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Planet mine area
Yuma co
Dec 29, 1965

Sample 2

Contact w/ Paleozoic Dolo
+ Iron rich Sq. rock
Mineralized Zone about 3'
thick + is Vertical. Copper
Stain - about 15-25%

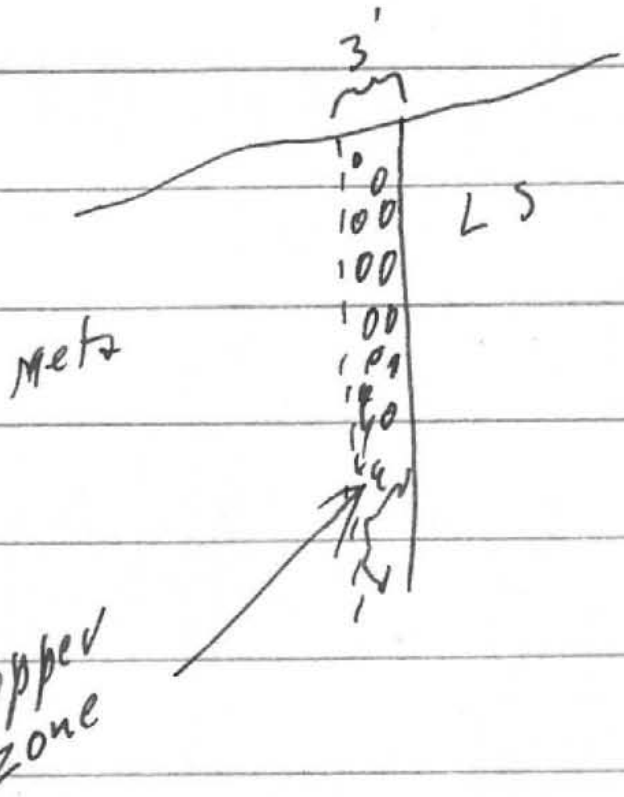
#3 West Side of Area
Contact w/ Ls + Basalt
Copper + Iron Vein ± 3 1/2'
Dip SW

Claim Notice - Pine Claim
~~Unit~~

Dtd 21 Jun 1956

E-W 1500'

C. W. Hutchinson
Wm Bright
Paul Bartlett.



Dec 29, 1965

Planet Mine Area.

Iron appears to be in Two Layers. Top Layer is Anticlinal & rather wide spread

Assays ranged From 25% to 50% w/some up to 65% Iron.

Best copper Appears in a Dolomite-Metamorphic Rx contact.

Largest minable Vein 3-3½' thick.

Also copper in iron Deposits but in veins 3 to 6 inches thick but is Fairly Rich.

copper may be minable. However it appears to be a by product of the open pit Iron mine.

Problems: 1 Exact Locations of Samples taken - #

2 How much iron & copper appears on Alcott-Buzard Claims

3 Miami Copper has patented Claims in center of Alcott claims

4 Need more detailed Survey to Outline relationship of Claims as well as ore bodies.

5. Need to Study ore Occurrence & structural relationship. may be one or more type of deposits.

6. Possible Conflict - Hutchinson, Bright & Bartlett Staked "Pine" Claim dated Jan 21, 1956 on E. Side of property.

EXPLORATION PRODUCTION RESERVOIR STUDIES OPERATIONS CONSULTING

EPROC ASSOCIATES DURANGO, COLORADO

P. O. BOX 1710 TELEPHONES 247-0347, 247-0025

Planet Iron Report

R.I. 3982
December 1946.

REPORT OF INVESTIGATIONS

UNITED STATES DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

EXPLORATION OF NEW PLANET IRON DEPOSIT, YUMA COUNTY, ARIZ.[1]

By Joseph B. Cummings[2]

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INTRODUCTION

The property was first examined by an engineer[3] of the Bureau of Mines in December 1942 and was later investigated by the same engineer in January and February 1943. Prominent outcrops and underground exposures of high-grade iron ore, together with mention of sizable intersections of

1/ The Bureau of Mines will welcome reprinting of this paper, provided the following footnote is used: "Reprinted from Bureau of Mines Report of Investigations 3982."
2/ Mining engineer, Bureau of Mines.
3/ Thomas L. Chapman.

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hematite in logs of four widely scattered churn-drill holes, indicated the possible occurrence of a substantial tonnage of iron ore at this old copper producer.

From March to May 1943, detailed topographic and geologic mapping of the property was done by the Federal Bureau of Mines, the Federal Geological Survey, and the Arizona Bureau of Mines.

Funds were allotted for exploration of the property by churn and diamond drilling. This work was started in December 1943 and completed in June 1944.

ACKNOWLEDGMENTS

In its program of exploration of mineral deposits, the Bureau of Mines has as its primary objective the more effective utilization of our mineral resources to the end that they make the greatest possible contribution to national security and economy. It is the policy of the Bureau to publish the facts developed by each exploratory project as soon as practicable after its conclusion. The Mining Branch, Lowell B. Moon, Chief, conducts preliminary examination, performs the actual exploratory work, and prepares the final report. The Metallurgical Branch, R. G. Knickerbocker, Chief, analyzes samples and performs beneficiation tests. Both these branches are under the supervision of Dr. H. S. Dean, Assistant Director.

With respect to this report, special acknowledgment is due to J. H. Hedges, district engineer, and S. R. Zimmerley, regional engineer, of the Western Region of the Bureau. Work on the project was facilitated by the assistance of Eldred Wilson, of the Arizona Bureau of Mines, and Arthur P. Butler, Jr., of the Federal Geological Survey, who mapped the geology of the area.

Chemical analyses included in this paper were performed at the Bureau's laboratory, Reno, Nev., under the direction of A. C. Rice, acting supervising engineer.

LOCATION AND ACCESSIBILITY

The property is on the south bank of the Bill Williams River 12 miles above its junction with the Colorado River, in the Planet mining district, and the northwest corner of Yuma County, Ariz. (fig. 1). It is 28 miles north of Bouse, which is on the Atchison, Topeka & Santa Fe Railroad and may be reached from Bouse by a dirt road, 18 miles of which is graded county road and 10 miles unimproved desert road.

PHYSICAL FEATURES AND CLIMATE

At the property the Bill Williams River has a permanent flow. The topography is rugged. Hills, 100 to 500 feet high, are cut by numerous small canyons with steep walls, and there is little soil on the slopes. The average altitude at the property is 800 feet. The climate is hot and dry in summer but mild in winter. Vegetation is scant, except along the river bottom, where brush and cottonwood trees are plentiful. There is no timber on the property suitable for mining operations.

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Figure 1. - Location map, New Planet iron project, Yuma County, Ariz.

LEGEND

- IRON ORE, 50% PLUS Fe
- WEAK IRON MINERALIZATION, 35% TO 50% Fe
- FERRUGINOUS MATERIAL, LESS THAN 35% Fe
- GNEISS
- SILICEOUS BRECCIA
- SCHIST
- MICA SCHIST
- RHYOLITE SCHIST
- LIMESTONE
- HORNFELS & NOVACULITE
- QUARTZITIC SCHIST
- BRECCIATED QUARTZITE
- ALLUVIUM, TALUS, SAND
- 1a OLD CHURN DRILL HOLES
- C.D.H. 1 BUREAU OF MINES CHURN DRILL HOLES
- D.D. 1 BUREAU OF MINES DIAMOND DRILL HOLES
- FAULTS
- SHAFTS

Note: Geology by Arizona Bureau of Mines and Federal Geological Survey

0 200 400 800
FEET

Figure 2. - Geologic map, New Planet iron mine, Yuma County, Ariz.

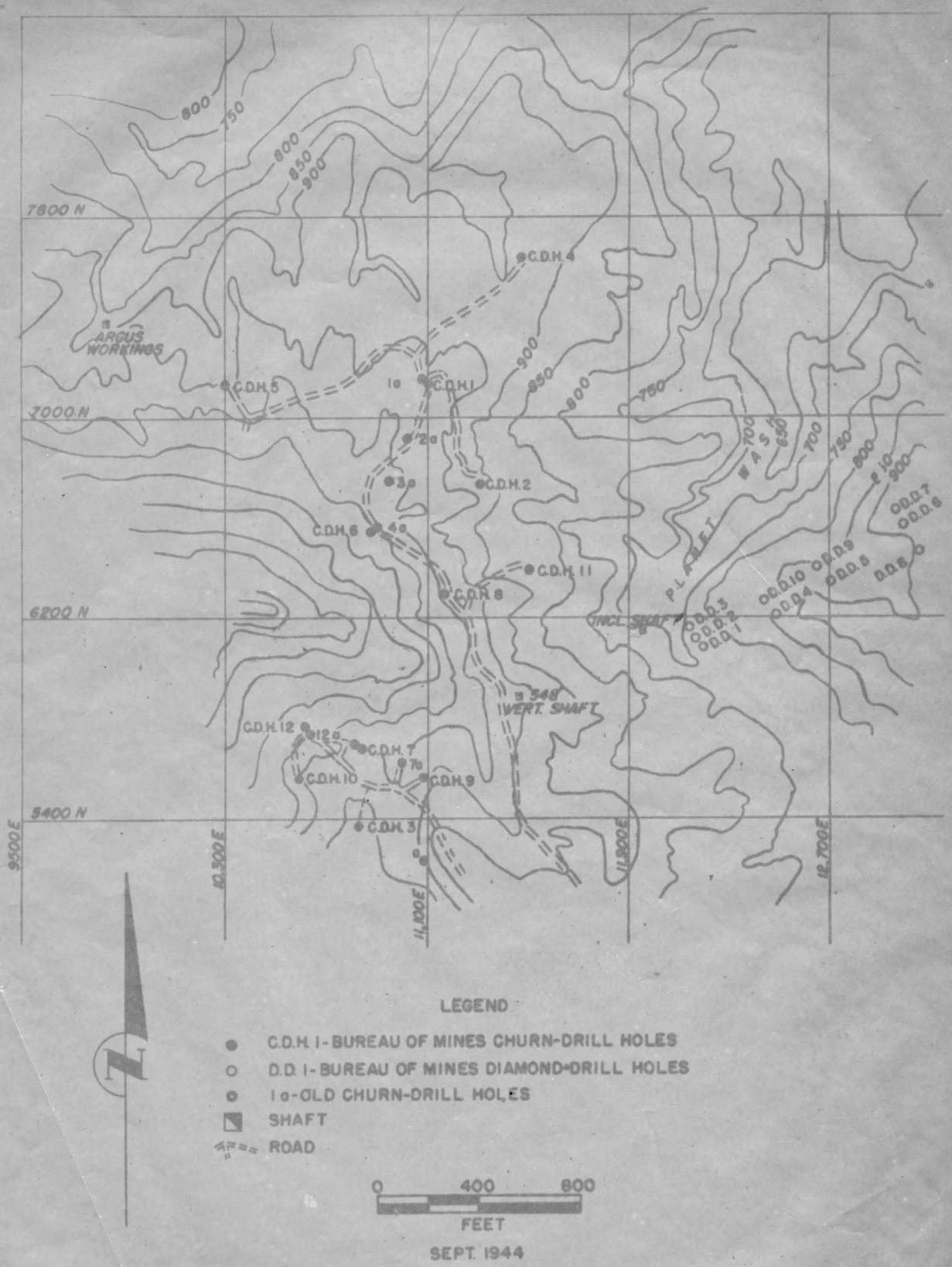

Figure 3. - Topographic map, New Planet iron project, Yuma County, Ariz.

