COPPER FLAT

HILLSBORO, NEW MEXICO

SUMMARIZING FINAL REPORT

May 22, 1953

by

P. C. BENEDICT

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MAP HEREWITH

May 22, 1953

Mr. Fred Searls, Jr.
Newmont Exploration Limited
Room 1501, 14 Wall Street
New York 5, New York

Dear Fred:

Re: Copper Flat Hillsboro, New Mexico
Summarizing Final Report.

FORESTATEMENT

The following is intended to summarize our operations between May 1952 and April 1953 on which later date work was discontinued.

Since then I have thought up an hypothesis which may explain the manner of occurrence of the better copper values. It is somewhat fully expounded at the end of this report.

LOCATION

The property is located in Sections 26, 27 and 35, T. 15 S., R. 7 W., Sierra County, New Mexico, 9 miles by road from Hillsboro, New Mexico.

EARLY EXAMINATIONS

In June of 1949 I made a six hour examination of the property from which I concluded that the protore ran from 0.2 to 0.3% copper and that there was no commercially important secondary enrichment.

Between May 10th to 23rd, inclusive, 1952** I mapped the areal geology (pace compass), sampled accessible underground workings showing protore and some dumps, obtained a favorable option on the property and recommended: (1) some drilling to see if protore increased in grade with depth and (2) geophysical survey to assist in determining the outline of a largely alluvium covered quartzy "crush" zone which I thought might possibly be a shallow expression of a breccia pipe.

**Report dated May 28th, 1952, called report II herein.

GEOLOGY

A Tertiary stock of quartz monzonite (possibly three varieties but essentially contemporaneous) intrudes Tertiary andesites resting on Paleozoic sediments. It now appears probable that much of the andesite occurs as very small sized, extremely irregular intrusions in andesite flows and fragmentals. The exact picture has not been worked out in any detail. Much of the intrusive andesite is an augite-porphyry with fine grained groundmass. About 13 square miles of areal geology surrounding the property are shown on drawing CF-1, accompanying Report II, derived from Bulletin 10, New Mexico Bureau of Mines. (It is inaccurate).

In report II I subscribed to my earlier conclusions but (1) recognized areas of "crushing" and much quartz, adjacent to better mineralized areas, which I felt might be a shallow expression of a breccia pipe; (2) expounded the possibility that the primary ore might improve with depth; (3) recognized that oxidation of chalcopyrite rarely, if ever, furnished copper stain on the surface without having first become coated with chalcocite and (4) recognized that much of the chalcopyrite was so fine that I could not recognize its limonitic derivatives. Subsequent work revealed regarding these ideas:

(1) The Quartzy Zone:

The collar of hole 4, most of hole 5 and hole 6, from 135 feet (the position of the Sternberg fault) to bottom, showed an abundance of irregular light grey quartz stringers and blebs similar to those shown in the quartzy "crushed" outcrops on surface. Such quartzy zones are characterized by:

(a) Development of pegmatitic pink feldspar and coarse biotite (frequently bleached to chlorite) accompanied in parts by intense sericitization.

(b) Considerably better than average copper grade, approaching ore grade, in what is tentatively advanced hereinafter as the upper layer or "frosting" of the quartzy zone. This better grade was evinced in the near-surface portion of hole 4 and the bottom portion of hole 6.

(c) A higher proportion of chalcopyrite to pyrite.

(d) Much of the chalcopyrite occurs as coarse erratic blebs associated with quartz blebs and particularly with biotite. Fine disseminated chalcopyrite accounts for less of the copper and sometimes almost completely fails.

(e) In hole 6 a small amount of anythestine quartz was recognized.

(f) The better grade near the bottom of hole 4, overlying the quartz zone which extends pretty much throughout hole 5, suggests that material of ore or near-ore grade may sometimes make as a bulge into non-quartzy, disseminated country, possibly well above the top of the quartzy zone.

GEOLOGY - continued

(2) Improvement With Depth:

The single test drilled, hole 5 under hole 4, indicated a leaner quartzy zone under the 159' of 0.60% Cu obtained near the bottom of hole 4 as well as under the better grade material showing near the collar of this hole.

(3) Lack of Copper Stain Derived From the Chalcopyrite was confirmed in a limited manner by the drilling. Near the collars of some of the drill holes chalcopyrite was observed half altered to limonite but with no adjacent copper stain.

(4) The Sternberg Fault is described below in such detail as is available because of its possible economic significance. It is a pre-mineral structure along which there has been some post-mineral movement.

It shows in a cut in andesite 400' slightly east of north of the S.E. corner of the Copperopolis. See CF-10. There appears to be a substantial width of highly bleached altered andesite. The exposures to the northeast are inadequate to reveal the amount of offset, if any on the andesite-monzonite contact, but if the fault zone were about 30' wide and most of the movement were along the footwall (west) side of the zone, the monzonite contact would appear to be offset some 500' to the left. If the normal monzonite contact dips outward under the andesite, the apparent horizontal offset would infer that the fault was normal and down on its east side. At 150' and 220' N.E. of the pit in andesite are two pits showing the shear dipping 80° east and up to two feet of gossany vein material. To the northeast thereof the fault passes over the crown of the ridge and follows down the N.E. flowing gully which is south and east of the Sternberg shaft. Near the head of this gully, about 150' N.E. of where it passes over the crest of the ridge, there is a 2-foot quartzy zone with some limonite showing in the fault zone. About 50' further down the gully a good shear zone is exposed dipping about 75° easterly. On CF-10, at 130' south of the Sternberg shaft, the fault is shown crossing through a basalt dike without offsetting it but this may not be factual. Actually the dike shows right at the collar of the Sternberg shaft, where it is striking about S. 20° W. and, so far as I know, is not exposed again to the point where it is shown abutting the fault on its east side. As far as I am aware the dike may actually be offset 100 feet to the left along the fault. The basalt dike dips steeply and is believed to be post-mineral.

In borehole #4, I logged faulting between 651 & 662 feet which fits up with an 85° easterly dip with the surface exposure. However, I cannot help but suspect that the broken zone logged from 699 to 717, at the bottom of the hole, may be a branch of this fault though such required a steep west dip to connect with the known surface position.

GEOLOGY - continued

(4) The Sternberg Fault - continued.

In borehole #5 (See CF-11 "Section on D. D. Holes Nos. 4 & 5) I logged a fault at 1038' - 1040' which the driller says caved during the rest of the drilling of the hole. This would fit up with the 651 - 662 fault in hole #4 with an 81° easterly dip. At 1117 to 1120 and possibly on to 1123 is a soft zone which did not seem to represent much of a fault but may well connect up with the 699 to 717 zone in hole 4 on an average dip of about 81° to the east.

Hole 6 undoubtedly went through this fault zone between 121 and 135'.

There is some improvement in Cu values in the vicinity of this fault in all three holes. However it is argued hereinafter that the improvement near the bottom of hole 4 is due to a bulge in the better values above the quartz mineralization dome but this bulge itself may be due to better mineralization near the fault. In spite of this, however, it is felt that post-mineral movement, may actually have somewhat lifted up the mineralization on the west, footwall, side along the footwall strands described in holes 4 and 5.

(5) The Dip of the Andesite Contact is definitely known in only one locality - at hole 2 on the Old Mac claim. See drawing CF-11, "Section on D. D. Hole #2". As shown in that section the average dip is 66° easterly over a vertical depth of 200 feet. However as the hole bears about 45° to the local strike of the contact on surface, the true dip is somewhat steeper than the figure cited.

Hole #1, on the Copenhagen claim, was all in andesite except for narrow monzonite dikes. The bottom of the hole is at elevation 5053 and is 270' horizontally southerly from the projected, because of overburden, position of monzonite-andesite contact at surface at approximate elevation 5410. If the contact dips south, it is at some angle steeper than 53°. See accompanying drawing CF-10.

Hole #3, on the Soudan claim, was all in andesite. The bottom of the hole is at elevation 5305 and is 280' horizontally westerly from the irregular monzonite-andesite contact at approximate elevation 5460. If the contact dips westerly, it is at some angle steeper than 29°.

Thus, in spite of the fact that a plug of monzonite outcrops northerly from Copper Flat, and another southerly, and the abundance of dikes radiating from the Copper Flat stock, there is no specific evidence that the monzonite flattens out under the andesite at any shallow depth.

