1317	DDH #3	43.0	44.9	43.3	100	102	2'
1521	1320		28.4	27.0	27.5	130.5	132.5	2
1522	1323		34.6	34.5	32.6	136.5	139	2.5
1523	1348	DDH #1	24.2	24.2	22.0	41	43	2'
1524	1350		35.4	34.8	34.6	45	47	2
1525	2104		62.0	62.4	61.3	98	100	2
1526	2119	DDH #9	47.1	44.9	44.3	36	38	2
1527	2135		41.1	38.6	38.6	72	74	2
1528	2057		31.0	31.7	31.7	192	194	2
			9/346.8	9/343.0	9/335.9			
			38.5%	38.1%	37.3%			

\*Sample No. 2163 shows Jacobs' assay as 33.9% and Union's as 53.9%. It is believed that Union's assay is correct because the interval above and below the sample (No. 2163) assayed over 50% iron and there is no reason to suspect that sample No. 2163 should not go over 50% iron. Thus, in averaging the check assays No. 2163 should be thrown out. If it is included, Union's assays are 1.2% higher than Jacobs' and if omitted, the check is perfect and no correction is needed.

# ASSAY LOG

Hole No.	From	To	Inter- val	Sample No.	% Fe Chemical Assay		Davis Tube Tests		Remarks	
					Jacobs	Union Other	Chem. Assay Conc.	Grind (Mesh)		% Rec. Fe
1	90	96	4'	1303		15.3	46.1	-20	94.4	
3	90.5-	93	2.5	1313	43.0	44.9	55.3	-20	96.7	
3	100	102	2.0	1317		33.7	52.4	-20	94.4	
3	102	104	2.0	1318	28.4	27.0	50.5	-20	98.6	
3	130.5-	132.5	2.0	1320		50.2	40.0	-20	100.0	
3	132.5-	134.5	2.0	1321		39.6	58.0	-20	99.9	
3	134.5-	136.5	2.0	1322		34.5	52.0	-20	97.7	
3	136.5-	139.0	2.5	1323	34.6	34.5	50.4	-20	95.9	
3	150.5-	152.5	2.0	1324		18.1	29.8	-20	92.3	
3	152.5-	154.5	2.0	1325		14.4	23.0	-20	95.8	
3	154.5-	156.5	2.0	1326		24.0	38.8	-20	99.0	
3	156.5-	158.5	2.0	1327		24.4	37.1	-20	97.8	
3	158.5-	161	2.5	1328		26.0	46.4	-20	91.2	
3	162	166	4.0	1329		21.6	37.1	-20	89.8	
3	166	169.5	3.5	1330		18.8	43.1	-20	96.5	
3	169.5-	172	2.5	1331		25.5	29.8	-20	99.0	
3	172	174	2.0	1332		17.0	36.7	-20	98.4	
3	174	176	2.0	1333		8.5	22.6	-20	98.6	
3	176	179.7	3.7	1334		18.3	24.6	-20	96.4	
3	179	182	3.0	1335		20.4	12.1	-20	59.6	
3	182	186	4.0	1336		34.8	53.6	-20	92.7	
3	186	190	4.0	1337		20.4	30.6	-20	89.7	
3	190	195	5.0	1338		19.0	45.9	-20	92.6	
3	195	200	5.0	1339		20.0	44.3	-20	79.2	
3	200	205	5.0	1340		12.3	42.3	-20	72.0	
3	205	210	5.0	1341		13.8	36.7	-20	79.6	
3	210	217	7.0	1342		11.9	33.4	-20	84.2	
1	25.5-	27.5	2.0	1343		44.8	54.8	-20	97.8	
1	33	35	2.0	1345		41.4	60.0	-20	96.2	
1	39	41	2.0	1347		32.6	47.1	-20	97.4	
1	41	43	2.0	1348	24.2	24.2	35.1	-20	96.1	
1	43	45	2.0	1349		47.1	52.8	-20	99.2	
1	45	47	2.0	1350	35.4	34.8	46.3	-20	95.4	

-65 chem. assay conc. 48.9  
Rec. Fe 79.4%

-65 chem. assay conc. 48.9  
Rec. Fe 79.4%



Hole No.	From	To	Inter- val	Sample No.	% Fe Jacobs	Davis Tube Tests			Remarks
						Chem. Assay Conc.	Grind (Mesh)	% Rec. Fe	
9	105	-107	2.0	2048		58.2	-20	92.6	
9	107	-109	2.0	2049		50.1	-20	85.6	
9	119	-121	2.0	2053	31.6	55.3	-20	88.3	
9	187	-189	2.0	2055		47.3	-20	98.0	
9	192	-194	2.0	2057	31.0	47.3	-20	96.7	
9	196	-198	2.0	2058		43.2	-20	96.1	
1	47	-49	2.0	2100		62.2	-20	99.4	
1	49	-51	2.0	2101		65.0	-20	99.4	
1	51	-54	3.0	2102		63.4	-20	98.0	
1	96	-98	2.0	2103		65.8	-20	100.0	
1	98	-100	2.0	2104		67.9	-20	97.8	
1	102	-104.5	2.5	2105	62.0	54.9	-20	96.8	
1	109	-111.5	2.5	2107		66.7	-20	97.2	
9	20	-24	4.0	2117		62.6	-20	97.3	
9	34	-36	2.0	2118		59.0	-20	94.4	
9	36	-38	2.0	2119	47.1	59.8	-20	97.3	
9	38	-40	2.0	2120		50.9	-20	96.6	
9	44	-46	2.0	2123		48.7	-20	90.0	
9	46	-48	2.0	2124		46.0	-20	93.0	
9	50	-52	2.0	2125	41.7	48.5	-20	94.8	
9	52	-54	2.0	2126	29.6	57.4	-20	95.8	
9	54	-56	2.0	2127	40.1	44.4	-20	99.1	
9	56	-58	2.0	2128		42.3	-20	92.4	
9	58	-60	2.0	2129	29.4	31.1	-20	97.7	
9	60	-62	2.0	2130		52.2	-20	94.9	
9	62	-64.8	2.8	2131		52.5	-20	96.7	
9	68	-70	2.0	2132		46.2	-20	96.8	
9	70	-72	2.0	2133		46.2	-20	96.8	
9	72	-74	2.0	2134	41.1	38.6	-20	97.4	
9	76	-78	2.0	2135		27.7	-20	92.1	
9	78	-80	2.0	2137		36.1	-20	98.3	
9	85	-87	2.0	2140		30.7	-20	99.2	
9	89	-91	2.0	2142		31.5	-20	96.4	
9	91	-93	2.0	2143		35.2	-20	97.5	
9	93	-95	2.0	2144		36.1	-20	93.4	
9	97	-99	2.0	2145		36.1	-20	96.3	

# QUALITATIVE SPECTROGRAPHIC ANALYSIS COMPARISON

<u>Element</u>	<u>Smith &amp; Emery</u>	<u>Abbot A. Hanks, Inc.</u>
Iron	Major Constituent	30% to 100%
Silicon	Major Constituent	3% to 30%
Magnesium	Major Constituent	3% to 30%
Aluminum	1%	.03% to 3%
Manganese	0.1%	.03% to 3%
Calcium	Not run	.03% to 3%
Titanium	0.05%	Less than .03%
Zinc	0.05%	Less than .03%
Boron	0.005%	Less than .03%
Chromium	0.005%	Less than .03%
Cobalt	0.005%	Less than .03%
Copper	0.005%	Less than .03%
Lead	0.005%	Less than .03%
Nickel	0.005%	Less than .03%
Vanadium	0.005%	Less than .03%
Barium	None found	Not run
Molybdenum	None found	Not run
Tungsten	None found	Not run
Rare Earths	None found	Not run
Sodium	Not run	Less than .03%
Potassium	Not run	Less than .03%

Composite sample sent to Smith & Emery was made up of samples taken in trenches. Composite sample sent to Abbot A. Hanks, Inc. was made up of check samples taken from drill holes No. 4, 5 and 6. No important discrepancy is noted in the above comparison.



# ABBOT A. HANKS, INC.

ESTABLISHED 1866

1300 SANSOME STREET • SAN FRANCISCO 11, CALIFORNIA • EXBROOK 7-2464

Engineers  
Assayers  
Chemists  
Metallurgists  
Spectrographers  
Soils and Foundations  
Consulting • Testing • Inspecting

## LABORATORY REPORT

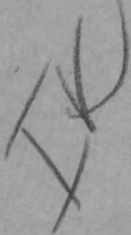
Lab. No. **C109091**

Date **May 17, 1960**

Submitted by **Union Assay Office, Inc.**  
**P. O. Box 1528**  
**Salt Lake City 10, Utah**

Sample Mark **Cerro De Pasco 1519**

### QUALITATIVE SPECTROGRAPHIC ANALYSIS Metals Found and Estimated Percentage Range

Less than .03 %	.03 % to .30 %	.30 % to 3 %	3 % to 30 %	30 % to 100 %
Cobalt Sodium Potassium Zinc Titanium Vanadium Strontium Chromium Copper Nickel Boron	Aluminum Calcium Manganese  		Magnesium Silicon	Iron

Remarks

ABBOT A. HANKS, INC.

Original Signed by  
By MARTIN P. QUIST  
Martin P. Quist  
Spectro-Chemist

TELEPHONE EM 3-3302

Hand Sample Serial 86725

ASSAY REPORT

## UNION ASSAY OFFICE, Inc.

Mine Cerro DePasco CorporationJ. V. SADLER, President  
W. C. WANLASS, Vice-Pres. & Treas.  
LILY M. HOTTINGER, Secretary

RESULTS PER TON OF 2000 POUNDS

May 11, 1960

Salt Lake City 10, Utah

NO.	GOLD Ozs. per Ton	SILVER Ozs. per ton	LEAD Per Cent Wet	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent	<del>PERCENT</del> <del>PERCENT</del>
										AS	TiO <sub>2</sub>	P
1519			None	None	20.6	None	0.056	38.5	0.4	None	0.15	0.045

Remarks \_\_\_\_\_

Charges \$ 12.00*W. C. Wanlass*



30 So. Main St.  
P. O. Box 1889

# Jacobs Assay Office

PHONE Main 2-6813

Registered Assayers

Certificate No. **54398**

Tucson, Arizona,

**May 19<sup>th</sup>** 19**60**

Sample Submitted by Mr.

**Cerro de Pasco Corp**

**IRON**

SAMPLE MARKED	GOLD		SILVER	COPPER	LEAD	Fe	
	Ozs. per ton ore	Value per ton ore *	Ozs. per ton ore	Per cent Wet Assay	Per cent Wet Assay	Per cent Wet Assay	Per cent Wet Assay
<b>#1520</b>		\$				<b>43%</b>	
<b>21</b>						<b>28 4/10</b>	
<b>22</b>						<b>34 6/10</b>	
<b>23</b>						<b>24 2/10</b>	
<b>24</b>						<b>35 4/10</b>	
<b>25</b>						<b>62%</b>	
<b>26</b>						<b>47 1/10</b>	
<b>27</b>						<b>41 1/10</b>	
<b>28</b>						<b>31%</b>	

\* Gold Figured \$35.00 per oz. Troy

Charges \$ **18.00**

Very respectfully,

**Ben P. Jacobs**



Registered Assayers

# HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

Shippers' Representatives - Umpires - Weighers - Samplers

537 12th STREET  
P. O. BOX 1060  
DOUGLAS, ARIZONA  
EMpire 4-2741

Representatives at Buyer's Plants: Phelps Dodge Corp., Douglas, Arizona and El Paso, Texas; ASARCO, El Paso, Texas and Hayden, Arizona

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	Ox Copper %	ZINC %	Fe %		
1520							43.3		
1521							27.5		
1522							32.6		
1523							22.0		
1524							34.6		
1525							61.3		
1526							44.3		
1527							38.6		
1528							31.7		

*Check on Jacobs  
&  
Union Assays*

CC:	REMARKS:	ANALYSIS CERT. BY <i>P. Rich</i>		
ADD:				
CITY:				
ADD:				
CITY:				
ACC: CERRO DE PASCO CORPORATION	DATE SPL. RECEIVED 5/19/60	DATE COMPL. 5/23/60	307589	PREPARATION \$
				ANALYSIS \$ 36.00
				\$ 36.00





Registered Assayers

# HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

Shippers' Representatives - Umpires - Weighers - Samplers

537 12th STREET  
P. O. BOX 1060  
DOUGLAS, ARIZONA  
EMpire 4-2741

Representatives at Buyer's Plants: Phelps Dodge Corp., Douglas, Arizona and El Paso, Texas; ASARCO, El Paso, Texas and Hayden, Arizona

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	Ox Copper %	ZINC %	Fe %		
1520							43.3		
1521							27.5		
1522							32.6		
1523							22.0		
1524							34.6		
1525							61.3		
1526							44.3		
1527							38.6		
1528							31.7		

*Check on Jacobs  
&  
Union Assays*

CC:

ADD:

CITY:

ADD:

CITY:

REMARKS:

ANALYSIS CERT. BY *Phelps*

PREPARATION \$

ANALYSIS \$ 36.00

ACC: CERRO DE PASCO CORPORATION

DATE SPL. RECEIVED 5/19/60

DATE COMPL. 5/23/60

307589

\$ 36.00

REL.

TELEGRAM

FOR

CERRO DE PASCO CORPORATION

E. O. SLATER  
SMITH EMERY CO.  
781 E. WASHINGTON BLVD.  
LOS ANGELES, 21, CALIFORNIA

IF PULP NO. 442995 IS STILL AVAILABLE PLEASE RUN TITANIUM AND  
ADVISE R. C. JAMES RESULTS.  
SPENCER CERRO DE PASCO CORPORATION

CC R. C. JAMES ✓  
NY CENTRAL FILES



LABORATORY REPORT  
**SMITH-EMERY COMPANY**

ESTABLISHED 1910

CHEMISTS - ENGINEERS  
781 EAST WASHINGTON BOULEVARD  
LOS ANGELES 21, CALIFORNIA

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.