HISTORY AND PRODUCTION

The first claims, now held by the New Planet Copper Mining Co., were located in 1863. By 1884 about 6,000 tons of highgrade copper ore had been shipped to Swansea, Wales, and to San Francisco. The ore was hauled by mule teams to Aubrey, on the Colorado River, and thence by boat to the Gulf of California, where it was loaded on ships. In 1884, a small water-jacketed smelter was installed. It operated for 6 months, treating about 1,200 tons of copper ore assaying approximately 14 percent copper. Work was carried on intermittently from 1884 to 1906, and some copper was shipped. (See fig. 2.)

In 1906, General Development Co. took an option on the property and put down nine churn-drill holes, sank a vertical shaft to a depth of 548 feet, and drove a 900-foot crosscut. Upon completion of this work, the option was relinquished.

Beginning in March 1915, the property was worked under the terms of a 3-year lease. All readily accessible copper ore was mined and shipped, together with 1,500 tons of slag. No development work was done, and the lease was relinquished. In all, about 50,000 tons of ore averaging approximately 10 percent copper has been produced.

Consolidated Arizona Smelting Co. sampled the property in 1920 under terms of a lease. Results were said to be disappointing, and the lease was relinquished.

Throughout the operation of the property, little attention was paid to the iron ore, although the Colorado Fuel & Iron Co. sampled it for iron in 1906. The property was still idle when the Bureau's project was in progress.

PROPERTY AND OWNERSHIP

The property consists of 31 lode-mining claims, comprising an area 3,600 feet wide by 8,000 feet long. Thirty of the claims are patented, and one claim is held by right of location and annual assessment work. It is owned by the New Planet Copper Mining Co., 61 Broadway, New York City.

DESCRIPTION OF THE DEPOSIT[4/]

The rocks in the vicinity of the iron deposit comprise two series - a gneissic basement complex of probably pre-Cambrian age and a younger series of undetermined age made up of schist and limestone (see fig. 3). The ore is in the younger series of rocks, where, for the most part, it has replaced limestone. The contact between the two series is nearly flat.

Massive, brownish gray, medium-grained limestone, which weathers to a rough surface, is confined to the lower part of the younger series; however, at some places limestone is missing, and at others two or three layers of limestone are present, separated by schist. Individual bodies of limestone range in thickness from a maximum of 60 feet down to a vanishing point. Some are irregular tabular bodies; others are lenses as little as 100 feet long.

4/ Abstracted from a report by Eldred D. Wilson, Arizona Bureau of Mines, and A. P. Butler, Jr., Federal Geological Survey.

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The schistose rocks are composed mainly of quartz-mica or quartz-sericite schist but include calcareous schist, some beds of quartzite, and some hornfels.

An extensive thrust fault separates the limestone-schist series and the gneiss throughout the area. Although undulating, the fault has an essentially flat dip.

Breccia is as much as 60 feet thick along this contact. A layer of gouge from 1 to 2 feet thick is present at places along the bottom of the thrust plate, and some gouge is locally interlayered with breccia.

Several other faults exist and are believed to be subsidiary breaks in the overthrust plates, for they do not appear to displace the top of the gneiss. Mineralization along some of the faults and replacement in the brecciated rock suggest that most of the movement on the faults and the main overthrust antedated ore deposition.

Although the schistose rocks are folded and crumpled, the sharp folding of the schist is not reflected in the boundary between the gneiss and the younger rocks, and the larger bodies of limestone and schist are in discontinuous layers that are approximately concordant with the top of the gneiss or intersect the contact at low angles and are cut off by it. In the main area of outcrop of the iron ore, these layers are in broad folds, whose axes trend, and for the most part plunge gently, southwesterly in common with the top of the gneiss.

The ore occurrences consist of discontinuous lenses, irregular bodies and, in some instances, small veins. The ore bodies range in size from a few tens of cubic feet to as large as 660 feet long by 250 feet wide by 15 to 50 feet thick.

The ore is of hydrothermal replacement origin and consists of specular hematite, associated with quartz, some calcite, and sparse pyrite and chalcopyrite, also with chrysocolla and other oxidized copper minerals. The presence of some small stringers of quartz, veined by hematite, indicates that some silicification preceded deposition of the iron. At the surface and to a depth of about 10 feet the ore is very hard. Underground, the high-grade ore is pulverulent.

Ore is confined to the lower part of the younger series of rocks, but some weak iron mineralization extends well up into the series. The contacts of bodies of hematite with limestone clearly show that the hematite replaced limestone. No intrusive rock younger than the gneiss that might have served as a source of mineralizing solutions is exposed in the immediate vicinity of the ore deposit.

MINE WORKINGS AND DEVELOPMENT[5]

Development workings aggregate about 8,000 linear feet of shafts, raises, drifts, crosscuts, and winzes. A small amount of stoping has been done. Approximately 3,000 feet of the development is between the inclined shaft and the vertical shaft. The latter is 548 feet deep. Copper ore has been produced

5/ Prior to work by the Bureau of Mines.

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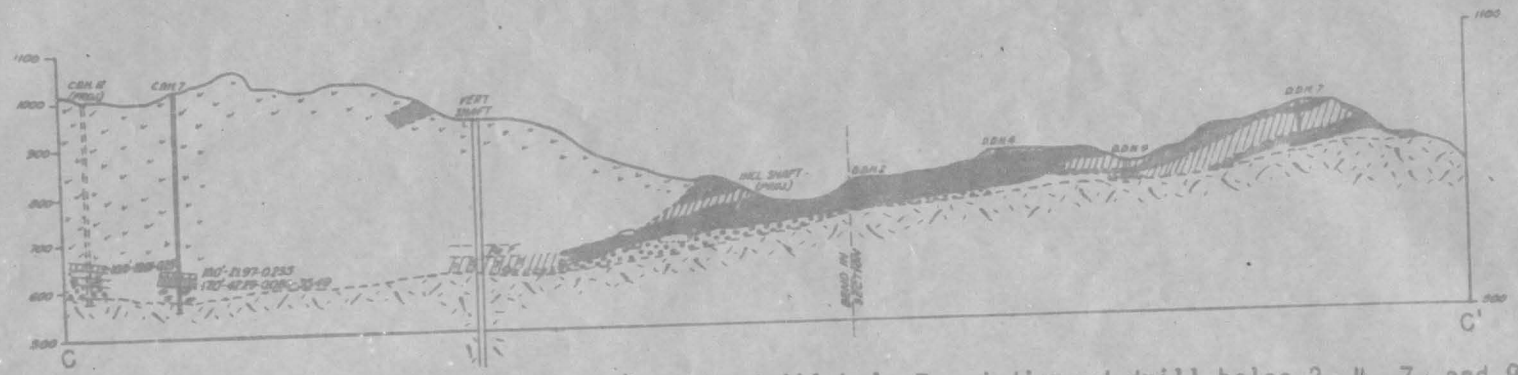

Figure 6. - Longitudinal section through churn-drill hole 7 and diamond-drill holes 2, 4, 7, and 9.

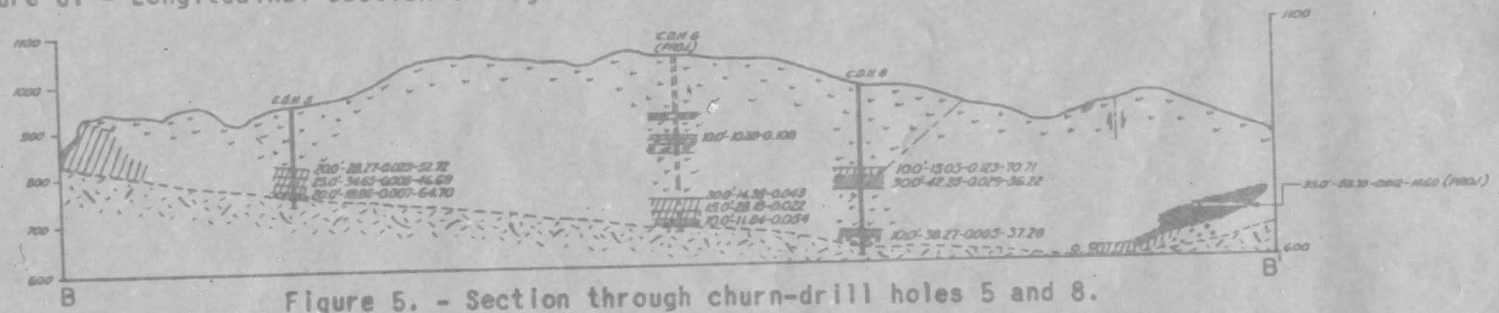

Figure 5. - Section through churn-drill holes 5 and 8.

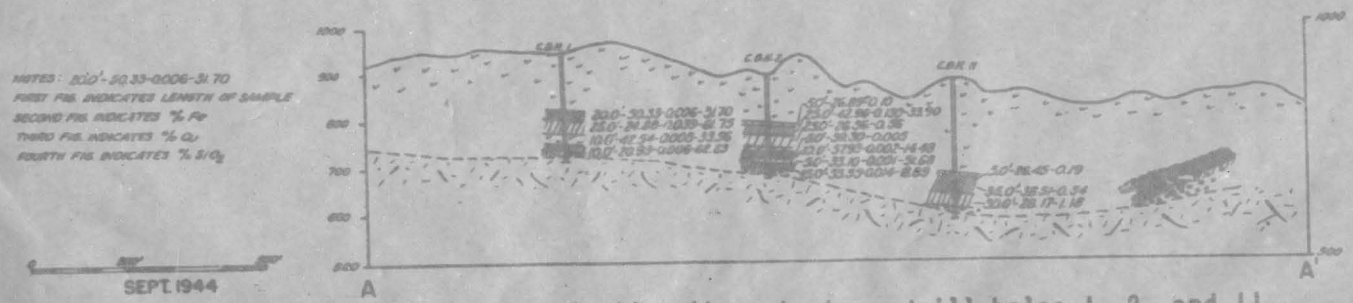

Figure 4. - Section through churn-drill holes 1, 2, and 11.

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from virtually all the workings, and iron ore is exposed in some of them. As all work was done in search of copper ore, only in a few places have the iron-ore deposits been crosscut.