GEOPHYSICAL SURVEY

Pulse survey was performed between August 26th and September 14th, 1952. See report by Grignon and Seigel dated September 30th, 1952. Three highly anomalous areas were determined mostly in the andesite,

GEOPHYSICAL SURVEY - continued

but along or bordering the monzonite contact. These occur to the northeast, northwest and to the south and are indicated on the accompanying drawing CP-10. These andesite areas had not been adequately covered by my previous mapping so, between October 29th and November 9th, nine field days were spent expanding the previous geologic mapping by plane table survey. The results of this and the earlier paced-compass mapping are shown on accompanying drawing CP-10.

The additional mapping indicated that: (1) The andesite in the areas covered by the anomalies was almost entirely andesite talus. The talus shows the leaching of almost no sulphide. Since the three holes drilled in the anomalous areas did show sulphide it is thought that the barren talus may be explained as follows:

(a) It is partly derived from less fractured, outcropping, barren andesite, topographically above the geophysically anomalous areas.

(b) The sulphides occur principally along sheeting along which the andesite fractures and the limonite is largely rubbed off these exposed surfaces during creep of the talus.

(2) There were extremely limited outcrops of andesite, generally along gulch bottoms, within the geophysically anomalous areas. In part these were barren but half or more of these did show a little limonite particularly along the sheeting planes. In general, this was judged to represent less sulphide than was actually subsequently obtained in the drill holes. It would appear that I am unable to estimate, with any acceptable accuracy, the original sulphide content represented by such sheet plane mineralization.

(3) The few underground workings in the anomalous areas in the andesite were usually driven along small structures, without crosscutting, and yielded no practical assistance in estimating the validity of the geophysical anomalies.

(4) None of the andesite outcrops showed any copper stain - though the three drill holes in andesite did show a little chalcopyrite pretty much throughout their lengths.

The geophysical anomalies were expected to represent 8 - 10% sulphide by volume. The limited drilling indicated between 2 and 3% total sulphide by weight. It was subsequently determined that the andesite itself, or some of it, gave an extremely high anomalous pulse. Under these circumstances I would venture to suppose that even though all three holes in the andesite did show between 2% and 3% sulphide, the unpredictable pulse response in these andesites means that such figure is not necessarily representative of the whole of the anomalous areas.

GEOPHYSICAL SURVEY - continued

Attention is drawn to the fact that a relatively high pulse was obtained in the monzonite, as a westward prong extension from the northeast anomalous area. This covers portions of the Old Mac, "83" Lode, Grass Flat and Ventura claims and is indicated on accompanying CP-10 by the 70 pulse contour. While including a little monzonite outcrop which I judge to have contained better than 2% sulphide before oxidation, most of it is, in my judgment, very lean. See CP-3 accompanying Report II. None of the monzonite is known to yield a high background pulse and the anomaly remains unexplained.

RESULTS OF DRILLING

The following table summarizes assay results and metallic minerals encountered in the six holes drilled and the North Craze Martin Tunnel.

TABLE I

AVERAGE ASSAYS

Hole No.	Claim on which Collared	Footage From	Footage To	Cu	MoS_2	S	Ag	Au
North Craze Martin Tunnel(1)				0.29	.0026	1.1	0.017	0.0014
1(2)	Copper King	82	431	0.14	N.R.	1.5	Not	Run
2(2)	Old Mac	0	499	0.19	N.R.	1.5	Not	Run
3(2)	Soudan	31	300	0.02	N.R.	1.28	Not	Run
4	Copper King	40	110	0.82(3)	0.022	1.30	Not	Run
		110	186	0.31	0.017	0.85	Not	Run
		186	441	0.22	0.030	0.80	Not	Run
		441	527	0.28	0.013	1.20	Not	Run
		527	686	0.60	0.023	1.20	Not	Run
	Total	40	686	0.38	0.024	1.00	Not	Run
		686	717	0.33	Not	Run	Not	Run

(1) Average of 22 rib samples shown on drawing CP-4. Analyses, other than copper, from a composite which includes 4 other samples from other dumps and workings. Au, Ag and MoS_2 are computed from that recovered in a concentrate made.
(2) Involves some visual estimation by P. C. Benedict.
(3) Average of individual samples 0.91% Cu. Of the 0.82% Cu in composite, 0.23% was present as chalcocite and oxidized copper.

RESULTS OF DRILLING - continued

TABLE I - continued

AVERAGE ASSAYS

Hole No.	Claim on Which Collared	Footage From	Footage To	Cu	MoS_2	S	Ag	Au
5	Copper King	20	112	0.16	N.R.	0.84	Not	Run
		112	351	0.32	0.007	0.96		
		351	635	0.22	0.004	0.96		
		635	865	0.29	0.004	1.12		
		865	942	0.15	0.001	0.96	Nil	0.01
		942	1030	0.25	0.004	0.93	Nil	Nil
		1030	1145	0.33	0.005	0.87	Nil	0.01
	Total	20	1145	0.26	0.005	0.97		
6(4)		70	105	0.36	Partly oxidized			
		105	286	0.37				
		286	374	0.57				
	Total	105	374	0.43				

It is perhaps noteworthy that hole 4, which is in and just above the hypothetical better grade zone (see hereinafter) carried about five times as much molybdenite as hole 5, which is entirely below the better grade zone.

Note: A substitute page will be sent to replace this when results from composites from Hole 6 have been received.

TABLE II

PER CENT METALLIC MINERAL CONTENT BY WEIGHT

Hole No.	Footage From	Footage To	Chalcopyrite	Molybdenite	Pyrite	Total Sulphides
1 (1)	32	431	0.4	Present	2.5	2.9
2 (1)	0	400	0.29	Not Run	2.63	2.92
3 (1)	31	300	0.06	Not Run	2.39	2.45

(4) Core not split where recovery poor. Sludges used alone where recovery was poor and averages of sludges and core assays where recovery was good and core split. Composites made up on a comparable basis.

(1) Includes some visual estimation by P. C. Benedict.

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TABLE II - continued

PER CENT METALLIC MINERAL CONTENT BY WEIGHT - continued

Hole No.	Footage From	Footage To	Chalcopyrite	Molybdenite	Pyrite	Total Sulphides	Ratio Py-Cl
4	40	110	1.71	0.022	1.18	3.20 (2)	.69-1 (1-1.45 [illegible]
	110	186	0.93	0.017	0.97	1.92	1.09-1
	186	441	0.64	0.030	1.05	1.72	1.72-1
	441	527	0.81	0.013	1.70	2.53	2.20-1
	527	686	1.74	0.023	1.08	2.84	.67-1 (1-1.5 [illegible]
Total	40	686	1.10	0.024	1.15	2.28	1-1
5	20	112	0.46	Not Run	1.26	1.73	2.74-1
	112	351	0.93	0.007	1.19	2.12	1.28-1
	351	635	0.64	0.004	1.37	2.01	2.14-1
	635	865	0.84	0.004	1.54	2.38	1.87-1
	865	942	0.43	0.001	1.51	1.94	3.50-1
	942	1030	0.73	0.004	1.26	1.99	1.73-1
	1030	1145	0.96	0.005	1.00	1.96	1.04-1
Total	20	1145	0.75	0.005	1.32	2.07	1.74-1
6							

(2) Includes 0.29% chalcocite.

Relation of pyrite to chalcocite at [illegible] less than 1:2 [illegible] capping at [illegible] pyrite to [illegible] 12.8:1 [illegible] oxidised copper [illegible] over area [illegible] ratio is greater than 1:2 is marked by general absence of oxidized copper compounds

AN HYPOTHESIS OF PRIMARY ZONING

(1) Descriptive Background:

Approximately 0.6% Cu was encountered in three places: (1) at the collar of hole 4, (2) near the bottom of hole 4 possibly on the east side of the post-mineral strand of the Sternberg fault and (3) the bottom 85 feet of hole 6 somewhat to the west of the Sternberg fault. In localities (1) and (3) the better values were associated with the more pronounced quartz stringer - pegmatitic feldspar - biotite mineralization which will hereinafter be abbreviated to quartz mineralization or zone.

Such quartz mineralization was encountered pretty much throughout hole 5 without showing any of the better copper values. Drawing CF-3 shows, in heavy, brown ink outline, the area in which about half of the sparce outcrops show this sort of quartz blob material. The area should be slightly extended to include the collar of hole 4 and possibly a prong should be extended to the south to include the tunnel, 200 feet a little east of south of the N.W. corner of the Copenhagen claim, which tunnel shows a "blow-out" of copper stained quartz.

