THIRD REPORT FOR MINERAL MATERIALS CO.
ON MAGNETOMETER SURVEYS ON THE BUENA VISTA IRON DEPOSIT
CHURCHILL COUNTY, NEVADA

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* BUENA VISTA IRON DEPOT, MAGNETIC PROFILES.

INTRODUCTION

This is the third report covering a series of magnetometer surveys made for Mineral Materials Co. on the Buena Vista iron deposit, Churchill County, Nevada. The Buena Vista property contains sixteen patented lode mining claims, situated chiefly in Sections 4, 5, and 9, T. 24 N., R. 34 E., in the northeastern part of the county. The ore bodies consist of irregular masses of magnetite in gabbro, occurring chiefly along well-defined mineralized zones that probably are structurally controlled. Mining now is in progress at several localities in the central part of the property.

During 1951 magnetometer measurements were made in the central part of the property, in an area designated as Grid No. 1 in the second report. This grid covered all of the Iron Mountain claim, most of the adjoining Fairview and Locomotive claims, the east end of the Wild Horse claim and adjoining open ground, and a small part of the Sea Gull claim. A detailed magnetic map of Grid No. 1 was submitted with the second report. The chief purpose of this work was to trace and outline the main mineralized zones and ore bodies in and around the mining area, as a guide for diamond drilling and other development work.
In March 1952 two smaller magnetometer grids were surveyed, Grid No. 2 on the Desert View claim and Grid No. 3 on the Rover and Wyoming claims; a small extension was added to the southeast part of Grid No. 1; and two reconnaissance traverses were run, one on the east end line of the Locomotive and Pennsylvania claims and one across the central part of the Albitross claim. This third report presents the results of these surveys, the chief purpose of which was to test additional areas in which outcrops of iron ore occur or in which ore might be present under cover. At the time the field work was done, preparations were under way to begin mining a body of ore that outcrops in the south central part of the Desert View claim.

As in the earlier surveys, the measurements were made with a standard Askania vertical magnetometer, having a sensitivity of about 30 gammas per scale division, and all of the magnetic values are determined in relation to the same fixed base value.
GEOLOGY

The chief country rock in the Buena Vista area is gabbro. The iron ore bodies occur in the gabbro as irregular and disconnected replacement lenses, chiefly along well-defined mineralized zones. In and around these zones the gabbro generally is impregnated with magnetite in the form of grains, stringers, and small veinlets, and the zones therefore produce rather strong magnetic anomalies that serve as guides in prospecting. Within the general anomalous zones the individual near-surface ore bodies produce very sharp, strong, localized anomalies.

Grid No. 1 and Grid No. 2, in the eastern group of claims, lie mainly in an area of sharp ridges and valleys. Here the gabbro is at the surface or is covered only by a thin mantle of detritus and slope wash, and the mineralized areas are roughly indicated by iron outcrops or heavy float. The western group of four claims, in which Grid No. 3 is located, lies on the eastern edge of the relatively flat main valley, along two terraces that mark shore lines of the former Lake Lahontan. The gabbro is exposed in the eastern part of the group, on the upper terrace, but most of the area is covered by a mantle of lake gravel. Two very small outcrops of fine, dense, high-grade iron ore occur in the central part of Grid No. 3, and bulldozer trenching has revealed additional ore, but for the most part the lake gravel effectively conceals the underlying rocks.
MAGNETOMETER SURVEYS

Plan of the surveys

The accompanying index map shows the relative locations of the Buena Vista patented claims, their relation to an established section corner, and the locations of all of the magnetometer grids and reconnaissance traverses. The surveys in 1951 included all of Grid No. 1 except the extension east of the Fairview claim, which was added during the present field work. The 0-point of this grid is the northwest corner of the Iron Mountain claim, and the base or control line is the north side line of the claim. On all of this grid north-south traverses were run at intervals of 100 feet, and magnetometer stations were occupied at intervals of 50 feet. The now extension consists of four traverses, 1600E to 1900E, run between the 600S and 1100S coordinate lines, with stations at 50-foot intervals.