The nine churn-drill holes put down by the General Development Co. lie southwest and northwest of the vertical shaft. Although drilled for copper, old logs of four of these holes reported intersections of iron ore.

WORK DONE BY THE BUREAU OF MINES

Preparatory Work

Preparatory work in connection with the exploratory project by the Bureau of Mines consisted of construction of a camp to accommodate Bureau employees and the drilling crew, repairing the desert road from the Bouse-Swansea road to the property, and construction of roads to drilling sites.

Churn Drilling

Twelve holes aggregating 3,742.5 feet were drilled. Eight of the holes - 1, 2, 4, 5, 6, 7, 8, and 11 (see figs. 4-6) - served to prospect an area containing, roughly, 4,400,000 square feet and bounded on the west and north by a continuous outcrop containing iron mineralization of varying degrees of intensity. A portion of the southern part of this area has been explored by underground workings in which is exposed a good grade of iron ore of an average thickness of 30 to 35 feet. These drill holes indicate the presence of an extensive zone of iron mineralization at an average depth of 175 feet below the surface. However, with the exception of 15 feet of 55.55-percent iron ore at hole 2 and 20 feet of 50.33-percent iron ore at hole 1, the intensity of mineralization is too slight to constitute ore of a commercial grade.

Drill holes 3, 7, 9, and 12 served to prospect for the southwesterly extension of the ore bodies that outcrop east of Planet Wash and extend into the mine workings between the inclined shaft and 548-foot vertical shaft. No commercial ore was found in these four holes.

To safeguard against possible contamination of sludge, all holes except hole 1, were cased from the collar to the top of each mineralized zone. A bottom-valve-type bailer was employed for cleaning cuttings from the hole, while drilling in mineralized zones. When approaching and while drilling in mineralized zones, 2-1/2-foot runs were made. The 2-1/2-foot runs were combined in 5-foot samples, except where a change in sludge color and panning indicated a change in the degree of mineralization.

All samples showing iron mineralization were mechanically split by using a Ray-type splitter. This consists of three Jones-type splitters set one above the other in such a manner that the sample obtained is about 12-1/2-percent of the material entering the splitter. After drying, the sample was split several times with a Jones-type splitter. The final sample, which was generally about 1.6 percent of the total sludge, was weighed and sacked. A reject, generally about 3 percent of the total sludge, was also saved. In all, 214 samples were taken.

Diamond Drilling

Ten holes, aggregating 569.4 feet, were drilled to determine the grade and extent of the ore that outcrops east of Planet Wash. (see figs. 7-10).

Sampling (Surface and Underground Exposures)

Channel samples were taken of ore exposures in the underground workings between the inclined and vertical shafts. This sampling was done during the time that the initial survey of the property was made in 1943. The results of this sampling are shown on figure 11.

During the time that the drilling program was in progress, 38 channel samples were taken along the northwest edge of the mineralized outcrop, east of Planet Wash. The locations of these samples are shown on figures 7, 8, and 10.

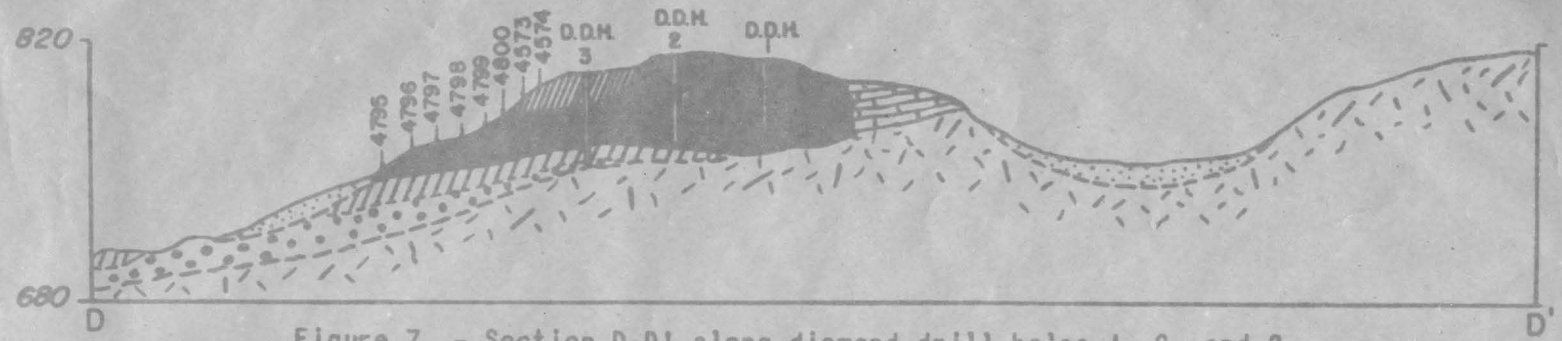

Figure 7. - Section D-D' along diamond-drill holes 1, 2, and 3.

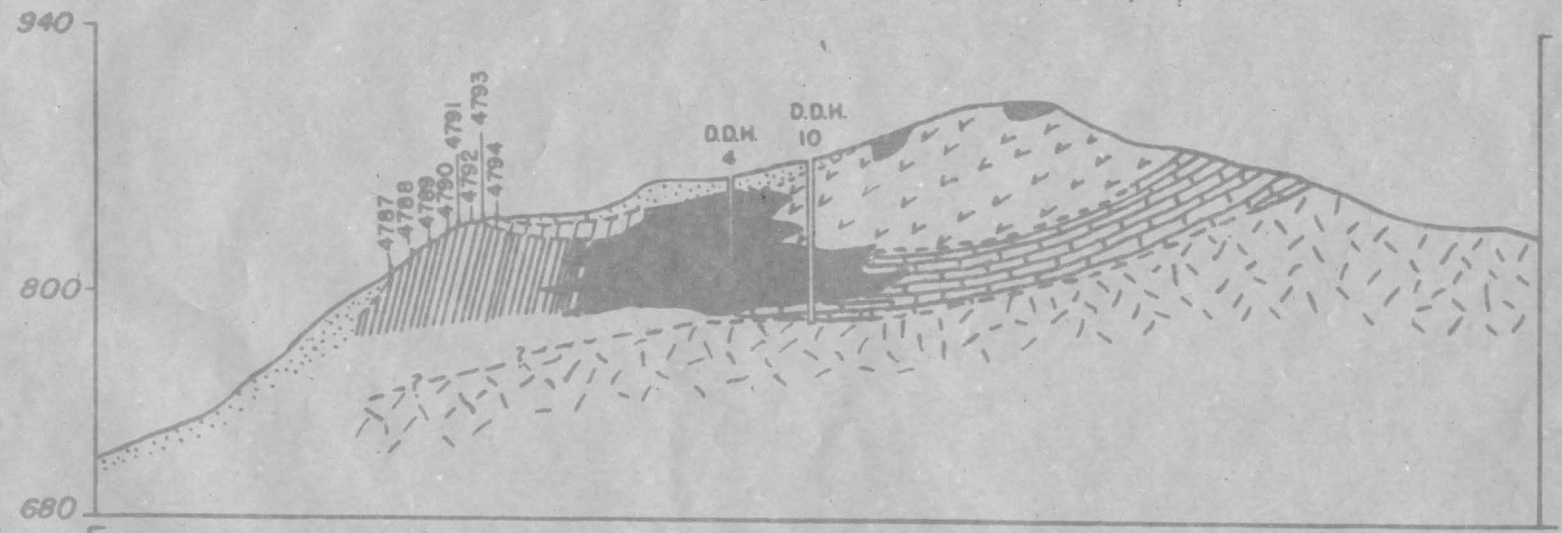

Figure 8. - Section E-E' along diamond-drill holes 4 and 10.

LEGEND

- IRON ORE, 50% PLUS Fe
- IRON MINERALIZATION, 35-50% Fe
- FERRUGINOUS MATERIAL, LESS THAN 35% Fe
- ALLUVIUM
- LIMESTONE
- SCHIST
- GNEISS
- 4795 SAMPLE NUMBER

SEPT. 1944

0 50 100 200 FEET

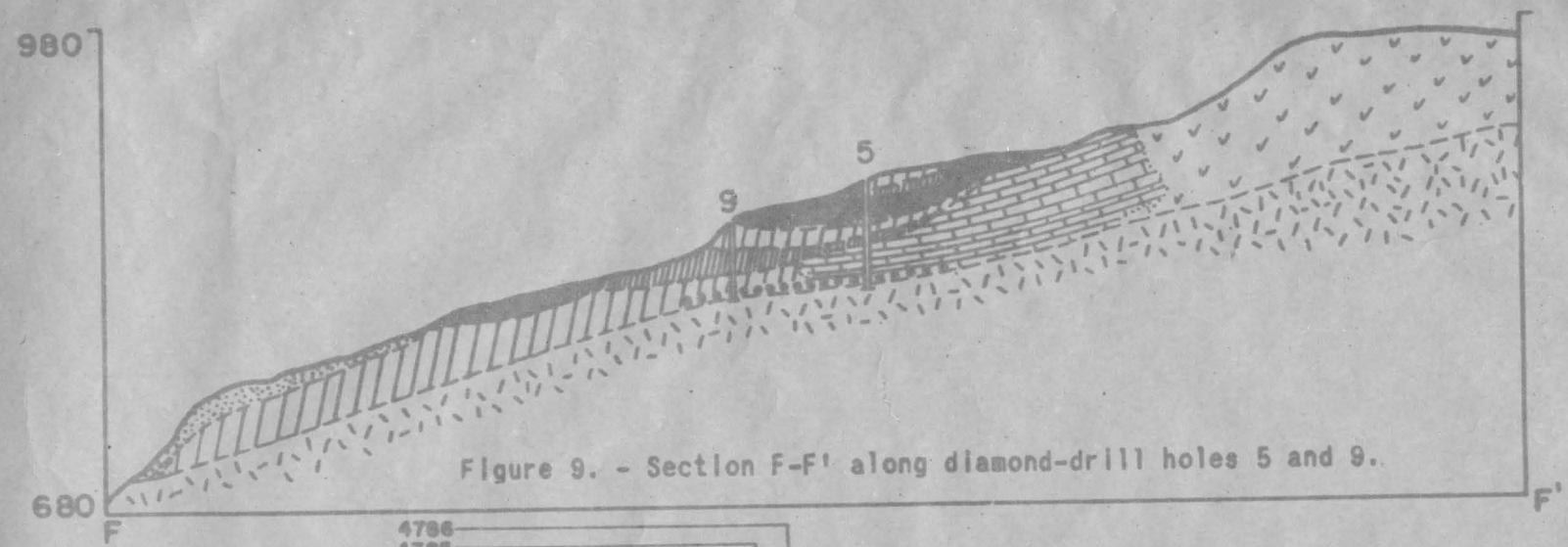

Figure 9. - Section F-F' along diamond-drill holes 5 and 9.

