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REPORT FOR PARKER BROTHERS ON MAGNETOMETER SURVEYS
IN THE IRON CASTLE AREA, PERSHING COUNTY, NEVADA.
by E. L. Stephenson (December 1952)

REPORT FOR PARKER BROTHERS

ON MAGNETOMETER SURVEYS IN THE IRON CASTLE AREA

PERSHING COUNTY, NEVADA

By

E. L. Stephenson
Consulting Geophysicist

Reno, Nevada
December 1952

Contents

Illustrations

* See Report for Parker Brothers May 1953

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INTRODUCTION

This report presents the results of detailed magnetometer surveys made for Parker Brothers in the general area of the Iron Castle group of claims, Section 32, T. 26. N., R. 34 E., Pershing County, Nevada. The purpose of the work was to obtain detailed magnetic information in areas showing scattered outcrops of iron ore, for the purpose of guiding diamond drilling and other development work. The work included a main magnetometer grid in the southern part of the Iron Castle group, and a smaller grid covering the northeast corner of the group and extending into Section 29.

When the magnetic work was begun the drill crew was ready to start operations, and considerable mining equipment also was standing by. The magnetometer results therefore were used immediately in the field to determine the most favorable drill hole locations and also to guide the start of stripping and pit

operations. As the magnetic work already has been utilized, the chief purpose of this report merely is to summarize and record the magnetic findings, particularly in relation to the drill holes. The accompanying base map and magnetic map constitute the principal parts of the report.

The field work was done with a standard Askania magnetometer having a sensitivity of approximately 30 gammas per scale division. The magnetometer was adjusted to the same zero setting as used in all other surveys in the district, utilizing the original magnetic base No. 1. The field work was done during October 1952.

GEOLOGY

The chief country rock in the Pershing County iron ore area is a coarse-grained diorite. The ore bodies, which are composed dominantly of magnetite, appear to be irregular replacement deposits occurring along structural breaks in the diorite. Although the deposits have some of the general features of veins, particularly in attitude and structural control, the individual bodies tend to be lenticular both horizontally and vertically. They vary in size from small pods to bodies containing many thousands of tons. Splits and horses of waste are very common features of the mineralized zones, and in the Iron Castle area, in addition, the rocks are especially broken and displaced by post-mineral faults.

All of the diorite contains at least small amounts of accessory magnetite and therefore is somewhat magnetic, but the magnetite content varies widely. Along the chief mineralized zones in which the ore lenses occur, the diorite is heavily impregnated with grains, stringers, and small veins of magnetite. These large masses of noncommercial magnetic rock produce rather strong anomalies, and to a large extent they account for the positive anomalous zones. They also may produce much magnetite float especially from small included lenses. They therefore tend to complicate both geologic and magnetic interpretations.

The zones of greatest magnetite concentration, and in particular the large magnetite bodies, produce especially strong and well-defined positive anomalies. The magnetic readings alone, however, will not determine the actual grade of a given body or zone, and the magnetic work must be followed by drilling or other development work to determine whether any given deposit contains mineable quantities of commercial ore.

MAGNETOMETER SURVEY

As noted above, the magnetic readings do not give specific information as to grade of ore, and no specific magnetic value can be assigned as the dividing line between commercial and noncommercial material. The positive anomalies are indicators of magnetite concentrations, however, and they delineate the areas in which development work should be concentrated. In the Iron Castle area the iron ore appears to have a higher content of hematite than do the ores in the southern part of the district. The mineralized zones and iron bodies therefore do not produce anomalies as strong as do the bodies of more nearly pure magnetite. For this reason even relatively weak anomalies in the Iron Castle area may be of significance. The results to date suggest that in places relatively weak anomalies may indicate commercial ore whereas in other places relatively strong anomalies may indicate only sub-marginal material. For any given anomaly drilling or other testing is necessary to determine the possible economic value.