Grid No. 2 covers the east part of the Desert View claim, including the main outcrop area in the south central part. The detailed plan is shown on the accompanying magnetic map. The 0-point of the grid is the northeast corner of the claim, and, beginning on the east end line, traverses were run parallel to the end line at 100-foot intervals, measured along the side lines, for a total distance of 600 feet. In the main outcrop area, traverses 4007 and 5007 were extended 100 feet south of the south side line, and the 1507 traverse was added in the south half of the claim. On all of the lines, magnetometer stations were occupied at intervals of 50 feet.

Grid No. 3, of which the detailed plan is shown on the magnetic map, covers most of the northwest part of the Rover claim and the
northeast part of the Wyoming claim. The O-point of the grid is the small iron outcrop located on the common side line 300 feet from the common north corner of the claims. As shown on the map, traverses of varying lengths were run normal to the common side line at intervals of 100 feet, for 300 feet north and 500 feet south of the O line. Intermediate traverses also were run at 50N and 150E, to give additional magnetic detail. Magnetometer stations were occupied at intervals of 25 feet in the central part of each line, to detail the magnetic anomaly, and at intervals of 50 feet on the ends.

The Albitross reconnaissance traverse, shown on the index map and the magnetic map of Grid No. 3, was run across an area entirely covered by lake gravel, to determine the general magnetic character of the area and, in particular, whether there might be a northwesterly continuation of the mineralized zone in Grid No. 3. The O-point of the traverse is located on the east side line of the Albitross claim, 600 feet north of the southeast corner. From this point the traverse was run 1000 feet on a bearing of S. 55° W., and magnetometer stations were occupied at intervals of 50 feet.

The Locomotive-Pennsylvania reconnaissance traverse, shown on the index map, was run to test the area northeast of Grid No. 1, with particular reference to the possible presence of mineralized zones parallel to those found in the grid. The O-point of the traverse is the northeast corner of the Pennsylvania claim. From this point the traverse was run 900 feet along the east end line, and magnetometer stations were occupied at intervals of 50 feet.
Results of the surveys

Grid No. 1 Extension. The second report, on page 12, noted two positive magnetic zones in the southern part of Grid No. 1, extending to the east and south beyond the limits of the grid. The report further stated:

"The positive anomalies probably mark structurally controlled zones of magnetite mineralization, similar to the main anomalous zone, although it now seems doubtful that the zones contain bodies of a size and grade to constitute commercial ore. The strongest anomalies occur in the northern zone at the east edge of the grid, centering at 8003 and 9503 on the 15E line. If further work is done in the Buena Vista area, it may be well to trace these zones farther to the east."

During the present field work Grid No. 1 Extension was added, largely on the upper west slope of the first main hill southeast of the mining area, to determine whether the strongest anomalies might indicate commercial mineralization to the east. The results are shown on the accompanying magnetic map, on which the positive anomalies are colored in the same manner as on the main map.

The magnetic results show that the positive zone continues on a trend a little south of east, but that it narrows considerably toward the east side of the Extension. The chief positive anomalies are shown to be narrow and of short strike length, and, although it is probable that ore of commercial grade is present, it is unlikely that substantial bodies occur close to the surface. The persistence and magnetic strength of the zone, and particularly the magnetic trends, suggest that this may be the same mineralized zone in which the chief ore body occurs on the Desert View claim."
Locomotive-Pennsylvania Reconnaissance Traverse. The results of this traverse are shown on the accompanying magnetic profile, which is plotted on a horizontal scale of 100 feet to the inch and a vertical scale of 3,000 gammas to the inch. The values are neutral on the north part of the line. At 2503 the curve breaks sharply downward, and all of the values are decidedly negative to the south end of the line, which is only about 100 feet north of the northeast corner of Grid No. 1. The profile shows that the broad area of low magnetic intensity in the north part of the grid continues northward beyond the middle of the Pennsylvania claim, that north of the low area the country rocks are magnetically neutral, and that no mineralized zones similar to those found on the Iron Mountain claim occur in the east part of the Locomotive or Pennsylvania claims.