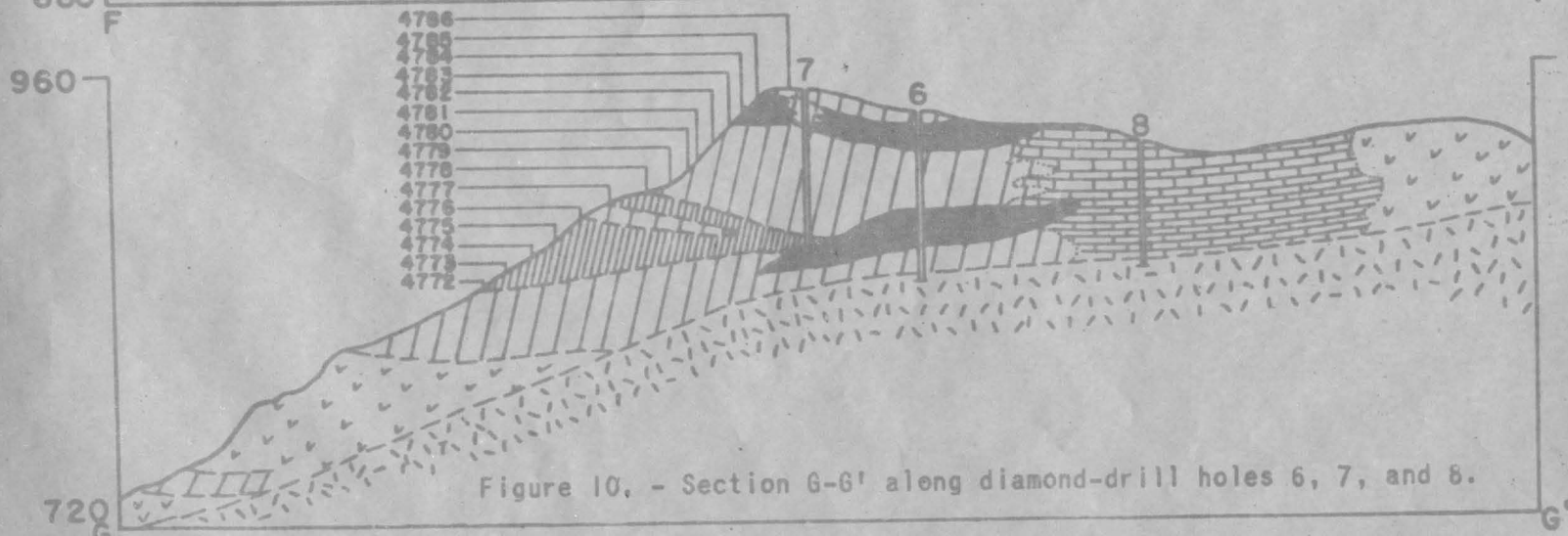

Figure 10. - Section G-G' along diamond-drill holes 6, 7, and 8.

IRON ORE, 50% PLUS Fe

IRON MINERALIZATION, 35-50% Fe

FERRUGINOUS MATERIAL, LESS THAN 35 % Fe

SILICEOUS BRECCIA

GNEISS

LIMESTONE

ALLUVIUM

SCHIST

4786 SAMPLE NUMBER

0 50 100 200

FEET

SEPT. 1944

NEW PLANET IRON PROJECT 931, YUMA COUNTY, ARIZONA

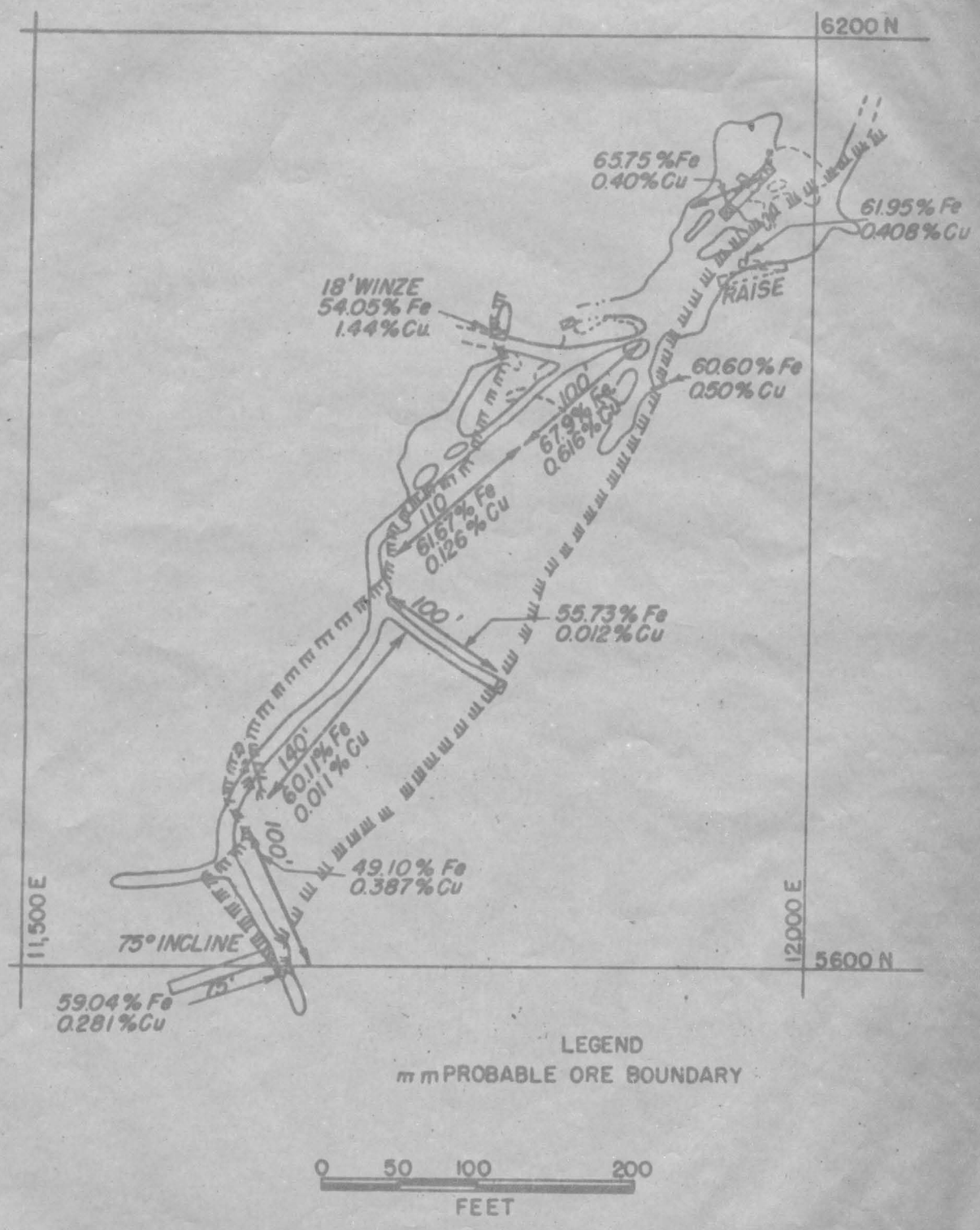

Figure 11. - Plan of drift level, New Planet iron project, Yuma County, Ariz.

LOGS OF CHURN-DRILL HOLES

The location of churn-drill holes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 as shown on figs. 2 and 3.

CHURN-DRILL HOLE 1.

Location: 7,085 N., 11,100 E. Elevation of collar: 955 feet Depth: 230 feet

Interval From	Interval To	Analysis, Percent Fe	Cu	SiO_2	S	P	Al_2O_3	CaO	Formation
0	85								Schist, slight spec. hematite 0-115.
85	90	8.17	0.010						
90	95	7.41	.012						
95	100	7.82	.002						
100	105	11.62	.010						
105	110	9.93	.002						
110	115	10.14	.002						
85	115	Composite		78.64	0.08	0.046	2.40	0.42	
115	120	51.92	0.005						Specular hematite, quartz, and some schist, 115-135.
120	125	51.36	.039						
125	130	47.71	.090						
130	135	38.31	.056						
115	135	Composite		31.70	.24	.101	1.42	.20	
135	140	30.88	0.052						Schist, some specular hematite, and limonite, 135-185.
140	145	28.40	.096						
145	150	21.30	.012						
150	155	16.69	.010						
155	160	13.70	.008						
135	160	Composite		61.75	.18	.090	2.12	.15	
160	165	9.26	0.025						
165	170	10.10	.008						
170	175	9.94	.015						
175	180	9.90	.010						
180	185	10.20	.015						
160	185	Composite		76.56	.33	.087	3.19	.21	
185	190	41.16	0.008						Siliceous specular hematite, 185-195.
190	195	43.92	.008						

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CHURN-DRILL HOLE 1.

From	To	Analysis, Percent Fe	Cu	SiO_2	S	P	Al_2O_3	CaO	Formation
185	195	Composite		33.56	0.28	0.064	1.28	0.09	
195	200	27.54	0.010						
200	205	14.32	.002						
195	205	Composite		62.23	.23	.049	2.03	.33	Schist, quartz, some spec. hematite, 195-205.
205	230	-	-	-	-	-	-	-	Gneiss, 205 - 230.

CHURN-DRILL HOLE 2.

Location: 6,695 N., 11,301 E. Elevation of Collar: 895 feet Depth: 215 feet

Interval From	Interval To	Fe	Cu	SiO_2	S	P	Al_2O_3	CaO	Formation
0	90								Schist and quartz, 0 - 90.
90	95	26.89	0.100						Slight spec. hematite, 90 - 95.
95	100	43.41	.176						
100	105	44.03	.063						Specular hematite, some schist and
95	105	Composite		30.90	0.100	0.056	2.28	0.18	quartz, 95 - 120.
105	110	42.33	.028						
110	115	42.21	.044						
115	120	42.59	.202						
105	120	Composite		36.00	.074	.113	1.50	.12	Schist, quartz, some specular
120	125	26.51	.229						hematite, 120 - 155.
125	130	23.71	2.358						Chrysocolla, 120 - 135.
130	135	30.60	.127						
135	140	24.72	.048						
140	145	27.38	.038						
145	155	-	-						
155	160	39.30	.005						Specular hematite, schist and quartz,
160	165	59.83	.002						155-160.
165	170	56.03	.002						Specular hematite, 160 - 170.
160	170	Composite		14.48	.104	.063	.61	.01	Specular hematite, schist, and quartz,
170	175	33.10	.001	51.68	.102	.064	.83	.01	170 - 175.
175	180	55.67	.011						Specular hematite, very hard, 175-190.
180	182	61.54	.016						
175	182	Composite		17.14	.072	.051	.47	.02	
182	187	52.94	.015						
187	190	55.63	.011						
182	190	Composite		20.42	.064	.074	1.09	.01	
190	195	25.21	.051						Schist, quartz, and gneiss, 190 - 195.
195	215	-	-						Gneiss, considerable pyrite, 195 - 215.