## LABORATORY

No. 442995-Additional

Date November 26, 1957

Sample Pulp

Received 11-18-57

Marked "Sample of Iron Ore"

Submitted by Cerro de Pasco Corporation,  
3656 East Speedway,  
Tucson, Arizona.

Att.: R. C. James,  
Chief, Arizona Exploration Unit.

REPORT OF DETERMINATION

Titanium Oxide ( $TiO_2$ ) ----- 0.05%

Respectfully submitted,

*Smith-Emery Co.*  
CHEMISTS AND ENGINEERS  
A.L.C.



COPY

LABORATORY REPORT  
**SMITH-EMERY COMPANY**

ESTABLISHED 1910

CHEMISTS - ENGINEERS

781 EAST WASHINGTON BOULEVARD

LOS ANGELES 21, CALIFORNIA

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.

## LABORATORY

No. 442995-Additional

Date November 26, 1957

Sample Pulp

Received 11-18-57

Marked "Sample of Iron Ore"

Submitted by Cerro de Pasco Corporation,  
3656 East Speedway,  
Tucson, Arizona.

Att.: R. C. James,  
Chief, Arizona Exploration Unit.

REPORT OF DETERMINATIONTitanium Oxide (TiO<sub>2</sub>) ----- 0.05%

Respectfully submitted,

*Smith-Emery Co.*CHEMISTS AND ENGINEERS

G.L.G.



ROBERT R. REYNOLDS

**ABBOT A. HANKS, INC.**

ESTABLISHED 1888

1300 SANSOME STREET • SAN FRANCISCO 11, CALIFORNIA • EXBROOK 7-2464

Engineers  
Assayers  
Chemists  
Metallurgists  
Spectrographers  
Boilers and Foundations  
Consulting • Testing • Inspecting

**LABORATORY REPORT**

Lab. No. C111076

Date September 14, 1960

Submitted by Cerro de Pasco Corp.  
Arizona Exploration Unit  
3656 E. Speedway Blvd.  
Tucson, Arizona

Sample Mark Composite Magnetic  
Concentrates -  
Iron King

**QUALITATIVE SPECTROGRAPHIC ANALYSIS**  
Metals Found and Estimated Percentage Range

Less than .03%	.03% to .30%	.30% to 3%	3% to 30%	30% to 100%
Titanium ✓ Sodium ✓ Potassium ✓ Lead ✓ Copper ✓ Zinc ✓ Zirconium ✓ Chromium ✓ Strontium ✓ Nickel ✓ Cobalt ✓	Calcium ✓ Aluminum ✓ Manganese ✓	Magnesium ✓	Silicon ✓	Iron ✓

Remarks

ABBOT A. HANKS, INC.

*Martin P. Quist*  
Martin P. Quist

# THE GALIGHER COMPANY

ESTABLISHED 1901



CABLE ADDRESS  
GALSAL

TELEPHONE  
ELGIN 9-8731

545-585 WEST EIGHTH SOUTH STREET  
P. O. BOX 209  
SALT LAKE CITY 10, UTAH  
U. S. A.

*JK Metallurgy File*

August 16, 1960

Cerro De Pasco Corporation  
Arizona Exploration Unit  
3656 Speedway Boulevard  
Tucson, Arizona

Attention: Mr. R. R. Reynolds

Gentlemen:

With reference to your letter of August 11, 1960, we are sending under separate cover the assay sample rejects from the concentrate obtained in the Davis tube tests.

If we can be of further assistance to you, please contact us.

Respectfully yours  
THE GALIGHER COMPANY

*R. O. Huch*

R. O. Huch  
Metallurgist

ROH/cb



Sample sent to Abbot A. Hanks for Spec Analysis  
8/26/60

# Composite of Davis Tube Concentrates

Sample No	Grams Wt.	Sample No	Grams Wt
1317	8.11	1326	6.15
1313	8.0	1331	6.27
1327	7.61	2128	6.83
1350	7.21	2127	7.66
1342	3.01	2126	7.09
1349	8.85	2125	6.12
1343	7.99	2124	6.71
1340	2.10	2135	7.54
1345	6.64	2138	7.21
1341	3.03	2142	8.14
1347	6.77	2143	6.11
1348	6.65	2144	6.28
2055	6.62	2145	6.53
2058	7.62	2119	7.30
2100	9.11	2120	7.37
2101	9.31	2123	6.89
2102	9.24	2048	6.43
2104	8.98	2049	3.95
2105	5.39	2053	5.33
2107	7.65	1324	5.63
2117	8.10	1323	5.67
1329	4.50	1322	7.44
1328	6.04	1321	8.65
2134	6.65	1337	6.00
2133	7.58	1336	6.06
2132	7.84	1335	4.18
2131	8.32	1334	7.16
2130	8.32	1332	6.85
2129	7.41	1330	7.27
2137	5.92	1325	6.02
2140	6.32	1333	7.42
1318	6.75	2057	6.49
1320	6.73	2103	8.79
		1339	3.60
		1338	3.84

BRANCH OFFICE: 10 DE LUCA PLACE • SAN RAFAEL • GLENWOOD 4-8650

## ESTABLISHED 1966

1300 SANSOME STREET • SAN FRANCISCO 11, CALIFORNIA • EXBROOK 7-2464

Engineers  
Assayers  
Chemists  
Metallurgists  
Spectrographers  
Soils and Foundations  
Consulting · Testing · Inspecting

Lab. No. C109091

Date May 17, 1960

Submitted by Union Assay Office, Inc.  
P. O. Box 1528  
Salt Lake City 10, Utah

Sample Mark Cerro De Pasco 1519

### QUALITATIVE SPECTROGRAPHIC ANALYSIS

Metals Found and Estimated Percentage Range

Less than .03 %	.03 % to .30 %	.30 % to 3 %	3 % to 30 %	30 % to 100 %
Cobalt Sodium Potassium Zinc Titanium Vanadium Strontium Chromium Copper Nickel Boron	Aluminum Calcium Manganese		Magnesium Silicon	Iron

Remarks

**ABBOT A. HANKS, INC.**

By Martin P. Quist  
Spectro-Chemist

ras

CA-108



COPY

## SMITH-EMERY COMPANY

ESTABLISHED 1910

CHEMISTS - ENGINEERS

METALLURGICAL AND TESTING ENGINEERS

781 EAST WASHINGTON BOULEVARD

LOS ANGELES 21

CALIFORNIA

## LABORATORY

No. 459248

Date March 9, 1959

Sample Pulp

Received 3-5-59

Marked "Composite Magnetic Iron Ore"

Submitted by Cerro De Pasco Corporation,  
3656 East Speedway Boulevard,  
Tucson, Arizona.

Att.: R.R. Reynolds,  
Geologist.

REPORT OF QUALITATIVE SPECTROGRAPHIC EXAMINATIONElementApproximate Quantity

Over metals and other substances can be examined. These qualitative examinations are useful in determining the presence of elements as a guide for chemical analyses and to identify elements the presence of which were not suspected. This method of examination is especially useful in determining the presence of elements in small amounts and in identifying elements in complex substances.

**Silicon, Iron, Magnesium ----- Major Constituents.**

Minor Constituents

Aluminum -----	1%
Manganese -----	0.1%
Titanium -----	0.05%
Zinc -----	0.05%
Boron -----	0.005%
Chromium -----	0.005%
Cobalt -----	0.005%
Copper -----	0.005%
Lead -----	0.005%
Nickel -----	0.005%
Vanadium -----	0.005%
Barium -----	None found
Molybdenum -----	None found
Tungsten -----	None found
Rare Earths -----	None found

Respectfully submitted,

CHEMISTS AND ENGINEERS

G.L.C.

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)

**CERRO DE PASCO CORPORATION**

(Incorporated in New York)

AND WHOLLY OWNED SUBSIDIARIES

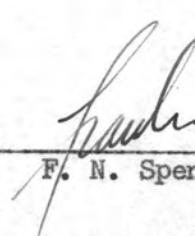
**INTERNAL MEMORANDUM****OTHER ADDRESSEES — FOR INFORMATION**cc NY Central Files  
NY Circulating FileSHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSORNew York, N. Y., February 27, 1959

Date

**To:** R. R. Reynolds, Geologist, Arizona Exploration Unit, Cerrocorp ←**From:** F. N. Spencer, Jr., Manager, Mining & Exploration Division, Cerrocorp**Subject:** Iron King Spectrographic Analysis

In view of the fact that Roseveare has not given us a written report on the actual spectrographic analysis of the ore, I think we should send a sample to Smith Emory or equal for full spectrographic analysis. Please send two copies of their report to me.

Use your own judgement on the make up of the sample, but it should, of course, be as representative as possible.

  
F. N. Spencer, Jr.

FNS:jc



# Rejects Sampled for Spectrographic Analysis

<u>S. End</u>	<u>N. End</u>
449✓	1073✓
450✓	1074✓
1035✓	1075✓
1002✓	1076✓
1036✓	1077✓
1003✓	1078✓
1004✓	1059✓
1005✓	1060✓
1010✓	<u>1061✓</u>
<u>1011✓</u>	1062✓
1014✓	1063✓
1015✓	1064✓
1016✓	1065✓
1017✓	1066✓
1018✓	1067✓

Made into a Composite

IK

**CERRO DE PASCO CORPORATION**

300 PARK AVENUE · NEW YORK 22, N. Y.

Arizona Exploration Unit  
3656 E. Speedway Blvd.  
Tucson, Arizona

August 26, 1960

Abbot A. Hanks, Inc.  
1300 Sansome Street  
San Francisco 11, California

Gentlemen:

Enclosed is composite sample of pulps  
of magnetic concentrates. Would you run a quali-  
tative spectrographic analysis on this please.

Sincerely yours,



R. R. Reynolds  
Chief, Arizona Exploration  
Unit

RRR:db  
Enc.

C  
O  
P  
Y



**CERRO DE PASCO CORPORATION**

300 PARK AVENUE · NEW YORK 22, N. Y.

Arizona Exploration Unit  
3656 E. Speedway Blvd.  
Tucson, Arizona

*L.K.*

*[Handwritten signature]*

August 11, 1960

The Galigher Company  
545-585 W. 8th South Street  
Salt Lake City 10, Utah

Att: Mr. R. O. Huch  
Metallurgist

Gentlemen:

We have had a request from our New York office that we have a complete spectrographic analysis run on a composite from the concentrates obtained in the Davis Tube tests. I do not know whether these concentrates were saved or not but if they were, could you send them to us.

We appreciate anything you can do in this matter.

Very truly yours,

*[Handwritten signature: R. R. Reynolds]*

R. R. Reynolds  
Chief, Arizona Exploration Unit

RRR:db

C  
O  
P  
Y

**CERRO DE PASCO CORPORATION**  
AND SUBSIDIARIES  
NEW YORK

**INTERNAL MEMORANDUM**


SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson, Ariz. ~~XXXXXX~~ Aug. 3, 1960  
New York, N. Y. ~~XXXXXX~~  
Date

To: S. B. Keith, Chief Geologist, Cerrocorp  
From: R. R. Reynolds, Chief, Arizona Exploration Unit, Cerrocorp  
Subject: Iron King Data

After our phone conversation this morning I dug the enclosed material out of the files. It probably duplicates what you already have for the most part. Whatever you do not need I would appreciate its being returned to my files. The main thing you require is the Abbot A Hanks spectrographic analysis certificate dated May 17, 1960. This was run on a composite of the samples sent to Galigher for Davis Tube tests. However, we prepared this composite in Tucson. The Union Assay office made a wet assay for Galigher on a composite prepared by them (certificate dated May 11, 1960).

Enclosed are the tabulated sampling results from the Iron King trenches. Due to our typist being on vacation this week and typing tables not being my forte, I'm sending them just as John wrote them up.

  
R. R. Reynolds



UNION ASSAY OFFICE, INC.

P. O. BOX 1528

SALT LAKE CITY, UTAH

UNIT 10

J. V. SADLER  
PRESIDENT  
W. C. WANLASS  
VICE PRES. & TREAS.  
LILY M. HOTTINGER  
SECRETARY

May 13, 1960



Cerro De Pasco Corporation  
Arizona Exploration Unit  
3656 East Speedway Blvd.  
Tucson,  
Arizona

Attention: Mr. John S. Skarbek

Dear Sir:

Enclosed you will find assay reports on  
samples number 1510 through 1519.

As we do not run Spectrographic Analysis  
at our office, we sent a portion of your #1519  
sample to a reputable firm in San Francisco who  
perform this service for us.

We will mail this report when received.

Yours very truly  
UNION ASSAY OFFICE, INC.

By W. C. Wanlass  
W. C. Wanlass -  
Vice Pres & Treas

W  
C  
W  
l  
h

**CERRO DE PASCO CORPORATION**

300 PARK AVENUE · NEW YORK 22, N. Y.

Arizona Exploration Unit  
3656 E. Speedway Blvd.  
Tucson, Arizona

*Pending*

May 5, 1960

Union Assay Office  
152-154 SW Temple  
Salt Lake City, Utah

Dear Sir:

Enclosed are ten (10) samples which we would like to have run chemically for iron. On Sample No. 1519 we would like a spectrographic analysis as well. Test for iron, lime, insolubles, titanium, phosphorus, copper, lead, zinc, arsenic and sulphur.

Sincerely,

John S. Skarbek  
Geologist

JSS:db  
Encs.

C  
O  
P  
Y



# THE GALIGHER COMPANY

ESTABLISHED 1901



CABLE ADDRESS  
GALSAL

TELEPHONE  
ELGIN 9-8731

545-585 WEST EIGHTH SOUTH STREET  
P. O. BOX 209  
SALT LAKE CITY 10, UTAH  
U. S. A.

*OK.*

May 12, 1960

Cerro de Pasco Corporation  
Arizona Exploration Unit  
3656 East Speedway Blvd.  
Tucson, Arizona

Attention: Mr. John S. Skarbek, Geologist

Gentlemen:

We wish to acknowledge receipt of your letter dated May 10, 1960, requesting that we return to you all sample rejects and pulps submitted to us in December. These samples have been packed in three drums and one box and have been shipped to the above address as of this date.