Grid No. 2. This grid primarily was established to determine the size, continuity, and probable attitude of the ore body represented by the large outcrop on the spur ridge in the southeast part of the Desert View claim. Because of other small outcrops, and abundant float in the valley, the grid was extended to cover the entire east half of the claim. The results are shown on the magnetic map, which is contoured on an interval of 5,000 gammas.

As in Grid No. 1, the dominant magnetic trends run eastward or southeastward. The main outcrop area shows an east-west elongate positive anomaly about 200 feet long, between the 325W and 525W grid points, which reaches maximum positive values of 22,000 to 25,000 gammas. The anomaly cuts off very sharply on the east, the 300W line
showing only very minor peaks. On the west the anomaly weakens more gradually, and it continues beyond the west edge of the grid. The 450W traverse shows a strong, solid peak, indicating that the ore is continuous between the main outcrop and the smaller outcrops to the west. The magnetic profiles are essentially symmetrical, indicating a vertical or very steep dip, and the absence of strong negative borders, except on the 500W line, suggests that the body has considerable depth extent. The peak on the 600W line suggests that the body may rake to the west under cover.

On the basis of the 410,000-gamma contour, and assuming vertical boundaries and no underlying splits or horizons of waste, the anomaly suggests a probable yield of about 1,900 tons per foot of depth, not including the projecting outcrop. Similar calculations based on the 415,000-gamma contour give a probable yield of about 1,300 tons per foot.

Outside of the main outcrop area the magnetic results show a broad low zone running northwesterly and southeasterly through the central part of the grid. Immediately to the north there is a positive zone that runs southeasterly from the 400W line to the east edge of the grid. The highest peak, at 250S on the 100W line, exceeds 410,000 gammas. A small outcrop of ore occurs on the slope at or near this point, but, considering the anomalies on the other lines, it seems likely that the zone as a whole contains mainly submarginal material.

Another pronounced magnetic high occurs on the north ends of the 200W and 300W lines, and the entire north edge of the grid shows increased magnetic intensity. This appears to be the south edge of a magnetically high belt associated with a general area of mineralization on the Mountain Top claim.
Grid No. 3. This grid was established to test part of the gravel-covered area in the north part of the Rover and Wyoming claims, particularly to determine the extent of the iron ore indicated by the small outcrops at and near the O-point. Stripping of a few feet of lake gravel by bulldozer in the area around this point had exposed a good showing of high-grade ore. The results of the survey are shown on the magnetic map, which is contoured on an interval of 5,000 gammas.

The magnetic readings show a 415,000-gamma closure extending about 250 feet on either side of the O line. From the 100S line northward the anomaly is approximately parallel to the common side line of the claims, bearing N. 38° W., and the positive zone continues with diminishing strength beyond the 300N line. Between the 100S and 150S lines the anomaly swings sharply eastward and terminates in a very small peak at 160E on the 300S line. The 400S and 500S lines show no peaks, but only a steady decrease in magnetic intensity from northeast to southwest.

Within the main anomaly the individual magnetic peaks are roughly symmetrical, indicating a vertical dip or possibly a very steep easterly dip. The curves show no appreciable negative reversals, indicating probable good depth extent. The width is difficult to judge, because most of the body is under gravel of variable thickness, and hence the magnetic curves tend to have broader and more gentle slopes than if the top of the body were at the surface. The curves indicate that the body is widest between the O line and the 150S line, and the bulldozer cut shows a width of perhaps 30 or 40 feet in this area. Calculations based on the 415,000-gamma contours, and others based on
the high points of the profiles, both suggest that 40,000 or 50,000 tons of ore may be present to a depth of 50 feet below the base of the gravel. A very much larger, probably excessive tonnage figure is obtained if the +10,000-gamma contour is used. Drilling and further stripping will be necessary to check these figures, which are tentative.

Outside of the sharp positive anomaly, the southern traverses show relatively high magnetic intensity on the northeast and low intensity on the southwest, whereas the northern lines show low intensity on the northeast and high intensity on the southwest, as shown by the +15,000-gamma contours. The distribution suggests that there may be a broad positive zone of easterly trend, as in the eastern group of claims, and that the iron ore occurs at the intersection of this zone with a structural break of northwesterly trend. Although a long projection is highly speculative, the index map suggests the possibility that this ore lies in the same general anomalous zone as the ore bodies on the Iron Mountain Claim.

