SUPPLEMENT I

REPORT ON PRELIMINARY DRILLING

OF

SILVER CHORD VEIN

by

Fred S. Haley

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Report For

UNITED STATES MANGANESE CORPORATION

on

PRELIMINARY DRILLING

of

SILVER CHORD VEIN

Picayune Basin, San Juan Co., Colo.

by

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Albuquerque, New Mexico

November 18, 1957

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SUMMARY

A small drilling program was conducted in the fall of 1957 on United States Manganese Corporation property in San Juan Co., Colorado, as a preliminary step in evaluation of rhodonite reserves. Six widely spaced diamond drill holes, totaling 1422 feet, were drilled through the Silver Chord vein, intersecting it about 200 feet below its outcrop.

The vein is a wide, stranded quartz vein containing important quantities of rhodonite, calcite and rhodochrosite (?). It occurs in the Pyroxene andesite member of the Silverton volcanic series, of Tertiary age.

Five of the six holes intersected good widths of better than 10% manganese ore and the sixth hole was submarginal but well mineralized. While no ore can be considered to have been proven by these few, widely spaced holes, it is estimated that there is a potential of 1,000,000 tons of better than 10% Mn ore to a depth of 400 feet below the surface. Several thousand feet more drilling will be necessary to prove whether this amount of ore does occur within the part of the vein in which these six holes were drilled.

In September and October, 1957, the United States Manganese Corporation drilled six diamond drill holes, totaling 1422 feet, on its property in Picayune Basin, Eureka Mining District, San Juan County, Colorado. The drilling was a preliminary step in evaluation of rhodonite reserves. The six holes were spread out over nearly 2,500 feet strike length of the Silver Chord Vein, penetrating the vein from 175 feet to 215 feet below its outcrop. Their positions are shown on the accompanying plan map, and a cross section of each hole is attached at the end of this report.

PROPERTY

Drilling was conducted only on part of the Silver Chord Vein on three patented mining claims: The Silver Lion (Sur. No. 922), The Jennie R (Sur. No. 2331) and the Silver Chord (Sur. No. 2103). No work was done on any of the other rhodonite bearing veins on U. S. Manganese property.

GEOLOGY

The area of known rhodonite occurrence on Great Divide property is within and near the eastern end of the Silverton Caldera, a large down-dropped block within the Tertiary volcanic flows. The veins traverse steep glaciated slopes of great relief at elevations of 11,600 to 12,700 feet in Picayune Basin and on Treasure Mountain.

The rocks cut by the veins are nearly flat lying volcanic extrusives of Tertiary age. At surface the rock is Pyroxene andesite and below it is the Burns latite, both of which are known to be favorable host rocks at other mines in the district. The Burns latite is

known to occur below 10,000 feet elevation in the Animas Canyon at the south end of the property.

The veins are the typical stranded San Juan veins occupying fault structures, some of which appear to have considerable displacement. At least the larger ones, therefore, may be assumed to persist to considerable depths. They are quartz veins with important quantities of rhodonite, calcite and rhodochrosite (?), and minor sulfide minerals. The accompanying plan map, showing the geology of the Silver Chord Vein on its outcrop, illustrates the complexity of the veins and shows how mineral content of the veins can change in relatively short distances along the strike.

Two vein systems occur in the area, a northeasterly striking system and a younger, northwesterly striking system which offsets the northeasterly striking veins. The northeasterly striking veins appear to be the larger and better mineralized, although rhodonite also occurs in the northwesterly striking veins.

The ore minerals were almost entirely deposited in open fissures, with relatively minor replacement of wall rock, but the wall rock adjacent to the veins has been intensely silicified and bleached. In general the walls are hard and can be expected to stand well during mining.

There are not enough good exposures in these veins to make it possible to draw conclusions about sequence of mineralization, but the mineralization appears to be similar to that in the veins at the nearby Sunnyside mine. There, vein filling obviously extended over a long period of time with repeated and overlapping deposition of the various minerals. Rhodonite is found cutting earlier quartz and quartz is found cutting rhodonite. In places quartz and rhodonite are intermixed, sometimes coarsely and sometimes intimately. In places there is

a gradation within a large band from nearly pure rhodonite to nearly pure quartz. In general most of the sulfide mineralization seems to be earlier than the bulk of the rhodonite, but there are numerous occurrences of sulfide bands cutting rhodonite and of sulfides disseminated in the rhodonite. There is some, but not conclusive, evidence that much of the gold and silver was deposited at a late stage in the mineralization of the veins.

The question of continuity of rhodonite mineralization in depth in these veins is probably one of mechanics rather than anything else. Deep development in recent years in the San Juan area has demonstrated that sulfide mineralization extends downward to below 9,000 feet elevation in the larger and stronger veins. There is no reason to believe that rhodonite should not extend at least as deep as the sulfides. In fact, theoretically at least, the rhodonite could probably be expected to extend deeper than the sulfides. The question is whether the veins themselves persist in depth and whether they were opened at the time of rhodonite deposition. The fact that the Scotia vein, which is the northeastward continuation of the Silver Chord vein, is as wide on the Sandiago Tunnel level (700 ft. below outcrop) as it is at the surface augers well for the persistance of at least the larger veins in depth. Some of the smaller veins, particularly those striking northwesterly, will very likely diminish in width as they go deeper. The rhodonite content of the veins in depth can only be ascertained by exploration, but I know of no geological reason to assume that it should be greatly different than it is near the surface. Of course these veins are not uniformly mineralized, as the geological map of the outcrop so clearly shows, so variations in rhodonite content along both strike and dip are to be expected.

DRILL HOLES

The accompanying plan map shows the positions of the drill holes. Holes No. 1 through 5 were spaced 395 feet to 465 feet apart along the strike of the vein and Hole No. 6 was 800 feet from Hole No. 5.

Holes No. 1, 2, 3, and 4 were drilled Ax size (1 1/8" core) through the vein, and Holes No. 5 and 6 were drilled Bx size (1 5/8" core) through the vein. Core recovery in the vein was very good in Holes No. 1, 2, 4 and 6 (89% to 95%), but in Holes No. 3 and 5 it was 64% and 69% due in part to spongy vein material and to clayey gouge. It is believed that core recovery can be improved in future drilling by the use of series D core barrels.

Core from the veins was split, one half being sent to Root & Norton in Durango, Colorado, for assay and the other half retained for possible future use. Assays are tabulated on pages i to vi in the appendix.

ORE RESERVES

Results of the drilling were highly encouraging but no ore can be considered to have been proven by the drilling because too few holes were drilled and they were too widely spaced. But five of the six holes drilled intersected good thicknesses of better than 10% Mn ore and the sixth hole intersected 11.0 feet of 7.3% Mn. This high ratio of success certainly suggests that a substantial tonnage of ore occurs in the vein.

Tonnage

Calculation of inferred or potential ore in the vein from this limited amount of drilling is useful if it is clearly understood that the purpose is only to show the possible magnitude of ore tonnage that

further work might prove to exist. With this purpose in mind the following assumptions are made: (1) 10% Mn is commercial grade ore; (2) the ore extends along strike from 100 ft. southwest of Hole No. 1 to 100 ft. northeast of Hole No. 5, a distance of 1,865 ft.; (3) because these five holes intersect the vein from 175 ft. to 215 ft. below its outcrop, it is reasonable to infer that more or less similar conditions exist to 400 ft. down dip from the outcrop; (4) two thirds of the volume included within the assumed strike and dip lengths will be ore. This will be commented on later.

Weighting drill hole average assays by true width and by strike length of influence, the following potential is estimated.

POTENTIAL ORE

Tons	Ave. True Width (ft.)	% Mn	% SiO_2	% Ignition Loss	% CaO
1,000,000	28 ft.	11.3*	36.4	12.1	19.2

This estimated tonnage does not include anything in the northeasterly 1,000 ft. of the vein shown on the accompanying geologic map, nor anything in the vein outside the mapped portion, either to southwest or northeast. The northeasterly 1,000 ft. of the vein on the map is penetrated only by Hole No. 6, which encountered 11.0 ft. of 7.3% Mn. That is below the grade (10% Mn) assumed to be ore, but one hole in more than 1,000 ft. of vein certainly does not prove that no commercial ore occurs there, particularly when the vein in that one hole is strong and well mineralized. The vein does not appear on surface to contain as much rhodonite northeast of Hole No. 5 as it does to the southwest, but outcrop exposures there are not good and manganese mineralization in Hole No. 6 is better than surface exposures indicate. There is a

*Average of drill hole samples. See comments under "Grade" on Page 8.

good possibility, therefore, that a substantial tonnage of ore will be found northeast of Hole No. 5 by further work. If the ore were assumed to extend to 100 ft. northeast of Hole No. 6 and the 11.0 ft. of 7.3% Mn were averaged with the other vein intercepts, potential tonnage would be 1,300,000 tons with an average true width of 24.7 ft. and 10.7% Mn, 39.2% SiO_2, 11.8% ignition loss and 18.1% CaO.

These estimates do not consider possibilities in other veins such as the one encountered in Hole No. 2 where 11.5 ft. from 131' to 142.5' averaged 11.5% Mn, and in Hole No. 4 where 13.5 ft. from 19.0' to 35.5' averaged 6.1% Mn. Additional mapping and drilling may lead to discovery of important tonnages in these and other similarly unexposed veins, as well as in other veins on the property which are known to contain rhodonite.

In the foregoing calculations it is assumed that two thirds of the assumed volume may be found to contain ore. The two thirds figure is wholly arbitrary and a matter of opinion, but there are two reasons for reducing the assumed volume (strike x dip x width) by some such figure. One is that instead of the manganese minerals being uniformly distributed throughout the vein, economic concentrations of mineralization (ore shoots) of varying size and geometric shape would be expected even if the vein itself were continuous and uninterrupted along both its strike and dip. The second reason is that, as the geologic map shows the vein is obviously interrupted and offset by northerly and northwesterly striking structures. These structures appear to have influenced deposition, but surface exposures are not good enough to reveal how or how much.

Grade

The grade arrived at in the calculation of potential tonnage on page 6, is simply an average of the drill hole samples. It does not purport to be representative of all the ore that may be found in the vein. These are far too few holes to establish even a tentative average grade. As can be seen from the variation in rhodonite content on the outcrop, much closer spaced drilling would be necessary to approach an average. In fact, after a large enough tonnage has been fairly well indicated by drilling, it will probably be necessary to do some underground work to check both grade and tonnage before any large scale operation can be definitely decided upon.

In the six holes drilled to date the assays of the core consistently show higher manganese content than would be expected from visual estimation of the rhodonite content. This seems to be attributable to a cream to buff colored mineral very similar to calcite in appearance. I do not know what the mineral is, but it appears to be a carbonate. Dr. Sheer has taken some pieces of core on which to have microscopic and X-ray diffraction work done in an effort to determine what form the manganese is in.

Averages of the assays for each hole are as follows (individual assays are tabulated on pages i to vi in the appendix):

Hole No.	Ft. in Hole	True Width (Ft.)	% Mn	% SiO_2	% Ignition Loss	% CaO
1	22.5	21.9	10.9	31.0	12.3	22.2
2	14.2	13.0	14.1	29.0	7.6	14.2
3	31.0	30.6	10.3	32.6	9.8	15.1
4	49.7	46.4	12.5	35.9	16.5	26.8
5	29.0	27.6	8.9	52.1	9.0	9.8
6	11.0	10.5	7.3	48.7	13.3	20.1

There are small amounts of gold, silver, lead and zinc in the Silver Chord vein. It is to be expected that occasional shoots of fairly good ores of these metals will be found in mining rhodonite, but the available evidence, derived from mapping the outcrop and from the drill holes, indicates that they will probably not contribute much to the profits from any operation.

CONCLUSIONS

This preliminary drilling has been very encouraging as far as potential tonnage is concerned. More rhodonite was found in the drill holes than could be inferred from examination of the outcrops; the reason being that the manganese bearing minerals on the outcrop break down under weathering more readily than does the quartz, and so tend to be covered by alluvium while the barren quartz stands up to form the bold outcrops.

If 10% Mn ore can be mined and treated profitably there appears to be a possibility of developing considerable tonnage on property owned by U. S. Manganese. These six holes were drilled on what seems, from the outcrops, to be the most heavily mineralized part of the Silver Chord vein and, while I have not studied any of the other veins on U. S. Manganese property in detail and have not even seen some of them, it is my distinct impression, based on knowledge of the district, that the Silver Chord is the strongest and most heavily mineralized vein in the immediate area. Therefore it is not likely that the same ratio of success in finding good widths and grade of rhodonite in successive, wide spaced holes can be expected when the other veins are drilled. This does not mean that rhodonite ore will not be found in the other veins, but

that larger areas in them will have to be explored to find equivalent potential tonnages. For this reason, and for others arising from my past experience in the district, it is my opinion that in order to develop very large tonnage it will be necessary to acquire the nearby and adjoining properties held by the United States Smelting Refining and Mining Company, Treasure Mountain Gold Mining Company, and by Mr. Ray Bennet and associates. Extensive exploration and development programs will be necessary on all of these properties as well as on U. S. Manganese properties.

Fred S. Haley

Fred S. Haley

November 18, 1957

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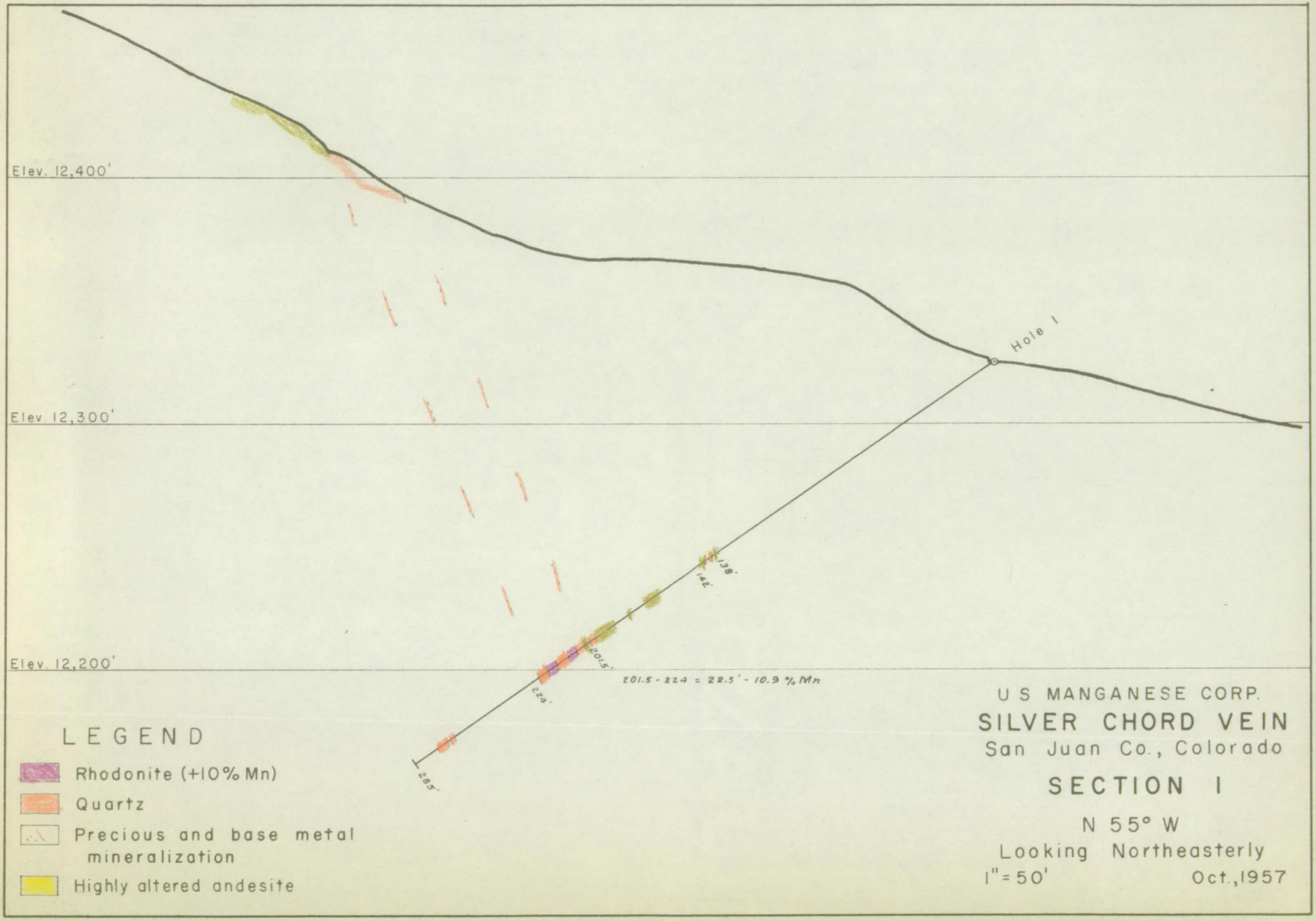
APPENDIX


Elev. 12,400'
Elev. 12,300'
Elev. 12,200'
Hole 1
138'
142'
201.5'
224'
285'
201.5 - 224 = 22.5' - 10.9 % Mn
LEGEND
Rhodonite (+10% Mn)
Quartz
Precious and base metal mineralization
Highly altered andesite
U S MANGANESE CORP.
SILVER CHORD VEIN
San Juan Co., Colorado
SECTION I
N 55° W
Looking Northeasterly
1" = 50'
Oct., 1957

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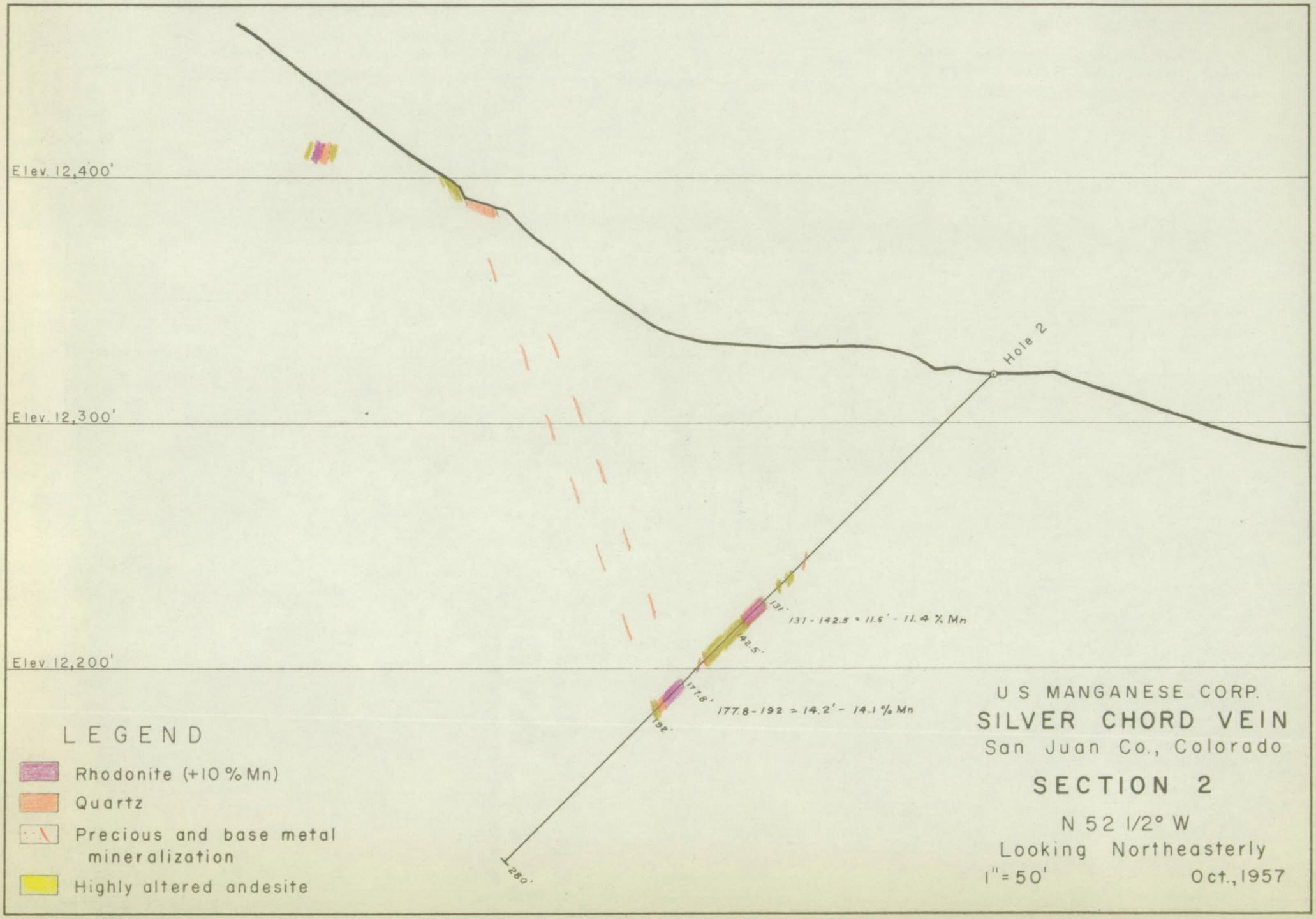
Elev. 12,400'
Elev. 12,300'
Elev. 12,200'
Hole 2
131'
131 - 142.5 = 11.5' - 11.4 % Mn
142.5'
177.8'
177.8 - 192 = 14.2' - 14.1 % Mn
192'
280'
LEGEND
Rhodonite (+10 % Mn)
Quartz
Precious and base metal mineralization
Highly altered andesite
U S MANGANESE CORP.
SILVER CHORD VEIN
San Juan Co., Colorado
SECTION 2
N 52 1/2° W
Looking Northeasterly
1" = 50'
Oct., 1957