CHURN-DRILL HOLE 3.

Location: 5,314 N., 10,835 E. Elevation of collar: 940 feet Depth: 477 feet

Interval		Analysis			Formation
From	To	Cu, Percent	Ozs. Ag.	Ozs. Au.	
0	5	-	-	-	Hornfels.
5	44	-	-	-	Schist and hornfels.
44	387	-	-	-	Schist, water at 350.
387	392	0.508	none	trace	Gneiss, considerable pyrite, some copper sulphide and native copper, 387 - 477.
392	424				
424	429	.122	none	trace	
429	434	.110	"	"	
434	439	.140	"	"	
439	444	.120	"	"	
444	449	.220	"	"	
449	454	.148	"	"	
454	459	.122	"	"	
459	464	.272	"	"	
464	469	.176	"	"	
469	474	.208	"	"	
474	477	.142			

CHURN-DRILL HOLE 4.

Location: 7,600 N., 11,500 E. Elevation of collar: 908 feet Depth: 150 feet

Interval		Analysis, Percent		Formation
From	To	Fe	Cu	
0	45	-	-	Schist, 0 - 45.
45	50	16.50	0.018	Schist, quartz and slight specular hematite, 45 - 67.5.
50	55	-	-	
55	60	18.60	.017	
60	62.5	14.48	.017	
62.5	67.5	14.90	.012	
67.5	72.5	42.51	.007	Specular hematite, considerable quartz, 67.5 - 72.5.
72.5	77.5	28.31	.012	Schist, quartz, some spec. hematite, 72.5 - 107.5.
77.5	82.5	25.59	.013	
82.5	87.5	16.50	.019	
87.5	92.5	13.47	.020	
92.5	97.5	14.41	.019	
97.5	102.5	20.22	.011	
102.5	107.5	21.58	.028	
107.5	112.5	-	-	Breccia and gouge, 107.5 - 112.5.
112.5	150	-	-	Gneiss - 112.5 - 150.

CHURN-DRILL HOLE 5.

Location: 7,085N., 10,300 E. Elevation of collar: 955 feet Depth: 218 feet

Interval From	Interval To	Analysis, Percent Fe	Cu	SiO_2	S	P	Al_2O_3	CaO	Formation
0	75								Schist and quartz, 0 - 75.
75	80	11.95	0.008						Schist, quartz, slight specular hematite, 75 - 130.
80	85	15.85	.002						
85	90	14.49	.010						
90	95								
95	100	14.50	.003						
100	105	13.01	.007						
105	110	10.49	.005						
110	115	11.39	.038						
115	120	11.06	.035						
120	125	10.86	.020						
125	130	21.84	.023						
130	135	29.90	.017						Specular hematite, considerable quartz, 130 - 175.
135	140	29.79	.013						
130	140	Composite		51.83	0.326	0.043	0.71	0.37	
140	145	34.51	.015						
145	150	18.89	.045						
140	150	Composite		53.66	.344	.062	1.13	.34	
150	155	39.90	.008						
155	160	31.78	.005						
160	165	31.31	.002						
165	170	35.81	.021						
170	175								
150	175	Composite		46.69	.468	.025	.53	.21	
175	180	25.50	.022	57.35	1.930	.032	.33	.22	Schist quartz, some specular hematite, 175 - 200.
180	185	14.09	.002						
185	190	21.65	.002						
190	195	13.45	.002						
180	195	Composite		67.14	1.288	.028	.53	.19	Gneiss, 200 - 218.
195	218								

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CHURN-DRILL HOLE 6.

Location: 6,496 E., 10,872 E. Elevation of collar: 1050 feet Depth: 380 feet

Interval From	Interval To	Analysis. Percent Fe	Analysis. Percent Cu	Formation
0	170			Schist and some quzrtz, 0 - 170 .
170	175	11.76	0.150	Schist, slight specular hematite, 170 - 180.
175	180	9.00	.065	
180	307			Schist and quartz, 180 - 307.
307	312	10.75	.040	Schist, quartz, and slight specular hematite, 307 - 337.
312	317	13.26	.042	
317	322	16.50	.030	
322	327	13.20	.097	
327	332	12.60	.043	
332	337	19.96	.005	
337	342	31.90	.035	Specular hematite, considerable quartz, and schist, 337 - 352.
342	347	24.99	.030	
347	352	27.65	.002	
352	357	14.70	.045	Breccia and gouge, 352 - 359.
357	362	8.98	.063	Gneiss, some pyrite, 359 - 380.
362	380	-	-	

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CHURN-DRILL HOLE 7.

Location: 5,654 N., 10,835 E. Elevation of collar: 10,19 feet Depth: 475 feet

Interval		Analysis, Percent							Formation
From	To	Fe	Cu	SiO_2	S	P.	Al_2O_3	CaO	
0	151								Schist, 0 - 151.
151	156	9.21	0.100						Schist, slight specular hematite,
156	161	9.62	.080						151 - 161.
161	310	-	-						Schist, 161 - 310.
310	315	7.28	.045						Schist, slight specular hematite,
315	320	7.02	.055						310 - 342.5.
320	325	6.35	.075						
325	335	-	-						
335	340	7.05	.030						
340	342.5	9.08	.005						
342.5	375	-	-						Schist and quartz, 342.5 - 375.
375	380	13.82	.225						Schist, quartz slight specular
380	385	13.80	.203						hematite, some chrysocolla,
385	390	27.04	.302						375 - 395.
390	395	16.90	.168						
395	400	36.95	.031	44.50	0.124	0.033	1.38	0.23	Specular hematite, quartz,
400	405	49.72	.087	25.50	.112	.051	1.14	.36	and schist, 395 - 412.
405	410	41.28	.095	35.06	.58	.058	2.08	.30	
410	412	39.40	.125	36.68	.38	.041	2.84	.37	
412	417	7.32	.050	-	-	-	-	-	Rhyolite schist, 412 - 452.
417	475	-	-	-	-	-	-	-	Gneiss, 452 - 475.

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CHURN-DRILL HOLE 8.

Location: 6,250 N., 11,170 E. Elevation of collar: 981 feet Depth: 365 feet

Interval From	Interval To	Analysis, Percent Fe	Cu	SiO_2	S.	P.	Al_2O_3	CaO	Formation
0	185								Schist and quartz, 0 - 185.
185	190	17.40	0.096						Schist, quartz, and slight specular hematite, 185 - 195.
190	195	12.71	.150						
185	195	Composite		70.71	0.042	0.032	4.38	0.33	
195	200	42.81	.018						Specular hematite, considerable quartz, 195 - 225.
200	205	42.15	.055						
205	210	43.34	.052						
210	215	47.33	.013						
215	220	39.68	.020						
200	220	Composite		34.33	.038	.077	2.80	.54	
195 to 200 & 220 - 225		Composite		40.00	.046	.112	2.56	.33	Lost sludge 225-230, fault?
225	230	-	-						Schist, 230 - 315.
230	235	6.00	.552						
235	315	-	-						Specular hematite, considerable quartz and schist, 315 - 325.
315	320	44.47	.002						
320	325	32.08	.008						
315	325	Composite		37.28	.080	.072	4.59	.15	
325	330	16.38	.030						Breccia and gouge, 325 - 342.
330	335	10.91	.038						
335	340	6.02	.568						
325	340	Composite		71.10	1.75	.030	6.37	.29	
340	345	5.01	.242						Gneiss, considerable pyrite, 342 - 365.

CHURN DRILL HOLE 9.

Location: 5,518 N., 11,081 E. Elevation of collar: 958 feet Depth: 420 feet

Interval From	Interval To	Analysis, Percent Fe	Analysis, Percent Cu.	Formation
0	369	-	-	Schist and quartz, 0 - 369.
369	373	14.88	0.015	Schist, quartz, slight specular hematite, and chrysocolla, 369 - 388.
373	378	14.08	.850	
378	383	22.90	3.525	
383	388	17.10	1.693	
388	393	4.99	.417	Breccia and gouge, 388 - 393.
393	420	-	-	Gneiss, considerable pyrite, 393 - 420.

CHURN-DRILL HOLE 10.

Location: 5,522 N., 10,589 E. Elevation of collar: 1028 feet Depth: 52.5 feet

Interval From	Interval To	Formation
0	52.5	Hornfels and quartz, very hard and beds dip steeply. Unable to keep the hole straight, so it was abandoned.

CHURN-DRILL HOLE 11.

Location: 6,347 N., 11,505 E. Elevation of collar: 904 feet Depth: 300 feet

Interval From	Interval To	Analysis, Percent Fe	Cu	SiO_2	S.	P.	Al_2O_3	CaO	Formation
0	198								Schist, 0 - 198.
198	203	26.45	0.19						Schist, slight spec. hematite, 198-203.
203	208	41.70	.11						specular hematite, schist, quartz,
208	213	42.25	.10	37.03	0.032	0.144	0.69	0.45	and some chrysocolla, 203 - 238.
213	218	37.75	.17	43.48	.058	.144	.84	.55	
218	223	35.05	.05	47.69	.040	.116	.55	.44	
223	228	35.80	.31	44.74	.054	.173	1.07	.98	
228	233	35.10	1.96	40.84	.045	.224	3.24	1.11	
233	238	41.95	.98	34.00	.110	.194	2.31	.86	
238	243	31.60	.87						Schist, slight specular hematite,
243	248	36.05	.80						and chrysocolla, 238.- 268.
248	253	29.75	.70						
253	258	27.70	.87						
258	263	15.10	.97						
263	268	28.80	2.85						Breccia and gouge, 268 - 283.
268	300	-	-						Gneiss, 283 - 300.

CHURN-DRILL HOLE 12.

Location: 5,711 N., 10,629 E. Elevation of collar: 1,035 feet Depth: 460 feet

Interval From	Interval To	Analysis, Percent Fe	Analysis, Percent Cu	Formation
0	310			Schist and quartz, 0 - 310.
310	315	7.90	0.014	Schist, quartz, and slight specular hematite, 310 - 335.
315	320	10.20	.020	
320	325	8.76	.021	
325	330	10.13	.020	
330	335	10.89	.050	
335	385	-	-	Schist and quartz, 335 - 385.
385	390	12.02	.34	Schist, quartz, and slight specular hematite, 385 - 410.
390	395	26.00	.16	
395	400	17.65	.47	
400	405	10.49	.069	Phyolite schist, 410 - 425.
405	410	5.10	.077	Siliceous breccia and gouge, 425 - 445.
410	415	4.57	.87	
415	460	-	-	Gneiss, 445 - 460.