(2) Hypothesis:

(1) The area outlined in brown on CF-3 is a horizontal cross-section of a domal-shaped nob of the quartz mineralization. In the vicinity of holes 4 and 5, the top of this mineralization dips westerly more steeply than hole 4, more flatly than hole 5. The top of the quartz mineralization is presumed to be below the collar of hole 6 but to have been raised somewhat on the west side of the Sternberg fault. The hole is presumed to be flatter than the dip of the top of the quartz mineralization and to have entered the upper, better-valued "frosting" near the bottom of the hole. See drawing CF-12. If the top of the quartz mineralization is actually somewhat dome shaped, at hole 6, dip is presumed to be to the N.W., and possibly more nearly north or even east of north near the S.W. corner of the Grass Flat claim.

(2) The Zone of better copper values includes the top part of the quartz mineralization and in some places extends somewhat above this horizon, i.e., the better values near the bottom of hole 4. It is assumed that the quartz mineralization characteristically has a thickness of several hundred feet but that, below the top layer of it (the frosting) both copper and total sulphide drop off. This leaner deeper portion of the quartz mineralization is exposed in the limited surface outcrops within the brown area on CF-3, pretty much throughout hole 5, and between 135 and 286' in hole 6.

(3) Grade and Thickness of the "Frosting":

The "frosting", as stated above, consists of the upper portion of the quartz mineralization and, in some localities, the disseminated mineralization immediately above it.

AN HYPOTHESIS OF PRIMARY ZONING - continued

(3) Grade and Thickness of the "Frosting" - continued.

Since the three holes drilled in the vicinity of the "frosting" are presumed to be inclined at only a small angle to the local dip of the "frosting", information is inadequate to closely define the thickness and grade possibilities except at the collar of hole 4 where it must be thin. In this locality one must assume that the top of the "frosting" is at 110' in hole 4, and that its dip is slightly steeper than the hole. If we assume 15° steeper (40° actual dip) and that the bottom, which must go above where hole 5 penetrated bedrock, is parallel, 99' is the maximum possible vertical thickness at this point. From the 110' point in hole 4 the top of the "frosting" would stay below hole 4 to 527 feet where it would be dipping flatter than the hole or perhaps even dipping to the east locally. This may be due to a thick ridge of "frosting" related to mineralization in the vicinity of the Sternberg fault. The total thickness of the "frosting" at this point is unknown except that it does not extend down to hole 5, 600 feet below.

No hole properly crosscuts the "frosting" to establish its grade but, according to the hypothesis, hole 4 in two places skittered through its upper portion and hole 6 bottomed in the basal portion of the "frosting". These intersections were as follows:

In hole 4 between 40' and 110' hole depths (70') the weighted average of the split core assays was 0.91% copper; a composite sample weighted according to the length of sample represented yielded 0.82% and 0.83% Cu, in two assays, of which 0.23% was present as chalcocite or oxidized copper.

Hole 4 between 527' and 686' (159') ran 0.80% Cu, both individual samples and composite.

Hole 6, which must be assumed to be skittering along the bottom of the "frosting" between 286' and 374', end of hole, showed a hole length of 88' averaging 0.57% Cu.

Thus, in summary, it must be said that neither thickness nor grade of the "frosting" are very encouraging but neither have been tested at all adequately.

(4) Topographic Evidence:

Core recovery in, and in the vicinity of, the "frosting" was frequently poor. This is in part due to intense sericitization. This is likely responsible for my description of the outcrops of the quartz mineralization as "crushed". At any rate, that the sparse outcrops of the quartz zone should occur in a general topographic depression or basin is consistent with the high degree of rock softening observed in the drill core in much of the quartz zone.

AN HYPOTHESIS OF PRIMARY ZONING - continued

(5) To Prove the Theory:

I would suggest a churn drill hole 200' ahead of the bottom of hole 6. This would be 110' at N. 75° W. from the N.E. corner of the Copperopolis. Assuming a 45° dip to the bottom of the frosting and projecting this bottom from the 286' point in hole 6, such a hole should have passed through the "frosting" at about 400 feet. A line of holes at 200' intervals in a N. 12° E. direction from the above would presumably continue to cut the frosting at somewhat equivalent depths. The general idea, according to my present conception, would be that holes could be discontinued after they had entered the quartz mineralization and values had dropped off.

Churn drilling is suggested inasmuch as, in the case of diamond drilling, considerable reliance would have to be placed on sludge samples anyhow and churn drilling would give a larger and more representative sample; where the mineralization is in the quartz zone, the chalcopyrite is less disseminated and more pocksty and the larger samples would be desirable. A churn drill would also be more economical on water. The first holes suggested would require but little work for churn drill access.

(6) Comment:

If the hypothesis is valid, lesser looking leached outcrop at the surface may have but little relationship to copper values in the "frosting". It is conceivable that the unexplained relatively high pulse anomaly in monzonite, mentioned above in the last paragraph under "Geophysical Surveys" might represent a mineralized ridge or bulge on the quartz mineralization dome in spite of the evidence of generally poor sulphide leaching at the surface.

Sincerely yours,

P. C. Benedict

PCB:mr

cc: A. A. Brant

FINAL REPORT ON GEOPHYSICAL OPERATIONS

COPPER FLAT PROPERTY

HILLSBORO, SIERRA COUNTY, NEW MEXICO

August 28 - September 14, 1952

Introduction

The purpose of this survey was twofold:

a) To locate the presence of zones of increased sulphide mineralization within the monzonite plug;

b) To determine whether or not sulphide mineralization increased appreciably with depth in those areas which Mr. Benedict has observed to contain some copper mineralization in surface outcrop.

A multiplicity of electrode spacings, three electrode array, was accordingly used in the pulse survey. Spacings of 500' were used in all lines (500' apart), spacings of 1000' were used on every second of these lines, while spacings of 250' were used on every line and also on intermediate lines over Benedict's copper area (see Plate CF 3 of his report). Additional detailed work using shorter spacing was done at selected points on the various anomalous areas.

Some self-potential work was done as an adjunct to test for near-surface sulphides in the anomalous areas.

General Conclusions

The whole area surveyed shows evidence of some sulphide mineralization. Three zones of greatly increased response have been revealed and, with one exception, delineated. These zones lie, in general, astride the monzonite-andesite contact, and sulphides apparently reside in both rock types. The depth to upper surface of some of the sulphides is of the order of 50' - 100' in each of the three zones. The magnitude of anomalies is such that we would expect at least 8 - 10% sulphides by volume in the vicinities of the anomalous peaks.

The correlation is not good between the variation of response over the monzonite outcrop region and the distribution of the near-surface sulphide mineralization as deduced by Mr. Benedict. However, the shortest spacing widely used was 250', and hence the resultant responses are representative of a considerable vertical column rather than of just the outcrop expression, and hence these discrepancies are conceivable.

The zones which Mr. Benedict has selected as demonstrating appreciable copper mineralization at surface lie, in general, in relatively low response portions of the area. It is, however, true that sulphide mineralization in these zones does appear to increase somewhat with depth below 200'.

It is anticipated that there may not be a simple porportionality between the response and the percentage by volume of the causative sulphides across the monzonite area. However, our experience at Montcliffe has shown that the relative highs within the anomalous zone do correspond to areas of increased sulphides. The coincidence of low resistivity centers in the vicinity of two of our high response zones would tend to reinforce hope of increased sulphides there. That increased sulphide mineralization does not necessarily mean increased copper mineralization has been clearly demonstrated in the outcrop region.

Recommendation

Geologic: In the light of the geophysical work it should be worthwhile to re-examine geologically selected portions of the area covered, in particular the locations of the three anomalous high zones. In each of these zones at least one specific location can be selected where sulphide mineralization comes within 100' of ground surface. The hope would be that one could obtain more indication from the surface outcrops in the vicinity as to whether there was any copper mineralization along with the pyrite which is undoubtedly present.

Drilling: If the above investigations are of hopeful result or even of inconclusive result it is then recommended that at least one drill hole be put down on each high anomalous area to determine the character of the mineralization therein. A specific site for each area is presented in the detailed report that follows. These sites have been plotted on Plate 2, accompanying.

Detailed Report

The three high anomalous zones are as follows:

(1) The South East Area:

This is the largest of the three areas. It is irregular in shape and somewhat elongated in a SE - SW direction. It has not been entirely delineated, i.e. is still open to the south and southwest, because it extends considerably into the andesite and the possibility of commercial mineralization here is uncertain. Two lines (X1 and the Base Line extended) cross its strike and give some idea of its size. We have the results of detailed work on lines X1 and 203. From 1200' N - 900' N on line X1 we have a nice 170 millivolt self-potential "low"

coinciding with the pulse and resistivity expressions of the near-surface sulphides. The correlation of results on the various spacings indicate a considerable thickness of sulphides here, which would likely place the sulphides largely in the underlying monzonite with some mineralisation in the overlying andesite.