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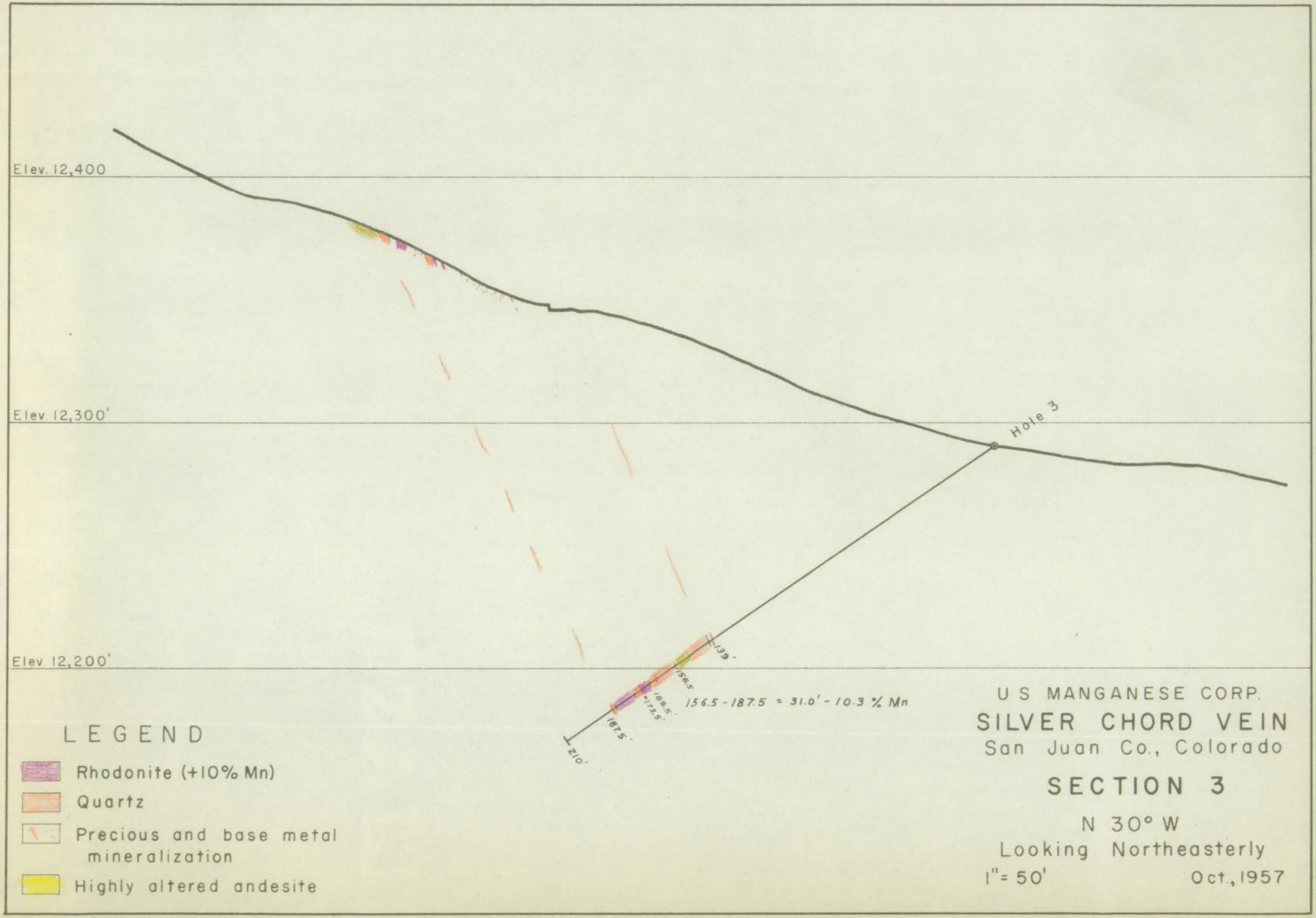
Elev. 12,400
Elev. 12,300'
Elev. 12,200'
Hole 3
139'
156.5
168.5'
173.5'
187.5'
210'
156.5 - 187.5 = 31.0' - 10.3 % Mn
LEGEND
Rhodonite (+10% Mn)
Quartz
Precious and base metal mineralization
Highly altered andesite
U S MANGANESE CORP.
SILVER CHORD VEIN
San Juan Co., Colorado
SECTION 3
N 30° W
Looking Northeasterly
1" = 50'
Oct., 1957

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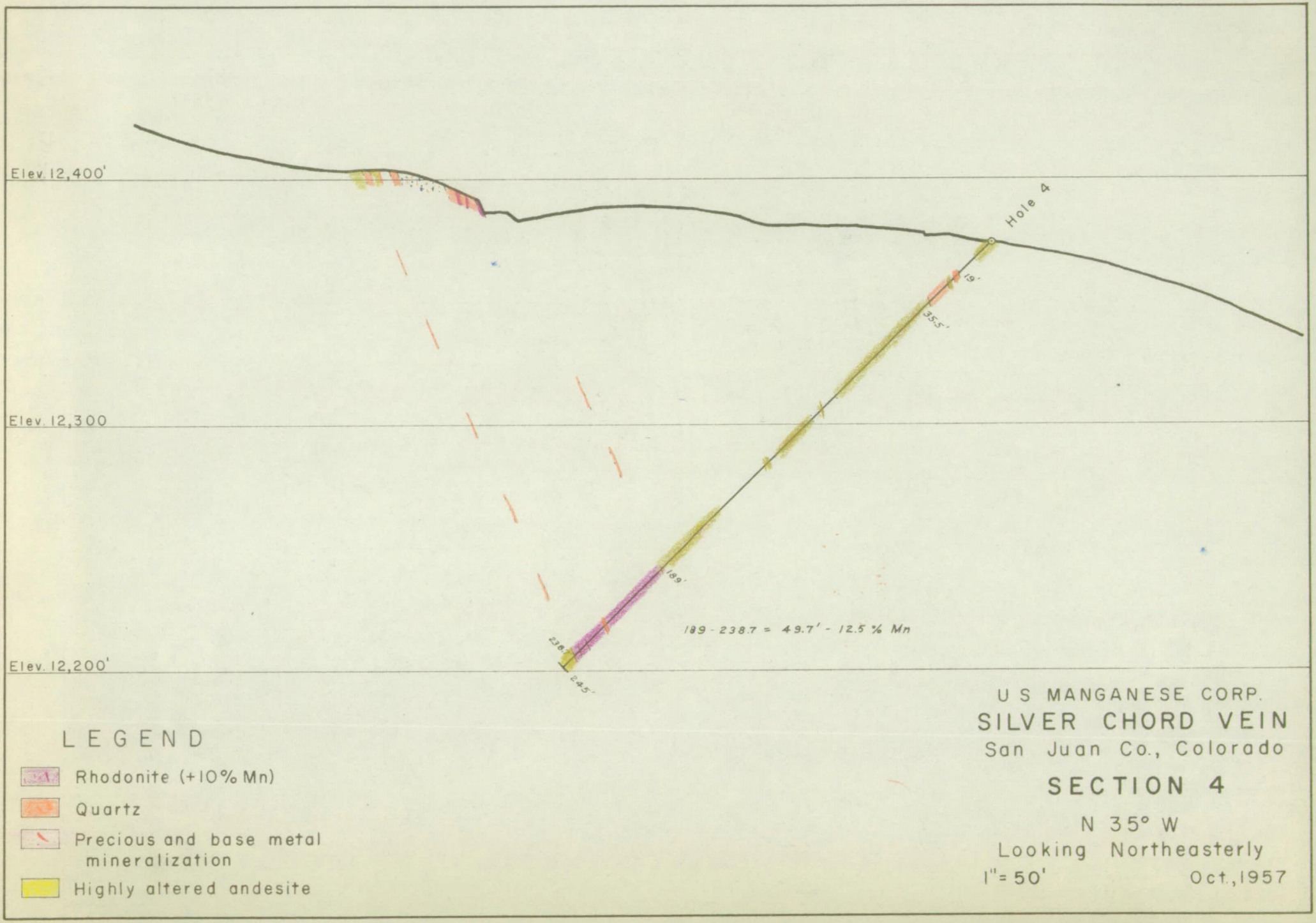
Elev. 12,400'
Elev. 12,300
Elev. 12,200'
Hole 4
19'
35.5'
189'
238.7
245'
189 - 238.7 = 49.7' - 12.5 % Mn
LEGEND
Rhodonite (+10% Mn)
Quartz
Precious and base metal mineralization
Highly altered andesite
U S MANGANESE CORP.
SILVER CHORD VEIN
San Juan Co., Colorado
SECTION 4
N 35° W
Looking Northeasterly
1" = 50'
Oct., 1957

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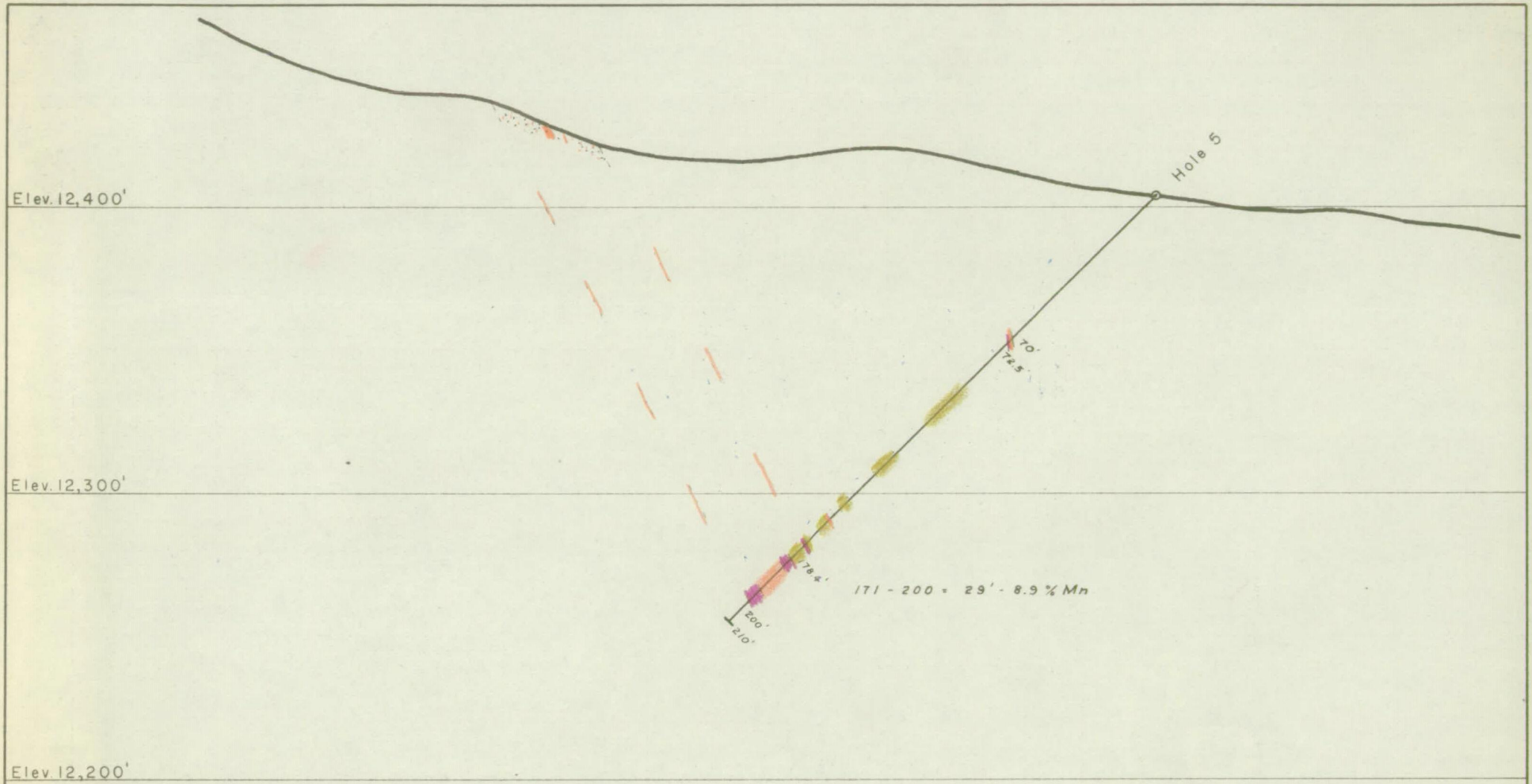

LEGEND

- Rhodonite (+10% Mn)
- Quartz
- Precious and base metal mineralization
- Highly altered andesite

U S MANGANESE CORP.

SILVER CHORD VEIN

San Juan Co., Colorado

SECTION 5

N 50° W

Looking Northeasterly

1" = 50'

Oct., 1957

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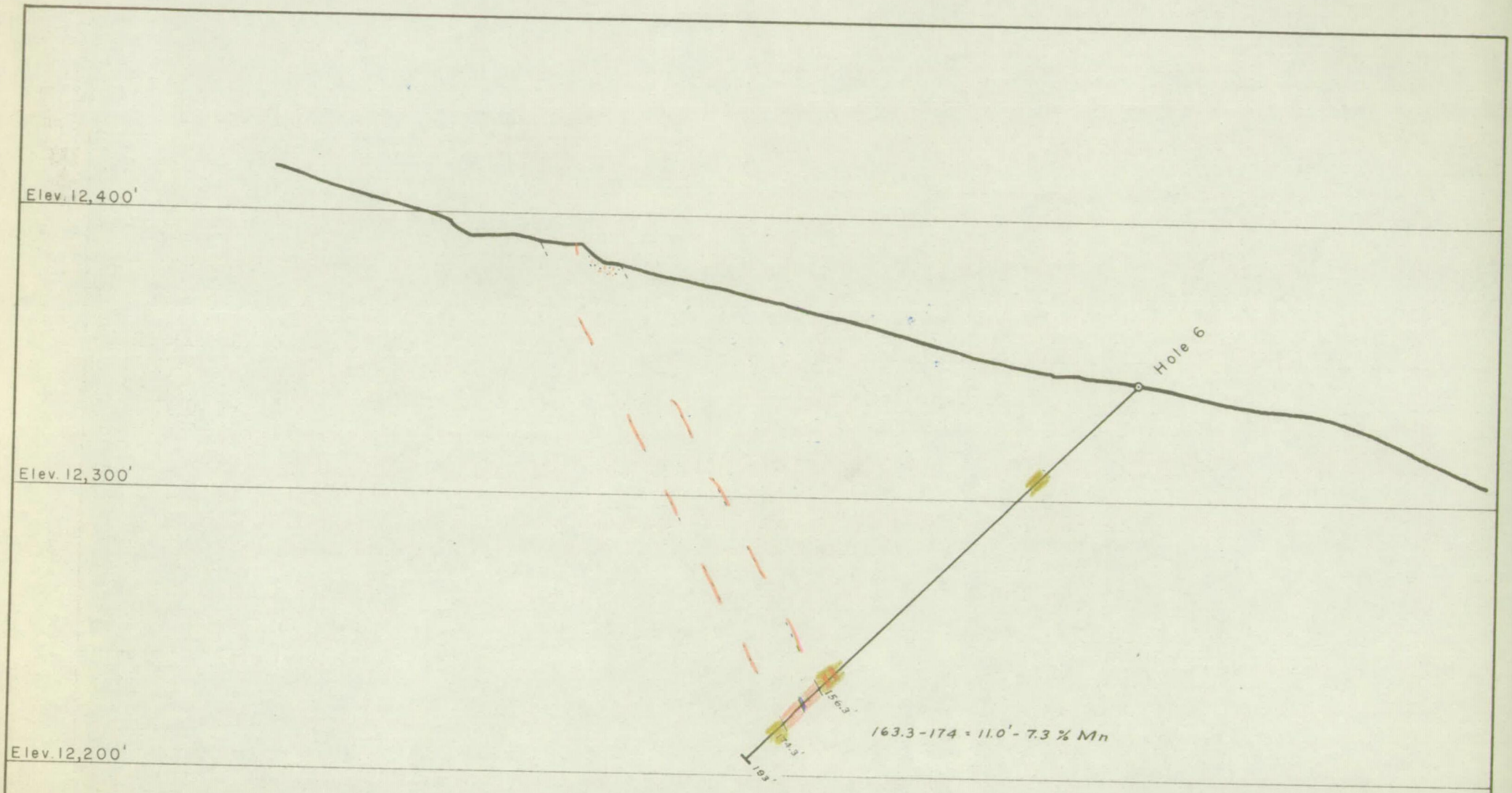

LEGEND

- Rhodonite (+10% Mn)
- Quartz
- Precious and base metal mineralization
- Highly altered andesite

U S MANGANESE CORP.