**Albitross Reconnaissance Traverse.** The plan of this traverse and the magnetic profile are shown on the magnetic map of Grid No. 3. The O-point is at the upper edge of the upper lake terrace, and the entire line is on lake gravel. The west end of the line is on the west-facing slope of the lower terrace.

The magnetic values are low to 500N, where the curve breaks rather sharply and shows a rapid increase in intensity, culminating in a broad peak at 650N. The anomaly is asymmetrical, the magnetic values decreasing more gradually to the west end of the line. The depth to
rock is unknown, but rough calculations based on a single pole and uniform magnetization suggest that the gravel may be 50 to 100 feet thick in this area. Basically, the curve shows the presence of a sharp break or change in the underlying rock, accompanied by a positive zone that exceeds 44,000 gammas. In an area of relatively thick cover such a variation may be considered as strong. The anomaly may represent a northwesterly extension of the positive zone in Grid No. 3, as seems the most likely interpretation, but, in any event, it indicates a zone of considerably increased magnetite content that may be worthy of further investigation.
RECOMMENDATIONS

The magnetic results in Grid No. 1 extension show that the southern positive zone continues to the east, and they suggest that this may be the mineralized zone in which the Desert View ore body occurs. In the surveyed area, however, no large near-surface ore bodies are indicated, and no further development is recommended at this time.

The Locomotive-Pennsylvania reconnaissance traverse, especially considered in relation to the magnetic findings in the north part of Grid No. 1, indicate that the Locomotive claim and at least the eastern part of the Pennsylvania claim are unfavorable for the occurrence of commercial ore. In view of the known magnetic trends and distribution, and the lack of favorable geologic showings, it seems probable that the Pennsylvania claim in general also is unfavorable.

On the Desert View claim, in the area of Grid No. 2, preparations already are well advanced to begin mining, and there is nothing in the magnetic findings to suggest any change in the program, nor does there appear to be any need for advance drilling. The body appears to be reasonably continuous over the general outcrop area, and to be, if anything, somewhat larger than the outcrops indicate. It cuts off sharply on the east, but there is a possibility of an extension to the west under cover. After mining operations have provided more information as to grade, size, and attitude, possible further development work on the west can be planned as may seem necessary.

The Grid No. 3 area is of special interest because it offers a possibility for development of an entirely new mining area. The
present findings are believed to warrant further investigation of the deposit, and it is recommended that additional development be undertaken by bulldozer trenching or diamond drilling, or both. As the main cover consists only of a few feet of gravel, further bulldozer trenching or stripping would be the next logical step. This should uncover the top of the ore and furnish more exact information as to grade and width. If this work shows favorable results, it probably would be best to drill at least one or two fairly shallow holes to test the size and grade at depth. As the body appears to be nearly vertical, drilling arbitrarily can be done from the low, or west side. If drilling is undertaken, it is recommended that the first hole be an inclined one collared at about 75° on the 1003 traverse and bearing 10° or 15° north of the line. A hole inclined at -35° or -40° should cut the center of the body at a depth of 60 to 75 feet, and the total hole length should be on the order of 150 to 200 feet. In view of the magnetic results on the Albitross traverse, if the development findings in Grid No. 3 are at all favorable, further prospecting is warranted in and around the western group of claims.

Deno, Nevada
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DESSERT VIEW

1 INCH = 100 FEET
CONTOUR INTERVAL 5000 GAMMAS

SURVEY BY E.L. STEPHENSON 1952

MAGNETIC MAP OF GRID NO. 2, BUENA VISTA IRON DEPOSIT, CHURCHILL COUNTY, NEV.
MINERAL MATERIALS CO.  BUENA VISTA

S.E. CORNER  IRON MTN.

14E  15E  16E  17E  18E  19E

14S  15S  16S  17S  18S  19S

1 INCH = 100 FEET  CONTOUR INTERVAL 1000 GAMMAS

SURVEY BY E.L. STEPHENSON  1952

MAGNETIC MAP OF GRID NO. 1 EXTENSION

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Item 12