Similar results were obtained on line 20 S, although there is likely more mineralization in the andesite here than on line X1. The mineralization on both these lines occurs across a width in excess of 800' and the area contained by the 30 units contour on the 500' spacing map exceeds 50 acres.

Dumps and adits several hundred feet south of 1500 E on line 20 S show considerable pyrite in the andesite and occasionally some copper carbonates.

Drill Sites: Two specific drill sites may be recommended for this anomalous area because of its large size, viz.:

a) At 1150' N on line X1, directed S 75° E at an angle of -60°, to intersect sulphides starting at 50' - 100' depth. This hole should be continued for a minimum of 300' and should be long enough to penetrate the monzonite below the andesite, whichever depth is the larger.

b) At 1100' E on line 20 S, directed S 75° E at an angle of -60°, to intersect sulphides at a similar depth to the above. This hole should be continued into the monzonite, with a minimum total length of 300'. It is possible that there may be a considerable thickness of andesite here.

The direction of these holes is chosen to intersect Mr. Benedict's jointing direction at right angles. If further geologic investigation should indicate that some other orientation of hole is preferable, we would have no cause to object to a change. The target as presented by the geophysical picture in the vicinity of both these holes is a broad one.

(2) The West Contact Area:

This is an elongated anomalous zone striking approximately north-south, lying astride the monzonite-andesite contact on the west ends of lines 5 S to 5 N. Once again sulphides probably reside in both rock types. We have detailed work on lines 5 S and 5 N. On line 5 S there appears to be localized sulphides within 100' of surface at 1500' W, dipping steeply. There are no outcrops in this immediate vicinity, but it is probably underlain by andesite. Some 250' to the east Benedict has noted a moderate amount of pyrite in the monzonite near its contact with the andesite. On line 5 N the sulphides appear to lie at somewhat greater depth, approaching within 200' of the surface near 1900' W. Here also the anomaly is sharp, as though the sulphides are relatively concentrated in their near approach to surface. The resistivity in this anomalous area gives some corroboration of the presence of sulphides but it is nowhere very low. The self-potential

profile on line 5 N has a low order anomaly (18 millivolts) coinciding with the pulse high.

All in all, this zone appears to be somewhat weaker in sulphides than either of the other two. It is also the smallest in area.

Drill Site: A hole may be suggested on line 5 S at 1450' W, oriented N 75° W at an inclination of -60°. Sulphides should be intersected above 100' depth, but the hole should be carried far enough to penetrate the monzonite below the andesite. The orientation of this hole may be subject to later adjustment on geologic grounds.

(3) The Animas Peak Anomaly:

This anomalous area lies astride the monzonite-andesite contact on the northeast flank of the intrusive stock. It is observed on lines 5 N to 25 N and strikes a few degrees east of north. The high pulse, indicative of sulphides, is corroborated by the resistivity and self-potential data.

We have detailed work on line 15 N. A singularly high pulse (125 units), low resistivity (40 ohm metres) and a self-potential sink (of 170 millivolts), all testify to the presence of sulphides 100' or less below ground surface at 1000' E on this line. This point is almost on the andesite-monzonite contact as mapped by Benedict, and hence mineralization here likely resides largely in the monzonite.

Drill Site: A hole is suggested at 950' E, oriented S 75° E and inclined at an angle of -60°. This hole should intersect sulphides within 100' and will be a minimum of 300' in total length.

(4) "Zone Containing Some Copper"

The area noted by Mr. P. C. Benedict, on Plate CF 3 of his report on this prospect, as containing evidence of copper mineralization in most surface outcrops, exhibits generally a moderate to low pulse response. The south and west (northwest) flanks appear to have the highest total sulphide mineralization within the area. There is indeed evidence that the sulphides, such as they are, increase with depth below about 200' over much of this copper area. The areal distribution of the responses on the 250' spacing over this zone is given by Plate 1. The distribution of the responses on the 500' spacing array is given by Plate 2. Plate 3 shows the area over which the response increases from the 250' to the 500' spacing, i. e. effectively, where sulphide mineralization increases below about 200' depth.

Property Situation

A memo is attached from Mr. R. J. Searls (Appendix 1) covering the present status of the property situation. Plate 4 shows the claims in question. As Mr. Searls indicates, it is quite possible that some of the more recently staked claims overlap on ground previously located by others. A thorough property search would be necessary to reveal the locations and standing of the prior claims.

A second memo is attached from P. C. Benedict, drawing attention to the terms of the original option agreement with Max Hiltscher and in particular to the necessity for drilling before December 15, 1952, under the terms of that option.

If all our recent claims (Nos 1 - 19) are valid we would appear to have adequate property protection over the West Contact Area and the Animas Peak Anomaly. The South East Area is, to a large extent, covered as well, although it may prove desirable to obtain additional coverage to the south and southwest, along its strike. Property acquisition here was limited to the immediate area of the anomaly because of the question as to whether it has any commercial significance.

J. P. Grignon

H. O. Seigel

September 30, 1952.

APPENDIX I

PROPERTY SITUATION

STATUS OF CLAIMS, HILLSBORO PROJECT, NEW MEXICO

MAX Nos. 1 - 5

First located by E. McGriffin June 16, 1952, and recorded June 19.

Relocated by R. Searls September 15, 1952, and recorded September 19.

MAX Nos. 6 - 16

Located by R. Searls September 8, 1952, and recorded September 19.

MAX 17, 18, 19

Located by Robert Learned September 15, 1952, and were sent to the Sierra County Recorder for recording on September 20.

A map has been prepared showing the location of all these claims. A copy is attached. Some of these claims are on previously staked ground the status of which was not investigated.

We have not done location work on any of these claims. The New Mexico law allows 90 days for the performance of the location work. It would be necessary then that this work be completed by December 7 (Pearl Harbor Day) 1952.

Robert J. Searls

September 30, 1952.

APPENDIX 2

GROUND CONTROL

HILLSBORO, COPPER FLAT PROPERTY, SIERRA COUNTY, N. M.

The survey was started at the NE corner of the Sternberg 2066 claim. This point is also the NW corner of the Craze Martin 2066 claim. This corner was called 0 + 00 on the Base Line which runs north south (magnetic).

Lines 5 N, 10 N, 15 N, 20 N, 25 N are perpendicular to the base line 500, 1000, 1500, 2000, 2500 feet north of 0 + 00.

Lines 5 S, 10 S, 15 S, 20 S are perpendicular to the Base Line 500, 1000, 1500, 2000 feet south of 0 + 00. Line 0 + 00 is perpendicular to the Base Line at 0 + 00.

Line X1 is a line through 2500 E L 20 S, 2000 E L 15 S, 1500 E L 10 S. The line starts at 2500 E L 20 S, extends 500 S and 2000 N.

Readings were taken along the Base Line from 1000 S to 2000 S. At 2000 S the line changes direction by 16° to the east and extends to 3000 S.

Lines 2.5 N, 2.5 S, 7.5 S are perpendicular to Base Line at 250 feet N, 250 feet S, and 7.5 feet south of 0 + 00 respectively.

J. P. Grignon

COPPER FLAT PROPERTY

HILLSBORO, NEW MEXICO

by

P. C. Benedict

May 28, 1952

CONTENTS

continued on next page

CONTENTS CONTINUED

MAPS ACCOMPANYING THIS REPORT

CP-1	Topographic and Geologic Map of the Hillsboro (Las Animas) Lode Mining District	1" = 1600'
CP-2	Copper Flat Property--Areal Geology	1" = 200'
CP-3	Copper Flat Property Classification of Mineralization	1" = 200'
CP-4	Copper Flat-North Crase Martin Tunnel Wall Sampling Plan--Sampling by P. C. B.	1" = 40'
CP-5	North Craze Martin Tunnel, Back Sampling Plan--Sampling by A. S. & R. Company	1" = 40'

NEWMONT EXPLORATION LIMITED

BOX 366

JEROME, ARIZONA

May 28, 1952

Mr. Fred Searls, Jr.
Newmont Mining Corporation
1501, 14 Wall Street
New York 5, N. Y.