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 1

Collar coordinates: Latitude, N. 6093: Departure, E. 12252
Collar Elevation: 806
Inclination: Vertical

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FOOTAGE			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	3.4	3.4	2.5	1578	0	73	0	1-1/8	Hard specular hematite.
3.4	8.6	5.2	1.4	898	7923	27	95	"	Medium-hard specular hematite.
8.6	13.8	5.2	.1	--	12749	2	—	7/8	Soft specular hematite.
13.8	18.8	5.0	2.0	550	2550	40	78	"	ditto
18.8	23.8	5.0	.1	--	5496	2	—	"	ditto
23.8	28.8	5.0	.1	--	3621	2	—	"	ditto
28.8	34.8	6.0	.0	0	3200	0	—	"	ditto
									END OF HOLE

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 2

Collar coordinates: Latitude, N. 6129; Departure, E. 12229
Collar Elevation: 806
Inclination: Vertical

FOOTAGE			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	3.0	3.0	0.3	--	9954	10	--	1-1/8	Hard specular hematite.
3.0	8.0	5.0	2.5	1076	6517	50	133	"	Hard specular hematite, some quartz.
8.0	13.0	5.0	2.5	1758	4765	50	61	"	Hard specular hematite.
13.0	18.0	5.0	.0	0	21230	0	--	"	Soft specular hematite.
18.0	23.0	5.0	.0	0	22556	0	--	"	ditto
23.0	28.0	5.0	.0	0	20059	0	--	"	ditto
28.0	30.0	2.0	.0	0	3649	0	--	"	ditto
30.0	35.0	5.0	.0	0	9677	0	--	7/8	ditto
35.0	40.0	5.0	.3	--	6499	6	--	"	Soft specular hematite from 35.0 to 39.5; hard, fractured specular hematite from 39.5 to 40.0.
40.0	42.0	2.0	.2	--	8376	10	--	"	Hard and fractured specular hematite.
									END OF HOLE

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 3

Collar corrdinates: Latitude, N. 6165; Departure, E. 12206
Collar elevation: 798
Inclination: Vertical

Footage			RECOVERIES					Core Diam.	
			Core		Sludge,	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	3.0	3.0	2.0	- -	- -	66-2/3	- - -	1-1/8	Chiefly quartz, slight specular hematite, no sample taken.
3.0	3.5	.5	.5	- -	- -	100	- - -	"	Same as 0.0 to 3.0, no sample taken.
3.5	8.5	5.0	3.5	1922	5395	70	94	"	Hard specular hematite, considerable quartz.
8.5	13.5	5.0	5.0	2758	4670	100	95	"	Hard specular hematite, considerable quarts.
13.5	18.5	5.0	.5	- -	13174	10	- - -	"	Soft specular hematite.
18.5	23.5	5.0	1.0	825	20836	20	196	"	Soft specular hematite from 18.5 to 22.0; hard specular hematite from 22.0 to 23.5.
23.5	27.5	4.0	.3	- -	6110	7-1/2	- - -	"	Specular hematite, badly fractured.
27.5	30.8	3.3	.2	- -	22425	6	- - -	1-1/8 to 29.5; 7/8 from 29.5 to 30.8	
30.8	39.2	8.4	1.2	- -	4233	14	- - -	7/8	Gouge, breccia and quartz, slight specular hematite, from 30.8 to 39.0; gneiss from 39.0 to 39.2

END OF HOLE

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 4

Collar coordinates: Latitude, N. 6255; Departure, E. 12475
Collar elevation: 851
Inclination: Vertical

Footage			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	6.8	6.8	0.7	- -	- -	10	- - -	1-1/8	Overburden, consisting of caliche and small specular hematite boulders.
6.8	11.7	4.9	2.2	1525	3427	44	42	"	Caliche, quartz, and specular hematite.
11.7	14.2	2.5	.0	0	4930	0	- - -	"	Specular hematite, considerable quartz.
14.2	16.7	2.5	.0	0	5422	0	- - -	"	Specular hematite, badly fractured.
16.7	21.7	5.0	.0	0	7262	0	- - -	7/8	Soft specular hematite, an occasional hard seam.
21.7	26.7	5.0	.0	0	24867	0	- - -	"	ditto
26.7	31.7	5.0	.0	0	16383	0	- - -	"	ditto
31.7	34.4	2.7	.0	0	21913	0	- - -	"	ditto
34.4	41.0	6.6	1.2	379	15576	18	269	"	ditto
41.0	47.0	6.0	1.0	305	23198	17	467	"	ditto
47.0	52.0	5.0	1.2	530	6976	24	117	"	Medium hard specular hematite, slight quartz.
52.0	54.0	2.0	.3	50	19467	15	- - -	"	Medium hard specular hematite.
54.0	59.0	5.0	.7	233	15250	14	331	"	Soft specular hematite, an occasional hard seam.
59.0	62.3	3.3	.0	0	27685	0	- - -	"	Soft specular hematite, twisted off bit at 62.3.

END OF HOLE

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 5

Collar coordinates: Latitude, N. 6343; Departure, E. 12736
Collar elevation: 859
Inclination: Vertical

Footage			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	3.6	3.6	0.0	0	--	0	--	1-1/8	Overburden, consisting of caliche, some specular hematite and quartz.
3.6	8.6	5.0	1.3	730	10535	26	149	"	Specular hematite, considerable quartz.
8.6	13.6	5.0	.7	215	7947	14	205	"	Specular hematite, ditto. and some chrysocolla.
13.6	18.6	5.0	.2	65	5650	4	129	"	Specular hematite, some quartz.
18.6	21.3	2.7	.0	0	2130	0	--	"	Specular hematite, considerable quartz.
21.3	28.2	6.9	.2	--	750	3	--	1-1/8 to 26.2; 7/8 from 26.2 to 28.2	Siliceous breccia and gouge, slight specular hematite.
28.2	32.3	4.1	1.4	293	3883	35	178	7/8	Specular hematite, considerable limestone, slight copper oxide.
32.3	38.0	5.7	2.3	450	3872	40	136	"	Limestone.
38.0	44.4	6.4	2.4	510	--	38	--	"	Limestone to 44.0; limonite and gouge from 44.0 to 44.4.
44.4	50.3	5.9	1.5	345	--	26	--	"	Limestone, badly fractured, considerable limonite.
50.3	52.1	1.8	1.7	432	--	94	--	"	Gneiss.

END OF HOLE

1257

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CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 6

Collar coordinates: Latitude, N. 6555; Departure, E. 13037
Collar elevation: 934
Inclination: Vertical

Footage			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	2.0	2.0	0.0	0	- -	0	- -	1-1/8	Overburden, caliche and specular hematite.
2.0	7.0	5.0	.0	0	8335	0	- -	"	Quartz and slight specular hematite.
7.0	12.0	5.0	.0	0	42193	0	- -	"	Soft specular hematite, slight quartz.
12.0	17.0	5.0	.0	0	21295	0	- -	"	ditto
17.0	19.4	2.4	.0	0	1450	0	- -	"	ditto
19.4	24.4	5.0	1.5	342	3900	30	129	7/8	Specular hematite and siliceous breccia.
24.4	29.4	5.0	1.2	517	4626	24	85	1-1/8	Siliceous breccia, slight specular hematite and copper oxides.
29.4	34.4	5.0	.0	0	14010	0	- -	"	Siliceous breccia, slight specular hematite, and copper oxides from 39.4 to 49.4.
34.4	39.4	5.0	.0	0	8540	0	- -	"	
39.4	44.4	5.0	.0	0	13905	0	- -	"	
44.4	49.4	5.0	.4	125	5820	8	140	"	
49.4	54.4	5.0	.3	109	10188	6	207	"	Soft specular hematite, some quartz.
54.4	59.4	5.0	1.5	917	8673	30	114	"	Hard and broken specular hematite.
59.4	64.4	5.0	3.1	1255	545	62	8	7/8	Hard, vuggy specular hematite.
64.4	68.1	3.7	1.0	275	1130	29	45	"	Hard, siliceous specular hematite.
68.1	72.1	4.0	1.0	207	2034	25	90	"	Siliceous breccia and gouge, slight specular hematite.
72.1	74.4	2.3	.2	22	750	9	- -	"	Siliceous breccia to 72.5; gneiss from 72.5 to 74.4.

END OF HOLE

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 7

Collar coordinates: Latitude, N. 6608; Departure, E. 13004
Collar elevation: 943
Inclination: Vertical

Footage			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	2.0	2.0	0.0	0	- -	0	- -	1-1/8	Overburden, gravel and caliche.
2.0	7.0	5.0	2.0	977	4093	40	67	"	Specular hematite with considerable quartz from 2.0 to 19.0.
7.0	12.0	5.0	1.0	418	5863	20	109	"	
12.0	15.6	3.6	.2	474	1006	34	30	"	
15.6	19.0	3.4	.2	72	5223	6	48	"	
19.0	24.0	5.0	.0	0	11,210	0	- -	"	Siliceous breccia and limonite, slight specular hematite, from 19.0 to 74.5.
24.0	29.0	5.0	.0	0	11,393	0	- -	"	
29.0	33.5	4.5	.0	0	7093	0	- -	"	
33.5	38.5	5.0	.0	0	5825	0	- -	"	
38.5	43.5	5.0	.0	0	4225	0	- -	"	
43.5	48.5	5.0	.0	0	11,835	0	- -	"	
48.5	53.5	5.0	.0	0	1439	0	- -	1-1/8 to 50.0 7/8 from 50.0 to 53.5	
53.5	58.5	5.0	.0	0	3933	0	- -	7/8	
58.5	64.5	6.0	.0	0	5978	0	- -	"	
64.5	69.5	5.0	.5	85	3250	10	135	"	
69.5	74.5	5.0	.0	0	9418	0	- -	"	
74.5	79.2	4.7	.8	235	4605	17	120	"	Specular hematite, considerable quartz and breccia.
79.2	84.6	5.4	1.0	278	3910	19	97	"	Hard specular hematite, fractured. Hole caved between 70.0 and 80.0 Abandoned at 84.6.

END OF HOLE.