Sincerely yours,

THE GALIGHER COMPANY

*R. O. Huch*

R. O. Huch  
Metallurgist

ROH/fh

**CERRO DE PASCO CORPORATION**

300 PARK AVENUE · NEW YORK 22, N. Y.

Arizona Exploration Unit  
3656 E. Speedway Blvd.  
Tucson, Arizona

*Print*

May 10, 1960

The Galigher Company  
P.O. Box 209  
Salt Lake City 10, Utah

ATT: R. O Huch  
Metallurgist

Gentlemen:

Please rush to us all sample rejects  
and pulps which were forwarded to you in December  
of last year for testing.

We would appreciate your immediate  
attention to this matter.

Sincerely yours,

*John S. Skarbek*  
John S. Skarbek  
Geologist

JSS:db

C  
O  
P  
Y



# THE GALIGHER COMPANY

ESTABLISHED 1901



545-585 WEST EIGHTH SOUTH STREET

P. O. BOX 209

SALT LAKE CITY 10, UTAH

U. S. A.

December 22, 1959

CABLE ADDRESS  
GALSAL

*J. L. Evans*

Cerro de Pasco Corporation  
Arizona Exploration Unit  
3656 East Speedway  
Tucson, Arizona

Attention Mr. R. R. Reynolds, Chief  
Arizona Exploration Unit

## Davis Tube Tests

In the absence of Mr. Sayers from the city, we are acknowledging your letter of December 11, Mr. Reynolds, in which you informed us that you have shipped 70 magnetic samples for Davis tube tests. We have cautioned our Receiving Department to be on the lookout for receipt of these samples and immediate delivery to our Metallurgical Laboratory.

Mr. Sayers is expected to return prior to the Christmas Holidays and will write you in detail upon his return.

THE GALIGHER COMPANY

*J. L. Evans*

S. L. Evans

General Manager

SLE/Tn

(duplicate)

TELEPHONE  
ELGIN 9-8731

# THE GALIGHER COMPANY

ESTABLISHED 1901



CABLE ADDRESS  
GALSAL

TELEPHONE  
ELGIN 9-8731

545-585 WEST EIGHTH SOUTH STREET  
P. O. BOX 209  
SALT LAKE CITY 10, UTAH  
U. S. A.

February 25, 1960

Cerro de Pasco Corporation  
Arizona Exploration Unit  
3656 East Speedway  
Tucson, Arizona

Attention Mr. R. R. Reynolds

Dear Mr. Reynolds:

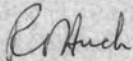
Enclosed you will find three (3) copies of our laboratory report covering the magnetic test work conducted on your seventy samples of iron ore. You will notice that we have omitted the individual test sheets from these copies. Because of the large number of test sheets and the time which would be required in preparation for the report, we thought it advisable to omit these at the present time. However, complete report copies will be sent to you at a later date when the test sheets are completed.

In Table I of the enclosed report, test data is summarized similarly to that given to you by Mr. Evans on his recent visit. The original tabulation of data resulted from rapid slide-rule calculations, so, you will notice a few minor changes concerning the data contained in Table I.

Also, it might be mentioned that we ran a few tests comparing the results obtained using a hand electro-magnet as against the Davis Tube Tester. The hand magnet gave nearly identical results and this would be a very useful tool for running quick field tests, if such is desired.

Sincerely yours,

THE GALIGHER COMPANY



R. O. Huch  
Metallurgist

ROH/fh

Enclosures

*Supplies and Equipment for Every Industry*  
Manufacturers • Mining • Milling • Laboratory Equipment • Ore Testing • Plant Designing • Construction • Operation

AIR  
MAIL



*file*  
*[Signature]*

# THE GALIGHER COMPANY

ESTABLISHED 1901



CABLE ADDRESS  
GALSAL

TELEPHONE  
ELGIN 9-8731

545-585 WEST EIGHTH SOUTH STREET  
P. O. BOX 209  
SALT LAKE CITY 10, UTAH  
U. S. A.

December 22, 1959

Cerro de Pasco Corporation  
Arizona Exploration Unit  
3656 East Speedway  
Tucson, Arizona

Attention Mr. R. R. Reynolds, Chief  
Arizona Exploration Unit

## Davis Tube Tests

In the absence of Mr. Sayers from the city, we are acknowledging your letter of December 11, Mr. Reynolds, in which you informed us that you have shipped 70 magnetite samples for Davis tube tests.

We have cautioned our Receiving Department to be on the lookout for receipt of these samples and immediate delivery to our Metallurgical Laboratory.

Mr. Sayers is expected to return prior to the Christmas Holidays and will write you in detail upon his return.

THE GALIGHER COMPANY

*[Signature]*

S. L. Evans  
General Manager

SLE/fh

(duplicate)

- CONDITION SYMBOLS
1. BROKEN

2. BURNED

3. CHIPPED

4. CONTENTS & CONDITION UNKNOWN

5. DENTED

6. FADED

7. GOUGED

8. LOOSE

9. MARRED

10. NORMAL WEAR

11. PACKED BY OWNER

12. RUBBED

13. MOTH EATEN

14. MECHANICAL CONDITION UNKNOWN

15. PADDED AND WRAPPED

16. SCRATCHED

17. SOILED

18. TORN

19. CRACKED

20. OWNER'S RISK

ARIZONA MOVING & STORAGE CO.

LOCATION SYMBOLS

- RT-RIGHT
- S-SIDE
- TOP-TOP
- LG-LEG
- V-VENEER
- B-BOTTOM
- C-CORNER
- F-FRONT
- LEF-LEFT
- RE-REAR

1039 N. ALAMO ST.

TUCSON, ARIZONA

white.

From Mr. Robert Reynolds Address 3656 E. Speedway City Tucson

Date December 11, 1959 Pick Up Date December 11, 1959 Lot No. 18037

No.	ARTICLE	CONDITIONS	No.	ARTICLE	CONDITIONS
1			51	Crate-Rock Samples-A.M.S.	
2			52		
3			53		
4			54		
5			55		
6			56		
7			57		
8			58		
9			59		
10			60		
11			61		
12			62		
13			63		
14			64		
15			65		
16			66		
17			67		
18			68		
19			69		
20			70		
21			71		
22			72		
23			73		
24			74		
25			75		
26			76		
27			77		
28			78		
29			79		
30			80	TO BE SHIPPED MOTOR FREIGHT	
31			81		
32			82		
33			83		
34			84		
35			85		
36			86		
37			87		
38			88		
39			89		
40			90		
41			91		
42			92		
43			93		
44			94		
45			95		
46			96		
47			97		
48			98		
49			99		
50			100		

IMPORTANT!

I acknowledge that the condition of the goods at the time of loading is as noted and that I have received a copy of this Inventory.

Driver [Signature] Signed [Signature] (Owner or agent)

I acknowledge receipt of all goods noted above and agree that the goods were delivered in good condition except as noted below:

Driver \_\_\_\_\_ Signed \_\_\_\_\_ (owner or agent) Date \_\_\_\_\_

READ CAREFULLY



**CERRO DE PASCO CORPORATION**  
AND SUBSIDIARIES  
NEW YORK

**INTERNAL MEMORANDUM**

OTHER ADDRESSEES - FOR INFORMATION

*J.K.*

cc: N.Y. Central Files

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson, Ariz.

New York, N.Y.

Sept. 20, 1960

Date

To: S. B. Keith, Chief Geologist, Cerrocorp

From: R. R. Reynolds, Chief, Arizona Exploration Unit, Cerrocorp

Subject: Iron King Project - Gila County, Arizona  
Spectrographic Analysis

Enclosed are laboratory reports on the spectrographic analysis made by Abbot A. Hanks, Inc. This is on a composite made up of all samples submitted to the Galigher Company for Davis tube tests. This is the additional information you requested to complete your data on the Iron King.

Abbot A. Hanks, Inc. only sent us two copies of this report. I presume you would like two copies so would you make us a photostat of this certificate for our files.

RRR:db/cerrocorp  
Enc.

*R. R. Reynolds*  
R. R. Reynolds

C  
O  
P  
Y

CERRO DE PASCO CORPORATION

300 PARK AVENUE · NEW YORK 22, N. Y.

Arizona Exploration Unit  
3656 E. Speedway  
Tucson, Arizona

December 11, 1959

The Galigher Company  
545-585 West 8th South Street  
Salt Lake City 10, Utah

Att: Mr. M. J. Sayers  
Vice President

Dear Sir:

We are sending today 70 magnetite samples for Davis tube tests. I am sorry these have been delayed so long. We have had so much difficulty with our drilling program that it appears unlikely that we will be able to get any more samples for you. If we do, they may be delayed as late as next summer.

The attached list gives our sample number, the footage, and interval represented by the sample. In case any samples are too small for the Davis test, they may be combined with an adjacent sample (the sample interval is given to assure correct proportioning). This procedure was adopted to supersede that given in paragraph four of my letter of November 24, 1959. In the event a sample is too small and there are no adjacent samples with which to combine it, please advise us and we will send you the other half of the core.

There were quite a few samples that were of doubtful grade to send you as we were striving for at least 30% iron. These doubtful samples were assayed locally and the few that made the grade, or nearly so, were included. These samples will be readily identified by the iron assay written on the sacks. Use your own judgment about reassaying these samples.

In the event your results indicate work is desirable on material in the 20%-30% range, or even the 15%-20%, we have quite a few samples in each category that we can send you.

Sincerely yours,



R. R. Reynolds  
Chief, Arizona Exploration Unit

RRR:db  
Enc.

COPY



DDH No. 1

List of Samples & Intervals they Represent

<u>Sample No.</u>	<u>Footage</u>	<u>Interval</u>
1343	25.5 - 27.5	2
1345	33 - 35	2
1347	39 - 41	2
1348	41 - 43	2
1349	43 - 45	2
1350	45 - 47	2
2100	47 - 49	2
2101	49 - 51	2
2102	51 - 54	3
1303	90 - 96	6
2103	96 - 98	2
2104	98 - 100	2
2105	102 - 104.5	2.5
2107	109 - 111.5	2.5

DDH No. 3

List of Samples & Intervals they Represent

<u>Sample No.</u>	<u>Footage</u>	<u>Interval</u>
1313	90.5 - 93	2.5
1317	100 - 102	2
1318	102 - 104	2
1320	130.5 - 132.5	2
1321	132.5 - 134.5	2
1322	134.5 - 136.5	2
1323	136.5 - 139.0	2.5
1324	150.5 - 152.5	2
1325	152.5 - 154.5	2
1326	154.5 - 156.5	2
1327	156.5 - 158.5	2
1328	158.5 - 161	2.5
1329	162 - 166	4
1330	166 - 169.5	3.5
1331	169.5 - 172	2.5
1332	172 - 174	2
1333	174 - 176	2
1334	176 - 179.7	3.7
1335	179.7 - 182	2.3
1336	182 - 186	4
1337	186 - 190	4
1338	190 - 195	5
1339	195 - 200	5
1340	200 - 205	5
1341	205 - 210	5
1342	210 - 217	7



DDH No. 9

List of Samples & Intervals they Represent

<u>Sample No.</u>	<u>Footage</u>	<u>Interval</u>
2117	20 - 24	4
2118	34 - 36	2
2119	36 - 38	2
2120	38 - 40	2
2123	44 - 46	2
2124	46 - 48	2
2125	48 - 50	2
2126	50 - 52	2
2127	52 - 54	2
2128	54 - 56	2
2129	56 - 58	2
2130	58 - 60	2
2131	60 - 62	2
2132	62 - 64.8	2.8
2133	68 - 70	2
2134	70 - 72	2
2135	72 - 74	2
2137	76 - 78	2
2138	78 - 80	2
2140	85 - 87	2
2142	89 - 91	2
2143	91 - 93	2
2144	93 - 95	2
2145	97 - 99	2
2048	105 - 107	2
2049	107 - 109	2
2053	119 - 121	2
2055	187 - 189	2
2057	192 - 194	2
2058	196 - 198	2

104

CERRO DE PASCO CORPORATION

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
300 PARK AVENUE, NEW YORK 22, N.Y.  
3056 E. Speedway Blvd., Tucson, Arizona

IK - Drilling  
Concept

November 24, 1959

The Galigher Company  
545-585 West 8th South Street  
Salt Lake City 10, Utah

Att: Mr. M. J. Sayers  
Vice President

Dear Sir:

In reply to your letter of November 20th, I have attempted a re-estimate of when to expect our magnetite ore samples. I am sorry about the delay but I have been pressed by other matters and just neglected to keep you better informed.

Our drilling has gone far more slowly than anticipated but we are now on the last hole and should have the samples for you before December 15th. Also, there will be a reduction in number of samples due to a less successful than anticipated drilling program.

Mr. Kaattari was in to see us about a month ago and he advised that we send only those samples that appear to run over 30% for the Davis tube tests. At this time there are about 75 samples in this category and it is anticipated that the last hole will bring the total to around 100 samples.

We have crushed the samples to pass  $\frac{1}{4}$  inch and have kept the weight under ten pounds as instructed. However, there may be a few samples that may contain insufficient material. Where we can anticipate this possibility, we will tie the light sample, or samples, together. Then it will be possible to combine these samples if necessary.

The samples will be double sacked in paper bags, with a numbered sample tag inside and the same number on the sack. The samples will then be packed in wooden boxes.

Very truly yours,



R. R. Reynolds  
Chief, Arizona Exploration Unit

RRR:db



# THE GALIGHER COMPANY

ESTABLISHED 1901



CABLE ADDRESS  
GALSAL

TELEPHONE  
ELGIN 9-8731

545-585 WEST EIGHTH SOUTH STREET  
P. O. BOX 209  
SALT LAKE CITY 10, UTAH  
U S A.

November 20, 1959

Cerro de Pasco Sales Corporation  
3656 East Speedway Blvd.  
Tucson, Arizona

Attention Mr. R. R. Reynolds  
Chief, Arizona Exploration Unit

In your letter of September 1, 1959, you explained that your drilling program had been delayed and that the samples for testing would not be available until mid-October. As yet, we have not received these samples.