Re: Copper Flat Property,
Hillsboro, New Mexico
(Max Hiltcher, Owner)

Dear Fred:

FORESTATEMENT

The following information results from field work classified as follows:

Reconnaissance	1	day
Drawing base map from patent plats	1	day
Geologic Mapping	8½	days
Option Agreement	½	day
Sampling	2	days
Total (May 10th - 22nd, 1952)	13	days

On May 20th, 1949 I had spent 6 hours on the property and recognized the presence of an area of protore which I guessed to run between 0.2 and 0.3% copper but, as there was no commercially important secondary enrichment, I turned the property down.

RECOMMENDATIONS

I recommend the property for geophysical survey and that some preliminary diamond drilling be done, whether or not geophysics assist in locating drill holes.

SUMMARY AND CONCLUSIONS

Two small areas of crushing (brecciation) are too poorly exposed, because of overburden, to be accurately evaluated.

They might expand into a breccia pipe or pipes with depth. They occur in a lightly pyritized portion of the monzonite stock more or less adjacent to the predominant 2 to 4½% sulphide (estimated) mineralized area, and in or adjacent to an area of lean copper mineralization possibly some 53 acres (conceivably considerably larger) in extent. In at least 11* acres of this, and possibly substantially more, the protore will run better than 0.2% copper and may average substantially more than this. Secondary enrichment is commercially unimportant. The gamble is that some considerable portion of this lean primary mineralization will improve with depth to ore grade. I hope that geophysics will assist in choosing sites for testing same but, should such not prove to be the case, I have specific notions where such tests should be made.

This is a long shot but the prize might well be of major importance.

LOCATION AND ACCESSIBILITY

The property is located about 4 miles in an air line N. E. of Hillsboro, Sierra County, New Mexico at an elevation of about 5,500 feet.

The route to the property is as follows, zero mileage being at the junction of the highways from Silver City and Deming, right in the center of the town of Hillsboro, from which point one starts out of town easterly towards Truth and Consequences (formerly Hot Springs), the county seat.

0.4 miles Hillsboro Auto Court with a Texaco station on N. side of road. The next five miles are hilly, winding and unpaved.

5.4 miles. Turn left off of Truth and Consequences road, 100 yards before pavement begins.

6.1 miles. Pass several houses on right. (Old Dredge Camp).

6.5 miles. Take left fork in roads at about 200' from windmill which you pass on your right.

7.7 miles. Max Hiltcher's place. Go through two gates.

9.0 miles. You have arrived on the Stockholm claim on the road shown near the S.E. corner of accompanying plates CF-2 and CF-3 and can identify your initial position by the windmill shown thereon.

*For perspective, I note that a block 27½ acres in area and 1,000 feet deep contains 100,000,000 tons.

GENERAL FEATURES

Board and Room

The geophysical crew will probably find it best to stay in the hotel or auto court in Hillsboro. The former was recommended to me as better and cheaper, and is probably the only place in town where meals may be obtained.

If drilling is undertaken it is possible that some of the old dredge camp houses shown above at 6.1 miles might be rented from the farmer now occupying the camp.

Buildings and Equipment

None. The stone and dobie houses shown on accompanying plates CF-2 and 3 are ruins.

Water

There has been a prolonged drought. The most likely source of water for drilling is the Sternberg shaft shown along the east side line of the Sternberg claim on Plates CF-2 and 3. This shaft is reported to be 150' deep from the collar with 500 or 1000 feet of driving on the 90 level. Water stands about 15' below the Sternberg adit tunnel which connects with the shaft at about 25' below the collar. The shaft is somewhat caved below the adit tunnel. If there is no opening in the cave through which a pipe can be lowered, I should be hopeful that it would be possible to drive pipe through the cave to the 90' level. If this proves impossible, the 61' shaft located 400' to the N.E. of the Sternberg has a little water and the 40' windmill shaft towards the east end of the Stockholm claim is reported to have a 40' cross-cut at its bottom. Water stands at about 20' below the collar. Should these sources fail it will be necessary to haul water 3 miles from the old dredge camp and it would be necessary to make arrangements with the farmer owner.

For a large scale milling operation the most obvious source of water is the Caballo reservoir on the Rio Grande River about 15 miles distant and likely over 2,000 feet lower and purchase of water rights would be involved.

Power

Light load Rural Electrification Administration lines are within three miles of the claims. I assume one could obtain something of the order of 250 H.P. therefrom. The nearest high tension lines are along the Rio Grande valley, about 15 miles distant.

REGIONAL GEOLOGY

The regional trend as judged from the State Geologic map appears to be almost due north-south.

LOCAL GEOLOGY

Accompanying Plan CF-1* shows the geology for several square miles around Copper Flat which is situated in the monzonite stock shown in sections 26 and 35, T15S, R7W.

Early Tertiary andesite flows and fragmentals rest on Paleozoic sediments and are intruded by the monzonite. The andesites appear to dip away from the intrusive and it might not be so very deep to the sediments, peripheral to the monzonite, in the vicinity of Copper Flat.

In the N.E. corner of CF-1 is shown an area of Fusselman limestone in fault contact with andesite to the south. This fault appears to dip northerly and hence is reverse. Displacement is probably not very great as the andesites appear to be lying in normal depositional contact on top of the limestone not far to the N.W. of the area of Fusselman shown.

In late Tertiary times, and subsequent to all the other rocks, basalt was intruded as dikes and breccia pipes from which a flow poured out on a topography not very different from today's.

On accompanying Plan CF-2, is shown my mapping of the andesite contact peripheral to the monzonite and I have made a preliminary and largely unsatisfactory attempt to divide the monzonite into petrologic phases A, B and C. "A" appears to be the oldest and probably contains most of the best copper mineralization. However, this statement is not worth much as included with "A" is a good deal of monzonite about which I am not certain of the classification. "B", as mapped, is generally low in mineralization. "C" appears to be the latest of the monzonites, accounts for most of the dikes and, though generally well mineralized, may be more pyritic and relatively barren in copper.

PAST PRODUCTION

Some lead, zinc and manganese have been mined from the sediments to the south, mostly off the map area of CF-1. The radiating veins in andesite, along latite (actually probably monzonite) dikes, southerly from the Copper Flat stock have been mined for gold and there has been some alluvial worked particularly along

*Printed from map contained in New Mexico School of Mines Bulletin No. 10, "Geology and Ore Deposits of Sierra County, New Mexico" by George Townsend Harley, 1934.

Grayback Gulch draining easterly from the stock area. Hiltcher thinks total gold production would come near to $10,000,000. I doubt that sorted copper ore shipped from Copper Flat would amount to 50 tons. Something like 5 tons were shipped from the shaft, on the Old Mac claim, labeled on CF-2 "50' + Incline Shaft". Perhaps more was shipped from the larger pit on the Copper King claim in which there is a shaft labeled "Reported 80' with drifting northerly;" and possibly a little oxidized copper ore (chalcotrichite, native copper and carbonates) occurring in amygdules in the basalt dike in the Sternberg shaft workings was sorted + shipped.

MINERALIZATION

On drawing CF-3 I have attempted to classify the monzonite according to total sulphide content before oxidation. Making a reasonable projection under covered areas, there is of the order of 130 acres in which there has been appreciable sulphide mineralization.

Two areas of the heaviest sulphide mineralization are shown, one capping Copperopolis Hill in the S.W. corner of the area mapped; the other consisting of two small outcrops near the center of the Ventura claim. Whether or not the heavier iron stained outcrop of Copperopolis Hill represents the leaching of any copper mineral I do not know. I do believe that the extra iron staining, compared to the area to the east, is due to an increase in pyrite content, not chalcopyrite. It is possible that the higher iron in the two little outcrops near the center of the Ventura claim may reflect a higher than average chalcopyrite content.

Secondary Enrichment

Secondary Enrichment appears to have been very light and spotty and is of little or no commercial importance. The primary sulphides are showing at shallow depth in the underground workings and appear in numerous places in the bottoms of the gulches. I do not think the enrichment has been eroded away but that the combination of topography, climate and character of the mineralization has never permitted any commercially important enrichment.

Copper Stain (carbonate and chrysacolla)

It is my impression that, on this property, copper stain is mostly derived from secondary chalcocite and that chalcopyrite furnishes very little. It is usually necessary to break into a rock to find preserved the little copper stain derived from chalcopyrite and this shows up only if the latter is preserved nearby. On the surface outcrop above the North Craze Martin Tunnel, in which the protore averages 0.29% Cu (See CF-4) I was able to find no copper stain except in the artificial cutting along the old road.