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 8

Collar coordinates: Latitude, N. 6455; Departure, E. 13099
Collar elevation: 918
Inclination: Vertical

FOOTAGE			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	51.0	51.0	28.6	-	-	56	-	1-1/8 to 34.3 7/8 from 34.3 to 51.0.	Limestone, slight amount of chrysocolla.
51.0	56.0	5.0	1.5	-	-	30	-	7/8	Limestone to 51.3; gneiss from 51.3 to 56.0. END OF HOLE

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 9

Collar coordinates: Latitude, N. 6402; Departure, E. 12697
Collar elevation: 836
Inclination: Vertical

FOOTAGE								Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	2.0	2.0	0.0	-	-	0	-	1-1/8	Overburden, consisting of caliche and gravel.
2.0	6.5	4.5	.3	-	6160	7	-	7/8	Siliceous breccia, slight specular hematite, from 2.0 to 11.5.
6.5	11.5	5.0	.1	-	3621	2	-	"	
11.5	16.5	5.0	.0	0	3848	0	-	"	Specular hematite and considerable siliceous breccia and quartz, from 11.5 to 33.0.
16.5	21.5	5.0	.0	0	7515	0	-	"	
21.5	26.5	5.0	.1	-	7250	2	-	"	
26.5	31.5	5.0	.0	0	8155	0	-	"	
31.5	33.0	1.5	.0	0	2655	0	-	"	
33.0	37.3	4.3	.0	0	6550	0	-	"	Siliceous breccia, slight specular hematite.
37.3	40.0	2.7	1.5	-	3505	56	-	"	Siliceous breccia and gouge to 38.0; gneiss from 38.0 to 40.0. END OF HOLE.

CONDENSED LOG OF DIAMOND-DRILL HOLE NO. 10

Collar coordinates: Latitude, N. 6202; Departure, E. 12507
Elevation of collar: 865
Inclination: Vertical

FOOTAGE			RECOVERIES					Core Diam.	
			Core		Sludge	In Percent			
From	To	Feet	Feet	Grams	Grams	Core	Sludge	Ins.	Description and Remarks
0.0	3.0	3.0	0.0	0	-	0	- -	1-1/8	Overburden, consisting of caliche and talus.
3.0	13.3	10.3	.3	—	-	3	- -	"	Schist and quartz.
13.3	21.0	6.7	.5	146	10,415	7	184	"	Schist, quartz, and very slight specular hematite, from 13.3 to 30.0.
21.0	30.0	9.0	.3	105	11,480	3	119	"	
30.0	40.0	10.0	.1	--	-	1	- -	7/8	Schist and quartz.
40.0	43.0	3.0	.0	0	-	0	- -	"	Schist and quartz, very slight specular hematite.
43.0	48.0	5.0	1.4	376	1880	28	53	"	Very hard specular hematite, some quartz, from 43.0 to 57.0.
48.0	52.0	4.0	3.6	1380	3430	90	109	"	
52.0	57.0	5.0	4.0	1455	2500	80	64	"	
57.0	62.0	5.0	.4	97	3625	8	105	"	Soft specular hematite, slight quartz,
62.0	67.0	5.0	.0	0	3125	0	- -	"	from 57.0 to 67.0.
67.0	71.4	4.4	1.5	368	2028	34	72	"	Limestone, slight specular hematite.
71.4	78.9	7.5	3.1	--	-	41	- -	"	Limestone.
78.9	84.0	5.1	5.1	--	-	100	- -	"	Gneiss.

END OF HOLE.

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 1

Coordinates: Latitude, N. 6093; Departure, E. 12252
Elevation of collar: 803

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	3.4	3.4	48.55	0.010	29.27	0.028					48.55	0.010	29.27	0.028
3.4	8.6	5.2	48.17	.010			55.40	0.020	9.90	0.91	54.74	.019	9.90	.91
8.6	13.8	5.2					60.19	.014	8.16	.16	60.19	.014	8.14	.16
13.8	18.8	5.0	42.19	.003			55.91	.006	15.77	.072	53.96	.006	15.77	.072
18.8	23.8	5.0					59.80	.010	11.40	.026	59.80	.010	11.40	.026
23.8	28.8	5.0					56.12	.013	17.81	.028	56.12	.013	17.81	.028
28.8	34.8	6.0					64.71	.010	5.42	.036	64.71	.010	5.42	.036

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	P	Al_2O_3	CaO	P	Al_2O_3	CaO	P	Al_2O_3	CaO
0.0	3.4	3.4	0.034	0.30	0.69				0.034	0.30	0.69
3.4	8.6	5.2				0.025	1.01	3.45	.025	1.01	3.45
8.6	13.8	5.2				.020	.93	1.75	.020	.93	1.75
13.8	18.8	5.0				.020	.63	1.37	.020	.63	1.37
18.8	23.8	5.0				.015	.19	.83	.015	.19	.83
23.8	28.8	5.0				.035	.29	.48	.035	.29	.48
28.8	34.8	6.0				.038	.18	.66	.038	.18	.66

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 2

Coordinates: Latitude, N. 2169; Departure, E. 12229
Elevation of collar: 806

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	3.0	3.0					51.20	0.008	15.31	0.13	51.20	0.008	15.31	0.13
3.0	8.0	5.0	26.00	0.005			32.29	.043	40.20	.15	31.16	.036	40.20	.1[illegible]
8.0	13.0	5.0	56.70	.017			61.30	.013	10.13	.040	60.47	.014	10.13	.0[illegible]
13.0	18.0	5.0					65.74	.004	4.63	.056	65.74	.004	4.63	.0[illegible]
18.0	23.0	5.0					66.60	.003	4.02	.040	66.60	.003	4.02	.04[illegible]
23.0	28.0	5.0					64.25	.006	7.17	.020	64.25	.006	7.17	.0[illegible]
28.0	30.0	2.0					57.93	.009	13.34	.018	57.93	.009	13.34	.0[illegible]
30.0	35.0	5.0					55.00	.022	19.28	.022	55.00	.022	19.28	.0[illegible]
35.0	40.0	5.0					55.02	.025	19.98	.018	55.02	.025	19.98	.01[illegible]
40.0	42.0	2.0					66.30	.055	12.93	.046	66.30	.055	12.93	.04[illegible]

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	P	Al_2O_3	CaO	P	Al_2O_3	CaO	P	Al_2O_3	CaO
0.0	3.0	3.0				0.015	0.78	5.28	0.015	0.78	5.28
3.0	8.0	5.0									
8.0	13.0	5.0				.025	.41	.80	.025	.41	.80
13.0	18.0	5.0				.021	.31	.42	.021	.31	.42
18.0	23.0	5.0				.012	.24	.15	.012	.24	.15
23.0	28.0	5.0				.010	.40	.39	.010	.40	.39
28.0	30.0	2.0				.024	.14	1.46	.024	.14	1.46
30.0	35.0	5.0				.033	.59	1.12	.033	.59	1.12
35.0	40.0	5.0				.020	.40	1.16	.020	.40	1.16
40.0	42.0	2.0				.012	.36	.23	.012	.36	.23

DIAMOND-DRILL-HOLE ASSAY VALUES

Hole No. 3

Coordinates: Latitude, N. 6165; Departure, E. 12206
Elevation of collar: 798

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	3.5	3.5												
3.5	8.5	5.0	20.50	0.010			37.48	0.036			33.57	0.024		
8.5	13.5	5.0	22.32	.002			53.07	.009	22.52	0.008	22.32	.002	22.52	0.008
13.5	18.5	5.0					67.82	.013	1.16	.030	67.82	.013	1.16	.030
18.5	23.5	5.0	53.84	.008			66.46	.005	3.38	.054	65.55	.005	3.38	.054
23.5	27.5	4.0					65.60	.021	4.38	.066	65.60	.021	4.38	.066
27.5	30.8	3.3					65.12	.019	5.10	.056	65.12	.019	5.10	.056
30.8	39.2	8.4												

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	P	Al_2O_3	CaO	P	Al_2O_3	CaO	P	Al_2O_3	CaO
0.0	3.5	3.5									
3.5	8.5	5.0									
8.5	13.5	5.0				0.017	0.43	0.22	0.017	0.43	0.22
13.5	18.5	5.0				.026	.36	.32	.026	.36	.32
18.5	23.5	5.0				.018	.38	.18	.018	.38	.18
23.5	27.5	5.0				.032	.33	.21	.032	.33	.21
27.5	30.8	3.3				.017	.17	.61	.017	.17	.61
30.8	39.2	8.4									

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 4

Coordinates: Latitude, N. 6255; Departure, E. 12475
Elevation of collar: 851

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	6.8	6.8												
6.8	11.7	4.9	36.81	0.221			21.34	0.421			22.78	0.390		
11.7	14.2	2.5					36.41	.274	37.08		36.41	.274	37.08	
14.2	16.7	2.5					60.00	.085	8.69	0.092	60.00	.085	8.69	0.092
16.7	21.7	5.0					61.90	.030	8.14	.099	61.90	.030	8.14	.099
21.7	26.7	5.0					59.71	.021	11.95	.10	59.71	.021	11.95	.10
26.7	31.7	5.0					61.40	.089	9.79		61.40	.089	9.79	
31.7	34.4	2.7					63.13	.001	6.36	.074	63.13	.001	6.36	.074
34.4	41.0	6.6	46.38	.009	32.54		58.04	.019	11.75	.008	57.29	.018	13.08	.008
41.0	47.0	6.0	37.71	.010	44.80		66.87	.004	2.59	.010	65.12	.004	5.12	.010
47.0	52.0	5.0	53.31	.001	22.39		59.88	.004	3.76	.092	58.60	.004	5.34	.092
52.0	54.0	2.0					67.25	.002	1.59	.040	67.25	.002	1.59	.040
54.0	59.0	5.0	50.72	.003	26.25	0.060	65.18	.009	2.10	.079	64.46	.009	3.31	.078
59.0	62.3	3.3					65.02	.026	3.06	.075	65.02	.026	3.06	.75

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	P	Al_2O_3	CaO	P	Al_2O_3	CaO	P	Al_2O_3	CaO
0.0	6.8	6.8									
6.8	11.7	4.9									
11.7	14.2	2.5				0.024	0.98	1.66	0.024	0.98	1.66
14.2	16.7	2.5				.023	0.76	1.13	.023	.76	1.13
16.7	21.7	5.0				.018	0.83	1.05	.018	.83	1.05
21.7	26.7	5.0									
26.7	31.7	5.0				.023			.023		
31.7	34.4	2.7				.019	1.60	1.89	.019	1.60	1.89
34.4	41.0	6.6	0.019			.007	.45	.62	.007	.45	.62
41.0	47.0	6.0				.011	3.88	4.25	.011	3.57	3.92
47.0	52.0	5.0	.010	0.25	0.36	.008	.61	.85	.008	.61	.85
52.0	54.0	2.0				.009	1.19	1.81	.013	1.14	1.73
54.0	59.0	5.0	.015	.27	.32	.013	1.23	1.38	.013	1.23	1.38
59.0	62.3	3.3									

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 5

Coordinates: Latitude, N. 6343; Departure, E. 12736
Elevation of collar: 859

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO2	S	Fe	Cu	SiO_2	S
0.0	3.6	3.6												
3.6	8.6	5.0	54.00	0.003	15.94	0.037	35.67	0.029			37.39	0.010		0.037
8.6	13.6	5.0	55.82	.31	9.97	1.26	49.24	.011	24.22	0.32	49.57	.019	23.51	.37
13.6	18.6	5.0					53.24	.018	19.33	.091	53.24	.018	19.33	.091
18.6	21.3	2.7					40.52	.051	33.63	.24	40.52	.051		.24
21.3	28.2	6.9												
28.2	32.3	4.1	8.55	1.70			47.70	.49			42.69	.645		