It would be of assistance to us in scheduling our laboratory work if you could give us an approximate date on which you believe the samples will be shipped. This information will make it possible to arrange our commitments for test work so that we can start on your samples soon after they arrive.

THE GALIGHER COMPANY

*M. J. Sayers*

M. J. Sayers  
Vice President

MJS/fh

CERRO DE PASCO CORPORATION

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
300 PARK AVENUE NEW YORK 22, N.Y.  
3056 E. Speedway Blvd., Tucson, Ariz.

*fi L.R.  
filling*

September 1, 1959

Galigher Company  
P.O. Box #209  
Salt Lake City, Utah

Att: Mr. Harold E. Wright  
Executive Vice President

Dear Mr. Wright:

We were planning to ship a rather large number of magnetic iron samples for Davis tube tests sometime this month. However, our drilling program is progressing so slowly due to difficult overburden conditions that the samples will be considerably behind schedule. It would appear now that it will be at least mid-October before we have sufficient samples to begin the tests.

As soon as most of the core is in, I will advise you when the samples will be shipped. Incidentally, they will be prepared here by crushing to  $\frac{1}{4}$  inch and will not exceed 10 pounds in weight.

Sincerely yours,



R. R. Reynolds  
Chief, Arizona Exploration Unit

RRR:db

C  
O  
P  
Y



**CERRO DE PASCO CORPORATION**

(Incorporated in New York)

AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson, Ariz.

~~XXXXXXXXXX~~  
New York, N. Y.,

Aug. 17, 1959

Date


*Re: S. B. Keith*  
*drilling*  
cc: NYD, Central Files

To: S. B. Keith, Chief Geologist, Cerrocorp

From: R. R. Reynolds, Chief, Arizona Exploration Unit, Cerrocorp

Subject: Galigher Company

Request the complete address of the Galigher Company. I  
do not seem to have it in my correspondence.

  
R. R. Reynolds

RRR:db/cerrocorp

C  
O  
P  
Y

Received  
Mining Section**CERRO DE PASCO CORPORATION**  
(Incorporated in New York)  
AND WHOLLY OWNED SUBSIDIARIES**INTERNAL MEMORANDUM**

OTHER ADDRESSEES - FOR INFORMATION

cc: NYD, Central Files

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson, Ariz.

~~New York, N.Y.~~ March 12, 1959

Date

To: F. N. Spencer, Jr., Manager, Mining &amp; Exploration Div., Cerrocorp

From: R. R. Reynolds, Geologist, Arizona Exploration Unit, Cerrocorp

Subject: Iron King - Gila County, Arizona

Enclosed are two copies of the spectrographic analysis made by Smith-Emery as per your memo of February 27th.

This sample was prepared from 30 pulps representing 15 samples from each end of the property. The iron content of these samples varied from 30% to 60% and were as representative as possible.

The four claims we propose laying out are for protective purposes against dumping to the south of Ferro No. 2 and No. 19. Bob James suggested these as desirable before he left and in order to hold down expense we planned to file on them every 60-90 days to avoid doing the location work. We can charge our 2-3 days field time required for the job to Account 575 as you suggest.

---

R. R. ReynoldsRRR:db/cerrocorp  
Encs.



**CERRO DE PASCO CORPORATION**  
(Incorporated in New York)  
AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

OTHER ADDRESSEES — FOR INFORMATION

cc: NYD, Central File

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR


Tucson,  
New York, N.Y., Feb. 10, 1959  
Date

To: F. N. Spencer, Jr., Manager, Mining & Exploration Div., Cerrocorp  
R.R. Reynolds, Geologist, Cerrocorp  
From: ✓ Iron King Spectrographic Analyses  
Subject:

R. C. James' memo of January 3, 1958 covering metallurgical tests by George Roseveare also includes spectrographic results. "Spectroscopic analysis indicated the copper, zinc, and lead were very low as well as titanium. The impurities are mainly MgO, SiO<sub>2</sub> and some CaO."

Mr. Roseveare was just now contacted about this analysis and he said that all elements present on the spectrograph were mentioned. If such metals as nickel and cobalt were not mentioned, then they were not noted.

If the above information is insufficient, we can very quickly make up composites from our rejects any way you desire. For instance, the sample already run by Roseveare is of relatively high grade (52.5% Fe) material, whereas material in the 30-40% Fe range is somewhat more representative of the deposit as a whole.

  
R. R. Reynolds

RRR:db/cerrocorp

**CERRO DE PASCO CORPORATION**  
(Incorporated in New York)  
AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

**OTHER ADDRESSEES — FOR INFORMATION**

cc NY Central Files  
NY Circulating File

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

New York, N. Y., February 6, 1959

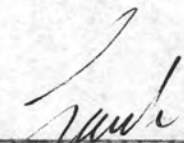
Date

**To:** R. C. James, Chief, Arizona Exploration Unit, Cerrocorp ←

**From:** F. N. Spencer, Jr., Manager, Mining and Exploration Division, Cerrocorp

**Subject:** Iron King

If you have rejects from any of the Iron King samples which might be made up into a composite of a reasonably representative nature, please have it assayed for copper, nickel and cobalt, and also have a complete spectrographic test made. Our records indicate that none of these have been carried out to date.

  
F. N. Spencer, Jr.

FNS:jc

*P.S. Could the Univ. of Arizona do the spectrographic analysis?*



CERRO DE PASCO CORPORATION

300 PARK AVENUE · NEW YORK 22, N. Y.

RCJ

December 31, 1958

Mr. L. H. Lange  
The Galigher Company  
545-585 West Eighth South Street  
P. O. Box 209  
Salt Lake City, 10, Utah

Dear Jim:

Thanks for your letter of December 18 regarding Davis tube tests.

Although the proposition you make sounds like a fair one, perhaps I was not clear in our short talk at the Mining Club that we will not have the samples ready until probably June or July 1959. However, I was glad to hear that you will probably be able to get hold of a Davis tube when the time comes. In a few months I will let you know what the situation is and perhaps we can discuss definite arrangements at that time.

Incidentally, we have decided to take drill cores for the samples and we will be in a position to buck these down to the weight limitations you mention.

With best regards and a Happy New Year to you and my other friends at Galigher.

Yours very truly,  
Original signed by  
F. N. Spencer, Jr.

F. N. Spencer, Jr.  
Manager, Mining & Exploration  
Division

FNS:je/Cerrocorp

Airmail

bcc R. C. James ←  
NY Central Files  
NY Circulating File

C  
O  
P  
Y

## JOY ENTERS MINERAL PROCESSING EQUIPMENT FIELD

At a press conference held in the middle of September at Pittsburgh, Pa., Joy Manufacturing Company confirmed an earlier statement that Joy would soon announce their entry into the mineral processing equipment field. See E & M J New Products Digest, Sept.

Joy has signed a licensing agreement with Carpo Research and Engineering, Inc., Jacksonville, Florida, to manufacture and service Carpo High Tension electrostatic separators for use in the iron ore industry. Last January, Carpo announced a revolutionary process for dry concentration of iron ore. Joy says that this is only the first step in a long line of mineral processing equipment to be marketed by Joy.

In the High Tension Process for iron ore (see E&MJ, January, 1958) of magnetic and/or non-magnetic character, the ore is processed dry at better than 96% iron recovery, with finished products of 65% Fe or better. Carpo says that the High Tension step can be operated at about 4¢ a ton treated. Special separators (production size) have been designed that will handle 100 tph feed. Process will be important to desert regions and colder places like northern Canada where controlling water is a serious problem. Iron ore will be dry ground and sized, separated and pelletized.

---

(Copied from ENGINEERING AND MINING JOURNAL, October, 1958, p. 45)



**CERRO DE PASCO CORPORATION**  
(Incorporated in New York)  
AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

OTHER ADDRESSEES - FOR INFORMATION

*K. Mitaberg*  
*Legat*

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson,  
New York, N.Y. August 28, 1958  
Date

**To:** F. N. Spencer, Jr., Manager, Mining & Exploration Unit, Cerrocorp  
R. C. James, Chief, Arizona Exploration Unit, Cerrocorp  
**From:** Iron King Program - Lime  
**Subject:**

Your memo of August 15th about lime has just been received. This matter has not been mentioned previously but I will have it taken care of the first time we are up in that area. There is a lime plant just out of Globe which might take care of all our needs. I will get an analysis from them.

Do you have any definite figures on the necessary analysis for suitable lime for the briquetting process mentioned?

*RCJ*  
\_\_\_\_\_  
R. C. James

RCJ:db/cerrocorp  
cc: NYD, Central file

C  
O  
P  
Y

**CERRO DE PASCO CORPORATION**

(Incorporated in New York)  
AND WHOLLY OWNED SUBSIDIARIES

*JK*  
*McCallum*  
N. Y. Central  
N. Y. Circulating

**INTERNAL MEMORANDUM**

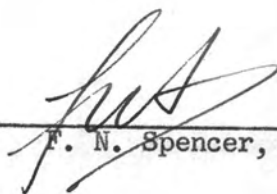
SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

New York, August 15, 1958  
Date

**To:** R. C. James, Chief, Arizona Exploration Unit  
**From:** F. N. Spencer, Jr., Manager, Mining and Exploration Division  
**Subject:** Iron King Program

Further to our phone conversation today, I neglected to ask if you had ever developed anything on lime deposits in the Globe-Iron King area. I think I brought this up some months ago, on Kursell's suggestion. It now develops that if a good grade lime with low MgO and silica is available, it may be used for a binder in briquetting or "plugging" magnetite concentrates in a new process which may have considerable advantage and capital savings over the usual pelletizing process. If I recall correctly, Miami or Inspiration have a lime burning plant near the road from Globe to Iron King. If so, you should be able to get the analysis of that particular lime from them. Also, prospecting around the area might develop something. Presumably the quantity required would be only a small percentage of the concentrates produced, but I do not yet have the details.

FNS:mq

  
\_\_\_\_\_  
F. N. Spencer, Jr.



**CERRO DE PASCO CORPORATION**

(Incorporated in New York)

AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson,  
~~New York~~, July 29, 1958  
Date

To: F. N. Spencer, Jr., Manager, Mining & Exploration Div., Cerrocorp

From: R. C. James, Chief, Arizona Exploration Unit, Cerrocorp

Subject: Iron King - Metallurgical Studies

I think I mentioned it previously, but Geo. Roseveare at Arizona Bureau of Mines Testing Laboratory says he is very busy (running pilot plant work on copper ore for A S & R's Pima property) and it is unlikely we will get much out of him on the testing of Iron King ores of different grades for quite a while.

You were going to ask Mr. Kursell about getting some work done elsewhere. What does it look like now?

*R.C.J.*  
\_\_\_\_\_  
R. C. James  
*db.*

RCJ:db/cerrocorp  
cc: NYD, Central files

*RCJ  
met.*

C  
P  
Y

**CERRO DE PASCO CORPORATION**

(Incorporated in New York)

AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson,  
New York, June 24, 1958  
Date

To: F. N. Spencer, Jr., Manager, Mining & Exploration Div., Cerrocorp  
From: R. C. James, Chief, Arizona Exploration Unit, Cerrocorp  
Subject: Iron King Magnetite - Concentration Studies

Recently, after results from the sampling of the trenches and outcrops on the Iron King property were received, the question arose, especially regarding the lower grade samples, as to what percent of the iron in these samples was available as magnetite.

This lead to Bob Reynold's studies on concentration as reported in his memos: "Microscopic Examination of Ground Samples of Iron King Magnetite Concentrates" and "Magnetic Separation Tests on Ground Samples of Iron King Ores" both dated June 10, 1958. Copies of these memos are attached. The one on Magnetic Separation Tests has been revised from the one previously sent to you then returned here.

With our inadequate equipment and facilities, I would not have suggested that this type of work be undertaken by ourselves; but since it was done and since the results seem to be at considerable variance with the results produced by Utah Construction Company for Mr. Kursell, and the Arizona Bureau of Mines, it appears that we should do some more work on the lower grade ores. The ores tested by the above two concerns was from the hard high grade outcrops at the north and south end ore bodies and may not be representative of the entire ore body.

It is becoming increasingly evident that for the Iron King prospect to be economic, we will have to depend upon concentration of the lower grade material. It might not be at all out of order for us to have some rather complete studies made on this low grade material.

In theory we should be able to get this done rather readily and cheaply at the Arizona Bureau of Mines, University of Arizona, testing laboratory but in practice, it does not work out quite that way. There is only one man working in this laboratory and he is evidently swamped all the time. Unless he takes a real, personal interest in a problem, the testing is rather sketchy and one is never sure of the procedure followed.



Do you think you could get some of this work done by Utah Construction Company through Mr. Kursell or do you think it might be better to get it done elsewhere.

  
\_\_\_\_\_  
R. C. James

RCJ:db/cerrocopp  
cc: NYD, Central files  
Enc.

1K

**CERRO DE PASCO CORPORATION**  
(Incorporated in New York)  
AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson, Nov. 22, 1957  
~~New York~~


Date

To: F. N. Spencer, Jr., Manager, Mining & Exploration Div., Cerrocorp  
From: R. C. James, Chief, Arizona Exploration Unit, Cerrocorp  
Subject: Iron King Sampling:

Enclosed are copies of assay results of a sample of the Iron King ore.

The sample was made from a composite of 6 other samples taken from various places along the outcrop which were crushed, mixed and the composite split from this.

Strangely enough the numerical average of iron content of the other samples was 50.3%.

  
R. C. James

RCJ:mb/Cerrocorp  
cc: NYD, Central files  
Enc.

C  
O  
P  
Y



**CERRO DE PASCO CORPORATION**

(Incorporated in New York)

AND WHOLLY OWNED SUBSIDIARIES

**INTERNAL MEMORANDUM**

SHOW NAME, TITLE  
AND CORPORATION  
OF ADDRESSEE  
AND ADDRESSOR

Tucson,  
New York, January 3, 1958  
XXXXXX Date

To: F. N. Spencer, Jr., Manager, Mining & Exploration Div., Cerrocorp  
From: R. C. James, Chief, Arizona Exploration Unit, Cerrocorp  
Subject: Iron King - Metallurgical Tests

Attached is a copy of results of some metallurgical tests made at the Arizona Bureau of Mines.