SILVER CHORD VEIN

San Juan Co., Colorado

SECTION 6

N 40° W

Looking Northeasterly

1" = 50'

Oct., 1957

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DATE	INITIALS	CODE

ASSAYS

Hole No. 1

Sample No.	Interval (ft.) From	To	Ft.	% Core Rec.	% Mn	% SiO_2	% Ignition Loss	% CaO	oz. Au	oz. Ag	%Pb	%Cu	%Zn	%Fe
1	138	139.1	1.1	95.8					.03	2.6				
2	141	141.9	0.9	95.8					.02	1.5				
3	201.5	204.0	2.5	90.0	9.3	38.4	10.5	17.6	.05	5.0	0.10	nil	0.15	2.9
4	204.0	205.5	1.5	93.4	6.1	52.8	8.5	13.2	.60	58.3	2.10	0.15	3.90	2.6
5	205.5	209.5	4.0	96.0	14.8	45.6	10.6	15.4	tr	1.0	nil	nil	0.05	3.0
6	209.5	215.0	5.5	93.5	8.5	20.8	23.0	43.4	.01	0.7	nil	nil	nil	2.0
7	215.0	219.5	4.5	96.2	16.8	25.6	8.2	14.1	.04	5.2	0.05	nil	0.20	3.1
8	219.5	224.0	4.5	98.0	6.8	24.8	7.2	16.1	.02	2.0	0.60	0.05	1.20	3.2
Average	201.5-	219.5=18.0' (17.5' true width)			11.9	32.6	13.6	23.7						
Average	201.5	-224 =22.5' (21.9' true width)			10.9	31.0	12.3	22.2						

ASSAYS

Hole No. 2

Sample No.	Interval (ft.) From	To	Ft.	% Core Rec.	% Mn	% SiO_2	% Ignition Loss	% CaO	oz. Au	oz. Ag	%Pb	%Cu	%Zn	%Fe
9	131.0	133.0	2.0	98.0	10.0	26.4	19.0	29.6	.10	12.4	nil	nil	0.25	3.0
10	133.0	142.5	9.5	80.7	11.7	20.0	18.9	32.6	.02	2.1	nil	nil	nil	2.5
Average	131.0 - 142.5 = 11.5'				11.4	21.1	18.9	32.1						
11	177.8	188.2	10.4	88.6	16.2	30.8	7.3	15.6	.01	1.6	.10	nil	0.40	3.1
12	188.2	192.0	3.8	100	8.3	24.0	8.4	10.4	.01	1.8	.70	.10	1.40	3.6
Average	177.8 - 192.0 = 14.2' (13' true width)				14.1	29.0	7.6	14.2						

ASSAYS

Hole No. 3

Sample No.	Interval (ft.) From	To	Ft.	% Core Rec.	% Mn	% SiO2	% Ignition Loss	% CaO	oz. Au	oz. Ag	%Pb	%Cu	%Zn	%Fe
13	139.0	145.0	6.0	60.5	3.4	62.8	5.3	5.8	.01	1.4	0.30	nil	0.50	3.5
14	145.0	149.4	4.4	39.9	5.0	61.0	4.8	6.8	.04	2.2	0.40	nil	0.70	3.4
15	149.4	156.5	7.1	60.2	3.0	54.6	5.8	6.1	.02	1.2	0.60	0.05	1.10	3.9
16	156.5	159.0	2.5	80.0	7.9	28.8	8.5	9.6	.03	3.8	nil	nil	nil	3.0
17	159.0	166.0	7.0	80.0	7.3	20.8	9.3	16.8	.02	1.6	nil	nil	nil	3.2
18	166.0	169.5	3.5	82.7	3.8	33.1	13.0	20.4	.02	2.0	nil	nil	0.05	4.2
19	169.5	172.5	3.0	82.7	16.6	26.0	13.8	24.9	.02	1.2	nil	nil	nil	3.5
20	172.5	173.5	1.0	82.7	10.8	53.2	7.6	9.7	tr	0.8	nil	nil	nil	4.6
21	173.5	177.0	3.5	82.7	9.1	33.0	6.5	17.5	.04	2.4	0.70	0.05	1.20	3.7
22	177.0	186.0	9.0	33.1	15.0	37.0	10.2	11.4	.02	1.0	nil	nil	0.10	4.0
23	186.0	187.5	1.5	78.0	5.4	64.8	6.6	4.9	tr	1.0	1.20	0.10	2.20	4.7
Average	169.5 - 186=16.5' (16.3' true width)				13.1	37.6	9.6	14.2						
Average	156.5 - 187.5=31.0' (30.6' true width)				10.3	32.6	9.8	15.1						

ASSAYS

Hole No. 4

Sample No.	Interval (ft.) From	To	Ft.	% Core Rec.	% Mn	% SiO2	% Ignition Loss	% CaO	oz. Au	oz. Ag	%Pb	%Cu	%Zn	%Fe
24	19.0	21.5	2.5	52.0	5.8	64.4	7.7	17.3	.10	0.8	nil	nil	nil	3.1
25	24.5	35.5	11.0	62.0	6.2	53.0	8.8	14.1	.02	2.8	nil	nil	nil	2.6
26	189.0	197.0	8.0	85.0	13.8	56.2	14.7	19.7	tr	1.6	nil	nil	nil	3.8
27	197.0	202.0	5.0	78.0	11.7	32.0	16.7	21.0	.08	9.2	nil	nil	nil	3.4
28	202.0	212.0	10.0	98.0	11.2	36.8	20.4	36.2	.02	1.6	nil	nil	nil	2.8
29	212.0	217.0	5.0	98.0	14.2	21.0	14.9	24.0	.03	2.3	nil	nil	0.10	3.8
30	217.0	220.3	3.3	60.3	11.0	21.6	20.3	40.2	.02	1.7	nil	nil	0.10	2.1
31	220.3	221.8	1.5	96.0	8.5	37.2	12.7	15.2	.02	1.1	nil	nil	nil	4.2
32	221.8	231.5	9.7	96.5	10.0	27.6	21.5	38.3	tr	1.2	nil	nil	0.05	2.4
33	231.5	236.0	4.5	78.7	21.9	48.0	7.1	9.2	.01	1.6	nil	nil	0.10	3.5
34	236.0	238.7	2.7	76.4	11.0	33.6	6.0	7.4	.01	0.9	0.30	nil	0.60	3.6
Average	189	-238.7=49.7' (46.4' true width)			12.5	35.9	16.5	26.8						

ASSAYS

Hole No. 5

Sample No.	Interval (Ft.) From	To	Ft.	% Core Rec.	% Mn	% SiO_2	% Ignition Loss	% CaO	oz. Au	oz. Ag	% Pb	% Cu	% Zn	Fe
35	70.0	71.5	1.5	88.0	1.4	76.0	2.8	1.7	tr	0.6	nil	nil	nil	4.6
36	71.5	72.5	1.0	88.0	11.9	40.8	10.6	13.8	tr	0.8	nil	nil	nil	5.2
37	171.0	172.3	1.3	57.5	13.0	50.2	12.6	8.3	.03	2.2	nil	nil	0.20	3.8
38	172.3	178.4	6.1	59.5	1.7	61.6	5.4	2.3	tr	0.5	nil	nil	nil	4.2
39	178.4	183.0	4.6	87.1	19.7	35.2	11.0	13.8	.02	2.8	0.20	nil	0.60	4.6
40	183.0	194.0	11.0	71.1	5.4	49.6	9.6	13.9	tr	0.4	nil	nil	nil	4.2
41	194.0	200.0	6.0	73.6	13.3	60.8	9.4	7.1	tr	0.4	nil	nil	0.20	4.4
Average	178.4-200.0=		21.6' (20.6' true width)		10.6	49.6	9.8	12.0						
"	171.0-200.0=		29.0' (27.6' true width)		8.9	52.1	9.0	9.8						

ASSAYS

Hole No. 6

Sample No.	Interval (Ft.) From	To	Ft.	% Core Rec.	% Mn	% SiO_2	% Ignition Loss	% CaO	oz. Au	oz. Ag	%Pb	%Cu	%Zn	%Fe
42	156.3	161.4	5.1	94.5	5.4	50.4	9.9	15.4	.03	1.6	nil	nil	0.20	3.6
43	161.4	163.3	1.9	95.0	1.4	72.8	4.4	5.8	.01	1.8	0.30	nil	2.90	5.2
44	163.3	163.9	0.6	95.0	7.7	47.2	12.4	10.1	.05	1.6	nil	nil	0.20	3.9
45	163.9	165.1	1.2	95.0	12.0	52.0	8.8	13.2	.02	1.0	0.05	nil	0.50	4.0
46	165.1	174.3	9.2	91.8	6.7	48.4	14.0	21.7	.08	7.7	nil	nil	nil	3.5
Average 163.3-174.3= 11.0' (10.5' true width)					7.3	48.7	13.3	20.1						
Average 156.3-174.3= 18.0' (17.2' true width)					6.2	51.6	12.6	17.3						

Hole No. 1

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
0	8	8	1.9	23.8	Pyroxene andesite breccia (healed) with weak disseminated pyrite
8	14	6	3.8	63.4	Same
14	20	6	3.9	65.0	Same
20	27.8	7.8	9.6	123.0	Andesite with occasional blebs and veinlets calcite. Weak pyrite dissem. in andesite. At 23' = 1/2" calcite @ 60° to core.
27.8	30.3	2.5	2.8	112.0	Same At 28' and 30' = 1/2" calcite veinlets at 75° and 60° to core.
30.3	37.3	7.0	7.0	100.0	Same
37.3	40.4	3.1	3.0	96.7	Same At 41' and 41.5' = 1/2" calcite veinlets at 65° & 60° to core.
40.4	50	9.6	9.6	100	Same Several calcite veinlets at 60° - 65° to core.
50	60	10	10.0	100	Same
60	70	10	10.0	100	Same At 64' = 4" irregular calcite.
70	80	10	9.8	98.0	Same to 72' 72 - 77 Reddish andesite with considerable calcite and weak, untarnished, disseminated pyrite. 77 - 80 Gray, altered, andesite with considerable calcite and weak, untarnished, disseminated pyrite. At 80' = 6" lt. gray, highly altered andesite at 60° to core.
80	90	10	10.0	100	80 - 84 Reddish, highly altered andesite with ± 10% calcite and weak, untarnished disseminated pyrite. 84 - 86 Greenish gray andesite 86 - 87 Same as 80 - 84 87 - 90 Lt. gray, highly altered andesite with considerable dissem. pyrite.
90	100	10	10.0	100	Same (90 - 91 = relatively unaltered Andesite)
100	110	10	10.0	100	100 - 107 Same 107 - 110 Reddish, highly altered andesite with considerable dissem. pyrite. At 109' = 1/2" calcite at 50° to core.
110	120	10	10.0	100	110 - 112 Same At 111' = 1/2" calcite at 45° to core.

Continued Hole No. 1

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery		Description
110	120	10	10.0	100	112 - 120	Greenish, altered andesite with weak dissem. pyrite and occasional minute veinlets calcite.
					120 - 122	Same
120	125	5	5.0	100	122 - 125	Hard, dark gray andesite (silicified) with few calcite veinlets and slight fine grained, dissem. pyrite.
125	130	5	2.5	50.0	125 - 130	Same
130	138	8	7.9	98.9	130 - 135	Lt. green to gray, altered andesite with rare calcite veinlets and sparse pyrite. At 130' = Two 1" quartz veins at 35° & 55° to core. At 132'=3" qtz. vein.
					135 - 138	Pale brown, highly altered andesite sparse calcite and pyrite.
138	145	7	6.7	95.8	138 - 139.1	Quartz vein at 60° to core. 1/2" rhodonite. Sparse pyrite and very fine grained black sulfides.
					139.1-144	Same as 135' - 138'
					141 - 141.9	Quartz vein - weak intermixed rhodonite last 5" at 30° - 60° to core. 1/4" pyrite at 30° to core on south wall of vein.
					141.9 -144	Same as 135' - 138'
					144 - 145	Hard, dark gray, silicified andesite.
145	150	5	4.7	94.0	145 -147.5	Same. At 146 = 1" qtz. at 30° to core - some rhod. in it.
					-148.5	Lt. gray, highly altered andesite - much pyrite.
					-150	Dark gray, silicified andesite with slight dissem. pyrite.
150	160	10	10.0	100		Same
160	170	10	10.0	100		Same to 165'. Change very sharp at 40° to core.
					165 - 169	Lt. gray, highly altered andesite
					169 - 170	Same as to 165'.
170	180	10	8.7	87.0	170 - 171.5	Same as 165' - 169'.
					171.5- 178	Same as 165' - Change at 40° to core.
					178 180	Same as 165' - 169'.
180	185	5	4.6	92.0	Greenish gray andesite	

Continued Hole No. 1

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery		Description
185	192	7	3.3	47.1	185 - 187	Hard, reddish black, highly silicified andesite.
					187 - 192	Lt. gray, highly altered andesite. Badly broken - may be slips here.
192	195	3	1.5	50.0		Same
195	197	2	1.2	60.0		Same to 196'
					196 - 197	Quartz vein - first 6" is quartz sealed breccia.
197	198	1	0.6	60.0		Quartz with weak rhodonite.
198	199	1	1.1	110		Same
199	204	5	4.5	90.0	199 - 201.5	Highly silicified andesite. At 200 = 0.7' qtz. with weak rhod.
					201.5- 204	Quartz with weak calcite(?) and rhodonite and very sparse sulfides.
204	207	3	2.8	93.4	204 - 205.5	Quartz with weak calcite(?) and rhodonite and fair sulfides.
					205.5- 207	Mixed quartz and rhodonite with calcite(?).
207	211	4	3.9	97.5	207 - 209.5	Mixed quartz and rhodonite with calcite(?).
					209.5- 211	Quartz and calcite(?) with weak rhod. and very sparse sulfides.
211	216	5	4.6	92.0	211 - 215	Same
					215 - 216	Mixed quartz, rhod. and calcite(?).
216	220	4	3.9	97.5	216 - 219.5	Same
					219.5- 220	Quartz with weak rhod. and calcite(?) and sulfides.
220	225	5	4.9	98.0	220 - 224	Same. 3" good ZnS at 220.5'
					224 - 225	Gray altered andesite with some quartz veinlets.
225	230	5	4.8	96.0	Same	At 225.5 = 0.4' qtz. with slight rhod. at 45° to core.
230	235	5	1.3	26.0	Same	
235	240	5	5.0	100	Same to 237'	
					237 - 240	Greenish gray, unaltered andesite with weak dissem. pyrite and occasional qtz. veinlets. At 240' = 2" qtz. and rhod. at 55° to core.

Continued Hole No. 1

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery		Description
240	245	5	4.8	96.0		Greenish gray, unaltered andesite with weak dissem. pyrite and occasional qtz. veinlets. (241.5-243'=Lt. gray, highly altered andesite with much pyrite)
245	250	5	4.9	98.0	Same	At 249.5'=3" qtz. & rhod. at 60° to core.
250	255	5	4.8	96.0	Same	At 253'=3" qtz. vein at 40° to core.
255	260	5	4.8	96.0	Same	At 259.5'=2" qtz. with slight rhod. & pyrite at 45° to core.
260	265	5	4.9	98.0	Same	At 260.5'=3" qtz. & rhod. at 53° to core.
265	270	5	2.7	54.0		Gray, altered andesite 266'-268'=Vuggy, FeOx & MnO_2 stained qtz. vein with sparse rhod. and sulfides. 269.5'-270'=Good PbS & ZnS and 2" rhod. in quartz vein- weak pyrite.
270	275	5	4.7	94.0	270-274	Qtz. vein with much included wall rock. Few 1/2" bands of fair PbS and ZnS - weak pyrite.
					274-275	Lt. greenish gray, altered andesite frequent qtz. veinlets.
275	280	5	4.8	96.0	Same	At 276'=4" qtz. & rhod. at 40° - 45° to core.
280	285	5	5.0	100.0		Greenish gray andesite with weak dissem. pyrite and frequent minute qtz. veinlets. At 281', 283', 284'=1" banded qtz. veins at 42° - 45° to core.

Total depth 285'

Hole No. 2

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
0	4	4	2.0	50.0	Greenish gray pyroxene andesite with dissem. pyrite and minute calcite seams.
4	15	11	2.2	20.0	Same
15	19	4	3.3	82.5	Same At 18' = 1" calcite veinlet at 55° to core. Slight pyrite in calcite veinlet.
19	29	10	9.9	99.0	Same
29	34	5	4.5	90.0	Same
34	41	7	5.4	77.2	Same Last 6" dark, reddish gray, highly silicified - no pyrite.
41	51	10	6.5	65.0	Same 41-42.5 and 50.5-51' dark, reddish gray, highly silicified - no pyrite.
51	59.5	8.5	7.6	89.5	Same to 57.5' then dark gray, highly silicified andesite with no pyrite.
59.5	65	5.5	5.5	100	Same to 60.5 60.5- 65 Gray andesite with weak dissem. pyrite & irregular, minute calcite veinlets.
65	70	5.0	5.0	100	Same 65'-69' At 66.5 - 67'=1/2" calcite veins with pyrite at 15°&25° to core. 69 - 70 Dark gray, highly silicified andesite with no pyrite.
70	80	10	9.3	93.0	70 - 72 Dark gray, highly silicified andesite with no pyrite. 72 - 76.5 Greenish gray andesite with weak dissem. pyrite and minute calcite veinlets. 76.5- 80 Gray andesite with weak dissem. pyrite & minute calcite veinlets. At 80' fault at 63° to core offsets calcite seams 1/4".
80	90	10	9.0	90.0	Gray andesite with weak dissem. pyrite & minute calcite veinlets. 81.5- 89.5 is greenish gray
90	100	10	10	100	Same as 80' to 90'
100	106	6	6.4	106.7	Gray andesite with weak dissem. pyrite & minute calcite veinlets. 100 -105.5 Greenish gray At 106'=2" qtz. with weak rhod. at 30° to core.

Continued Hole No. 2

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
106	110	4	3.3	82.5	Gray andesite with weak dissem. pyrite and minute calcite veinlets. 107'-108'=Qtz. vein with weak rhod. at 30° - 35° to core.
110	117	7	3.8	54.3	Same to 115'. Last foot dark, gray, highly silicified-no pyrite. 115-117 Lt. gray, highly altered andesite.
117	125	8	9.1	113.8	same to 119'. 119 - 125 Gray andesite with slight dissem. pyrite & minute calcite stringers. 121.5-123.5'=bleached to lt. gray. at 123'=2" qtz. with rhod. at 60° to core.
125	130	5	3.7	74.0	Same Several narrow qtz. veinlets with weak rhod. at 60° to core. At 129'=6" qtz. vein.
130	135	5	4.9	98.0	130 - 131 Gray, altered andesite with many qtz. bands. 131 - 133 Qtz. with some calcite(?) and very sparse rhod. and sulfides. 133 - 135 Qtz. calcite and rhod. - sparse sulfides (134.3-134.8' no rhod.)
135	145	10	7.6	76.0	Same to 142.5'(137'-138'=no rhod.) 142.5-143 Qtz. with weak FeS_2 143 - 145 Lt. gray, silicified andesite with minute qtz. veinlets. At 144'=3" rhod at 50° to core. Last foot about 50% qtz.
145	150	5	6	120	Same At 146' irregular qtz. with weak rhod.
150	164	14	5.4	38.6	Same At 151'=2" qtz. & rhod. at 53° to core.
164	174	10	9.3	93.0	Same 164'-165.2'=qtz. with weak rhod. at 60° to core. 168'=6" gouge. 168'-169.5=qtz. with fair rhod. banding ± 30° to core. Many qtz. veinlets to 174'.

Continued Hole No. 2

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery		Description
174	179	5	4.8	94.0	174-177.8	Lt. gray silicified andesite with many qtz veinlets.
					177.8-178	Qtz. & rhod. - weak sulfides
					178 - 179	Rhodonite, quartz and calcite (?) Weak sulfides
179	184	5	4.0	80.0		Rhodonite, quartz and calcite (?) Weak sulfides
184	186	2	1.9	95.0		Same
186	194	8	8.2	100		Same to 188.2
					188.2-192	Quartz and some calcite(?) with weak sulfides- last 3" rhod. & qtz.
					192 - 194	Lt. gray highly altered andesite with qtz. stringers. 2" qtz. & rhod. at 193.5'
194	204	10	8.7	87.0	194 - 195	Same
					195 - 204	Greenish gray andesite with weak dissem. pyrite and rare minute qtz. veinlets.
					197.5-198	qtz. with weak rhod. irregular at 40° - 45° to core.
204	220	16	15.5	96.9	204 - 220	Greenish gray andesite with weak dissem. pyrite and rare minute qtz. veinlets. At 214.5 = 1/2" qtz. & rhod. at 20° to core.
220	223	3	3.2	106.7	Same	Small irregular blotches white calcite 220-222'
223	233	10	10.0	100	223 - 228	Greenish gray andesite with weak dissem. pyrite and rare miunte qtz. veinlets. At 224' = 1" qtz. at 40° to core
					228 - 233	Gray andesite with weak dissem. pyrite and rare minute qtz. veinlets.
233	243	10	10	100	Same	
243	253	10	10	100	Same	At 248'=1" qtz with weak rhod. at 20° to core.
253	263	10	9.9	99.0	Same	
263	273	10	6.4	64.0	Same	Last 5'=more bleaching and some FeOx stain. Rock more coarsely crystaline and pyrite xtels larger.
273	280	7	7.0	100	Same	

Total depth 280'

Hole No. 3

Interval (ft.) From	To	Ft.	Ft. Core	% Core Recovery		Description
0	14	14	3.1	22.1	0 - 10	Greenish gray altered andesite with weak dissem. pyrite
					10 - 14	Dark gray silicified andesite
14	19	5	4.5	90.0		Gray, altered andesite with weak dissem. pyrite
					15 - 16 &	17 - 18 = same as 10' - 14'
19	27.5	8.5	7.8	91.9		Same as 14 to 19'
27.5	37	9.5	9.6	101		Dark gray silicified andesite with occasional qtz. and calcite veinlets.
37	47	10	10	100		Same
47	57	10	9.2	92.0		Same
57	68	11	10.5	95.5		Same
68	74	6	5.8	96.7		Gray altered andesite with slight dissem. pyrite and frequent minute calcite veinlets.
74	85	11	11.0	100		Same 81.5-83 = same as 27.5-68'
85	89	4	3.3	82.5	85.- 88	Same
					88 - 89	Dark gray silicified andesite
89	91	2	1.7	85.0		Same
91	99	8	3.8	47.5		Same
99	103	4	2.6	65.0		Same
103	108	5	4.8	96.0		Same
108	115	7	7.0	100		Same
115	117	2	1.6	80.0		Gray, altered andesite with slight dissem.pyrite
117	122	5	4.7	94.0	117 - 120	Same
					120 - 122	Dark gray silicified andesite
122	127	5	4.2	84.0		Same
127	133	6	3.9	65.0		Same
133	138	5	3.9	78.0		Same
138	144	6	3.9	65.0		Fault gouge at 138'
					138 - 139	Gray altered andesite - qtz.stringers
					139 - 144	Mixed andesite, qtz. & calcite (?)