Furthermore, I suspect that most, if not all, of the chalcanthite found in various tunnels is derived from chalcocite. In the North Craze Martin Tunnel, there is no chalcanthite except for the first 25' at the portal where a trace of chalcocite may still be seen and where I suspect there was more previous to post-mine oxidation. This all convinces me that presence or absence of copper can be determined only in

(a) Substantial excavations or
(b) In outcrops in the gulch bottoms.

The hill and ridge outcrops appear to have been completely leached of copper except where there had previously been a little local secondary enrichment.

Character of the Mineralization

The better mineralized rock is in general well sheeted and jointed and on these planes occur seams of pyrite devoid of chalcopyrite. The latter characteristically occurs as tiny grains actually disseminated throughout the monzonite as does a good deal of the pyrite. However, in the crushed or brecciated areas (see below) showing copper stain, the interiors of the fragments do not show evidence of disseminated mineralization and it may be that the copper here was originally as coatings on, or in seams between, the fragments.

AREA OF COPPER MINERALIZATION

On accompanying plan CF-3 I have drawn a heavy green line described in the legend as "Most appropriate exposures in this area show a little copper." As outlined above under "Copper Stain", I regard an appropriate exposure as an artificial excavation or an outcrop in the gulch bottoms.

The area included by the heavy green line comprises 53 acres. It could be considerably larger than this for there are no limiting excavations nor gulch outcrops to the west on the Copperopolis claim; nor are there to the north on the Alhuten claim. On the other hand there are shown on CF-3 seven gulch outcrops and shafts, west, north and northeast of the north end of the Alhuten, which show pyrite but no chalcopyrite.

Inasmuch as the area outlined in green is predominantly covered with overburden, there is a chance that substantial barren areas are included though I doubt such.

On CF-3 I have also drawn a heavy red line described in the legend as "Underground workings strongly suggest that this is the minimum area which will average 0.20+% Cu as chalcopyrite." The underground workings referred to are shown on CF-3 and are listed with descriptive notes below:

Alhuten Shaft

Alhuten Shaft is located 290' at N55°W from the S.E. corner of Alhuten claim. There are no bedrock exposures within 250 feet and there could have been no selectivity of location for the shaft. It is said to be 61' deep. My sample of the unoxidized portion of the dump yielded 0.20% Cu.

Sternberg Tunnel

Sternberg Tunnel, the adit of which is on the Craze Martin claim, S15°E 250' from the N.W. corner of this claim. The outer half of the tunnel is in overburden. The rest is so heavily coated with copper sulphate as to make sampling meaningless.

Sternberg Shaft

Sternberg Shaft 300' almost due south of the N.E. corner of the Sternberg claim. This shaft is said to be 150' deep with somewhere between 500 and 1000 feet of driving on the 90' level. Part of this driving was along the basalt dike shown but there is said to be a substantial crosscut away from the dike. My sample of unoxidized material around the north toe of the dump yielded 0.27% Cu.

North Craze Martin Tunnel

North Craze Martin Tunnel; the adit is S60°W 280' from the N.E. corner of the Craze Martin claim. My somewhat detailed rib sampling is shown on plan CF-4 and averaged 0.29% Cu. Seven back samples by A.S. & R. are shown on CF-5 and averaged 0.40% Cu as did their dump sample. As jointing is predominantly more or less along the bearing of the tunnel, back samples may possibly be slightly preferable. The first 25' of the tunnel show too much chalcanthite to warrant sampling.

N. E. Craze Martin Tunnel

Portal S20°W 200' from the N.E. corner of the Craze Martin claim. Caved at about 75' from the portal and so encrusted with copper sulphate as to make sampling useless. However, a short east crosscut at about 40' from the portal shows much less sulphate near its face. My 8.0' sample on the south side of the cross-cut yielded total copper of 0.42%, oxidized copper 0.23%. The difference, 0.19% is present as chalcopyrite.

35' east of the portal of this tunnel is a 30' tunnel bearing southerly. It is too heavily encrusted with chalcanthite to make sampling worth while.

Copper King Shaft

Completely caved; located in a big trench or open cut at S20°E 320' from the N.W. corner of the Copper King claim, thought to be 60' deep with some drifting reported in a northerly direction. A sample of unoxidized dump material with chalcopyrite as the only copper mineral gave me 0.34% Cu. Sheeting here is strong and bears N25°E and there is considerable copper oxide and carbonate along this. This is the strongest copper showing on the property. Specimens, found in the dump, of fairly coarse chalcopyrite associated with coarse biotite were not included in the sample.

A second shallow cut, 50' to the S.E. shows a good deal of oxidized copper. A trench 100' to the N.W. of the Copper King shaft and which is 10' deep at the S.W. face, shows no recognizable copper.

South Craze Martin Tunnel

South Craze Martin Tunnel is driven northerly off Yellow Jacket Wash. Its portal is N23°W 500' from the S.W. corner of the Craze Martin claim. The back of this tunnel is in gravel to within a few feet of the face. Bedrock under the gravel in the northerly portion of the tunnel shows very light chalcanthite but in the face chalcopyrite is the only copper mineral. My sample across 4.0' yielded 0.30% Cu. Assaying was by Magma Copper Company.

Possible Extensions of the 0.20+% Protore Area

The area could easily extend importantly to the west; there is simply no information.

The 60' Ventura shaft, located 260' east of the west sideline Ventura monument #3, shows oxidized copper and chalcocite on the dump. There is a good possibility that the 0.20+% protore area extends this far north.

In Grayback Wash, the west end of the outcrop on the north side of the wash, 230' easterly of the N.E. corner of the Craze Martin claim, is pretty well stained with copper. This could be on the northerly extension of the richer than usual Copper King Shaft showing. The plus 0.2+% Cu protore may possibly extend this far east.

The Copenhagen adit, on the south side of Yellow Jacket Wash, S20°E 200' from the N.W. corner of the Copenhagen claim, is well incrusted with copper sulphate. It is entirely possible that a S.E. lobe of the 0.20+% Cu protore area extends as far as this working.

To summarize, instead of the 0.20+% copper protore area being 11 acres in area, there is quite a good possibility that it is 2 or 3 times this size and there is even some chance that it is substantially larger than 30 acres.

THE CRUSHED AND QUARTZ STRINGER EXPOSURES

The two conspicuously crushed exposures are in Grayback Wash. The Copper King crush shows in the outcrops on the north side of the wash from about 150' west of the east Copper King side line and extends east into the Castle Hill claim for about 75' or for a total length of about 225'. The extreme west end of this outcrop has been mentioned in the section above as being the conceivable northerly extension of the Copper King shaft showing. The nature of the crushing is such that I have no notion as to its trend or strike direction. I saw no evidence that it was merely a thin narrow band following the direction of the outcrop. It may or may not be part of the perimeter of a crescent-shaped or annular ring of breccia--there is no evidence. This and most of the outcrops within the heavy brown line on Plan CF-3 show several % of irregular quartz stringers. The west end of the Copper King crush shows strong copper stain but in the rest of it copper stain is present but very faint. Perhaps something like 1½ to 2% total sulphide has been leached.

The Stockholm Crush is shown in three tiny outcrops in Grayback Wash extending from 90' to 170' below the junction with Scotch Lord Wash (from 670' to 770' from the west end line of the Stockholm claim). They are along the south side of the road going up to the Ventura shaft.

It is conceivable that the Copper King crush and the Stockholm crush are part of the same structure though outcrops in the intervening 650 feet show much less crushing.

If there is going to be an increase in the grade with depth of the protore, I believe the Copper King crush and Copper King shaft zone is the place to look for it on the basis of present geological exposures.

GEOPHYSICAL SURVEY SUGGESTIONS

(1) I should like to see five N70°W pulse traverses run across the porphyry stock with 500 feet between lines. The most northerly line would be through the N.E. (#3) corner of the Alhuten claim. The fifth line, to the south, mostly on the Copperopolis claim, would be very short.

(2) In addition, if there is any way to trace out and indicate the shape of the crush zones by much more closely spaced

traverses, such information would be extremely helpful. It is possible that the crush zones are enough more water soaked than the surrounding country that resistivity or S.P. survey might yield something.

(3) Using the data gathered from (1) as background information, I should like to see as many depth probes as might be deemed useful in this area with particular emphasis on the copper bearing area outlined with the heavy green line on CF-3 and, of course, special emphasis on crushed areas as might be determined by (2).

(4) It is thought that there are magnetic anomalies in the area. Perhaps it would be worth while to run a couple of preliminary lines to see if such correlate with any commercially important geologic features.

WHY SHOULD THE PROTORE IMPROVE WITH DEPTH?