As you can see these results confirm Mr. Kursell's estimates as to grade of concentrate and recovery; and results are thus quite satisfactory. I was told verbally that a higher recovery might be expected when working on larger scale equipment than they had available, using a slightly lower magnetic field.

One of these days I shall get some lower grade material and have similar type tests made.

R. C. James

RCJ:db  
cc: NYD, Central files  
Enc.

1 K  
Converp

C

O

P

Y

UNIVERSITY OF ARIZONA  
ARIZONA BUREAU OF MINES  
ORE TESTING SERVICE

Mr. R. C. James  
Cerro de Pasco Corporation  
3656 E. Speedway  
Tucson, Arizona

Dear Mr. James:

Ore Test #1557

The two samples of iron ore from north of Globe were tested for magnetic concentration. One sample was crushed through 10-mesh and passed over a Dings belt magnetic separator. The magnetic concentrate was locked with gangue and would have to be ground fine to liberate the magnetite. The sample No. 3 - 622,624 and 626 which assayed 52.5 per cent iron was crushed to 10-mesh and two samples from this size ground in a ball mill and the magnetite concentrated.

Test 1 on sample No. 3

A sample was ground in a ball mill and the magnetite concentrated with a permanent magnet and the rough concentrate cleaned using a slightly weaker field. The results are given in the following table:

	<u>Weight, percent</u>	<u>Percent Iron</u>	<u>Distribution Iron, percent</u>
Heads	100.0	52.4*	100.0
Concentrate	71.7	63.0	86.0
Middling	10.4	41.7	8.3
Tailing	17.9	15.9	5.5

\*Calculated

The concentrate amounted to 71.7 percent of the weight of the heads, assayed 63.0 percent iron and contained 86.0 percent of the total iron that was in the feed.

The middling or cleaner tailing amounted to 10.4 percent of the total weight, assayed 41.7 percent iron and contained 8.3 percent of the total iron. The rougher tailing assayed 15.9 percent iron.



**UNIVERSITY OF ARIZONA**  
ARIZONA BUREAU OF MINES  
ORE TESTING SERVICE

-2-

Test 2 on Sample No. 3

A sample was ground for 5.5 minutes and treated as in Test 1. The results are given in the following table:

	<u>Weight, percent</u>	<u>Percent iron</u>	<u>Distribution, iron, percent</u>
Heads	100.0	51.6*	100.0
Concentrate	73.4	63.0**	89.7
Cleaner tailing	3.0	30.9	1.8
Tailing	23.6	18.6	8.5

\* Calculated from products

\*\* Calculated from screen test on concentrates

Sizing on Concentrate

	<u>Percent, Weight</u>	<u>Percent Iron</u>
on 65	4.3	55.1
Thru 65 on 100	14.5	61.3
Thru 100 on 200	42.1	64.3
Thru 200	39.1	63.1
Composite	100.0	63.0

The concentrate amounted to 73.4 percent of the total feed assayed 63.0 percent iron and contained 89.7 percent of the total iron.

The percent weight of the middling or cleaner tailing was 3.0 percent and assayed 30.9 percent iron. The tailing assayed 18.6 percent iron.

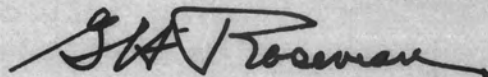
A screen test was made on the concentrate and the iron determined on each size. The plus 65 mesh assayed 55.1 percent iron, the minus 65 plus 100-mesh 61.3, the finer size minus 100 plus 200-mesh 64.1 and the minus 200 - 63.1 percent iron. This indicated that the ore needs to be ground to about 100-mesh to obtain the highest grade.

UNIVERSITY OF ARIZONA  
ARIZONA BUREAU OF MINES  
ORE TESTING SERVICE

-3-

Spectroscopic analysis indicated the copper, zinc, and lead were very low as well as titanium. The impurities are mainly  $\text{MgO}$ ,  $\text{SiO}_2$  and some  $\text{CaO}$ .

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'G.H. Roseveare', with a stylized, flowing script.

G.H. Roseveare  
Metallurgist



**UNIVERSITY OF ARIZONA**

ARIZONA BUREAU OF MINES

ORE TESTING SERVICE

Ore No. 1557      Sample # 3      Test No. 1

**Conditions and Reagents**

Point of Addition	Conditions			Reagents Pounds Per Ton									
	Time Mins.	% Solids	pH										
Ball mill	3.0	62											
Rougher magnet		25											
Cleaner		20											

Remarks:

Ground pulp put into Fagergren cell, agitated and magnetite removed with permanent magnet. Rougher concentrate recleaned.

**Metallurgical Products**

Product	Tons in 100 Tons Feed	Assays , percent						% of Total					
		Fe						Fe					
Heads	100.0	52.4						100.0					
Concentrate	71.7	63.0						86.2					
Cleaner tailing	10.4	41.7						8.3					
Rougher tailing	17.9	15.9						5.5					

Remarks:

**UNIVERSITY OF ARIZONA**

ARIZONA BUREAU OF MINES

ORE TESTING SERVICE

Ore No. 1557 Sample # 3 Test No. 2

**Conditions and Reagents**

Point of Addition	Conditions			Reagents Pounds Per Ton							
	Time Mins.	% Solids	pH								
Ball mill	5.5	62									
Rougher magnet		25									
Cleaner		20									

Remarks: Ground pulp put into Fagergren cell and magnetic material removed with a permanent magnet.

**Metallurgical Products**

Product	Tons in 100 Tons Feed	Assays					% of Total				
		Fe					Fe				
Heads	100.0	51.6*					100.0				
Concentrate	73.4	63.0**					89.7				
Cleaner tailing	3.0	30.9					1.8				
Rougher tailing	23.6	18.6					8.5				

Remarks: \*Calculated from products  
 \*\*Calculated from screen test on concentrates

Screen sizing concentrate: Iron,  
 Weight, percent %  
                   on 65           4.3       55.1  
                   -65 on 100       14.5       61.6  
                   -100 on 200      42.1       64.3  
                   -200           39.1       63.1

METALLURGICAL RESULTS OBTAINED ABOVE SHOULD BE CONSIDERED AS ONLY APPLICABLE TO MATERIAL CONFORMING TO THE CHARACTER OF THE SAMPLE UPON WHICH THE TESTS WERE MADE.

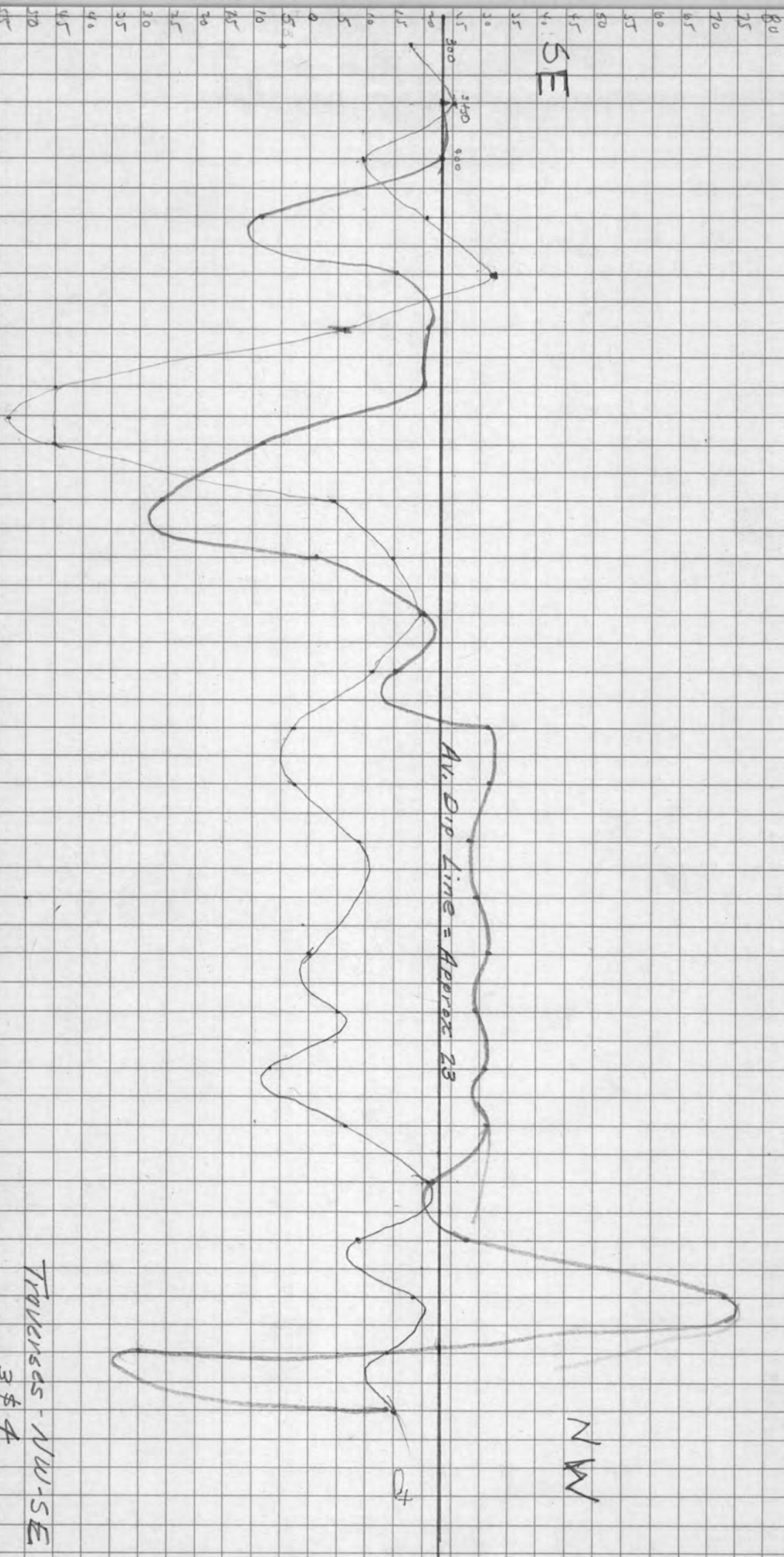


120X KING  
 3 3 3 4

12.3

SE

NW



Traverses - NW-SE

3 & 4

23

~~23~~

3:40 3:50 4:00 4:10 4:20 4:30 4:40 4:50 5:00 5:10 5:20 5:30 5:40 5:50 6:00 6:10 6:20 6:30 6:40 6:50 7:00 7:10 7:20 7:30 7:40 7:50 8:00 8:10 8:20 8:30 8:40 8:50 9:00 9:10 9:20 9:30 9:40 9:50 10:00 10:10 10:20 10:30 10:40 10:50 11:00 11:10 11:20 11:30 11:40 11:50 12:00 12:10 12:20 12:30 12:40 12:50 13:00 13:10 13:20 13:30 13:40 13:50 14:00 14:10 14:20 14:30 14:40 14:50 15:00 15:10 15:20 15:30 15:40