Continued Hole No 3

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
144	149	5	1.9	38.0	144 - 145 Mixed andesite, qtz. & calcite(?) 145 - 149 Qtz. with weak sulfides, rhod. and calcite(?)
149	156	7	4.1	58.6	149 - 149.4 Same 149.4-156 Altered andesite with qtz. stringers At 151'=2" qtz. & rhod. at 60° to core. At 153'=2" sphalerite in irregular qtz.
156	166	10.	8.0	80.0	Same to 156.5'. 156.5-159 Qtz. with weak rhod. and some calcite(?) 159 - 166 Qtz. with rhod. and calcite. At 164' & 166'=few inches included andesite.
166	177	11	9.1	82.7	Same to 169.5' 169.5-172.5 Good pink rhod. with calcite(?) 172.5-173.5 Altered andesite 173.5-177 Qtz. with weak to fair PbS & ZnS Several 2" bands rhod. At 175.5'=1" Black sulfides.
177	185	8	2.2	27.5	Qtz. with weak to fair rhod. and calcite(?) & weak sulfides. Few spots chalcopyrite. Last few pieces core good pink rhod. Driller said soft intervals would not core.
185	190	5	3.9	78.0	185 - 186 Rhodonite & Qtz. 186 - 187.5 Mixed andesite & qtz. with some rhod. and sulfides. 187.5-190 Altered andesite with few qtz. stringers.
190	195	5	4.9	98.0	Altered andesite with few qtz. stringers.
195	200	5	5	100	Same At 195'=2" banded qtz. and rhod. at 20° to core. At 199'=2" qtz. & rhod. at 35° to core.
200	205	5	5	100	Same
205	210	5	4.9	98.0	Same 207'-208.1'=calcite(?) at 30° to core.

Total depth 210'

Hole No 4

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
0	10	10	6.3	63.0	Lt. gray highly altered andesite with dissem. pyrite. Much FeOx stain - broken core.
10	19	9	5.3	58.9	Gray altered andesite with weak dissem. pyrite. FeOx & MnO stain on cracks. 16-17'=Dark gray, silicified andesite. At 11'=1" vuggy qtz. vein at 60° to core. At 15'=1 1/2" qtz. & calcite vein at 50° to core.
19	29	10	5.2	52.0	19-21.5 Qtz. & calcite(?). Considerable MnO stain on fractures. 21.5-24.5 Lt. gray andesite. 24.5-29 Qtz. & calcite - broken core with much MnO stain on fractures.
29	39	10	6.9	69.0	Same to 35.5' 35.5 - 39 Lt. gray, highly altered andesite with considerable dissem. pyrite.
39	49	10	9.0	90.0	Same
49	59	10	8.9	89.0	Same Numerous qtz. & calcite veinlets and calcite specks. At 51.5'=1/2" qtz. veinlet at 35° to core. At 55' =1/2" qtz. veinlet at 60° to core.
59	69	10	8.4	84.0	Same At 65'=2" qtz. at 50° to core. At 67'=2" qtz. at 30° to core.
69	79	10	7.0	70.0	Same At 76'=3" qtz. vein at 60° to core.
79	89	10	6.4	64.0	Same
89	95	6	5.1	85.0	Same to 89.7' At 89.7'=1" qtz. vein at 45° to core. 89.7 - 94 Dark gray, hematite stained andesite. 94 - 95 Greenish gray andesite.
95	105	10	8.0	80.0	Same to 97' 97 - 99 Lt. gray, highly altered andesite with weak dissem. pyrite. 99 -102.5 Gray, altered andesite with weak dissem. pyrite. At 100.5' and 101.5'=1" qtz. vein at 60° to core. 102.5-105 Lt. gray, highly altered andesite with weak dissem. pyrite. At 104.5'=2" qtz. vein at 65° to core
105	114	9	7.4	82.2	Same

Continued Hole No. 4

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
114	120	6	2.6	43.3	Lt. Gray, highly altered andesite with weak dissem. pyrite.
120	126	6	7.7	128.3	Same to 123.5' Ends with 2" qtz. & andesite banded at 30° to core. 123.5-126 Dark gray andesite with slight dissem. pyrite and frequent minute qtz. veinlets. At 124.5=2" qtz. vein at 20° to core.
126	136	10	9.6	96.0	126 -127 Same 127 -130 Lt. gray, highly altered andesite with weak dissem pyrite. 130 -136 Dark gray andesite with very sparse pyrite and frequent minute qtz. veinlets. 134 -135 Bleached and highly altered.
136	143	7	6.3	90.0	Dark gray andesite with very sparse pyrite and frequent minute qtz. veinlets.
143	153	10	8.6	86.0	Same
153	163	10	10.0	100	153 -156 Gray, altered andesite with weak dissem. pyrite and frequent minute qtz. veinlets. 156-157.5 Lt. gray, highly altered andesite At 157 = 1" qtz. vein at 40° to core. 157.5-163 Same as 153-156. Alteration gradually increasing to end of run.
163	172	9	6.7	74.5	Gray to lt. gray, highly altered andesite. Some red color from hematite(?). Weak to abundant dissem. pyrite and frequent minute qtz. veinlets. At 170'=2" qtz. vein at 80° to core.
172	189	17	10.1	59.4	Same
189	197	8	6.8	85.0	189 -190.5 Qtz. with weak rhod. MnO stain on cracks. 190.5-197 Rhod. & qtz. with some calcite(?)
197	202	5	3.9	78.0	Same Few wall rock pebbles at beginning of run. Probably fell in hole from above.
202	212	10	9.8	98.0	Same More calcite(?)
212	217	5	4.9	98.0	Same Last 1/2" = Qtz. & silicified andesite.

Continued Hole No. 4

Interval (Ft.) From	To.	Ft.	Ft. Core	% Core Recovery	Description
217	220	3	1.7	56.7	Rhod. & qtz. with much calcite(?)
220	230	10	9.6	96.0	220-220.3 Same 220.3-221.8 Gray qtz. with weak calcite(?) And rhod. 221.8-230 Quartz, rhodonite, and calcite(?)
230	233	3	3.0	100	Same to 231.5 231.5-233 Rod. with quartz and calcite(?)
233	238	5	3.4	68.0	Same to 236' 236 - 238 Quartz & rhod. Few bands sulfides in qtz.
238	243	5	5	100	Same to 238.7 238.7-243 Lt. gray, highly altered andesite with qtz. veinlets
243	245	2	2	100	Same

Total depth 245'

Hole No. 5

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
0	9	9	7	77.8	Gray altered andesite with weak dissem. pyrite. FeOx stained
9	15	6	2.5	41.6	Same
15	20	5	2.0	40.0	Same
20	25	5	2.0	40.0	Same
25	30	5	0.3	6.0	Same. Few pieces qtz. with fine gr. pyrite.
30	34	4	0.9	22.5	Same.
37	40	3	4.5	150.0	Gray altered andesite with weak dissem. pyrite. At 38' & 38.5=1/2" qtz. at 45° to core.
40	45	5	2.9	58.0	Same. At 41=1/2" qtz. at 25° to core. At 44=2" qtz. at 40° to core.
45	50	5	3.2	64.0	Same.
50	60	10	9.4	94.0	Same. 51-58.5=Narrow FeOx stained bands at various angles to core. Fresh pyrite in narrow veinlets at various angles to core. Bleaching increasing in intensity to 58.5, where it stops abruptly on calcite filled crack at 40° to core.
60	70	10	9.3	93.0	Same.
70	80	10	8.8	88.0	70- 71.5 White & gray qtz. with pyrite. Strong MnO_2 & FeOx stain on cracks. Very sparse PbS & ZnS. Banding at 55° to core. 71.5-72.1 Rhod., white qtz. and calcite 72.1-72.5 Qtz. and wall rock with sparse Pbs & ZnS. 72.5-80 Gray, altered andesite with weak dissem. pyrite. At 74.5' = 3"vein banded qtz. & calcite at 30°-40° to core.
80	87	7	7.3	104.2	Gray, altered andesite with weak dissem. pyrite.
87	90	3	1.8	60.0	Gray, altered andesite with weak dissem. pyrite. At 89.5'=three 1/4" pyrite veinlets at 50° to core.
90	101	11	10.6	96.5	To 94.5' Gray, altered andesite with weak dissem. pyrite. 94.5-101 Lt. gray, highly altered andesite with much pyrite dissem. and in irregular, minute veinlets.

Continued Hole No. 5

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
101	110	9	5.2	57.8	Lt. gray, highly altered andesite with much pyrite dissem. and in irregular, minute veinlets. 103'-105'=gray & less bleached. 108'-109'=three qtz. veinlets, two at 60° and one at 15° to core.
110	119	9	8.0	80.0	Gray, altered andesite with weak dissem.pyrite & a few minute qtz. veinlets. At 114.5' and 115'=1/2" qtz. at 55° and 60° to core. At 117'=1" qtz. at 60° to core.
119	127	8	6.2	77.5	Gray, altered andesite with weak dissem. pyrite & a few minute qtz. veinlets. At 125'=4"qtz. at 60° to core. 124.5'-125.5'=50% qtz. Broken qtz. & wall rock pebbles in core at end of run.
127	134	7	0.8	14.2	Broken pieces qtz. & highly altered wall rock with much dissem. pyrite.
134	137	3	1.5	50.0	Lt. gray highly altered andesite with much pyrite dissem. and in irregular minute veinlets. Qtz. in irregular veinlets and in two 1/2" veinlets at 50° - 60° to core.
137	140	3	2.7	90.0	Gray, altered andesite with weak dissem. pyrite and irregular qtz. veinlets.
140	150	10	8.5	85.0	Same At 140'=6" qtz. at 60° to core. At 141.5'=3" qtz. at 75°-80° to core.
150	155	5	5	100	Same to 151' - change is on 1/4" qtz. veinlet at 50° to core. At 150.5'= 1 1/2" qtz. vein at 60° to core. 151 -154.5 Lt. gray, highly altered andesite with much pyrite, dissem. & in irregular veinlets. 154.5-155 Gray, altered andesite with weak dissem. pyrite.
155	165	10	6.5	65.0	Same to 157.5 - change on qtz. veinlet at 60° to core. 157.5-165 Lt. gray, highly altered andesite with much pyrite. 159.5'-160.5'=qtz. & cream colored calcite(?) at 75°-80° to core.
165	170	5	2.8	56.0	Gray, altered andesite with weak dissem. pyrite. At 167'=7" qtz. & cream colored calcite at 75° to core. At 169'=two 1" veins qtz., cream calcite(?) & rhod. at 85°- 90° to core. Qtz. calcite (?) & rhod pebbles at end of run.

Continued Hole No. 5

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
170	178	8	4.6	57.5	170 - 171 Lt. gray, highly altered andesite with weak dissem. pyrite. 171-172.3 Qtz. & rhod. with considerable buff colored calcite(?) 172.3-178 Same as 170-171. Broken qtz.&andesite core at end of run.
178	185	7	6.1	87.1	178 -178.4 Same as 170-171 178.4-183 Vein at 70°-80° to core. First 3" fair ZnS & PbS in qtz. Then rhod. and qtz. with sparse dissem. sulfides. 183 - 185 Qtz. with slight rhod. and white calcite(?). 4" near end is qtz. & vuggy, partially dissolved, buff colored calcite(?)
185	191	6	4.5	75.0	Qtz. with slight rhod. and calcite(?). Very sparse sulfides.
191	197	6	3.2	53.3	191 -194 Same. At 191=3" good rhodonite. At 193=± 6" altered andesite. 194 - 197 Rhodonite and qtz. At 197=few inches altered andesite.
197	205	8	6.7	83.8	197 - 200 Qtz. & Rhod. 200 -200.8 Gray qtz. F.W. contact at 65° to core. 200.8-205 Gray altered andesite with weak dissem. pyrite.
205	210	5	4.8	96.0	Same

Total depth 210'

Hole No. 6

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
0	6.5	6.5	4.0	61.6	Dark gray, silicified andesite.
6.5	9.0	2.5	1.0	40.0	Same
9	12	3	0.9	30.0	Same
12	14	2	1.0	50.0	Same
14	16	2	1.3	65.0	Same
16	23	7	5.7	81.4	Same
23	28	5	4.7	94.0	Greenish gray andesite with weak dissem. pyrite and occasional quartz veinlets.
28	35	7	6.2	68.9	Same
35	40	5	4.9	98.0	35-37.5 Same 37.5-40 Gray, altered andesite with weak dissem. pyrite, occasional qtz. veinlet and FeOx stain on cracks.
40	45	5	4.5	90.0	Same
45	50	5	4.8	96.0	Lt. gray, highly altered andesite with weak dissem. pyrite and FeOx stain on cracks. Little gouge (?) at end of run.
50	55	5	4.8	96.0	50-53=Same. Minute pyrite veinlets 50'-51'. 53-55=Gray, altered andesite with weak dissem. pyrite qtz. veinlets 0°-30° to core.
55	60	5	5.0	100	Same. At 58'=3" qtz. vein at 60° to core.
60	65	5	5.0	100	Same.
65	70	5	5.0	100	Same.
70	75	5	5.0	100	Same. At 72'=1" qtz. vein at 60° to core.
75	80	5	5.0	100	Same. At 77'=1" qtz. at 30° to core.
80	85	5	4.9	98.0	Same At 83'=1" qtz. vein at 42° to core. 81'-83'=Lt. gray highly altered andesite.
85	90	5	4.9	98.0	Gray andesite with sparse dissem. pyrite and occasional qtz. veinlets.
90	95	5	5.0	100	Same. At 93'=1/2" qtz. veinlet with FeS_2 and spots ZnS at 60° to core. At 95'=1/2" qtz. veinlet at 25° to core offset 1/2" by 1 1/2" qtz. vein at 65° to core.

Continued Hole No. 6

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
95	100	5	5.0	100	Gray andesite with sparse dissem. pyrite and occasional qtz. veinlets. At 96'=2" qtz. vein at 40° to core.
100	105	5	4.5	90	Same
105	115	10	10.5	105	Same
115	120	5	4.4	88	Same
120	125	5	4.7	94	Same
125	130	5	4.7	94	Same 125'-126'. At 125.5'=1" qtz. vein at 60° to core. 126'130'= Dark gray, silicified andesite
130	135	5	5.0	100	Same
135	144	9	8.4	93.4	135-137.5 Dark gray, silicified andesite 137.5-144 Gray, altered andesite with weak dissem. pyrite and frequent qtz. veinlets. At 139=1" qtz. vein at 50°-60° to core. vug with qtz. crystals. At 141=1/2" qtz. veinlet at 20° to core offsets 1/4" qtz. veinlet at 90° to core. 1/2" offset. Intense alteration 141'-142'
144	149	5	3.8	76	144 - 146 Dark gray, silicified andesite. At 145'=1" qtz. with thin rhod. bands at 70° to core. 146-148.7 Lt. gray, highly altered andesite with weak dissem. pyrite. 148.7-149.7 Qtz. with weak rhod. and slight sulfides. Banding at 75° - 90° to core.
149	157	8	7.4	92.5	149.7-152.1 Lt. gray, highly altered andesite with weak dissem. pyrite. At 151' = 4" qtz. vein with slight rhod. at 80° to core. 152.1-153.3 Qtz. with weak rhod. HW at 83° & FW at 75° to core. 153.3-156.3 Lt. gray, highly altered andesite with weak dissem. pyrite. Numerous qtz. veinlets. HW of vein at 75° to core. 156.3-157 Qtz. with weak rhod. & calcite sparse sulfides.

Continued Hole No. 6

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
157	165	8	7.6	95	Qtz. with weak rhod. & calcite - sparse sulfides. 158.3-162.2=considerable included andesite At 162.0=1" band ZnS 162.0-163.3=Weak ZnS & PbS 163.3-163.9=Qtz. with small amount calcite(?) 163.9-165 =Rhodonite and quartz with some calcite(?)
165	173	8	7.8	97.5	Qtz. with slight rhod.,calcite and sulfides.
173	181	8	4.6	57.5	173 -174.3 Qtz. & rhod. in matrix of breccia-andesite fragments. At 173'=2" piece core dark gray breccia. 174.3-181 Lt. gray, highly altered andesite with weak dissem. pyrite. Much irregular gray qtz. Some soft drilling-probably fault planes.
181	186	5	4.5	90	Gray altered andesite with frequent qtz. veinlets
186	193	7	5.1	72.9	Same

Total depth 193'

Continued Hole No. 6

Interval (Ft.) From	To	Ft.	Ft. Core	% Core Recovery	Description
157	165	8	7.6	95	Qtz. with weak rhod. & calcite - sparse sulfides. 158.3-162.2=considerable included andesite At 162.0=1" band ZnS 162.0-163.3=Weak ZnS & PbS 163.3-163.9=Qtz. with small amount calcite(?) 163.9-165 =Rhodonite and quartz with some calcite(?)
165	173	8	7.8	97.5	Qtz. with slight rhod.,calcite and sulfides.
173	181	8	4.6	57.5	173 -174.3 Qtz. & rhod. in matrix of breccia-andesite fragments. At 173'=2" piece core dark gray breccia. 174.3-181 Lt. gray, highly altered andesite with weak dissem. pyrite. Much irregular gray qtz. Some soft drilling-probably fault planes.
181	186	5	4.5	90	Gray altered andesite with frequent qtz. veinlets
186	193	7	5.1	72.9	Same

Total depth 193'

(WSK
HMC

UNITED STATES MANGANESE CORPORATION

261 MADISON AVENUE, NEW YORK 16, NEW YORK · MURRAY HILL 2-5700

February 14, 1958

DMEA
DEPARTMENT OF THE INTERIOR
FEB 20 1958
REGION III
DENVER, COLORADO

Mr. Nelson Harshman
Acting Executive Officer, Region III
Defense Minerals Exploration Administration
Federal Center
Denver, Colorado

Dear Mr. Harshman:

Enclosed are five (5) copies of an application for DMEA aid in an exploration program for rhodonite ore on United States Manganese Corp. property in the San Juan County of Colorado.

Our plans involve a comprehensive drilling program divided into three phases, each to be carried out during three successive summer seasons. Weather conditions prevailing in the San Juan area limit the exploration season to the period between June and October. The entire exploration project would therefore require three years for consummation. For this reason we hope that consideration of the enclosed application can be accomplished in time to initiate the proposed program during the 1958 season.

If there is any further information you require, please do not hesitate to call on me.