There is no good valid reason why the protore should improve in grade with depth but the following unsubstantied theories are pointed out:

(1) The andesites appear to be domed around the monzonite stock. Reconstructing the original monzonite surface, and the presence of placer gold probably derived from veins in andesite which overlaid the monzonite, suggest that only one or two thousand feet of the top of the stock have been eroded. It is possible that the exposed monzonite is too high up in the stock for chalcopyrite deposition to have attained its maximum.

(2) Limestone is doubtlessly present under the andesite and surrounding the monzonite at no great depth. An off-hand guess would be a thousand feet. Many of the porphyry copper intrusives have limestone walls. It is conceivable that such condition might favorably affect the amount of chalcopyrite deposited in the stock, even well away from the limestone contacts.

(3) The crushed zones and quartz stringer zone associated therewith could be a high horizon expression of a breccia pipe, a few of which have been known to change their tenor radically for the better with depth.

OTHER MONZONITE PLUGS

On CF-1, a small monzonite area is shown in the S.E. corner of sect. 23, T15S, R7W about a quarter mile northerly of the main Copper Flat stock. It is the spheroidal weathering "B" type

monzonite and never contained much sulphids except along fractures. No copper was seen.

The Hillsboro-Truth and Consequences highway crosses the stock shown on CF-1 in sections 3 and 10, T16S, R7W. It was not inspected in detail but appeared to show very little mineralization. The S.E. corner, near the limestone contact, is quite basic--perhaps dioritic.

OTHER MONZONITE THAT DOES NOT BREAK THROUGH THE ANDESITE

The presence of three monzonite stocks and the abundance of monzonite dikes suggests that there may well be other stocks which have not yet been exposed by erosion. If we can find an orebody in the Copper Flat stock, perhaps pyritized, buried ones are worth looking for by geophysics. At present the difficulty of trying to localize a hot spot in the exposed pyritized monzonite seems difficult enough without investigating the buried ones.

DEAL

Enclosed herewith in duplicate is a horseback deal which I drew up in the field and obtained Hiltcher's signature thereon. Please note that you are to indicate your approval by signing and returning one copy to Hiltcher, P. O. Hillsboro, Sierra County, N. M. Or, if it is too bad, you can have a new agreement drawn and sent to him for signature as is provided in paragraph (13).

The principal provisions of the deal are:

In order to keep the option valid we:

(1) Start a geophysical survey before August 1, 1952
(2) Three months after completion of survey, spend not less than $1,000 per month on the property through June, 1953.
(3) Pay Hiltcher $100 per month beginning July 1, 1953.

The purchase price is $150,000 against which the $100 monthly payments are credited. The balance of the $150,000 is payable on the first day of July 1957, five years hence.

VALIDITY OF TITLE

I did not search title but saw the tax receipts for the patented claims.

GROUND COVERED

You will note on plans CF-2 and 3 that positions of patented claims Sudan and Isabella, and unpatented claim Olympic are

indicated as very approximate. I have written for the patent plats. Exact additional coverage can not be indicated until such are received and the Olympic has been accurately located, but should include:

(1) The triangle between the Castle Hill and Stockholm. This is too near the crushed areas for comfort.

(2) The rest of the monzonite area west of the Copperopolis and Alhuton and N.W. of the Sandow.

All of this is believed to be open.

The continuation of the monzonite N.E. off the map area is said to be staked and I doubt that it is worth while bothering with.

Hillsboro is full of smart guys and the above locations should be made before the geophysical survey is started. I think Hiltcher can get hold of someone to dig the discovery pits.

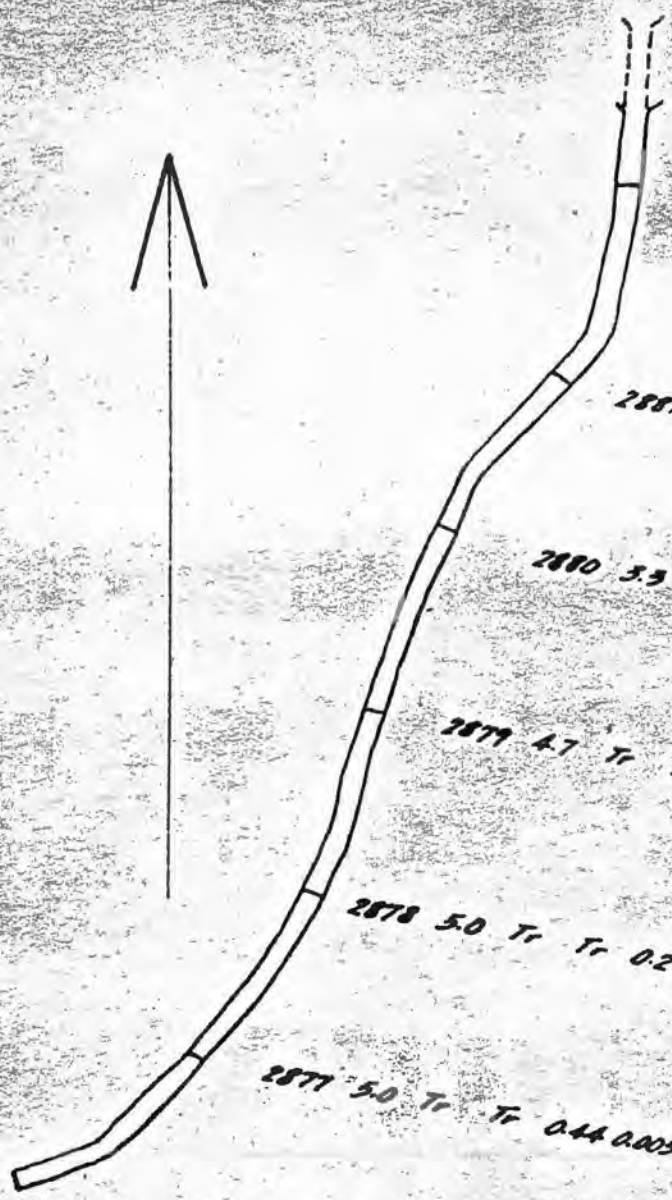
I stayed out of Hillsboro and believe that both my identity and my length of stay on the property are unknown.

Someone with some technical training should do the staking in order to make sure that the discoveries are not on older locations or patented ground and also to minimize the number of claims staked.

Very truly yours,

PCB:lu

P. C. Benedict



DUMP

0.005 0.08 0.40 0.012

SAMPLE NO	FT WIDTH	Pb	Ag	Cu	Mo
2882	6.8	0.01	0.16	1.11	0.169
2881	8.0	Tr	Tr	0.40	0.004
2880	3.9	Tr	Tr	0.29	0.006
2879	4.7	Tr	Tr	0.19	0.010
2878	5.0	Tr	Tr	0.29	0.011
2877	5.0	Tr	Tr	0.44	0.005
2876	5.0	Tr	Tr	0.25	0.004

NOTE: SURVEY IN ERROR. TUNNEL IS 40'-50' LONGER THAN SHOWN. SEE CF-4. P.C.B.

NO VISIBLE OXIDIZED COPPER IN SAMPLES.

NEWMONT EXPLORATION
COPPER FLAT, N.M.
NORTH CRAIG MARTIN TUNNEL BACK SAMPLING PLAN

SAMPLING BY A.S.+R.