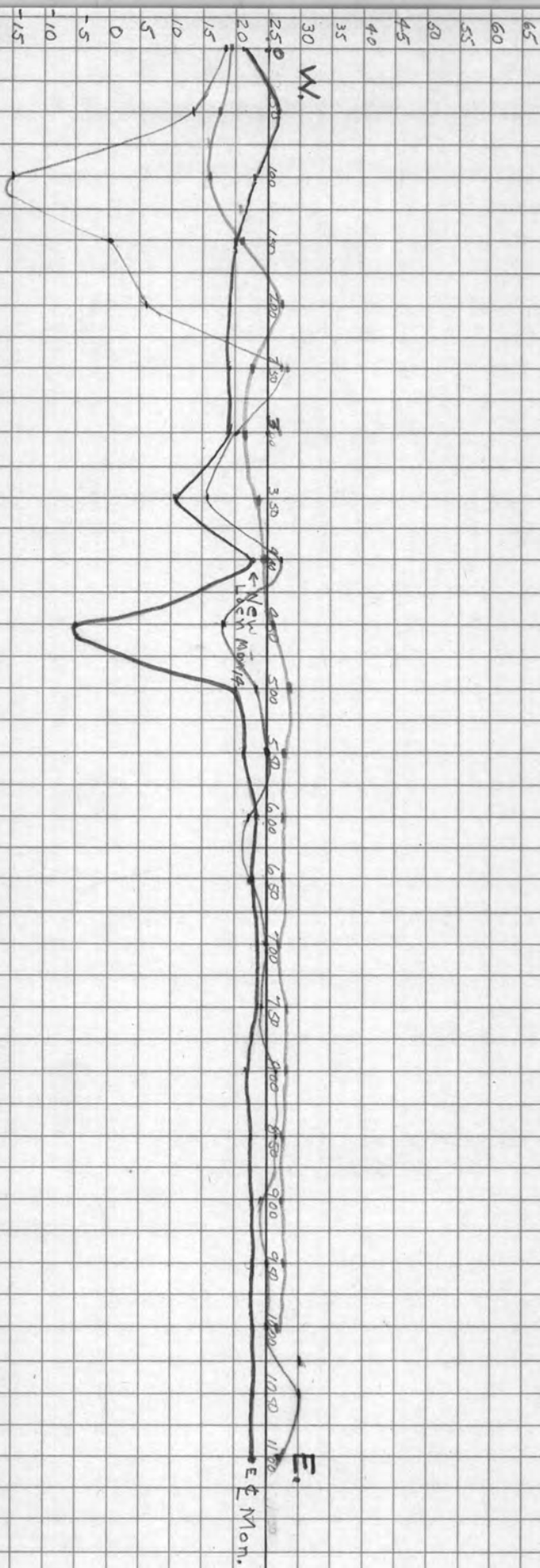
# MAGNETIC SURVEY

<u>Distance</u>	<u>Station</u>	<u>J.S.</u>	<u>R.A.</u>	<u>Average</u>	<u>Remarks</u>
350	D E 3	+26	+22	+24	Db
400	"	+23	+23	+23	Db - some float Fe
450	"	-10	-6	-8	Ls - some Fe float
500	"	+10	+14	+12	Ls - below outcrop, at Location
550	"	+20	+22	+21	Ls - below Fe outcrop; Fe float heavy
600	"	+21	+19	+20	Ls in outcrop or heavy float
650	"	-9	-7	-8	Ls - heavy Fe float
700	"	-24	-28	-26	Ls - heavy Fe float
750	"	+1	+3	+2	Ls - heavy Fe float
800	"	+20	+19	+19½	Ls - Fe outcrop
850	"	+16	+14	+15	Ls - Fe outcrop; low grade
900	"	+30	+32	+31	Ls - some Fe outcrop; altered Ls.
950	"	+31	+30	+30½	Altered Ls; some Fe outcrop
1000	"	+26	+28	+27	Db - Ls; contact some Fe
1050	"	+27	+31	+29	Db - Ls within 50'
1100	"	+33	+31	+32	Db
1150	"	+28	+30	+29	Db
1200	"	+32	+30	+31	Db
1250	"	+31	+32	+31½	Lms/db contact +8'
1300	"	+21	+24	+22½	Ls - mineralized
1350	"	+27	+26	+26½	Ls - mineralized
1400	"	+74	+72	+73	Ls - mineralized
1450	"	-29	-30	-29½	Fe outcrops
1500	"	+15	+13	+14	W center IK #3 Ls - mineralized
1500	3 E 4	+16	+14	+15	In Db at W end corner of IK # 3 and 4
1450	"	+14	+15	+14½	" " " "
1400	"	+18	+17	+17½	" " " "
1350	"	+7	+10	+8½	Db
1300	"	+23	+19	+21	Cherty bed in Lms Db float
1250	"	+5	+6	+5½	Below cherty bed Db float
1200	"	-7	-6	-6½	Fe outcrop; Db float - below cherty bed
1150	"	+5	+5	+5	Ls - Db float
1100	"	+1	0	+0.5	Ls - Db float
1050	"	-50	-49	-49½	Ls (altered)
1000	"	+7	+9	+8	Cherty Ls - Db float
950	"	-5	+0	-3	Cherty Ls outcrop
900	"	-3	-2	-2½	Cherty Ls
850	"	+11	+13	+12	Cherty Ls float
800	"	+17	+23	+20	Cherty Ls float
750	"	+16	+14	+15	Top of ridge Cherty Ls
700	"	+4	+4	+4	" " "
650	"	-45	-43	-44	Cherty Ls float - Fe float
600	"	-44	-46	-45	" " " "
					Reversed Polarity - rdge N. end Needle
550	"	+5	+7	+6	Iron outcrop - mag. merid. ½ way off normal low; Needle points due W to iron outcrop; point in dead Ls 5' below iron outcrop.



<u>Distance</u>	<u>Station</u>	<u>J.S.</u>	<u>R.A.</u>	<u>Average</u>	<u>Remarks</u>
500	3 S 4	+33	+33	+33 $\frac{1}{2}$	Ls
450	"	+22	+19	+20 $\frac{1}{2}$	Ls - unmineralized
400	"	+11	+8	+9 $\frac{1}{2}$	Db - Fe float
350	"	+25	+25	+25	Db - Fe float
300	"	+17	+17	+17	Db
50	D E 11	+25	+22	+23 $\frac{1}{2}$	Near covered location pit
100	"	+22	+24	+23	East of covered location pit; Qtzite float
150	"	+21	+23	+22	Covered Qtzite float
200	"	+22	+21	+21 $\frac{1}{2}$	Qtzite Float
250	"	+23	+23	+23	" "
300	"	+24	+25	+24 $\frac{1}{2}$	" "
350	"	+26	+24	+25	" " some Ls float
400	"	+23	+23	+23	" " " " "
450	"	+20	+20	+20	Ls outcrop (?)
500	"	+21	+20	+20 $\frac{1}{2}$	Ls outcrop
550	"	+20	+19	+19 $\frac{1}{2}$	Ls outcrop
600	"	+24	+25	+24 $\frac{1}{2}$	Covered float
650	"	+23	+24	+23 $\frac{1}{2}$	Covered
700	"	+26	+25	+25 $\frac{1}{2}$	Fe float heavy; near small draw
750	"	+26	+25	+25 $\frac{1}{2}$	Fe float
800	"	+26	+25	+25 $\frac{1}{2}$	Covered Qtz. float
850	"	+26	+28	+27	" " "
900	"	+26	+26	+26	" " "
950	"	+24	+23	+23 $\frac{1}{2}$	" " "
1000	"	+26	+24	+25	Qtzite float
1050	"	+25	+26	+25 $\frac{1}{2}$	" " some Fe
1100	"	+26	+26	+26	" " some Fe float
1150	"	+25	+24	+24 $\frac{1}{2}$	" " " " "

L.C. #12 (original)  
 South to L.C. #13  
 L.C. #14

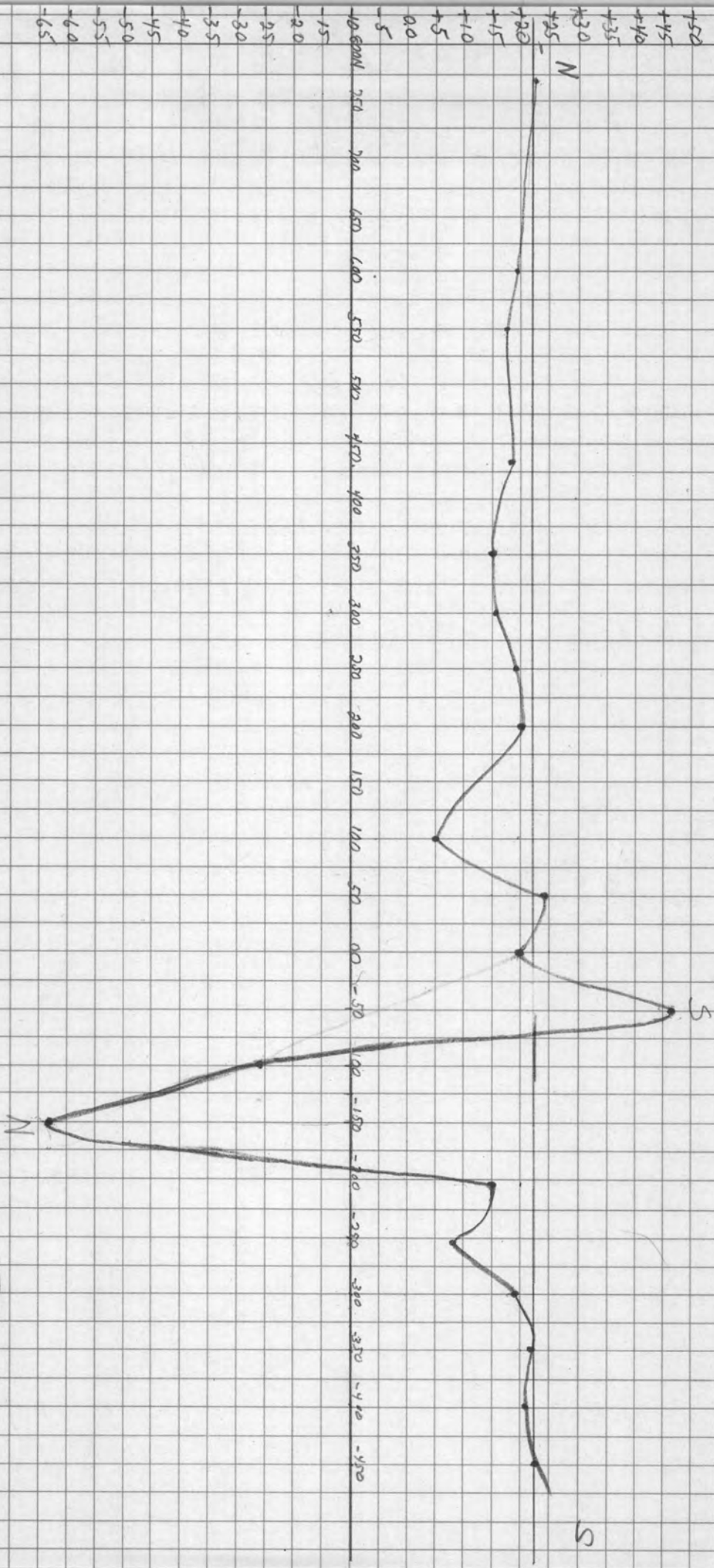


— L.C. #12 at  
 W. Mon.  
 — South L.C. #13  
 Sta 0 at SW Corn Mon.

— L.C. #14  
 Sta 0 at original locn  
 Mon, 400' from W. end line  
 Sta 1100 at E.E. Mon.

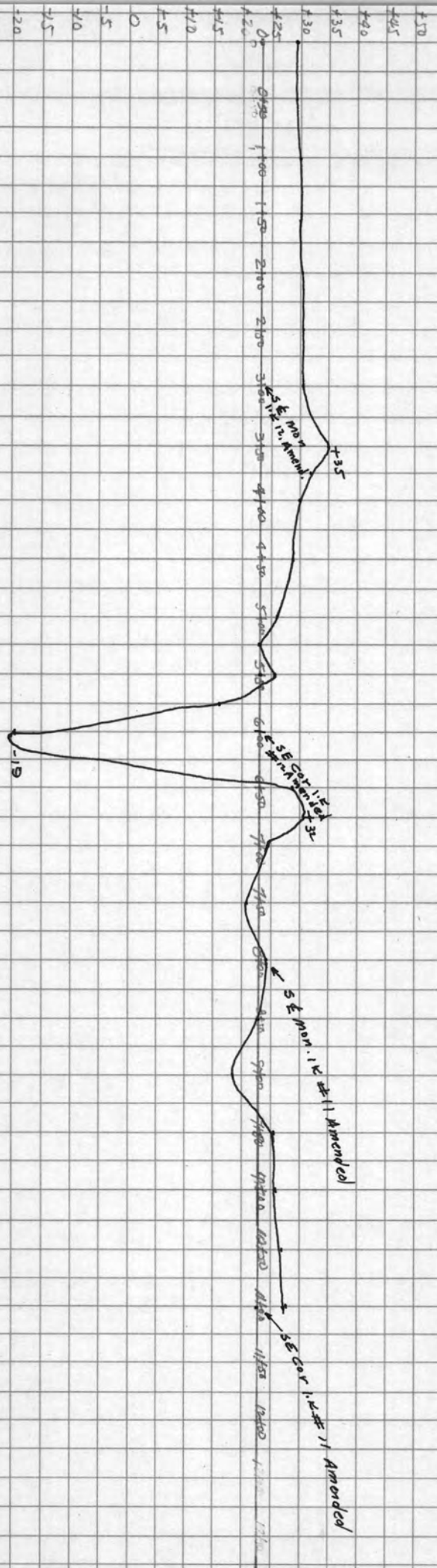


# Ridge Line Above Saddle



Ridge line  
above Saddle

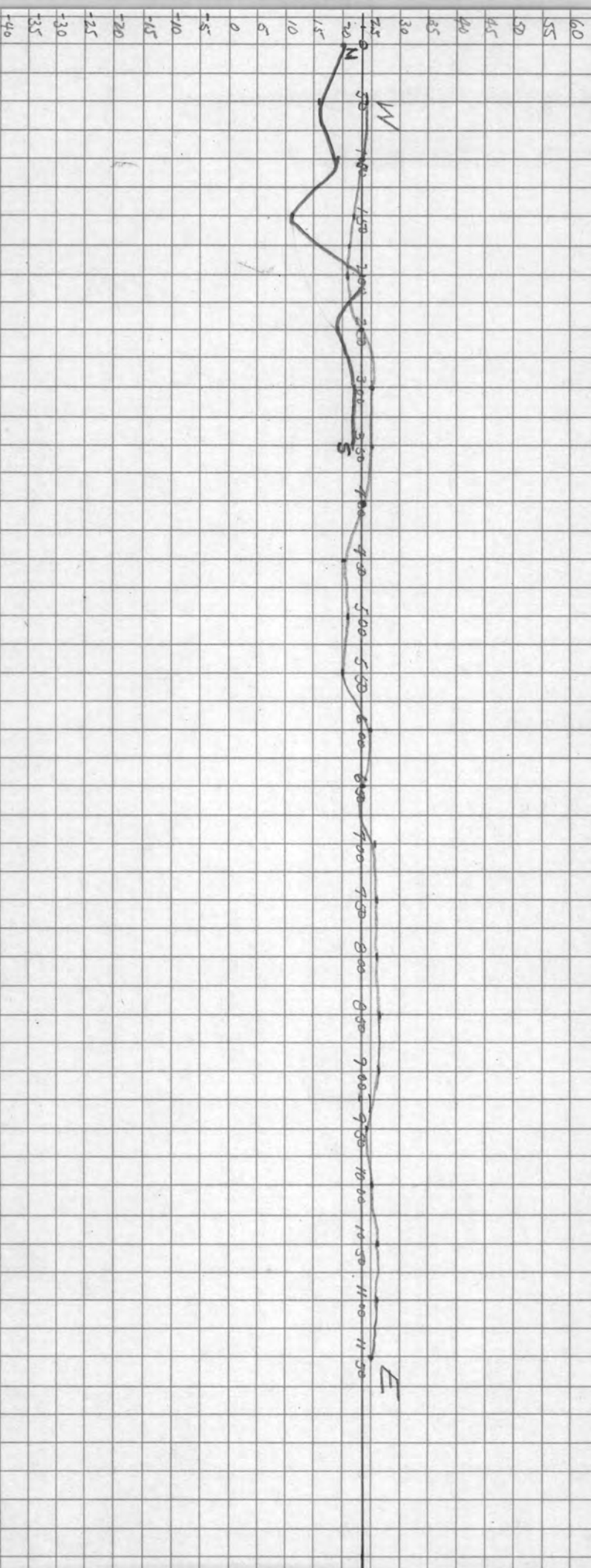
North & LK #10



— North & LK #10  
Sta 0 at NW Corner



LK # 11 (original)  
 LK # 12 (amended)



LK # 11, 540 at W-E line  
 LK # 12, 540 at W-E line  
 LK # 11, 540 at W-E line  
 LK # 12, 540 at W-E line

O Pt	Dist from O Point	Readings	Av. of Readings	REMARKS
A45	0'	+17		Lms
<p>DIP Needle Lines</p> <p>R.A. - Notebook</p>				



A85-<sup>on</sup> Line of iron  
float seen by R.R.R.