Very truly yours,

UNITED STATES MANGANESE CORPORATION

Charles Sheer

C. Sheer
Vice President

CS:bfs
Enclosures (5)

Form MF-103
Revised Feb. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

APPLICATION FOR AID IN AN EXPLORATION PROJECT

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

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

United States Manganese Corporation

DMEA
DEPARTMENT OF THE INTERIOR
FEB 20 1958
REGION III
DENVER, COLORADO

APPLICANT NOT TO USE THIS BLOCK

Docket Number	4944
Date Received	2-24-58
Government Participation %	
Region	III
Division Code	400

BUSINESS ORGANIZATION (Check one)

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

State in which firm is organized: Delaware

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

Name	Address	Title
J. R. Dunning	261 Madison Ave, N. Y. C.	Chairman of Board
F. B. Jewett	" " "	President
C. Sheer	" " "	Vice-President
A. M. Garbade	" " "	Vice-President
J. M. Hopkins	" " "	Secretary
H. J. Nullmeyer	" " "	Treasurer

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

Estimated Cost of Project: $ 566,372.02

LOCATION OF PROPERTY

Name	County	State
Treasure Mountain Area	San Juan	Colorado

GENERAL INSTRUCTIONS

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

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

February 10, 1958
Dated

Charles Sheer
BY (Signature)

Vice-President
Title

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

INFORMATION REQUIRED WITH THIS APPLICATION

1. *Applicant's Property Rights:*

(a) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all land adjacent to the proposed project area which you own or control. Describe any part of the project land or workings which should not be subject to Government lien for royalty payments. If the land consists of unpatented claims, state the book and page number for each recorded location notice, including amended locations, and the place where recorded (courthouse, recorder's office, county, and state).

(b) State all the names by which you know the property.

(c) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise. If you are not the owner, submit with this application one exact copy of the lease, contract, or other document (with address of owner) under which you control the property.

(d) Describe all liens, mortgages, or other encumbrances on the property.

2. *Physical Description:*

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the lands, including existing mine workings. Describe all production facilities.

(b) State your interest, if any, in operations stated in 2*(a)*.

(c) State, as far as you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves on the property giving quantities and grades and sampling methods used, supporting your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you may have, indicating on each whether you require its return to you.

3. *Accessibility of Project:*

(a) To aid DMEA representatives who may be required to examine the property, state the name and address of the person who will meet the DMEA representative; give directions for reaching the property; and describe accessibility of the property including the mine workings.

(b) Name the shipping and supply points and places where employees reside and state the distances between them and the property.

4. *The Exploration Project:*

(a) Describe fully the proposed exploration project giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and longitudinal and cross sections as necessary. Show the location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *property boundaries* or to the closest identifiable corner.

(b) If an access road to the project must be built, show the location on the property map and state the length, type, and construction methods proposed.

(c) In the event that an exploration contract with DMEA is executed, how soon will the work start and how many months will be required to complete it? State your anticipated average daily or monthly rate of progress for each type of work.

5. *Experience:*

State your operating experience and background with relation to your ability to carry out this exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of Costs:*

Furnish detailed estimates of the costs *for each item of the work proposed in 4(a)* under the headings listed below with a total for each heading and the estimated total cost of the project. Costs for any work to be performed by an independent contractor should be shown separately under category *(a)* below. Costs for any work that is not to be performed by an independent contractor should be given in detail under categories *(b)* through *(g)*.

(a) Independent contracts. State the cost of any proposed independent contract for the performance of all or any part of the work, expressed in units of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. *(Note* — If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. For necessary supervision, engineering and geological services, and labor, include an itemized schedule of numbers, classes, rates of wages, salaries or fees, and periods of employment. State whether these technicians and employees are available.

(c) Operating materials and supplies. List items of material and supplies with their cost. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of operating equipment to be used, giving specifications and indicating how each item is to be acquired — i.e., rented, purchased, or provided by the applicant. If it is rented or purchased, state the estimated rental or purchase price. If it is to be furnished by the applicant, give its present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of necessary *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant, which will be used on the exploration project.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration project stating specifications and cost including labor, materials and supervision.

(g) Miscellaneous. For the operating equipment listed in 6*(d)*, describe the type and estimate the cost of repairs and maintenance expected during project operations. Do not repeat initial repairs listed in 6*(e)*. Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories.

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

7. *(a)* State whether you are prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order–I, Amended.

(b) Explain to what extent you propose to furnish your share of the costs by providing money, by use of equipment owned by you, or otherwise.

* * * * *

INT.-DUP. SEC., WASH., D.C. 15539

APPLICATION FOR AID IN EXPLORATION OF RHODONITE ORE

UNITED STATES MANGANESE CORP.

261 Madison Avenue New York 16, N.Y.

EXTRA COPY
DMEA
RECEIVED FEB 24 1958

DATE	INITIALS	CODE

INFORMATION IN SUPPORT OF APPLICATION FOR FINANCIAL AID IN EXPLORATION FOR RHODONITE ORE

Submitted to

Defense Minerals Exploration Administration
U. S. Department of Interior
Washington, D. C.

by

U. S. Manganese Corporation
261 Madison Avenue
New York 16, New York

Approved by C. Sheer
C. Sheer
Vice President

EXTRA COPY
DMEA
RECEIVED FEB 24 1958
DATE | INITIALS | CODE

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I. APPLICANT'S PROPERTY RIGHTS

A. The mining properties of United States Manganese Corporation are situated in the Animas, Eureka, and Uncompaghre Mining Districts of San Juan County, Colorado. These consist of 187 patented lode claims and 60 unpatented locations. Of the 187 patented claims, 175 are fully owned and 12 partially owned by the applicant. A list of the patented claims with corresponding U. S. Mining Survey numbers is given in Table I. Unless specifically designated otherwise, the claims listed in Table I are owned 100% by the applicant.

Table II is a list of the unpatented claims with corresponding book and page numbers of original and amended recorded location notices in each case. All these locations are recorded in the Recorder's Office, County Courthouse Building, Town of Silverton, San Juan County, Colorado.

The exact location of all property owned or controlled by the applicant is shown in Map I. Metes and bounds with respect to neighboring U. S. Mining Monuments are obtainable from this map. Table III is a list of claims which should be excluded from Government lien because they do not form part of the geological structure prevailing in the exploration area. This property is sufficiently remote from the project site so that the results of the proposed exploration could not possibly yield any information as to its mineral content.

B. The names presented in Table I and II are the only ones known to the applicant for this property. Ownership or control of this property was transferred from the Great Divide Mining and Milling Corporation to U. S. Manganese Corporation by an agreement dated October 29, 1956 and recorded in San Juan County, Colorado on March 7, 1957, book 178, page 556.

C. The applicant owns 100% interest in the patented claims listed in Table I except as specifically indicated.

D. None

II. PHYSICAL DESCRIPTION

A. The exploration work carried on thus far on applicant's property consists of the following:

1. Reconnaissance Survey

This was carried out during the summer of 1957 to locate areas of extensive manganese mineralization. Prominent outcroppings of rhodonite were found in the Treasure Mountain area between Picayune Gulch and Placer Gulch. During this survey the veins were mapped for this area and a number of surface samples were taken for assay. The most promising area involves 14 patented and 12 unpatented claims, nearly all of which are contiguous. A vein map, showing claim boundaries, access road, sampling points, etc., is presented in Map II. A list of the applicants claims in this area is presented for convenience in Table IV. Assay data for six surface samples, taken at sites indicated on Map II, is presented in Table V. A copy of the assay certificate for these samples is included in Exhibit A.

2. Preliminary Drilling Program

During September and October 1957, six exploratory holes were drilled into the Silver Chord Vein. Referring to Map II, the location of the drill sites designated as Hole No. 1 to Hole No. 6 may be found on the Silver Lion, Jenny R., and Silver Chord claims. These holes intersected the vein at an average depth between 175 and 215 feet below the outcrop, and extended for a horizontal distance of 2400 feet along the strike. Assay certificates for the drill core samples of the vein matter for each of the six holes are included in Exhibit A. A report describing this drilling operation in detail and containing a surface map of the vicinity is included as Supplement I.

There are no existing mine workings or buildings on the land in question. Several small abandoned shafts and pits have been found on these veins in the locations indicated on Map II. No records could be found, however, giving information on these earlier workings.

B. All exploration described in II A, above, was carried out entirely by the U. S. Manganese Corporation.

C. There has been no production from the property in question except for scattered surface workings of apparent early date and for which no records could be found.

D. No accurate statement as to the ore reserves on the property can be made at this time by the applicant since no exploration work has been done on the property for manganese ore with the exception of the six drill holes described in II A above. These are too few in number and are too widely spaced to permit estimating reserves. However, they do permit the inference of considerable potential for a large tonnage of rhodonite. A discussion of the possible magnitude of ore tonnage indicated by the preliminary drilling is given in the report (Supplement I) pages 5-7.

E. Geological Description

The property under consideration is located in the northeastern part of the Silverton volcanic center. The geological features of this region has been described in considerable detail by Mr. W. S. Burbank in the Proceedings* of the Colorado Scientific Society. The rock formations exposed in the area are of volcanic origin, of the middle Tertiary Age (the Silverton volcanic series), resting on a buried basement of Pre-Tertiary sedimentary and Pre-Cambrian metamorphic rocks.

There are two fault systems in which the veins occur: a northeasterly striking system parallel to the Sunnyside and Toltec faults, and a younger northwesterly striking system. The veins are the typical banded San Juan veins and the mineralization appears to have taken place by successive fissure filling. The vein matter in this area consists of banded quartz and rhodonite with varying amounts of calcite. The gangue materials contain minor amounts of the sulfides of lead, zinc, and iron.

Rhodonite is the principal manganese mineral found in these structures. There are, however, lesser amounts of other manganese silicates and carbonates.

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* Burbank, W. S., "The Sunnyside, Ross Basin, and Bonita Fault Systems and Their Associated Ore Deposits, San Juan County, Colorado"; Colorado Scientific Society Proceedings, Vol. 15, No. 7, P. 285 (1951).

F. The reasons for expecting to find a considerable tonnage of rhondonite ore in this area are the following:

1. Surface examination has indicated strong fissure veins of considerable width throughout this area. Outcrops of these veins are 40 feet or more in width and may be followed along the strike for linear distances totaling several miles. Where outcrops are visible, the rocks are often characterized by the typical black stain due to weathered manganese mineral. The assays of the outcrop samples (Table V) show the presence of considerable manganese.

2. The six diamond drill holes, mentioned in II A above, which pierce the vein at a depth of ~200 feet, have demonstrated the persistence at this depth of considerable rhodonite in the vein matter, over a linear distance of 2400 feet along one of the major veins. The assay results of the core samples taken from the drill holes were used to calculate the approximate vein composition with regard to the principle gangue materials. This is summarized in Table VI. Averaged over the six holes, a rhodonite content of approximately 23% of the vein matter is indicated. The occurrence habit of the gangue materials, judging from visual inspection of the cores, appears to be in the form of alternating bands with relatively coarse intergrowth. Some of these bands were several feet or more in thickness, so that the recovery of a high grade rhodonite from the vein matter would appear feasible. It is significant that at the 200 foot depth, the vein width, as determined from the drilling log, averaged 25 feet.

3. Rhodonite is known to occur massively in the adjacent Sunnyside Mine located at 0.9 mile from the property to the west. Large tonnages are indicated by the prominent showings in the No Name, Sunnyside, and Washington veins of this mine. In particular, a dyke of almost solid rhodonite has been exposed in the Washington ore body measuring about 25 feet in thickness where it is intersected by the Terry Tunnel. This structure has been followed for a vertical distance of 1000 ft with no evidence of pinching off at the lowest level of exposure and appears to continue along the strike for at least 900 ft. Similarly at 0.4 mile to the east, in the Sandiago tunnel, a considerable showing of rhodonite was exposed at a depth of 800 feet, consisting of alternating rhodonite and quartz bands in a vein 45 feet in thickness. About 1/3 of the vein matter in this showing was high grade rhodonite.

G. The applicant has made no independent detailed geological studies of his property because this area has been exhaustively studied and reported in the published literature. We have used for our work the following reports:

1. Ransome, F. L., "A Report on the Economic Geology of the Silverton Quadrangle, Colorado", U. S. Geological Bulletin No. 182, USGPO (1901).

2. Purington, C. W., "Treasure Mountain, Colorado", Mining and Scientific Press, July 4, 1908.

3. Burbank, W. S., "Vein Systems of the Arrastre Basin and Regional Geologic Structure in the Silverton and Telluride Quadrangles, Colorado", Colorado Scientific Society Proceedings, Vol. 13, No. 5 (1933).

4. Kelley, V. C., "Geology, Ore Deposits, and Mines of the Mineral Point, Poughkeepsie, and Upper Uncompahgre Districts, Ouray, San Juan, Hinsdale Counties, Colorado", Colorado Scientific Society Proceedings, Vol. 14, No. 7, (1946).

5. Burbank, W. S., "The Sunnyside, Ross Basin, and Bonita Fault Systems and Their Associated Ore Deposits, San Juan County, Colorado"; Colorado Scientific Society Proceedings, Vol. 15, No. 7, (1951).

6. Larsen and Cross, "Geology and Petrology of the San Juan Region, Southwestern Colorado"; Geological Survey Professional Paper 258, USGPO, (1956).

III. ACCESSIBILITY OF PROJECT

A. The following persons are designated by the applicant to meet DMEA representatives and will be available to conduct them to the property for inspection.

1. Mr. S. Lawrence Martin, Field Representative of U. S. Manganese
   c/o Benson Hotel
   Silverton, Colorado
   Telephone: Dudley 7-9902

2. Mr. Fred S. Haley, Consultant Geologist
   3813 Mackland Avenue, N. E.
   Albuquerque, New Mexico
   Telephone: Amherst 8-2074

3. Directions for Property Inspection
   After notification of Mr. Martin and Mr. Haley, meet in Silverton at specified time at the Benson Hotel. Property is accessible by jeep or similar conveyance. Travel northeast on state highway from Silverton past the old site of the town of Eureka, up the Animas Canyon Road, 12 miles from Silverton. Turn left on Picayune Gulch Road which leads to the property 3 miles from the intersection.

B. Shipping and supply point for this perperty is Silverton, Colorado. The site is 15 miles from Silverton.

IV. THE EXPLORATION PROJECT

A. The proposed exploration project has been divided into three stages, all of which will consist of diamond drilling from the surface. The project plan involves proceeding with each of the three stages in sequence with the details of procedure for the later stages depending to some extent on the findings of the preceding stages. The following is the proposed work apportionment for the three stages.

Stage I

Stage I will consist of 30 holes totaling 10,925 feet of diamond drilling. These holes will be drilled with BX size bits through the overburden, and AX size through the veins. Twenty-seven of these holes are located in the Picayune Basin, and on Treasure Mountain to the north, and three in the Placer Gulch area. Their locations are shown on Map II and the details are listed in Table VII*. The general plan for Stage I is to drill 24 holes separated horizontally by approximately 500 feet at such angles as to intersect the veins about 200 feet below the outcrops. In addition, Stage I will include 6 holes to be drilled beneath the 6 holes drilled in 1957 and designed to intersect the vein at 500 feet below the outcrop.

Stage II

Stage II will consist of 33 holes totaling 27,420 feet of diamond drilling. The positioning of Stage II holes will be precisely determined at the end of Stage I. In general, however, 24 of these holes will be designed to intersect the veins at 300 feet below the shallower Stage I holes for a total depth of 500 feet below the outcrops; three will be drilled in the vicinity of certain Stage I holes, (D-17 to D-22 inclusive), so as to intersect the vein 1000 feet below the outcrops; finally, 6 holes are proposed on veins or parts of veins not drilled during Stage I, but where geological work in 1958 may indicate promise of good rhodonite content.

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* It is not necessarily intended that the Stage I holes be drilled in the sequence presented in Table VII.

V. EXPERIENCE

United States Manganese Corporation is associated with the Vitro Minerals Corporation of Salt Lake City, Utah, through their joint affiliation with the Vitro Corporation of America, 261 Madison Avenue, New York, New York. The Vitro Minerals Corporation is engaged in exploration work and mining, as a major activity.

The proposed exploration project will be supervised by Mr. Fred S. Haley, 3313 Mackland Avenue, Albuquerque, New Mexico, who is geological consultant to U. S. Manganese Corporation.

Mr. Haley has had more than 14 years experience in exploration work, part of which has been spent in the Silverton area. In particular, he was specifically engaged for one full season and parts of some others in mapping rhodonite occurrences and estimating reserves in the same general area for the United States Mining, Smelting and Refining Co.

VI. ESTIMATE OF COSTS

A. Independent Contracts

It is the intention of U. S. Manganese to execute the proposed exploration project through independent contractors. Two such contracts are contemplated, one for the actual drilling, and one for management and technical services. The total estimated costs for each of these contracts is detailed in the following.

1. Drilling Contract*

Stage I

Core Size	Depth Range	Footage	Rate	Cost
BX	0-250 ft	300 ft	$5.70/ft	$ 1,710.00
AX	0-250	7,200	5.30	38,160.00
AX	250-500	3,425	5.75	19,693.75
Totals		10,925 ft		$59,563.75

Plus 30¢/ft for water haulage, reaming, casing, cementing, etc., = 30¢ x 10,925 = $3,277.50

Total drilling cost, Stage I $62,841.25

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* Quotations from drilling contractors are included in Exhibit B. The estimate of drilling costs is based on the lowest of these quotations, received from the Boyles Bros. Drilling Co., 1321 So. Main Street, Salt Lake City, Utah. (Letter dated Jan. 13, 1958 in Exhibit B). The Boyles Bros. Company were retained to do the preliminary drilling mentioned in Item II A above.

Stage II

Core Size	Depth Range	Footage	Rate	Cost
BX	0-250 ft	330 ft	$5.70/ft	$ 1,881.00
AX	0-250	7,920	5.30	41,976.00
AX	250-500	7,230	5.75	41,572.50
AX	500-1000	9,300	6.40	59,520.00
AX	1000-2000	1,950	7.30	14,235.00
Totals		26,730		$159,184.50

Plus 30¢/ft for water haulage, reaming, casing, cementing, etc., = 30¢ x 26,730 = $8,019.00

Total drilling cost, Stage II $167,203.50

Stage III

Stage III will consist of 18 holes totaling 25,470 feet of diamond drilling. The exact positions of Stage III holes will be determined at the end of Stage II, but in general, will be designed to intersect the veins at 500 feet below Stage II holes for a total depth of about 1000 feet below the outcrops.

The bulldozer work estimated for preparing drill sites and drill roads is 130 hours for each of Stages I and II, and 75 hours for Stage III. The average hole depth for the 24 shallow holes of Stage I is estimated at 330 feet, while the 6 deeper holes of Stage I will average 500 feet. For Stages II and III, the holes which intersect the veins at 500 feet below the outcrop, will average 825 feet in length, while those which intersect the veins at 1000 feet will average 1650 feet.

B. No access road is required for the proposed project since a good jeep road to the property is already in existence, as indicated in Map II.

C. The work on this project would commence on June 15, and extend to October 31, for each of three successive years, starting in 1958 and ending in 1960. It is planned to carry out each of the three stages, into which the exploration project is divided, during consecutive years. The dates chosen are dictated by average weather conditions in the area which are such as to preclude exploration work during the winter.