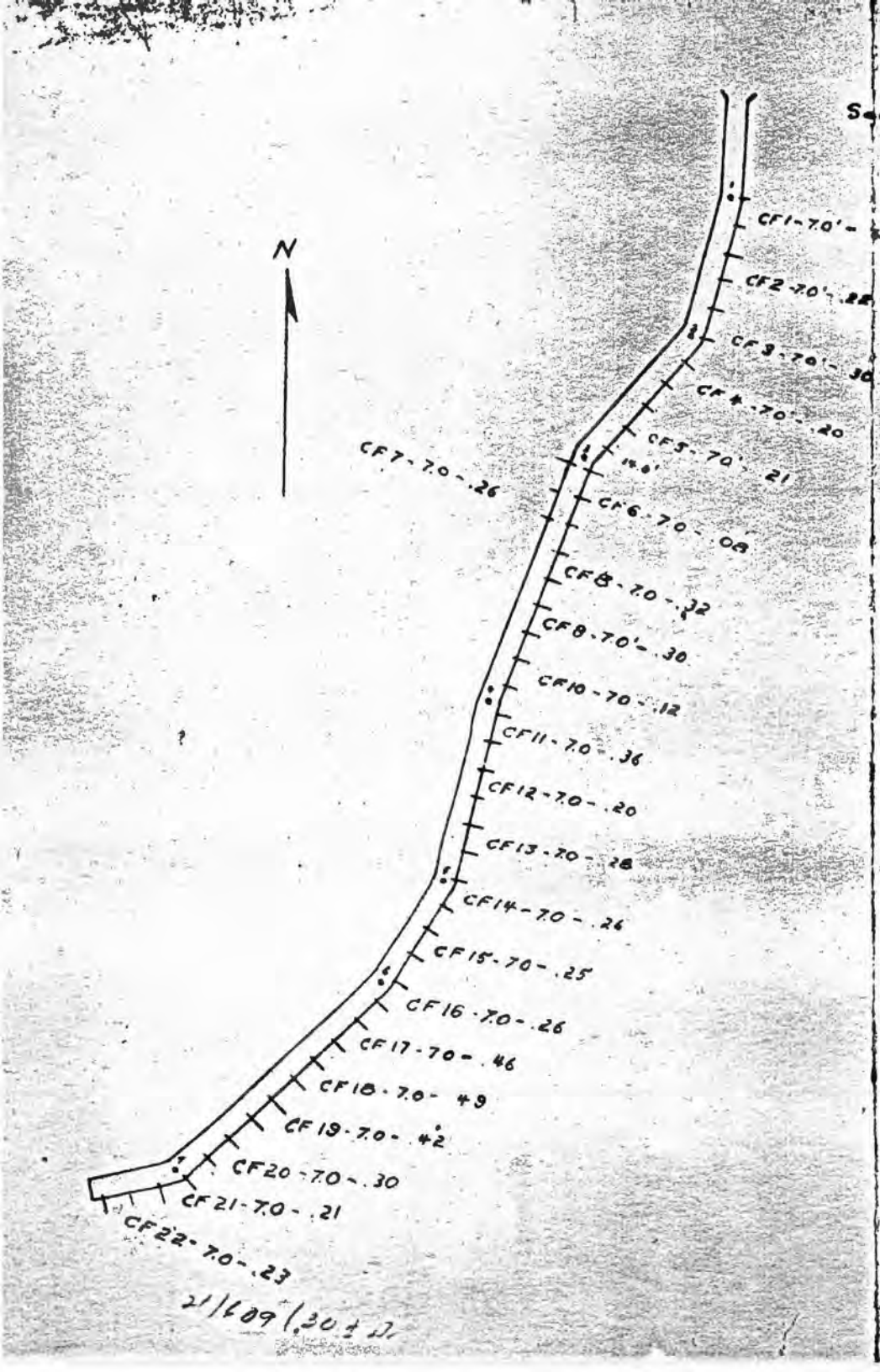
SCALE: 1"=40'

TRACED BY P.C.B.
MAY 28TH, 1952

SAMPLED AUGUST, 1942.

CF-5

Sample No. - Width Sampled - Total Copper %



NEWMONT EXPLORATION
COPPER FLAT, N.M.

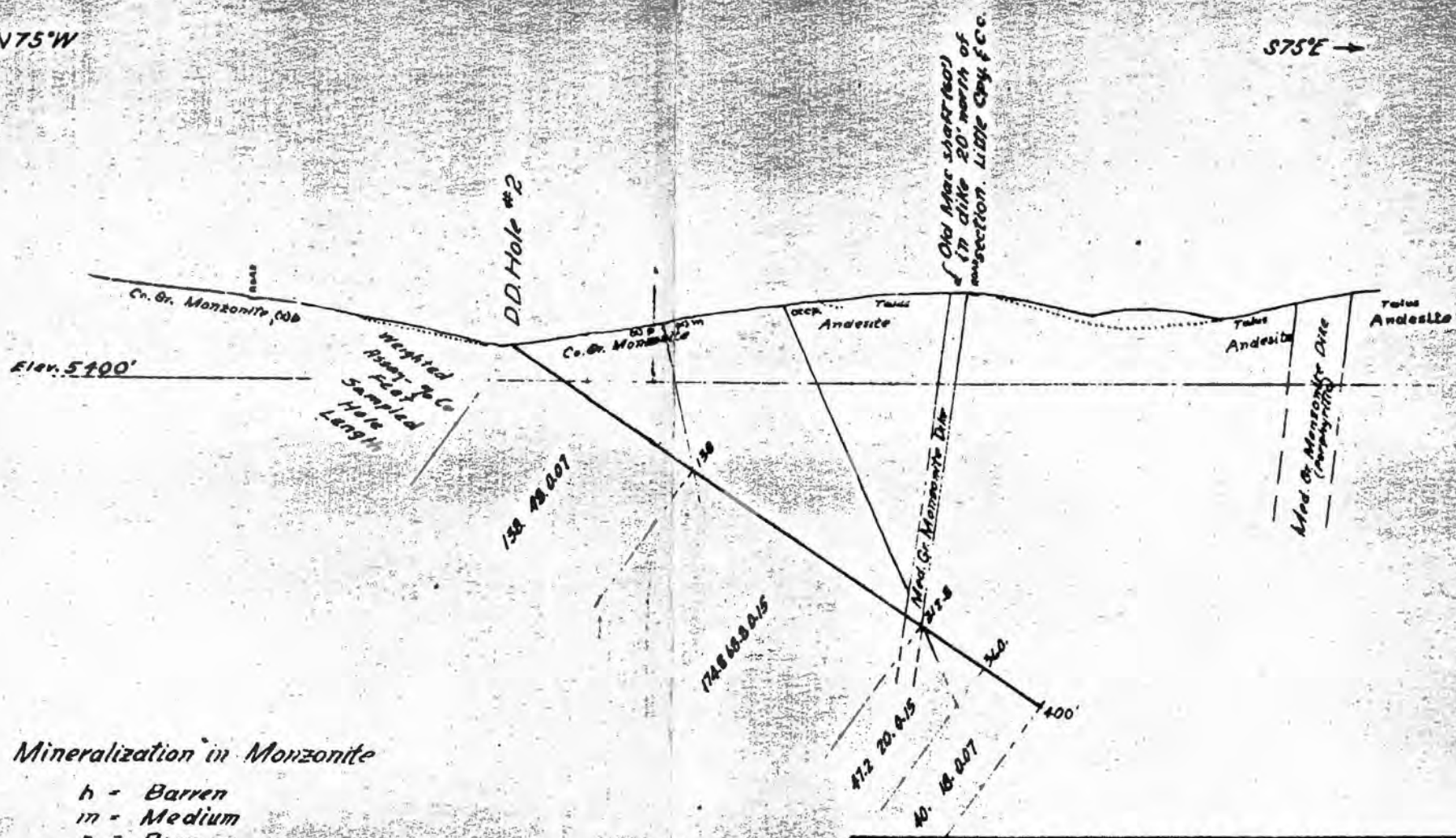
North Craze Martin Tunnel

Wall Sampling Plan

Sampling by P.C.B.

Scale	1" = 40'
Drawn by	REL
	May 28, 1962

CF-4



Mineralization in Monzonite

h - Barren
m - Medium
p - Poor

NEWMONT EXPLORATION LTD.

COPPER FLAT PROPERTY
HILLSBORO, NEW MEX.

SECTION ON D.D. HOLE #2
BEARING S75°E

Scale: 1" = 100'

Drawn by Ben Hash ~ 1/2/53

CF-11

NEWMONT EXPLORATION LTD.

COPPER FLAT PROPERTY

HILLSBORO, N.M.

AREAL GEOLOGY

SCALE: 1" = 200'

GEOLOGY BY R.C.B. (BRUNTON & PACING)
BASE: PATENT PLAT SURVEYS.
DRAWN BY R.C.B. MAY 28TH, 1952

CF-2

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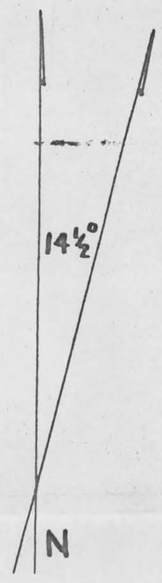

15 N

10 N

5N

"ZONE SHOWING SOME COPPER"

DOWN
UP

"ZONE OF 70% Cu"

0

5S

"CRUSHED ZONE"

10S

BASE LINE

15 S

PLATE 3

COPPER FLAT PROPERTY

HILLSBOROUGH, NEW MEXICO

T15S, R7W, SIERRA CO.

SCALE: 1" = 200'

DOWN
UP

OUTLINE OF AREA (UP) WHERE PULSE VALUES ON THE 500' SPACING EXCEED THOSE ON THE 250'.

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