A86-Some Line- This may be  
a shallow ledge outcropping-  
ft R.R.R. - Float sparse.

1K Magnetic survey Mar 21  
£ 14 Start at old locn Mon 400'E

350E +26 [to go west

300E +26

250E +26

200E +26

150E +26

100E +27

50E +26

0E +27 at W £ 14

50W +26 w. on E Ferro 14

100W +27 ← Locn Mon #14 at 125W

150W +27 Very thick talus

200W +26 no mag effect/obscure

Start E £ Ferro 13

0 +29

50W +29

100W +29

150W +27

200W +27

250W +27 Locn Mon 13  
plenty high stratig.



Turn S 27 W from lantern 13

50 S +28

100 S +29

150 S +28

200 S +28

250 S +29

300 S +28

350 S +28

400 S +28

Prob heavy  
cover of  
talus

Start at 300 S & head S 62 E

50 E +32

100 E +32

150 E +34

200 E +33

250 E +33

300 E +16

Start at cor <sup>NW</sup> ~~at NW cor~~ <sup>1/2 R</sup> & go NW

50 N +40

100 N +48

150 N +39

200 N +27

250 N +28

300 N +29

point of beg. traverse

Start at NW 1/4 12 amend &  
run end line of 12 & 11 (Mar 21)

50 E	+10	on Fentrop
100 E	-6	" " "
150 E	-1	" " "
200 E	+5	" " "
250 E	+29	" " "
300 E	+13	" " " N 1/4 12
350 E	+16	in road

400 E	+26	
450 E	+17	
500 E	+23	
550 E	+25	
600 E	+21	NE cor 1/4 12 amend.

<del>650 E</del>	+23	
700 E	+25	
750 E	+23	
800 E	+26	N 1/4 1/4 11 amend

850 E	+27	
-------	-----	--

900 E	+23	
-------	-----	--

950 E	+25	
-------	-----	--

1000 E	+24	
--------	-----	--

1050 E	+25	
--------	-----	--

1100 E	+26	
--------	-----	--



Start at old \$4+5  
cedar tree on stake

March 24  
Magnetic  
\$ 74+5  
TR. MK. REG. U.S. PAT. OFF.

00	+ 28	14	road
50W	+ 29	db	float
100W	+ 28	db	
150W	+ 26	db	
200W	+ 26	db	
225W	+ 20	db	float
250W	+ 12	db	float
275W	+ 5	db	float
300W	- 1	db	float
325W	- 5	db	float
350W	- 1	db	float
375W	+ 6	db	float
400W	+ 15	db	float
425W	+ 15	db	float
450W	+ 15	db	float
# 475W	+ 15	db	"
500W	+ 17	"	"
525W	+ 21	"	"
550W	+ 22	"	"
575W	+ 23	"	"
600W	+ 23	"	"
625W	+ 24	"	"
650W	+ 24	"	"

ORIGINAL COPY. 1918 BY J. G. PARKER

4 LINES TO INCH

LEFAX, PHILADELPHIA, PA. MADE IN U.S.A.

D & H Start on top of  
ledge & work down to  
road.

10+50	+ 19	db ledge
10+25	+ 18	db
10+00	+ 18	"
9+50	+ 19	"
9+00	+ 17	"
8+50	+ 14	"
8+00	+ 21	"
7+50	+ 6	LS cherty
7+25	+ 6	" "
7+00	<del>±</del> 2 minus	" "
6+75	- 7	" "
6+50	+ 4	" "
6+25	- 9	good iron float
6+00	- 18	on RR Containing
* 6+00	- 54	on location pit polarity reversed
5+75	- 28	at base of iron ledge polarity normal below
5+50	+ 22	int. exp. lots of float.
5+25	+ 26	in dead ls. some iron float.
5+00	+ 20	Blow db - ls contact
4+50	+ 27	db
4+00	+ 27	db in road



Center Line of IK #5

First station in road

TR. MK. REG. U.S. PAT. OFF.

0 + 00 W	+ 34	in db in road
0 + 25 W	+ 26	db
0 + 50 W	+ 24	db
1 00 W	+ 26	db below road
1 50 W	+ 26	db above road
2 00 W	+ 29	db. under cedar
2 50 W	+ 18	db to flat
3 00 W	+ 43	near Fe ledge
3 25 W	- 7	on ledge. Red.
3 50 W	- 20	slightly covered, in road
3 75 W	+ 5	above rd. in db
4 00 W	+ 11	db
4 25 W	+ 13	db
4 50 W	+ 13	db
4 75 W	+ 16	db
5 00 W	+ 18	db
5 25 W	+ 18	db
5 50 W	+ 16	db
5 75 W	+ 19	db
6 00 W	+ 21	db
6 50 W	+ 26	db

\$ 1.K. 5 + 6

Start 13' S. of C 11 in road

0 + 00	+ 25	db			
50 W	+ 26	db			
100 W	+ 26	db			
150 W	+ 28	db			
200 W	+ 30	db			
250 W	+ 29	db			
300 W	+ 29	db			
350 W	+ 13	db + clearly	ls	shoot	
375 W	+ 6	"	"	"	"
400 W	+ 23	"	"	"	"
425 W	+ 25	"	"	"	"
450 W	+ 26	"	"	"	"
475 W	+ 29	"	"	"	"
500 W	+ 34	"	"	"	"
525 W	+ 43	db	only		
550 W	+ 33	"	"		
575 W	+ 33	"	"		
600 W	+ 32	"	"		
625 W	+ 31	"	"		
650 W	+ 32	"	"		



\$ 1K # 6

Starting point  $\Delta C 12 = 00$

00 +32 LS

50 E +28 LS

100 E +28 LS

150 E +27 Covered

200 E +26 " db?

250 E +26 db in road

50' W +23 15. above # C loc.

100 W +31 15

150 W +29 15

200 W +25 in wash covered

250 W +18 db.

300 W +26 db

350 W +28 db

400 W +28 db.

450 W +27 db

off of 400 W line Tunnel N 27° 30' E

50 N +26 db

100 N +26 db

150 N +26 db

200 N +25 db

250 N +26 db

300 N +31 db

350 N +29 db

400 N +25 db

over

off of \$ 1K #6 to the North

450 N	+ 25	db
500 N	+ 23	db in wash
550 N	+ 27	<del>db</del> gtzite float
600 N	+ 28	gtzite slide
650 N	+ 26	gtzite float
700 N	+ 26	" slide
750 N	+ 26	" "
800 N	+ 26	" "

East & west from S-176 {Line Bears  
S 176 - 700's  
to C-41

200 W	+ 21	Covered Tray float
225 W	+ 22	"
250 W	+ 23	"
<del>175</del> 225 W	+ 22	"
<del>150</del> 200 W	+ 22	"
<del>100</del> 150 W	+ 22	"
<del>50</del> 100 W	+ 22	Lms float & out crop.
00	+ 23	"
50 E	+ 23	"
100 E	+ 22	Altered Lms outcrop
150 E	+ 23	Lms - Db. float.
200 E	+ 23	Covered. hot. float.



Line N-3 From Lower Road  
near old locn of Ferro #8

Line trends S 53° W

00 +24 - Db. + Float

50 S +24 Float bet.

100 S +23 Lms Float + outcrop.

150 S +23 " " "

200 S +25 " " "

250 S +23 Troy Float + Lms Float

300 S +20 Troy Float

350 S +21 Troy Float

400 S +21 " "

450 S +20 " "

500 S +21 " "

Start at Locn Ferro #15 go N.

N 50° E.

00 +20 at Locn mon-Troy Float

50 N +20 Troy Float.

100 N +18 " " - Same basalt float?

150 N +17 Troy Float

200 N +13 Troy "

225 N +13 " "

250 N +13 " "

275 N +19 " "

300N +29

Troy Float

325N +30

" "

350N +28

" "

375N +31

" "

400N +18

" "

425N +17

" " - above Fe o.c.

450N +42

" " FC o.c.

475N +23

Covered.

500N +15

End Center of B?  
Troy Float + Fe o.c.?

525N +23

Troy Float + Lms o.c.

550N +24

Float

600N. +26

in rd- Troy Float



\$ 1K. 13 + 14

April 13, 1958

0+50W +22

Covered Tray Qtz. float

1+00W +23

" " "

1+50W +24

Same Fe float?

2+00W +21

Covered

2+50W +21

Covered - Tray float

3+00W +21

" " "

Turn 90° S off 2+50 station

50 S +22

Qtz. float.

1+00S +22

" "

1+50S +22

" "

2+00S +22

" "

2+50S +23

" "

3+00S +23

at Loc Ferro +13

Rod also read +23

2+50 stat.

0+50N +22

Qtz. float

1+00N +21

" "

1+50N +21

" "

2+00N +22

2+50N +22

3+00N +21

~~River crossing February 4~~  
~~at Loc Ferro +13~~  
~~Turn East~~

3+50N +24

Qtz. float.

4+00N +23

" "

4+50N +24

" "

5+00N +23

N. side of wash Qtz. float

5+50N +23

Qtz. float

6+00N +22

at 600 N Turn East on S. 1/2 line  
W. of Cor. 14. #14. Fence #14

250 NW + 22 9/2 flent 150 NW  
200 NW + 22 100W  
150 NW + 22 30W  
100 NW + 22 = NW COR 14 14

0 + 50 E + 22 9/2 flent

1 + 00 E + 22 " "

1 + 50 E + 22 " "

2 + 00 E + 22 " "

2 + 50 E + 22 " "

3 + 00 E + 22 " "

3 + 50 E + 22 " "

4 + 00 E + 22 " "

4 + 50 E + 20 " "

5 + 00 E + 23 " "

5 + 50 E + 21 " "

6 + 00 E + 21 " "

6 + 50 E + 20 " "

7 + 00 E + 19 1/2 " "

7 + 50 E + 17 " "

8 + 00 E + 15 " "

8 + 50 E + 15 " "

9 + 00 E + 14 " "

9 + 50 E + 5 " "

10 + 00 E + 20 " "

10 + 50 E + 20

11 + 00 E + 20



start at 300 E on & 1K 13 + 14

0+50 S +22 gta. on ridge

0+75 S +24 ls. outcrop in <sup>ch</sup> creek

1+00 S +22 covered

1+50 S +28 Iron float.

1+75 S +38 Fe ledge

2+00 S +28 Fe ledge

2+50 S +21 End of trench

3+00 S +22 side of trench

3+25 S +42 at pine trees <sup>near trench</sup>

3+50 S +43 near trench

3+75 S +10 on pile of dirt

4+00 S +17 covered

4+25 S +15 "

4+50 S +19 "

4+75 S +19

5+00 S +14

5+25 S +10

5+50 S +16 level out on center line of R<sub>12</sub>

Start at E. end  
old 1-K. 11 + 12

line on cor  
going west  
qtzite float

cor. + 22

0 + 50w + 22

1 + 00w + 22

1 + 50w + 22

2 + 00w + 21

2 + 50w + 21

3 + 00w + 21

3 + 50w + 25

4 + 00w + 23

4 + 50w + 25

5 + 00w + 23

5 + 50w + 22

6 + 00w + 26

6 + 50w + 22

7 + 00w + 22

7 + 50w + 22

8 + 00w + 23

8 + 50w + 23

9 + 00w + 23

9 + 50w + 25

10 + 00w + 20

10 + 50w + 24

11 + 00w + 26

11 + 50w + 20

12 + 00w + 23

Frosh ls. flint & qtzite

" " " "

" " "

qtzite float

" "

" "

" "

" "



\$ 11412

12+50 W + 23  
13+00 W + 23  
13+50 W + 23  
14+00 W + 20  
14+50 W + 16  
15+00 W + 13

From SW Cor. 1K, 12 & NW Cor 1K 11

0+50 W + 15  
1+00 W + 17  
1+50 W + 21  
2+00 W + 22  
2+50 W + 22  
3+00 W + 22

qtzite float

" "

" "

Δ C-27 in road.

qtzite float

" " 15' short of Mon.

qtzite float

" "

" "

" "

" "

" "

Loc N Ferro # 10

C.L. 1K # 10 W, E 46

0+50 E + 27

1+00 E + 26

1+50 E + 23

2+00 E + 23

2+50 E + 21

3+00 E + 21

3+50 E + 20

4+00 E + 16

4+50 E + 12

5+00 E + 9

5+50 E + 54

5+75 E + 74

+ ~~20~~ + 27

+ 27

qtzite float

" "

" "

" "

" "

" "

" "

" "

" "

" "

below road.

on outcrop

& 10 1K.  
6+00 E

+ 1 below ledge of Fe  
25' South of Lorn Mon.  
at 6.30'

6+25 E ± 0 below outcrop.

6+50 E + 50 over Fe <sup>wedge of road</sup> ledge

6+75 E + 4 E. edge of road

7+00 E + 6 covered ground Fe ledge

7+25 E + 23 covered " " "

7+50 E + 17 covered.

7+75 E + 22 "

8+00 E + 23 "

8+50 E + 23 "

9+00 E + 23 "

9+50 E + 20 "

10+00 E + 24 "

10+50 E + 25 "

11+00 E + 25 "

Go East From <sup>A</sup>C-34 -

0+00 E - 64 in rd near Fe ledge

0+25 E - 44 above Fe ledge

0+50 E + 12 below " " about 6'

0+75 + 37 above ledge Fe.

0+100 + 16 on Alt Lms o.c. west mins

125 E + 18 Alt Lms.



1750E +17 - Covered - Fe + Lms Float.

200E. +29 - Low grade - Lms.  
in road N of Sta -

250E - +22 - Covered - db. + Lms Float

300E 117 - Covered.