For Stage I holes, the anticipated average drilling progress for one eight hour shift is 18 feet per drill; for Stage II, 15 feet per drill shift is anticipated, while for the deeper Stage III holes, 12 feet per drill shift is the expected average. The project is planned on the basis of a double shift operation, in which 4 drill rigs would be employed during Stage I, 8 during Stage II, and 9 during Stage III. Therefore the anticipated average daily progress is as follows:

Stage I: 18 feet/drill x 4 drills/shift x 2 shifts/day
= 144 feet/day

Stage II: 15 feet/drill x 8 drills/shift x 2 shifts/day
= 240 feet/day

Stage III: 12 feet/drill x 9 drills/shift x 2 shifts/day
= 216 feet/day

Stage III

Core Size	Depth Range	Footage	Rate	Cost
BX	0-250 ft	18- ft	$5.70/ft	$ 1,026.00
AX	0-250	4,320	5.30	22,896.00
AX	250-500	4,500	5.75	25,896.00
AX	500-1000	7,950	6.40	50,880.00
AX	1000-2000	7,800	7.30	56,940.00
Totals		24,750 ft		$157,617.00

Plus 30¢/ft for water haulage, reaming, casing, cementing, etc.,
= 30¢ x 24,750 = $7,425.00

Total drilling cost for Stage III $165,042.00

Summary of drilling costs:

Stage I	$ 62,841.25
Stage II	167,203.50
Stage III	165,042.00
Total estimated cost of drilling contract.	$395,086.75

2. Management and Technical Services Contract

The following is a breakdown of the estimated costs for supervising the drilling operation and performing all technical services except the actual drilling, bulldozing, and assay work, these services to be supplied by independent vendors.

Stage I

Total footage for Stage I estimated at 10,925 ft.
Assume 4 drill rigs on two shift operation.
Therefore estimated drilling time is:

10,925 ÷ 18 ft/shift = 607 drill shifts
607 drill shifts ÷ 2 shifts/day = 304 drill days
304 drill days ÷ 4 drills = 76 days ÷ 26 days/mo. = 3 months

In addition to the technical manager it is estimated that 12 man-months of geologists' time plus 30 days for a surveying crew will be required for surveying, mapping, logging, and other necessary field work.

Personnel	Salary	Expenses
Geologists; 3 at $1,000/mo. x 2 months	$ 6,000.00	$1,980.00
2 at $ 750/mo. x 3 months	4,500.00	1,980.00
Surveying Crew; $100/day x 30 days	3,000.00	660.00
Samplers; 2 @ $104/wk. x 13 wks.	2,704.00	-
Draftsman; 1 @ $575/mo. x 5 months	2,875.00	1,500.00
Clerk-typist; 1 @ $290 x 4 months	1,160.00	-
Totals	$20,239.00	$6,120.00
Labor taxes, etc. @ 15%	3,035.84	
Total direct salaries	$23,274.84	
Expenses	6,120.00	
Total personnel cost	$29,394.84	

Operating Equipment

Jeep rental - 3 @ $275/mo. x 4 months	$ 3,300.00
Core splitter rental - 1 @ $25/mo. x 4 months	100.00
	$ 3,400.00

Operating Materials and Supplies

Jeep operation; gas, oil, maintenance @ 15¢/mi. x 3 jeeps x 70 mi./day each x 26 days/mo. x 4 months	$ 3,276.00
Core boxes: 560 boxes (20') x 40¢ ea.	224.00
Sample sacks: 40 @ 50¢ each	20.00
Misc.: drafting materials, office supplies, etc.	400.00
	$ 3,920.00

Miscellaneous Costs

Reproduction of maps and reports	$ 800.00
Local office rent @ $100/mo. x 4 months	400.00
Telephone, postage, freight on samples, etc.	500.00
	$ 1,700.00

Summary of Stage I Costs

Personnel	$29,394.84
Operating equipment	3,400.00
Operating materials and supplies	3,920.00
Miscellaneous	1,700.00
Total not including fee	$38,414.84
Management fee	17,000.00
Total cost for Stage I	$55,414.84

Stages II and III

Total footage for Stage II estimated @ 27,420 ft.
Assume 8 drill rigs on two shift operation.
Therefore estimated Stage II drilling time is:

27,420 ft ÷ 15 ft/shift = 1828 drill shifts
1828 drill shifts ÷ 2 shifts/day = 914 drill days
914 drill days ÷ 8 drills = 114 days ÷ 26 days/mo. = 4.4 mos.

Total footage for Stage III estimated @ 25,470 ft.
Assume 9 drill rigs on two shift operation.
Therefore estimated Stage III drilling time is:

25,470 ft ÷ 12 ft/shift = 2,122.5 drill shifts
2,122.5 drill shifts ÷ 2 shifts/day = 1,061 drill days
1,061 drill days ÷ 9 drills = 118 days ÷ 26 days/mo. = 4.5 mos.

For both Stages II and III, it is estimated that in addition to the technical manager, 5 man-months of geologists time will be required for logging, supervisory assistance, and incidental field work.

Since the drilling operation planned for Stages II and III are nearly identical, it is assumed that the costs will be the same. The following cost breakdown therefore applies to both.

Personnel	Salary	Expenses
Geologist: 1 @ $750/mo. x 5 months	$ 3,750.00	$1,650.00
Samplers: 4 @ $104/wk x 19 weeks	7,904.00	-
Draftsman: 1 @ $575/mo. x 3 months	1,725.00	900.00
Clerk-typist: 1 @ $290/mo. x 5 months	1,450.00	-
Totals	$14,829.00	$2,550.00
Labor taxes, etc. @ 15%	2,224.35	
Total direct salaries	$17,053.35	
Expenses	2,550.00	
Total personnel cost	$19,603.35	
Operating Equipment		
Jeep rental: 3 @ $275/mo. x 5 months	$ 4,125.00	
Core splitter rental: 1 @ $25/mo. x 5 months	125.00	
	$ 4,250.00	
Operating Materials and Supplies		
Jeep operation: gas, oil, maintenance, etc. @ 15¢/mi. x 3 jeeps x 70 mi./day x 120 days	$ 3,780.00	
Core boxes: 1380 boxes (20') @ 40¢ each	552.00	
Sample sacks: 50 @ 50¢ each	25.00	
Miscellaneous: drafting materials, office supplies, etc.	500.00	
	$ 4,857.00	
Miscellaneous Costs		
Reproduction of maps and reports	$ 800.00	
Local office rent @ $100/mo. x 5 months	500.00	
Telephone, postage, freight on samples, etc.	500.00	
	$ 1,800.00	

Summary of Stage II or Stage III Costs

Personnel	$19,603.35
Operating equipment	4,250.00
Operating materials and supplies	4,857.00
Miscellaneous costs	1,800.00
Total not including fee	$30,510.35
Management fee	17,000.00
Total cost for Stage II, III	$47,510.35

Summary of Management and Technical Services Contract

Stage I costs	$55,414.84
Stage II costs	47,510.35
Stage III costs	47,510.35
Total estimated cost of management and technical services contract	$150,435.54

VI B Included in VI A

VI C Included in VI A

VI D Included in VI A

VI E None

VI F None

VI G The work not included in the two independent contracts described in VI A above, but necessary for the completion of the proposed project, falls into the two categories listed below. It is planned to secure these services by purchase orders placed with appropriate firms. The estimated costs for this work are as follows:

(1) Bulldozing for site preparation and construction of auxiliary drill roads:

Stage I	
130 bulldozer-hours @ $15/hr.	$ 1,950.00
Stage II	
130 bulldozer-hours @ $15/hr.	1,950.00
Stage III	
75 bulldozer-hours @ $15/hr.	1,125.00
Total for bulldozer work	$ 5,025.00

(2) Assay work for analysis of drill-core samples. The analytical work planned will involve the same determinations performed in the preliminary drilling and included in Exhibit A. It is estimated that an average of 15 assays per hole will be required, at a cost of $13.00 per sample.

Stage I	
30 holes x 15 assays x $13 per sample	$ 5,850.00
Stage II	
33 holes x 15 assays x $13 per sample	6,435.00
Stage III	
18 holes x 15 assay x $13 per sample	3,510.00
Total for analytical work	$15,795.00

Recapitulation of Estimated Costs

	Stage I	Stage II	Stage III
Drilling Contract	$ 62,841.25	$167,203.50	$165,042.00
Management and Technical Services Contract	55,414.84	47,510.35	47,510.35
Bulldozer Work	1,950.00	1,950.00	1,155.00
Analytical Work	5,850.00	6,435.00	3,510.00
Totals	$126,056.09	$223,098.85	$217,217.35

Total estimated cost of exploration project:

Stage I -	$126,056.09
Stage II -	223,098.58
Stage III -	217,217.35
Grand total	$566,372.02

VII.

A. The U. S. Manganese Corporation is prepared to furnish its share of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order-I, Amended.

B. The U. S. Manganese Corporation proposes to furnish its share of the costs in the form of money payments to independent contractors and service companies.

TABLE I

List of Patented Mining Claims Owned By
United States Manganese Corporation
As of October 25, 1957

Name of Claim	U. S. Mining Survey Number	Mining District
Acherson	1718	Eureka
An Undivided 1/2 Acapulca	180	Uncompahgre
Adelia	510	"
Big Giant	505	"
Byron	419-A	Eureka
Byron Mill Site	419-B	"
Buffalo	509	Uncompahgre
Clara	506	"
Central	507	"
A. W. Hafer	508	"
Georgia	504	"
Hite Wing	511	"
Silver	512	"
Waldron	513	"
Acme	5671	Eureka
Roy	298	"
Rainbow	5671	"
Tempest	5671	"
Ben Bolt	994	"
Bountiful	2583	"
Boston Dip	1478	Uncompahgre
Brown	5140	Eureka
Bryan (Part)	15481	Uncompahgre
Bullion	352	"
Big Mountain	5073	"
Belcher	2121	Eureka and Uncompahgre
Bonanza No. 2	5121	Uncompahgre
Bannock Burne	1204	"
An Undivided 81/100 Bruce	19320	Eureka

Name of Claim	U. S. Mining Survey Number	Mining District
An Undivided 81/100 Little Julia	19320	Eureka
Braidalbine	2501	"
Blue Jacad	5398	Uncompahgre
Copper King	5120	"
Caesar	6715	Eureka
Canola	2101	"
Crescent	18238	"
Carbonate King	1175	"
Canon	1262	"
Custer	14438	"
Cleveland	5072	Uncompahgre
Cleveland No. 2	5072	"
Cross Cut	1847	"
Clydesdale	2501	Eureka
Cornell	858	"
Beach	17954	Eureka
Lotah	17954	"
Protection	17954	"
Protection No. 1	17954	"
Yellowstone	17954	"
Dolly	1231	"
Emma	1753	"
Ellen	1232	"
Digger Indian No. 2	485	Uncompahgre
Denver Belle	13428	"
Hoosier Girl	13428	"
North Star	14447	"
An Undivided 17/18 Rosenkranz	13428	"
Denver	5416	"
Denver	2071	"
Dexter	4860	Eureka
Excelsior	857	"
Equator	113	"
Excelsior	19110	"
Excelsior Ext.	19110	"
Hard Cash	1241	"
Home Stake	19110	"

Name of Claim	U. S. Mining Survey Number	Mining District
Home Stake Ext.	19110	Eureka
Home Stake Annex	19110	"
Gold Brick	19110	"
Ore Cache	19110	"
La Plata Grande	1263	"
Evergreen	16931	Uncompahgre
Esquimaux	5126	"
Extension	676	Eureka
Indian Chief	675	"
Enterprise	2102	"
Evening Star	1851	Uncompahgre
Eva	2072	"
Frances	19411	Eureka
Little Giant	19411	"
Forest Queen	2186	Uncompahgre
Frank Barber	2676	"
Meyers	2676	"
O.K.	2676	"
Flora Fredericks	2605	Eureka
Pavillion	1601	"
Specie	1602	"
Sue Amenda	2605	"
Joe Shipley	19016	"
Fanetta	5415	"
Toronto	5425	"
Great Eastern No. 2	235	Uncompahgre
An Undivided 1/3 Great Republic	970	Eureka
Galena No. 1	17366	Animas
Galena No. 3	17366	"
Galena No. 6	18640	"
Gipsey Maid	1845	Uncompahgre
Ready and Rough	1846	"
Great Eastern	725	Eureka
Silver Lion	322	"
Gipsey King	1775	Uncompahgre
Great Western	1603	Eureka
Hilgrade	1096	Uncompahgre

Name of Claim	U. S. Mining Survey Number	Mining District
Hurricane Peak	478	Uncompahgre
Hesperian	1258	"
Index	18120	Eureka
Iron	2325	"
Justice	18152	"
Jennie R.	2331	"
J. H. French Placer	45	Animas and Eureka
Kate Gibson	1757	Eureka
Katie	746	"
Lee	1716	"
Lake Park	241	Uncompahgre
Lincoln Boy	1261	"
Little Flossie	2327	Eureka
North Pole	1393	"
Promontory	4860	"
Pontoon	1752	"
Ruby	2326	"
Ruby Cross	2328	"
Sterling	414	"
Silver Wing (Surface Only)	70	"
Monitor	530	"
Mountain King	2662	"
Mobile	398	Uncompahgre
An Undivided 1/5 Mountain Eagle	15304	Eureka
Manhattan	495-A	Uncompahgre
Manhattan Mill Site	495-B	"
Merrimac	1751	Eureka
My Choice	2397	Eureka and Uncompahgre
Morning Star	18282	Eureka
Nasby	1918	Uncompahgre
Niagara	2133	Eureka
Redemption	1915	Uncompahgre
O. C. Day	1713	Eureka
Oberto	217	"
Parnell	15251	Eureka and Uncompahgre

Name of Claim	U. S. Mining Survey Number	Mining District
Parallel	18152	Eureka
First S.W. Poughkeepsie Ext.	2177	Uncompahgre
Pine	5123	Eureka and Uncompahgre
Paymaster	4770	Eureka
Queen	826	Uncompahgre
Rollo	350	"
Rarus	995	Eureka
Russell	2184	"
San Francisco	4829	"
An Undivided 10/11 Seven Thirty	225	Uncompahgre
St. Louis	501	"
Silvery Falls	5120	"
Silver Cliff	7300	"
Silver Chord	2103	Eureka
Silver Blossom	567	Uncompahgre
Silver Hill	351	"
Silver Cloud	973	Eureka
Silver Crown	18282	"
Silver Key	18282	"
Silver King	18282	"
Summitt	18282	"
Seventy-six	2108	Uncompahgre
Silver Chord	2335	Eureka and Uncompahgre
Silver Belt	1365	Uncompahgre
Tyrol	476	"
An Undivided 3/5 Toltec	5544	Eureka
An Undivided 3/5 Toltec No. 1	5544	"
An Undivided 2/3 Taggert	2338	"
Tom Moore	94	"
Vermillion Ext. No. 2	1290	"
Vermillion Ext. No. 1	109	"
Wolverine	1179	Uncompahgre
War Eagle	20074	Eureka
Silver Comet	2134	"
Eagle	17954	"

Name of Claim	U. S. Mining Survey Number	Mining District
Daisy	1693	Eureka
I.X.L.	4879	"
Paymaster	1694	"
Barhoff	19738	"
Maude S.	2466	"
Shakespeare	2465	"
Big Cliff	17954	"
Cliff	17692	"
Golconda Mill Site	17701	"
Vesta	19127	"
Veta Grande	17954	"
Empire State	6937	"
Garibaldi	659	"
Crater Lode	20047	"

TABLE II

List of Unpatented Claims*
Controlled by U. S. Manganese Corporation
as of October 25, 1957
in Eureka Mining District, San Juan County, Colorado

	Name	Original Recording		Amended Recording	
		Book	Page	Book	Page
1.	Empire	147	510	--	--
2.	Empire No. 1	147	511	--	--
3.	Empire No. 2	157	282	--	--
4.	Empire No. 3	157	283	--	--
5.	Empire No. 4	157	284	--	--
6.	Empire No. 5	157	285	--	--
7.	Empire No. 6	157	287	--	--
8.	Empire No. 7	157	288	--	--
9.	Empire No. 8	157	289	--	--
10.	Empire No. 9	157	294	--	--
11.	Empire No. 10	157	295	--	--
12.	Float Gold Placer, Tracts A & B	157	268	--	--
13.	Copper Boy No. 1	147	233	92A	279
14.	Copper Boy No. 2	147	254	--	--
15.	Copper Boy No. 3	142	5	92A	280
16.	Frances No. 1	147	215	--	--
17.	S. G. M.	147	543	92A	267
18.	Tom Moore No. 1	147	215	129	635
19.	Tom Moore No. 2	157	350	--	--
20.	Tom Moore No. 3	157	351	--	--
21.	Tom Moore No. 5	147	315	92A	277
22.	Tom Moore No. 6 (1st location)	147	316	--	--
23.	Tom Moore No. 6 (2nd location)	157	321	--	--
24.	Slide	116	312	129	208

* Affidavits of labor for these claims filed in San Juan County Recorder's Office for the year, July 1, 1957 to June 30, 1958.

Name	Original Recording Book	Original Recording Page	Amended Recording Book	Amended Recording Page
25. Mexia	147	367	92A	269
26. Mexia No. 2	147	368	92A	270
27. Mexia No. 3	157	332	--	--
28. Mexia No. 4	157	333	--	--
29. Mexia No. 6	157	334	--	--
30. Treasure Mountain	147	527	92A	271
31. Treasure Mountain No. 1	147	528	92A	272
32. Treasure Mountain No. 2	157	322	--	--
33. Treasure Mountain No. 3	157	323	--	--
34. Treasure Mountain No. 4	157	324	--	--
35. Treasure Mountain No. 5	157	325	--	--
36. Treasure Mountain No. 6	147	529	92A	273
37. Treasure Mountain No. 7	147	530	--	--
38. Treasure Mountain No. 8	157	335	--	--
39. Treasure Mountain No. 9	157	326	--	--
40. Treasure Mountain No. 10	157	336	--	--
41. Treasure Mountain No. 11	157	337	--	--
42. Treasure Mountain No. 12	157	338	--	--
43. Treasure Mountain No. 13	157	339	--	--
44. Treasure Mountain No. 14	157	340	--	--
45. Treasure Mountain No. 15	157	327	--	--
46. Treasure Mountain No. 16	157	341	--	--
47. Treasure Mountain No. 17	157	342	--	--
48. Golden Fleece No. 1	157	316	--	--
49. Golden Fleece No. 2	157	317	--	--
50. Golden Fleece No. 3	157	318	--	--
51. Golden Fleece No. 4	157	319	--	--
52. Golden Fleece No. 5	147	525	92A	274
53. Golden Fleece No. 6	147	526	92A	275
54. Byron No. 1	147	370	--	--
55. Byron No. 2	147	371	--	--
56. Byron No. 3	147	372	92A	276
57. Byron No. 4	147	524	--	--
58. Nantucket No. 1	147	493	--	--
59. Nantucket No. 2	147	494	92A	278
60. Bear No. 12	157	267	--	--

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TABLE III

List of United States
Manganese Property to Be Excluded
From Government Lien

A. Patented Claims

Name of Claim	U. S. Mining Survey Number	Mining District
An Undivided 1/2 Acapulca	180	Uncompahgre
Adelia	510	"
Big Giant	505	"
Byron	419-A	Eureka
Byron Mill Site	419-B	"
Buffalo	509	Uncompahgre
Clara	506	"
Central	507	"
A. W. Hafer	508	"
Georgia	504	"
Hite Wing	511	"
Silver	512	"
Waldron	513	"
Acme	5671	Eureka
Roy	298	"
Rainbow	5671	"
Tempest	5671	"
Ben Bolt	994	"
Bountiful	2583	"
Boston Dip	1478	Uncompahgre
Brown	5140	Eureka
Bryan (Part)	15481	Uncompahgre
Bullion	352	"
Big Mountain	5073	"
Belcher	2121	Eureka and Uncompahgre
Bonanza No. 2	5121	Uncompahgre
Bannock Burne	1204	"
An Undivided 81/100 Bruce	19320	Eureka