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	P	Al_2O_3	CaO	P	Al_2O_3	CaO	P	Al_2O_3	CaO
0.0	3.6	3.6									
3.6	8.6	5.0	0.055						0.055		
8.6	13.6	5.0	.053			0.071			.060		
13.6	18.6	5.0				.061			.061		
18.6	21.3	2.7				.115			.115		
21.3	28.2	6.9									
28.2	32.3	4.1									

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 6

Coordinates: Latitude, N. 6555; Departure, E. 13037
Elevation of collar: 934

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	2.0	2.0												
2.0	7.0	5.0					25.38	0.028			25.38	0.028		
7.0	12.0	5.0					61.06	.016	10.43	0.036	61.06	.016	10.43	0.036
12.0	17.0	5.0					61.04	.002	10.64	.032	61.04	.002	10.64	.032
17.0	19.4	2.4					60.95	.002	10.93	.028	60.95	.002	10.93	.028
19.4	24.4	5.0	37.88	0.009			24.00	.008			25.48	.008		
24.4	29.4	5.0	9.48	.141			20.00	.246			19.10	.237		
29.4	34.4	5.0					9.29	.062			9.29	.062		
34.4	39.4	5.0					7.67	.133			7.67	.133		
39.4	44.4	5.0					7.23	.270			7.23	.270		
44.4	49.4	5.0					10.66	.76			10.66	.76		
49.4	54.4	5.0					47.93	.157	22.11	.28	47.93	.157	22.11	.28
54.4	59.4	5.0	67.37	.049	1.07	0.13	56.29	.285	10.88	.37	57.49	.259	9.82	.34
59.4	64.4	5.0	68.03	.060	.65	.044	65.04	.144	3.39	.16	65.69	.126	2.79	.13
64.4	68.1	3.7	42.26	.097	36.82	.20	54.19	.169	17.82	.12	52.96	.153	19.64	.13
68.1	72.1	4.0	19.80	.093			19.38	.150			19.42	.145		
72.1	74.4	2.3					16.72	.087			16.72	.087		

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	P	Al_2O_3	CaO	P	Al_2O_3	CaO	P	Al_2O_3	CaO
0.0	7.0	7.0									
7.0	12.0	5.0				0.023	0.48	0.64	0.023	0.48	0.64
12.0	17.0	5.0				.026	.38	.48	.026	.38	.48
17.0	19.4	2.4				.023	.57	.45	.023	.57	.45
19.4	49.4	30.0									
49.4	54.4	5.0				.048	4.01	.62	.048	4.01	.62
54.4	59.4	5.0	0.098	0.46	0.11	.098	2.98	.91	.098	2.71	.82
59.4	64.4	5.0	.173	.24	.39	.094	.76	.46	.111	.65	.44
64.4	68.1	3.7	.091			.141	.97	.90	.135		
68.1	74.4	6.3									

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DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 7

Coordinates: Latitude, N. 6608; Departure, E. 13004
Elevation of collar:

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	2.0	2.0												
2.0	7.0	5.0	38.42	0.036)			30.62	0.042)(2)			31.74	0.040)(3)		
7.0	12.0	5.0	48.91	.062)(1)	36.61		36.06	.083)	39.27		38.33	.078)	39.03	
12.0	15.6	3.6	36.09	.030)			27.13	.065)		0.28	28.32	.061)		0.28
15.6	19.0	3.4					36.09	.089		.11	36.09	.089		.11
19.0	24.0	5.0					19.20	.121			19.20	.121		
24.0	29.0	5.0					11.20	.089			11.20	.089		
29.0	33.5	4.5					12.13	.091			12.13	.091		
33.5	38.5	5.0					17.88	.065			17.88	.065		
38.5	43.5	5.0					12.40	.128			12.40	.128		
43.5	48.5	5.0					10.82	.108			10.82	.108		
48.5	53.5	5.0					8.36	.72			8.36	.72		
53.5	58.5	5.0					6.33	.68			6.33	.68		
58.5	64.5	6.0					9.28	.41			9.28	.41		
64.5	69.5	5.0					12.20	.026			12.20	.026		
69.5	74.5	5.0					10.63	.074			10.63	.074		
74.5	79.2	4.7	29.80	.036	39.14		37.49	.074	32.12		37.03	.072	32.54	
79.2	84.6	5.4	26.87	.011	42.03		61.70	.066	9.47	.054	59.36	.062	11.65	

(1) Composite sample from 2.0 feet to 15.6 feet.
(2) " " " 2.0 feet to 19.0 feet.
(3) " " " 2.0 feet to 19.0 feet.

S.I. 3982

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 9

Coordinates: Latitude, N. 6402; Departure, E. 12679
Elevation of collar: 836

FOOTAGE			CORE Percent			SLUDGE Percent			ADJUSTED AVERAGES Percent		
From	To	Feet	Fe	Cu	SiO_2	Fe	Cu	SiO_2	Fe	Cu	SiO_2
0.0	2.0	2.0									
2.0	6.5	4.5				12.77	0.100		12.77	0.100	
6.5	11.5	5.0				17.05	.78		17.05	.78	
11.5	16.5	5.0				27.21	.094		27.21	.094	
16.5	21.5	5.0				34.49	.098		34.49	.098	
21.5	26.5	5.0				40.68	.097	35.06	40.68	.097	35.06
26.5	31.5	5.0				29.32	.011		29.32	.011	
31.5	33.0	1.5				23.72	.017		23.72	.017	
33.0	37.3	4.3				16.85	.36		16.85	.36	
37.3	40.0	2.7				15.45	.45		15.45	.45	

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R.I. 3982

DIAMOND-DRILL-HOLE ASSAY VALUES

HOLE NO. 10

Coordinates: Latitude, N. 6202; Departure, E. 12507
Elevation of collar: 865

FOOTAGE			CORE Percent				SLUDGE Percent				ADJUSTED AVERAGES Percent			
From	To	Feet	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S	Fe	Cu	SiO_2	S
0.0	13.3	13.3												
13.3	21.0	6.7	16.38	0.32										
21.0	30.0	9.0	29.23	.225			5.40	0.149			5.67	0.152		
30.0	43.0	13.0					7.45	.104			7.72	.105		
43.0	48.0	5.0	44.59	.017	33.46	0.072	37.20	.119	35.43		37.93	.109	35.23	
48.0	52.0	4.0	51.62	.070	20.25	.040	49.58	.202		0.044	50.23	.160	20.25	0.043
52.0	57.0	5.0	53.07	.065	16.66	.085	49.74	.050	22.24	.016	50.68	.054	20.66	.036
57.0	62.0	5.0	59.21	.043	8.72	.026	54.70	.022	18.85	.008	54.82	.023	16.01	.009
62.0	67.0	5.0					58.01	.087	11.74	.100	58.01	.087	11.74	.100
67.0	71.4	4.4	18.47	1.52			17.50	.82			17.61	.090		
71.4	84.0	12.6												

FOOTAGE			CORE Percent	SLUDGE Percent	ADJUSTED AVERAGES Percent
From	To	Feet	P	P	P
0.0	13.3	13.3			
13.3	21.0	6.7			
21.0	30.0	9.0			
30.0	43.0	13.0			
43.0	48.0	5.0	0.016		
48.0	52.0	4.0	.011		
52.0	57.0	5.0	.014	0.034	0.024
57.0	62.0	5.0	.013	.013	.013
				.011	.011
67.0	71.4	4.4			
71.4	84.0	12.6		.036	.036

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ANALYSIS OF SAMPLES [illegible] EAST OF PLANET WASH

Location: North 33° west of D.D. Hole No. 7 (fig. 10)

Sample No.	Length, feet	Analysis - Percent Fe	Cu	SiO_2	S	P	CaO	Al_2O_3
4772	10.0	44.10	0.067					
4773	5.9	45.18	.050					
4774	3.7	50.0	.035	23.34	0.14	0.048	1.61	0.79
4775	6.4	46.58	.046					
4776	7.1	17.51	.034					
4777	6.4	43.52	.012					
4778	3.4	14.33	.020					
4779	3.1	23.44	.050					
4780	4.5	24.85	.018					
4781	5.0	19.28	.022					
4782	3.4	19.01	.030					
4783	4.7	23.92	.028					
4784	6.8	49.88	.010	24.09				
4785	8.7	55.60	.008	17.00	.15	.082	7.07	.40
4786	2.6	16.02	.020					

Location: North 33° west of D.D. Hole No. 4 (fig. 8).

Sample No.	Length, feet	Analysis-percent Fe	Cu
4787	9.4	49.53	0.003
4788	7.1	38.43	.007
4789	1.8	44.17	.002
4790	9.8	36.73	.004
4791	6.4	42.88	.004
4792	6.0	47.85	.008
4793	5.7	27.73	.006
4794	3.8	7.95	.010

Location: North 33° west of D.D. Hole No. 3. (fig. 7).

Sample No.	Length, feet	Analysis - Percent Fe	Cu	SiO_2	S	P	CaO	Al_2O_3
4795	5.0	62.50	0.061	2.13	0.51	0.093	2.11	0.38
4796	7.7	56.45	.033	4.37	.010	.073	6.02	.46
4797	5.9	55.86	.022	4.88	.058	.069	7.07	.40
4798	4.2	48.94	.019	14.24	.010			
4799	4.2	50.53	.009	7.66		.087	9.82	.71
4800	4.7	36.55	.008					
4573	2.6	31.60	.012					
4574	1.5	45.60	.026					

ECONOMIC CONSIDERATIONS

Markets. - The nearest market for iron ore is the steel plant of the Kaiser Co. at Fontana, Calif. This plant is situated 290 miles by rail from Bouse, Ariz., the nearest shipping point.

Buildings and Equipment. - There are no useful buildings or equipment at the property.

Water. - The Bill Williams River is approximately half a mile north of the property. At this point it has a permanent flow. Sufficient water for mining operations can be obtained from the river or by sinking one or more shallow wells in the wash.

Power. - By constructing approximately 20 miles of line, hydro-electric power, originating at Parker Dam on the Colorado River could be utilized.

Transportation. - The deposit is 28 miles from Bouse by road. It is estimated by engineers of the Santa Fe Railway that a railroad from Bouse to the mine would be about 30 miles long and would cost about $40,000 a mile, or $1,200,000 to build.

The present road from Bouse to the property consists of 18 miles of nearly level, graded, unsurfaced county road in poor condition and 10 miles of unimproved desert road with many sharp curves and steep grades. This road could be made serviceable for hauling ore by rebuilding the 10 miles from the property to the county road and improving the 18 miles of county road to Bouse.