350E +23 Db Float Cover

S 76 E, 80' from 200E to 5489

Line Bears N 15° W

0 + 100 W - A + ~~100~~ Car of Ferro 15  
below rd. going w to Loc. 1K #9

0 + 100 W - +22 - Covered

0 + 150 W +24 Covered

100W +27 Covered - Hot Float

150W +21 in road at curve - Filled

200W +26 Float Covered.

250W +21 Covered.

300W +7 Below main Fe ledge.

325W +7 at Lip 1.K #9 Loc. Tr.

350W -30 on o.c. above 1.K #9 Loc.

375W -10 on o.c. but covered

400W ± 0 Covered.

425W +4 on rd edge in fill

450W +11 Covered

475W +13 Covered

500 H4 - covered

525 +14 "

550 +18 "

575 +18

600 +20 covered - on end line

50' - 60' N of E. Mon

Start at SW Cor I.K #9 go E

0700E +12 Covered by Troy float

0750 +12 " " " "

08100 +12 " " " "

1150E +11 " " "

200E +11 " " "

Sta end of line E.C. 8 + 1/2 N. Mon

See K book.

200E +12 - cover Troy float.

300E on rd about 100' from

~~300~~ +15 end.

~~400~~ 300 +12 covered

400 +19 "

450 +20 "

500 +22 "

550 +24 - in rd, 20' E S 27° E.  
from C 353.



Fri - 19 Apr.

90 W from C-34

50W - +1 - Covered

75W - +6 "

100W +10 "

125W +11 "

150W +13 "

200W +16 "

250W +19 "

300W +19 "

This line tips into line on  $\Phi 10$   
at Sta 250' about 10' S.O. of it.

---

Start at W  $\Phi$  Mon 1. K # 10-90 Sou  
on end lines

00.5 +27 - covered

50 S +26

100 S +28 "

150 S +26 "

200 S +25 "

250 S +25

300 S +23 at  $\Phi$  7-12

Start at  $\$ 9-10$  w  $\$$  men

80 562 E.

0+00 +23

0+50 +30

100 +22

150 +19

200 +16

~~225 +13~~

250 +11

~~275 +8~~

300 +2

~~325 -3~~

350 -10 in road

~~375 -8~~ Fe o.c

400 +5 Fe o.c.

~~425 -1~~ Fe o.c.

450 +42

475 +18 covered

500 +20 covered

525 +8 Iron o.c?

550 +8 Iron o.c

575 +13

600 +10 Lms Alt

625 +10

650 +20 - on road,  $\$ 9'$  from (N)

<sup>above</sup>  
5189 +50 "from sta 250"

on line that goes off of C 34.



Start at 600'

£10 go turn 90°

50 N. +32

75 N +13

100 N +43

125 N ~~+3~~ -42

150 N -51

175 N +47 - on o.c.

200 N +52 on o.c.

225 N +28 cover

250 N +13 cover lots Fe Plant

28' to SE cor 1.5 #12 amended

94 post -15

+25 N +65

+50 N +9

75 N +23

100 N +43

125 N 128

150 N +23

200 N +24

250 N +20

300 N +19 Come out at 600' on old £11

Start at 400 on old £11 go so. turn 90°

£ 5 600' Goin west  
600' from road + 18 lb.

650' w + 22 lb.

700w + 23 "

750w + 24 "

800w + 25 "

850w + 26 "

900w + 27 "

1000w + 27 "

1050w + 27 "

1100w + 27 "

1150w + 27 "

1200w + 27 "

1250w + 28 "

1300w + 28 "

1350w + 28 west cont.  
man LK. #5

start AC-14

AC-14 + 18 lb.

0+50 N + 16 "

100 N + 17 " 10' E of 600'  
line on £ 1K #5

150 N + 21 "

200 N + 22 "

250 N + 22 "

300 N + 27 "

350 N + 26 "

400 N + 35 "



off of A		C-14		
4	+50 N	+30	Turn N 65° E	for line
5	+20 N	+36	15 contact	
5	+50	+34	cherty	15
550	6 + 00 N	+36	cherty	15
525	6 + 25 N	+38	"	"
600	6 + 50 N	+21	"	"
625	6 + 75 N	+ <del>21</del> +6	"	"
650	7 + 00 N	- 81	outcrop	10' below
675	7 + 25 N	+ 35	below outcrop	
700	7 + 50 N	+ 28	15	
725	7 + 75 N	+ 22	15	
750	8 + 00 N	+ 29	at A C-12 in road	

Start at 11+50 \$ 1K. 3+4

50S - + 42 covered db

1+00S + 14 db + ls. float.

1+25S + 10 cherty outcrop.

1+50S + 11 low grade Fe outcrop

1+75S + 29 alt. ls. some Fe above

2+00S + 31 alt Ls.

2+50S + 32 db - ls. contact

3+00S come + 31 out at 1150 db.

Start at 8+50. 3 \$ 4, turn 90°

90 South. (sta Numbered from #3)

250N + 4 - Cherty Lms outcrop

200N + 23 " " " varies from -25 to +30 in 10 E-W.

150N + 24 Covered - Cherty, + Fe float

100N + 3 Covered - Cherty, + Fe float

50N - 13 Fe outcrop

850W + 12 Alt Lms, Fe stringers on 850W #3

Start at 1450 W 3 \$ 4 90 S

50S + 16 Covered - db float

100S + 11 Alt Lms outcrop - db cover

150S + 7 Alt Lms float - Covered

200S + 7 Alt Lms + db float - Covered

250S + 66 Lms + Fe outcrop.

300S + 8 Lms + Fe outcrop

15' W + 15' S. of 1450 on #3



350 S- +15, Lms, FE stringers

400 S +40, Alt Lm,

450 S +34 Alt Lms.

500 S +29 Alt Lms

550 S +24 Alt Lms. Float

600 S +24 Covered by Lms (Alt.) Float  
db. outcrop - 50' SE; in db?

Going up draw  $\pi$  at  $\frac{1}{4}$  cor.

turned  $25^\circ$  L. from locn 1.  $\pi$  #1 -  
500 S- +28 - Altered Lms. - Db Cont.  
50' down hill no rdg  
taken on it

450 S. +26 - Alt Lm. outcrop

400 S +25 - Covered db float.

350 S +30 Lms outcrop - looks <sup>like</sup> ~~fresh~~ E2.

300 S +30 Covered - Alt Lms float

250 S +43 Alt Lms, outcrop - minor Fe  
stringers

200 S. +33, min Lm. outcrop

150 S +46, well min Lms.

100 S +31 " " "

50 +15 covered - db. float.

00 -13

at  $\frac{1}{4}$  cor  $\frac{20}{29}$  - Iron ledge

From 1/4 Cor on E 1 25° From

50N -2 Covered db float, Fe ledge  
15' N.

100N +2 - Fe out crop

150N +15 in Dig base

From AC 5 To AC 6

T on AC 5

0+00 ~~AC 5~~ +30 db-ls contact

0+50 N +5 15' South<sup>4</sup> db cover.

1+00 N +13 " "

1+50 N +26 " "

2+00 N +28 " "

0+50 S +5 cherty ls. mineral.

1+00 S +4 cherty ls outcrop

1+50 S -21 covered ls float

2+00 S -20 ls

2+50 S +8 below Good Fe ledge

3+00 S -7 at AC 6

3+50 S +3 alt. Ls, min

4+00 S +28 alt Ls min

4+50 S -11 alt Ls min.

5+00 S +63 alt Ls min.

5+50 S +2 alt " "

6+00 S +24 " " "

6+50 S +24 alt " "



7+00 +24 at Loc pit  
7+56 +24 gtz. on ls ?  
Start at E. Center Ferro #2  
#3, old #3 claim  
at End center stake - 5 cherty ls.

Start at old E & 3 90 W  
50 W - - 26 - Alt Lime & Fe.  
75 W - +33 Covered - Fe out crop 10' So.  
100 W +32 Covered - Cherty float  
Fe out crop 25' N  
125 W +30 Covered - db & Alt Lms float  
150 W +25 Covered - Fe float. Fe  
out crop 75' N  
200 W +33 Fe float - Ledge 15' N  
225 W +40 Cover - db float - Cherty float  
250 W +40 Cover - db & cherty float - Alt  
Lms. below (W) 10'  
~~275 W~~ +34 - Cover - Fe & Cherty float  
300 W +33 Fe ledges  
325 W +31 Alt Lms. o.c.  
350 W +30 Alt Lms o.c.  
this line bears S 65 E

Wed. April 9, 1958

Start at 8+00 £ LK.3

8+00 W	+ 19	Run North min ls.
0+50 N	+ 26	Covered Fe float
1+00 N	+ 28	Covered " "
1+50 N	+ 0	Covered "P"
2+00 N	- 11	" "
2+50 N	+ 12	Charly Marbur bed
3+00 N	+ 12	Covered charly ls

Came out on 8+50

From 8+50 Going N. from £ 3+4

3+50 N	+ 12	Charly ls. float
4+00 N	+ 14	" " "
4+50 N	+ 16	Db.
5+00 N	+ 13	Db
5+50 N	+ 13	Db
6+00 N	+ 19	Db. on £ 4 #4 at 8+00

At 11+50 on £ 3+4 turn

1/2 off £.

11+50	+ 0	covered charly float
0+50 N	+ 11	charly outcrop
1+00 N	+ 16	" "
1+50 N	+ 10	Db. float
2+00 N	+ 16	Db - float
2+50 N	+ 17	Db - float
3+00 N	+ 20	hits 10+00 on £ 4



£ I.K. #4 at 9+00 going N.

9+00	+ 15	Db.
0+50 N	+ 17	Db.
1+00 N	+ 17	Db Cover
1+50 N	+ 17	Turn 90' - Db.
0+50 E	+ 15	Db float
1+00 E	+ 22	" "
1+50 E	+ 12	cherty ls. float.
2+00 E	- 8	silicious cherty ls at
<sup>2+25 E = -1</sup> 2+50 E	+ 28	RPR stake D silic. ls.
3+25 E	+ 39	some Fe float
3+00 E	+ 41	Fe outcrop?
3+25 E	+ 46	Good Fe outcrop?
3+50 E	+ 29	covered up and
3+75 E	+ 4	general Y green chert
4+00 E	+ 25	covered some Fe float
4+25 E	+ 25	" " " "
4+50 E	+ 33	" " "
4+75 E	+ 24	" " "
5+00 E	+ 25	" " "
ΔC-1(2)	+ 25	Db. in road

Go	50	down ridge from 350 w
50	+28	Covered Lms. float
1005	+16	Covered " "
1253	+24	" " "
1505	+28	" - db + Lms. float.

This line bears 540 w

2005	+26	Covered - Near db contact
50N	+49	Covered - Lms float
75N	?	Covered - Needle swings thru 360° - won't settle down in horiz pos.

1mon	+35	Lms float covered
150N	-52	Read so. end of needle Polarity reversed - on Fe ledge.

At Sta 220'N - 8' W Sk C-7

200N	+53	Covered Lms float.
220N	+48	at C-7 - Fe ledge about
250N	+37	At Lms. Fe stringers
275N	+35	Lms - db contact ±
300N	+30	db.



\$	1K	13	+	14	going East
Cor		+ 24			grate flat
0+50		+ 24			" "
1+00		+ 24			" "
1+50		+ 24			" "
2+00		+ 24			" "
2+50		+ 25		Ruining	" "
3+00		+ 27		"	" "
3+50		+ 24		"	" "
4+00		+ 19			" "
4+50		+ 23			" "
5+00		+ 25		C-19 is 30 feet south.	" "
5+50		+ 24			" "
6+00		+ 23			" "
6+50		+ 24			" "
7+00		+ 19		Free Flow	" "
7+50		+ 23		10' N of C-19	" "
8+00		+ 24			" "
8+50		+ 25			" "
9+00		+ 25			" "
9+50		+ 25			" "
10+00		+ 25			" "
Turn South					
50 S		+ 23		South side of wash	
1+00 S		+ 23			
1+50 S		+ 24			

2+00 S	+ 24	qtz float
2+50 S	+ 24	" "
3+00 S	+ 24	Center like 13
Sheet 1000' Kent		

9+50 E	+ 25	qtz float
9+00 E	+ 25	" "
8+50 E	+ 26	" "
8+00	+ 26	" "
7+50	+ 24	" "
7+00	+ 23	" "
6+50	+ 23	Sheet " "
6+00	+ 22	" "
5+50	+ 23	Trail " "
5+00	+ 23	" "
4+50	+ 23	" "
4+00	+ 23	" "
3+50	+ 1	heavy iron sheet
3+00	+ 15	" "
2+50	+ 19	" "
2+00	+ 23	" "
1+50	+ 38	between locs
1+00	+ 28	+ C-19
0+50	+ 27	



Start at

Δ C-6

Two's April 22, 1958

Δ C-6	- 17	on Fe outcrop
0 + 25 w	+ 4	min ls
0 + 50 w	+ 36	" "
0 + 75 w	+ 35	" "
1 + 00 w	- 64	reversed polarity
1 + 25 w	+ 51	min ls
1 + 50 w	+ 55	" "
1 + 75 w	- 20	5' from Fe ledge
2 + 00 w	+ 2	min ls.
2 + 25 w	+ 17	" "
2 + 50 w	+ 13	" "
2 + 75 w	+ 21	" " cov.
3 + 00 w	+ 35	" "
3 + 25 w	+ 31	covered
3 + 50 w	+ 30	"
3 + 75 w	+ 30	"
4 + 00 w	+ 26	"
4 + 25 w	+ 24	"
4 + 50 w	+ 24	edge of draw

line above runs 100' North  
of S end Center New  
Ferro # 3 claim.  
about N 77° W from AC-6

200' North of  $\frac{1}{4}$  Cor.

2+00 N +18 db.

2+50 N +21 db

3+00 N +22 db.

3+50 N +25 db

ON 1450  $\frac{1}{2}$  H. 3 going North  
start at 350 N. cover db.

3+50 N +18 "

4+00 N +20 "

4+50 N +22 "

5+00 N +23 "