Name of Claim	U. S. Mining Survey Number	Mining District
An Undivided 81/100 Little Julia	19320	Eureka
Braidalbine	2501	"
Blue Jacad	5398	Uncompahgre
Copper King	5120	"
Caesar	6715	Eureka
Carbonate King	1175	"
Canon	1262	"
Custer	14438	"
Cleveland	5072	Uncompahgre
Cleveland No. 2	5072	"
Cross Cut	1847	"
Clydesdale	2501	Eureka
Cornell	858	"
Beach	17954	"
Lotah	17954	"
Protection	17954	"
Protection No. 1	17954	"
Yellowstone	17954	"
Dolly	1231	"
Emma	1753	"
Ellen	1232	"
Digger Indian No. 2	485	Uncompahgre
Denver Belle	13428	"
Hoosier Girl	13428	"
An Undivided 17/18 Rosenkranz	13428	"
Denver	5416	"
Denver	2071	"
Dexter	4860	Eureka
Equator	113	"
Excelsior	19110	"
Excelsior Ext.	19110	"
Hard Cash	1241	"
Home Stake	19110	"
Home Stake Ext.	19110	"
Home Stake Annex	19110	"
Gold Brick	19110	"
Ore Cache	19110	

Name of Claim	U. S. Mining Survey Number	Mining District
La Plata Grande	1263	Eureka
Evergreen	16931	Uncompahgre
Esquimaux	5126	"
Extension	676	Eureka
Indian Chief	675	"
Evening Star	1851	Uncompahgre
Eva	2072	"
Frances	19411	Eureka
Little Giant	19411	"
Forest Queen	2186	Uncompahgre
Frank Barber	2676	"
Meyers	2676	"
O. K.	2676	"
Flora Fredericks	2605	Eureka
Pavillion	1601	"
Specie	1602	"
Sue Amenda	2605	"
Joe Shipley	19016	"
Fanetta	5415	"
Toronto	5425	"
Great Eastern No. 2	235	Uncompahgre
Galena No. 1	17366	Animas
Galena No. 3	17366	"
Galena No. 6	18640	"
Gipsey Maid	1845	Uncompahgre
Ready and Rough	1846	"
Gipsey King	1775	Uncompahgre
Great Western	1603	Eureka
Hilgrade	1096	Uncompahgre
Hurricane Peak	478	"
Hesperian	1258	"
Iron	2325	Eureka
Justice	18152	"
J. H. French Placer	45	Animas and Eureka
Lake Park	241	Uncompahgre
Lincoln Boy	1261	"
Little Flossie	2327	Eureka

Name of Claim	U. S. Mining Survey Number	Mining District
North Pole	1393	Eureka
Promontory	4860	"
Pontoon	1752	"
Ruby	2326	"
Ruby Cross	2328	"
Sterling	414	"
Silver Wing (Surface Only)	70	"
Monitor	530	"
Mobile	398	Uncompahgre
An Undivided 1/5 Mountain Eagle	15304	Eureka
Manhattan	495-A	Uncompahgre
Manhattan Mill Site	495-B	"
Merrimac	1751	Eureka
My Choice	2397	Eureka and Uncompahgre
Nasby	1918	Uncompahgre
Niagara	2133	Eureka
Redemption	1915	Uncompahgre
Oberto	217	Eureka
Parnell	15251	Eureka and Uncompahgre
Parallel	18152	Eureka
First S. W. Poughkeepsie Ext.	2177	Uncompahgre
Pine	5123	Eureka and Uncompahgre
Paymaster	4770	Eureka
Queen	826	Uncompahgre
Rollo	350	"
Rarus	995	Eureka
Russell	2184	"
San Francisco	4829	"
An Undivided 10/11 Seven Thirty	225	Uncompahgre
St. Louis	501	"
Silvery Falls	5120	"
Silver Cliff	7300	"
Silver Blossom	567	"
Silver Hill	351	"

Name of Claim	U. S. Mining Survey Number	Mining District
Silver Cloud	973	Eureka
Seventy-six	2108	Uncompahgre
Silver Chord	2335	Eureka and Uncompahgre
Silver Belt	1365	Uncompahgre
Tyrol	476	"
An Undivided 2/3 Taggert	2338	Eureka
Tom Moore	94	"
Vermillion Ext. No. 2	1290	"
Vermillion Ext. No. 1	109	"
Wolverine	1179	Uncompahgre
Silver Comet	2134	Eureka
Eagle	17954	"
Daisy	1693	"
Paymaster	1694	"
Barhoff	19738	"
Maude S.	2466	"
Shakespeare	2465	"
Big Cliff	17954	"
Cliff	17692	"
Golconda Mill Site	17701	"
Vesta	19127	"
Veta Grande	17954	"
Empire State	6937	"
Garibaldi	659	"

B. Unpatented Claims

Name	Original Recording Book	Original Recording Page	Amended Recording Book	Amended Recording Page
Empire	147	510	--	--
Empire No. 1	147	511	--	--
Empire No. 2	157	282	--	--
Empire No. 3	157	283	--	--
Empire No. 4	157	284	--	--
Empire No. 5	157	285	--	--
Empire No. 6	157	287	--	--
Empire No. 7	157	288	--	--
Empire No. 8	157	289	--	--
Empire No. 9	157	294	--	--
Empire No. 10	157	295	--	--
Float Gold Placer, Tracts A & B	157	268	--	--
Copper Boy No. 1	147	233	92A	279
Copper Boy No. 2	147	254	--	--
Copper Boy No. 3	142	5	92A	280
Frances No. 1	147	215	--	--
S. G. M.	147	543	92A	267
Tom Moore No. 1	147	215	129	635
Tom Moore No. 2	157	350	--	--
Tom Moore No. 3	157	351	--	--
Tom Moore No. 5	147	315	92A	277
Tom Moore No. 6 (1st location)	147	316	--	--
Tom Moore No. 6 (2nd location)	157	321	--	--
Slide	116	312	129	208
Golden Fleece No. 5	147	525	92A	274
Golden Fleece No. 6	147	526	92A	275
Byron No. 4	147	524	--	--
Bear No. 12	157	267	--	--

TABLE IV

LIST OF U.S. MANGANESE CLAIMS IN THE EXPLORATION AREA

(1) PATENTED

Kate Gibsen, No. 1757

Index, No. 18120

Excelsior, No. 857

Mountain King, No. 2662

Crescent, No. 18238

Great Republic, No. 970

Canola, No. 2101

Great Eastern, No. 725

Silver Lion, No. 322

Jennie R., No. 2331

Silver Chord, No. 2103

Crater, No. 20047

Enterprise, No. 2102

War Eagle, No. 20074

(2) UNPATENTED

Golden Fleece, No. 1

" " No. 2

" " No. 3

" " No. 4

Treasure Mountain, No. 3

" " No. 4

" " No. 5

TABLE IV (Continued)

Treasure	Mountain,	No. 8
"	"	No. 9
"	"	No. 10
"	"	No. 11
	"	No. 12

TABLE V - SURFACE SAMPLE ASSAY DATA

Symbol (Map II)	Assay No.	Location	Type of Sample	Assay Data				
				% Mn	% SiO_2	% Combined Pb, Zn, Cu	Ozs/ton Au	Ozs/ton Ag
S1	5426	Kate Gibson Claim, #1757 200 ft. from S. W. boundary	Channel sample across 6 ft. rhod. -bearing outcrop	26.5	33.8	0.42	trace	0.1
S2	5427	Kate Gibson Claim, #1757 750 ft. from S. W. boundary	Channel sample across 12 ft. rhod. -quartz outcrop	25.4	43.8	0.55	trace	0.2
S3	5431	Index Claim #18120 center of claim	Composite grab sample from dump adjacent to small pit	15.3	21.6	3.70	0.02	3.4
S4	5423	Great Eastern Claim #725 center of east-west vein	Channel sample across 8 ft. rhod. -quartz outcrop	13.2	77.9	0.05	0.02	1.1
S5	5429	Silver Lion Claim, #322 center of east-west vein	Composite grab sample from dump adjacent to small tunnel	7.7	88.7	0.60	trace	0.3
S6	5428	Jennie R. Claim, #2331 center of east-west vein	Composite grab sample from dump near portal of small shaft	8.2	80.2	0.45	0.01	0.8

TABLE VI

APPROXIMATE CONTENT OF MAJOR GANGUE MATERIALS

IN VEIN MATTER AT 200 FT. DEPTH

(Calculated From Drill Core Assay Data)

Hole No.	Depth* of Vein	Vein Width, Ft.	% Rhodonite	% Free Quartz	% Calcite
1	219	22.5	26	18	40
2	209	25.7	31	11	41
3	188	46.5	18	34	20
4	197	63.2	27	28	44
5	181	31.5	21	45	17
6	184	18.0	15	45	30

* Below outcrop

TABLE VII

DRILL HOLES PROPOSED FOR STAGE I
OF EXPLORATION PROJECT

A. Picayune Basin

Hole No.	Claim	Inclination	Depth in Feet Bx	Depth in Feet Ax	Total
D-1	Excelsior	-45°	10	390	400
D-2	Excelsior	-45°	10	390	400
D-3	Mt. King	-30°	10	250	260
D-4	Mt. King	-30°	10	250	260
D-5	Mt. King	-30°	10	250	260
D-6	Index	-45°	10	310	320
D-7	Index	-45°	10	310	320
D-8	Great Republic	-35°	10	430	440
D-9	Great Republic	-35°	10	440	450
D-10	Great Republic	-45°	10	365	375
D-11	Conola	-45°	10	390	400
D-12	Great Eastern	-45°	10	330	340
D-13	Great Eastern	-45°	10	330	340
D-14	Crescent	-45°	10	270	280
D-15	Crescent	-45°	10	270	280
D-16	Silver Lion	-35°	10	240	250
D-17	Silver Lion	-45°	10	490	500
D-18	Silver Lion	-45°	10	480	490
D-19	Jennie R	-45°	10	450	460
D-20	Jennie R	-45°	10	480	490
D-21	Jennie R	-45°	10	530	540
D-22	Silver Chord	-45°	10	500	510
D-23	Jennie R	-45°	10	250	260
D-24	Silver Chord	-45°	10	250	260
D-25	Crater	-45°	10	320	330
D-26	Crater	-45°	10	320	330
D-27	Treasure Mt. #5 (U. P.)	-45°	10	320	330
					9,875

B. Placer Gulch

Hole No.	Claim	Inclination	Depth in Feet Bx	Ax	Total	
D-28	Kate Gibson	45°	10	340	350	
D-29	Kate Gibson	45°	10	340	350	
D-30	Kate Gibson	45°	10	340	350	
						1,050
					Total footage for Stage I	10,925

Bulldozer work for drill sites and drill roads estimated at 130 hrs.

EXHIBIT A

DRILL CORE SAMPLE ASSAY DATA
FROM PRELIMINARY DRILLING
OF SILVER CHORD VEIN

W. C. ELLIOTT

(Drill Core Samples)

ROOT & NORTON

ASSAYERS AND CHEMISTS

UMPIRE AND CONTROL WORK — ORE SHIPPERS' AGENTS

1139 Main Avenue, Durango, Colorado

Telephone 36
P. O. Box 301

EXHIBIT A

CERTIFICATE OF ASSAY

Assayed for U. S. Manganese Corporation

NO.	DESCRIPTION	Ozs. Per Ton 2000 Lbs. GOLD	Ozs. Per Ton 2000 Lbs. SILVER	Per Cent Lead (wet)	Per Cent Copper (wet)	Per Cent Zinc	Per Cent ~~Insoluble~~ SiO_2	Per Cent Iron	~~Lbs. Per Ton~~ % CaO	% Mn
1	~~Exploration Lots~~	0.03	2.6							
~~XXX~~2		0.02	1.5							
3	~~Root & Norton~~ 10.5	0.05	5.0	0.10	nil	0.15	38.4	2.9	17.6	9.3
4	~~Smelter~~ .5	0.60	58.3	2.10	0.15	3.90	52.8	2.6	13.2	6.1
5	10.6	Tr.	1.0	nil	nil	0.05	45.6	3.0	15.4	14.8
6	~~Sample~~ 23.0	0.01	0.7	nil	nil	nil	20.8	2.0	43.4	8.5
7	8.2	0.04	5.2	0.05	nil	0.20	25.6	3.1	14.1	16.8
8	7.2	0.02	2.0	0.60	0.05	1.20	24.8	3.2	10.1	6.8
9	19.0	0.10	12.4	nil	nil	0.25	26.4	3.0	29.6	10.0
10	16.9	0.02	2.1	nil	nil	nil	20.0	2.5	32.6	11.7
11	7.3	0.01	1.6	0.10	nil	0.40	30.8	3.1	15.6	16.2
12	6.4	0.01	1.8	0.70	0.10	1.40	24.0	3.6	10.4	8.3

Durango, Colorado Oct. 16, 1957

Charges $

ASSAYERS

W. C. ELLIOTT

ROOT & NORTON

ASSAYERS AND CHEMISTS

UMPIRE AND CONTROL WORK — ORE SHIPPERS' AGENTS

1139 Main Avenue, Durango, Colorado

Telephone 36
P. O. Box 301

CERTIFICATE OF ASSAY

Assayed for U. S. Smelting Corporation

NO.	~~Description~~	% Ignition Loss	Ozs. Per Ton 2000 Lbs. GOLD	Ozs. Per Ton 2000 Lbs. SILVER	Per Cent Lead (wet)	Per Cent Copper (wet)	Per Cent Zinc	Per Cent ~~Insoluble~~ CaO	Per Cent Iron	~~Silica~~ SiO_2	% Mn
13	~~Control Assay~~	5.3	0.01	1.4	0.30	nil	0.50	5.8	3.5	62.8	3.4
~~Lot~~ 14		4.8	0.04	2.2	0.40	nil	0.70	6.8	3.4	61.0	5.0
15	~~Root & Norton~~	5.8	0.02	1.2	0.60	0.05	1.10	6.1	3.9	54.6	3.0
16	~~Smelter~~	8.5	0.03	3.8	nil	nil	nil	9.6	3.0	28.8	7.9
17		9.3	0.02	1.6	nil	nil	nil	10.8	3.2	28.8	7.3
18	~~Settlement~~	13.0	0.02	2.0	nil	nil	0.05	20.4	4.2	33.1	3.75
19		13.8	0.02	1.2	nil	nil	nil	24.9	3.5	28.0	10.6
20		7.6	Trace	0.8	nil	nil	nil	9.7	4.6	53.2	10.8
21		6.5	0.04	2.4	0.70	0.05	1.20	17.5	3.7	33.0	9.1
22		10.2	0.02	1.0	nil	nil	0.10	11.4	4.0	37.0	15.0
23		6.6	Trace	1.0	1.20	0.10	2.20	4.9	4.7	64.8	5.45
24		7.7	0.10	0.8	nil	nil	nil	17.3	3.1	64.4	5.8

Durango, Colorado Oct. 16, 1957

Charges $

ASSAYERS

W. C. ELLIOTT

ROOT & NORTON

ASSAYERS AND CHEMISTS

UMPIRE AND CONTROL WORK — ORE SHIPPERS' AGENTS

1139 Main Avenue, Durango, Colorado

Telephone 36
P. O. Box 301

CERTIFICATE OF ASSAY

Assayed for U. S. Manganese Corporation

NO.	% Ignition Loss	Ozs. Per Ton 2000 Lbs. GOLD	Ozs. Per Ton 2000 Lbs. SILVER	Per Cent Lead (wet)	Per Cent Copper (wet)	Per Cent Zinc	Per Cent CaO	Per Cent Iron	SiO_2	% Mn
25	8.8	0.02	2.8	nil	nil	nil	14.1	2.0	53.0	6.2
26	14.7	Trace	1.6	nil	nil	nil	19.7	3.8	56.2	13.8
27	18.7	0.08	9.2	nil	nil	nil	21.0	3.4	32.0	11.7
28	20.4	0.02	1.6	nil	nil	nil	36.2	2.8	36.8	11.25
29	14.9	0.03	2.3	nil	nil	0.10	24.0	3.8	21.0	14.15
30	20.3	.02	1.7	nil	nil	0.10	30.2	2.1	21.6	11.0
31	12.7	0.02	1.1	nil	nil	nil	15.2	4.2	37.2	8.5
32	21.5	Trace	1.2	nil	nil	0.05	3[illegible].3	2.4	27.0	10.05
33	7.1	0.01	1.0	nil	nil	0.10	9.0	3.5	48.0	21.9
34	0.0	0.01	0.9	0.30	nil	0.00	7.4	3.0	33.0	11.0

Durango, Colorado Oct. 10, 1957

Charges $

ASSAYERS

W. C. ELLIOTT

ROOT & NORTON

ASSAYERS AND CHEMISTS

UMPIRE AND CONTROL WORK — ORE SHIPPERS' AGENTS

1139 Main Avenue, Durango, Colorado

Telephone 36
P. O. Box 301

CERTIFICATE OF ASSAY

Assayed for U. S. Vanadium Corporation

NO.	Description Ignition Loss	Ozs. Per Ton 2000 Lbs. GOLD	SILVER	Per Cent Lead (wet)	Per Cent Copper (wet)	Per Cent Zinc	Per Cent CaO	Per Cent Iron	% SiO_2	% Mn
35	Control Assay 2.8	Trace	0.6	nil	nil	nil	1.7	4.6	76.0	1.4
36	10.6	Trace	0.8	nil	nil	nil	13.8	5.2	40.8	11.9
37	12.4	0.03	0.2	nil	nil	0.10	8.3	1.8	50.2	1.6
38	5.4	Trace	0.5	nil	nil	nil	2.3	4.2	61.6	12.8
39	11.0	0.02	2.8	nil	nil	0.10	13.8	4.6	35.2	17.7
40	9.6	Trace	0.4	nil	nil	nil	13.9	4.2	49.6	5.4
41	9.4	Trace	0.4	nil	nil	0.20	7.1	4.4	60.8	13.3
42	9.9	0.03	1.6	nil	nil	0.20	15.4	3.6	50.4	5.4
43	4.4	0.01	1.8	0.30	nil	2.9	5.8	5.2	72.8	1.4
44	12.4	0.05	1.6	nil	nil	0.10	10.1	3.9	47.2	7.7
45	8.8	0.02	1.0	0.05	nil	0.50	13.2	4.0	52.0	12.0
46	14.0	0.08	7.7	nil	nil	nil	21.7	2.5	42.4	6.7

Durango, Colorado Oct. 26, 1957

Charges $

ASSAYERS

W. C. ELLIOTT

ROOT & NORTON

ASSAYERS AND CHEMISTS

UMPIRE AND CONTROL WORK — ORE SHIPPERS' AGENTS

1139 Main Avenue, Durango, Colorado

Telephone 36
P. O. Box 301

CERTIFICATE OF ASSAY

Assayed for [illegible] Manganese Corporation

NO.	% Ignition Loss	Ozs. Per Ton 2000 Lbs. GOLD	Ozs. Per Ton 2000 Lbs. SILVER	Per Cent Lead (wet)	Per Cent Copper (wet)	Per Cent Zinc	% CaO	Per Cent Iron	% SiO_2	% Mn
37	12.6	0.03	[illegible]	nil	nil	0.20	8.3	3.8	50.2	13.0
38	5.4	Trace	0.5	nil	nil	nil	2.3	4.2	61.8	1.7
39	11.0	0.02	2.8	0.20	nil	0.60	13.8	4.6	35.2	19.7
40	9.6	Trace	0.4	nil	nil	nil	13.9	4.2	49.6	5.4

Settlement

Durango, Colorado

Charges $

J. B. Stewart

ASSAYERS

W. C. ELLIOTT

ROOT & NORTON

ASSAYERS AND CHEMISTS

UMPIRE AND CONTROL WORK — ORE SHIPPERS' AGENTS

1139 Main Avenue, Durango, Colorado

EXHIBIT A

Telephone 36
P. O. Box 301

(Surface Samples)

CERTIFICATE OF ASSAY

Assayed for [illegible] Manganese Corporation

NO.	~~DESCRIPTION~~ % Ignition Loss	Ozs. Per Ton 2000 Lbs. GOLD	SILVER	Per Cent Lead (wet)	Per Cent Copper (wet)	Per Cent Zinc	~~Insoluble~~ % CaO	Per Cent Iron	~~Alumina~~ % SiO_2	% Na
5423	~~Control Assay~~	0.02	1.1	nil	nil	0.05		2.3	77.9	13.2
~~Dot~~										
5426	~~Root & Norton~~	Trace	0.1	0.10	0.02	0.30		4.5	33.8	26.5
	~~Shelter~~									
5427		Trace	0.2	0.10	0.05	0.40		4.1	43.8	25.4
	~~Settlement~~									
5428		0.01	0.8	0.10	nil	0.35		3.3	80.2	8.2
5429		Trace	0.3	0.50	nil	0.10		3.2	88.7	7.7
5431	20.8	0.02	3.4	1.10	0.15	2.40	5.5	4.1	21.6	15.3

Durango, Colorado

Charges $

L. P. Stuart

ASSAYERS

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D M E A
RECEIVED FEB 24 1958

DATE	INITIALS	CODE

EXHIBIT B

QUOTATIONS OF DRILLING COSTS
FROM PROSPECTIVE CONTRACTORS

Diamond Core Drilling
Mining
Quarries
Shaft Sinking
Tunnel Driving

Bayles Bros.
DRILLING COMPANY

CONTRACTORS · ENGINEERS · GEOLOGISTS
General Offices
1321 South Main Street Phone HUnter 4-4401
SALT LAKE CITY 15, UTAH

January 13, 1958 Reply to: S. L. C.

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DMEA
RECEIVED FEB 24 1958

DATE	INITIALS	CODE

Mr. C. Sheer, Vice President
United States Manganese Corporation
261 Madison Avenue
New York 16, New York

Dear Mr. Sheer:

Reference is made to your letter of January 6 referring to the proposed drilling program to be done on the rhodonite deposits near Silverton, Colorado. We are very much interested in carrying out this program should the program be approved and have carefully gone over costs of the preliminary drilling to see just what could be done price-wise. It seems however, that our rates were apparently just about correct on the first work. We sustained a small loss on the 1422 feet drilled, but feel that with a greater amount of work and doing it in the summer the rates would be correct.

Following are the rates necessary for Stage 1 with the necessary revision for holes beyond 500 feet.

1. Drilling Rates:

	AX	BX	NX
0 - 250	$5.30	$5.70	$6.60
250 - 500	5.75	6.30	
500 - 750	6.30	6.90	
750 - 1000	6.90	7.60	

2. Reaming, if required, will be charged for at $2.50 per foot.

3. Cementing, if required, $10.60 plus cost of cement or cement substitute, including drilling mud.

4. Surveying or delays ordered by the company will be charged for at $9.60 per hour.

5. Weather delays will be charged for at $6.60 per hour for 2 man crew.

6. Water will be hauled at truck rentals of $250.00 plus 12 cents per mile plus drivers wages and payroll taxes.

7. Access roads and drill stations will be at no cost to us.

8. Bull Dozer D6 Class will be charged for at $14.00 per hour, plus cost of mobilization to job.

9. Lost Casing will be charged for at 75% of list price f.o.b. the job. Casing left in hole at company's request will be charged for at list price f.o.b. the job.

Should the foregoing rates meet with your approval, no further inspection would be necessary. We feel that after Stage 1 was drilled we would be happy to go over our costs with you and adjust them according to the findings. However, at this point we feel the foregoing rates are as low as we dare to quote for a program of this magnitude.

Thank you for calling on us.

Yours very truly,

P. A. Park.

P. A. Park
Assistant Manager, Drilling Division

PAP/bm

cc: Mr. Fred S. Haley

MINERALS ENGINEERING COMPANY

P. O. BOX 1951
GRAND JUNCTION, COLORADO

January 2, 1957

EXTRA COPY
DMEA
RECEIVED FEB 24 1958
DATE | INITIALS | CODE

Mr. C. Sheer, Vice President
United States Manganese Corporation
261 Madison Avenue
New York 16, New York

Dear Sir:

Your letter dated December 24, 1957, to R. G. Sullivan has been referred to me.

Please accept the following quotations as our bid for diamond core drilling your property in the Treasure Mountain region of the Eureka Mining District near Silverton, Colorado:

Proposal No. 1

Depth	Price per Foot AX Core
0-250 feet	$ 9.50
250-500 feet	12.50
500-750 feet	15.50
750-1000 feet	18.50
1000-1250 feet	22.50
1250-1500 feet	28.50
1500-1750 feet	35.00

Standby time will be charged at the rate of $18.50 per hour. Mobilization, moving and setting up between holes, reaming and cementing would be on a standby time basis. The above prices per foot would include water hauling providing we could get to each drill site with 4-wheel drive water trucks and would not exceed a 2-mile haul.

Proposal No. 2

Hourly basis of $15 per hour, plus all diamond bit costs.

It is my understanding from a telephone conversation with your geologist, Mr. Fred Haley, that you would want a minimum of four core drills and Stage 1 drilling would consist of a total minimum footage of 10,000 feet to a maximum depth of 850 feet for six holes and 24 holes averaging 330 feet all to be completed in the summer of 1958; also, all holes will be 35° to 45° angle holes with part of the drills skid-mounted.

The bulldozer work would be $13.25 per hour for D-7 caterpillar angle dozers and $16.50 per hour for D-8 caterpillar angle dozers plus $1 per mile move-in from Grand Junction on either size dozer for less than 200 hours of work at any one time.

Very truly yours,

MINERALS ENGINEERING COMPANY

Edson Foster

Edson Foster
Drill Superintendent

Ef/k

cc - Mr. Fred Haley
J. L. Robison

SPRAGUE & HENWOOD, Inc.
Contractors for DIAMOND DRILLING
MINERAL EXPLORATION • SOIL SAMPLING • PRESSURE GROUTING

EXECUTIVE OFFICES & PLANT
221 WEST OLIVE STREET
SCRANTON, PENNSYLVANIA
Telephone Diamond 4-8507

January 18, 1958

EXTRA COPY
D. M. E.
RECEIVED FEB 24 1958
DATE | INITIALS | CODE

United States Manganese Corporation
261 Madison Avenue,
New York 16, New York

Attention:- Mr. C. Sheer,
Vice-President

Gentlemen:-

In further reference to your inquiry of December 24th, requesting a quotation on drilling in the Treasure Mountain region of the Eureka Mining District near Silverton, Colorado, our Mr. Carver was in touch with your Mr. Fred S. Haley and we are pleased to submit to you the following prices for drilling, Stage 1, 2 and 3:-

ITEM NO.

1 - For drilling AX holes

Depths	0' to 500'	-	$ 6.20 per lin.ft.
"	500' to 1000'	-	$ 6.85 per lin.ft.
"	1000' to 1250'	-	$ 7.60 per lin.ft.
"	1250' to 1500'	-	$ 8.35 per lin.ft.
"	1500' to 1750'	-	$ 9.35 per lin.ft.

2 - For reaming holes

AX to BX	-	-	$ 3.35 per lin.ft.
BX to NX	-	-	$ 3.85 per lin.ft.
NX to 3-1/2"	-	-	$ 4.50 per lin.ft.

3 - For cementing - - - $ 9.00 per hour (plus cost of cement)

4 - Bulldozer work, using Allis-Chalmers HDS Tractor with 10-foot blade - $ 9.00 per hour.

For the above prices we will furnish complete drilling equipment, including experienced operating personnel.

You are to furnish core boxes for any cores which you wish to preserve.

Payments to be made monthly. Our invoice will be issued on the first of each month covering work performed the previous month and payments to be made within 15 days after date of invoice.

BRANCH OFFICES: NEW YORK • PITTSBURGH • PHILADELPHIA • BUCHANS, NEWFOUNDLAND • GRAND JUNCTION, COLORADO
MANUFACTURERS OF DIAMOND DRILLS DRILLING EQUIPMENT "ORIENTED" DIAMOND BITS

TO:-
United States Manganese Corporation
Attn:- Mr. C. Sheer, Vice-President

1/18/58

We wish to thank you for your inquiry. If awarded the contract, we are prepared to take care of this work when you require it and the work will be performed from our Grand Junction, Colorado Branch.

Very truly yours,

SPRAGUE & HENWOOD, INC.,

Wm. J. Schank
T.

Wm.J.Schank,
Vice President

WJS:GT
cc - Mr. Fred S. Haley,
3813 Mackland Avenue, N.E.,
Albuquerque, New Mexico

cc - Grand Junction Office

SPRAGUE & HENWOOD, Inc.
Contractors for DIAMOND DRILLING
MINERAL EXPLORATION • SOIL SAMPLING • PRESSURE GROUTING

EXECUTIVE OFFICES & PLANT
221 WEST OLIVE STREET
SCRANTON, PENNSYLVANIA
Telephone Diamond 4-8507

January 30, 1958

EXTRA COPY
DMEA
RECEIVED FEB 24 1958

DATE	INITIALS	CODE

United States Manganese Corporation
261 Madison Avenue,
New York 16, New York

Attention:- Mr. C. Sheer,
Vice-President

Gentlemen:-

We wish to refer you to our quotation of January 18, 1958 for drilling in Treasure Mountain region near Silverton, Colorado.

ITEM NO. 4 of our quotation is for using an Allis-Chalmers HDS Tractor with 10-foot blade and we have received a letter from our Mr. Robert Carver, stating it was agreed between he and your Mr. Haley that a Caterpillar D-7 Tractor should be used to make the roads and the smaller bulldozer on which we quoted would be the Allis-Chalmers HDS was too small to take care of this work satisfactorily.

Therefore, this item should read - you are to provide the bulldozer and make roads at your expense.

We are sorry there has been a misunderstanding in the type of bulldozer required for the road work.

Very truly yours,

SPRAGUE & HENWOOD, INC.,

Wm.J.Schank,
Vice President

WJS:GT
c - Mr. Fred S. Haley,
3813 Mackland Avenue, N.E.,
Albuquerque, New Mexico

cc- Grand Junction Office

BRANCH OFFICES: NEW YORK • PITTSBURGH • PHILADELPHIA • BUCHANS, NEWFOUNDLAND • GRAND JUNCTION, COLORADO

MANUFACTURERS OF DIAMOND DRILLS DRILLING EQUIPMENT "ORIENTED" DIAMOND BITS

MAP I

CLAIM MAP SHOWING LOCATIONS
OF U. S. MANGANESE MINING PROPERTY

MAP II

VEIN MAP OF EXPLORATION AREA
(PICAYUNE GULCH, TREASURE MOUNTAIN,
AND PLACER GULCH)

MAP II

VEIN MAP OF EXPLORATION AREA
(PICAYUNE GULCH, TREASURE MOUNTAIN,
AND PLACER GULCH)

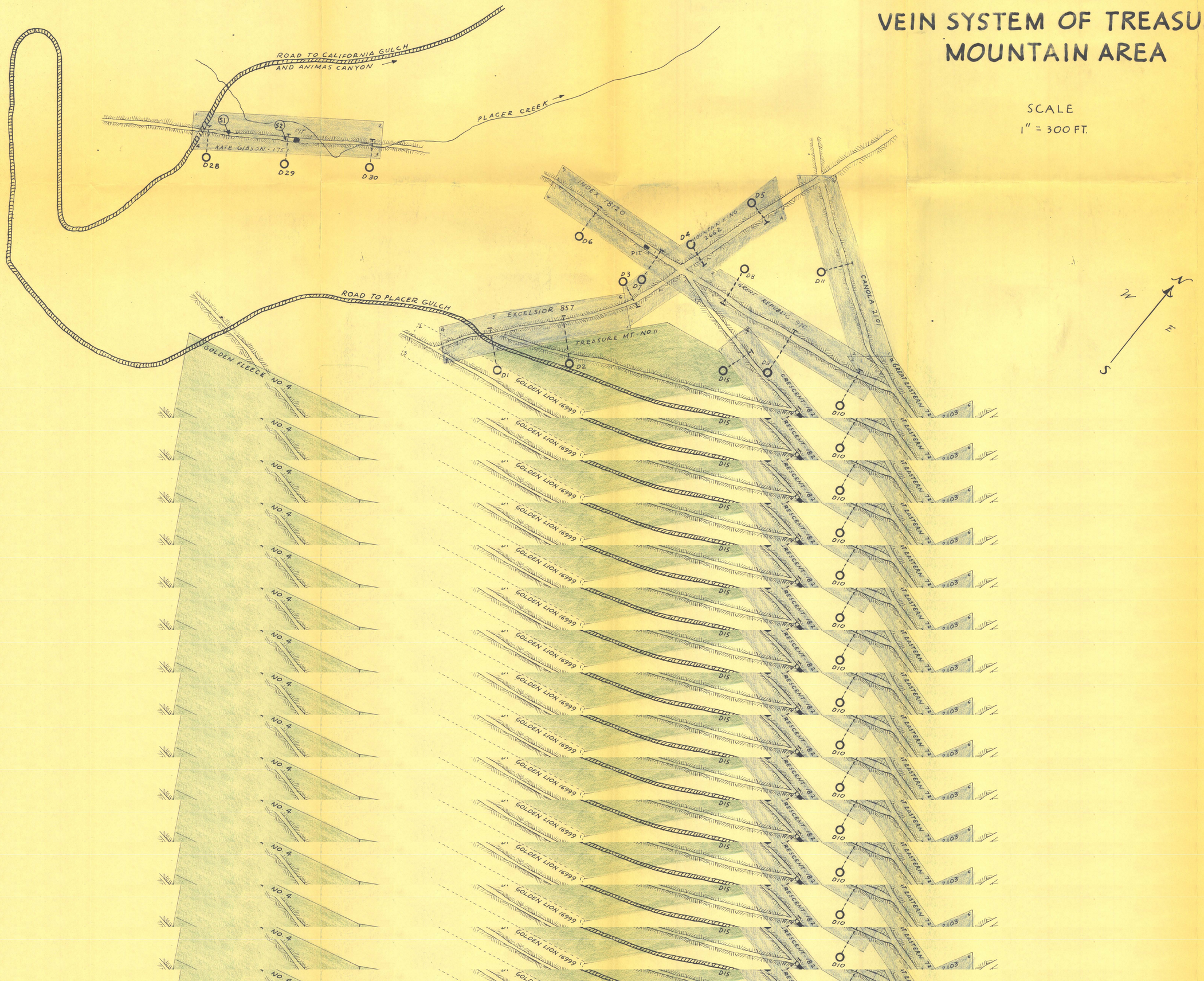
MAP I

CLAIM MAP SHOWING LOCATIONS
OF U. S. MANGANESE MINING PROPERTY

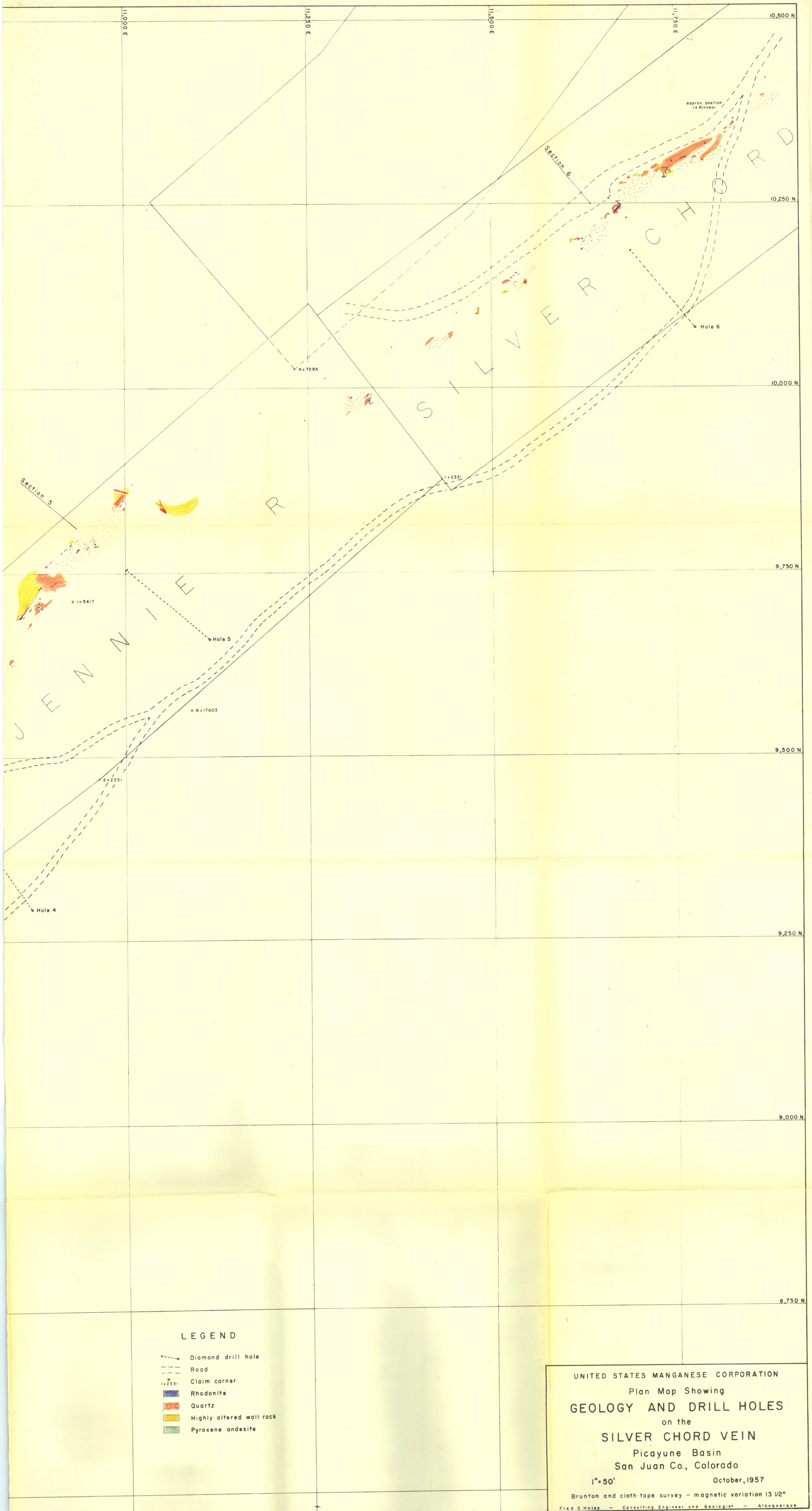
OURAY CO.
SAN JUAN CO
SILVER CUP
SILVER MOTOR
ATLANTIC
BELL
CAMERON
WALKAR
LITTLE CHIEF
MAY B
CALUMET
ARCTIC
TANGERINE
MAMMOTH
ROMBALD
MAC MICH
JOSEPHINE
WINNEBAGO
GREAT AMERICAN
LITTLE MAID
NEW CHICAGO
BLACK JACK
EARL NEE
NEW JACK ORIENTAL
SILVER MAID
BEN BUTLER
LAKE CITY
NEW PORT
FORT DONALSON
COLORADO CENTRAL
EVERGREEN
ZENOBIA
PACIFICS
CYRUS
MONTEZUMA
GUESS
TRIAS
WHITE
ROCK ISLAND BRIDGE CO.
EAGLE CO.
SAN JUAN CO.

MAP II
VEIN SYSTEM OF TREASURE MOUNTAIN AREA

SCALE
1" = 300 FT.



9,750 E
10,000 E
10,250 E
10,500 E
10,750 E
N
SILVER LION
Section 1
Section 2
Section 3
Section 4
Hole 1
Hole 2
Hole 3
1x17003


11,000 E
11,250 E
11,500 E
11,750 E
10,500 N
10,250 N
10,000 N
9,750 N
9,500 N
9,250 N
9,000 N
8,750 N
Section 6
Section 5
approx. position 1 x Kinnear
Hole 6
Hole 5
Hole 4
4 x 7295
1 x 2331
1 x 5417
6 x 17003
2 x 2331
SILVER CHORD
JENNIE SILVER
LEGEND
Diamond drill hole
Road
1 x 2331 Claim corner
Rhodonite
Quartz
Highly altered wall rock
Pyroxene andesite
UNITED STATES MANGANESE CORPORATION
Plan Map Showing
GEOLOGY AND DRILL HOLES
on the
SILVER CHORD VEIN
Picayune Basin
San Juan Co., Colorado
1"=50'
October, 1957
Brunton and cloth tape survey – magnetic variation 13 1/2°
Fred S Haley – Consulting Engineer and Geologist – Albuquerque