Plan of the surveys

The plan of the surveys is shown on the accompanying base map, which also shows the location of the three original Iron Castle claims, the location of newer claims recently staked, and the location of the earlier magnetometer grid

run in the area of the Thomas body in the southwest corner of Section 29. The major part of the work was concentrated on Grid No. 1, which covers most of the Iron Castle No. 1 and Iron Castle No. 2 claims. An arbitrary 0-point was selected in the northern part of the Iron Castle No. 2 claim and a base line was projected on a due east and west bearing. North-south traverses were run at intervals of 100 feet for a distance of 800 feet east of the 0-point and 1000 feet west. In addition intermediate 50-foot traverses were run in the southeast and northwest part of the grid to obtain additional magnetic detail in anomalous areas. The 0 traverse was extended northward essentially to the section line and it showed only minor magnetic variation in the northern part of the area. The grid therefore was confined to the main anomalous zone on the south, for the most part extending 500 feet north and 500 feet south of the base line. In the western part of the grid the lines were extended somewhat further northward because of a northerly swing of the anomalous zone.

Grid No. 2, as shown on the map, covers a strongly mineralized center lying mainly in the southeast quarter of Section 29. The grid consists of seven main traverses spaced at 100-foot intervals and one intermediate traverse in the most heavily mineralized zone. The two grids were tied together

Lyman Moore's southeastern sec. 29

by a diagonal traverse extending from 800E-500N of Grid No. 1 to 100W-300S of Grid No. 2. One separate 400-foot traverse also was run on the section line south of the Cyaman grid to check a possible southerly continuation of the Thomas ore body.

Results of the surveys

The results of the survey are shown on the magnetic map, which is drawn on a scale of 100 feet to the inch and contoured on an interval of 1000 gammas. In Grid No. 1 a broad, very complex anomalous zone extends in a direction somewhat south of east entirely across the grid. In view of the northerly trend at the west end it may be that this zone is more or less directly related to the Thomas ore zone, but traverse 1000W and the short traverse on the section line indicate a broad neutral magnetic zone between the two.

The general anomalous zone is divided into two main sub-parallel parts, the northern one extending from about 900W to about 200E and the southern one extending from about 350W beyond the southeast corner of the grid. Each of these zones is marked by a complex series of relatively small positive anomalies, at least some of which mark small bodies of commercial ore. Although the zone as a whole is strongly mineralized the magnetic results indicate that there is no one large body near the surface. Part of the variability and complexity no doubt

is due to erratic emplacement of magnetite within the mineralized zones, but stripping and mining operations also show that the zone is broken by a complex system of post-mineral faults.

Three inclined diamond drill holes were drilled at the locations indicated on the map. Hole No. 1 encountered 28 feet of good grade ore at shallow depth, and stripping and mining operations were immediately started in this area. When the pit was opened, however, it was found that the ore was cut off at shallow depth by a strong fault and that the drill hole apparently had hit this thin fault slice edge on. The zone was found to be highly mineralized but also complexly faulted, and only a small tonnage of ore could be recovered.

Drill holes No. 2 and No. 3 in two of the better of the local anomalies showed strong magnetite mineralization but no mineable quantity of commercial ore. In general the magnetic results suggest that at least at shallow depth the Iron Castle mineralized zone probably does not contain much ore that can be economically mined. The possibility remains that better material may underlie the zone at depth.

Grid No. 2 shows a much higher magnetic intensity in the anomalous zone, and the magnetic contours also indicate more uniformity for the zone as a whole. Within the general zone there are two main positive peaks, one centering on the 0 traverse near 100N and the other, larger one centering on the 250E traverse near 200S. There are fairly large outcrops of ore in the latter area,

but drill holes No. 4, No. 5 and No. 6 show mainly intensely mineralized but submarginal material.

To date no mining has been attempted, although it may be possible to remove one or two of the outcrops profitably. The entire magnetic anomaly in Grid No. 2 may be due only to submarginal concentrations of magnetite in the diorite, but the nature of the anomaly is such as to suggest that more massive iron may underlie this area at depth.

In the extreme southeast corner of the grid there is a broad and fairly strong anomaly that occurs on a terrace of deep lake gravel. Eventually it may be advisable to trace this zone eastward and to test it by drilling, for the anomaly is strong enough to represent commercial ore under fairly deep cover. The new claims Iron Castle Nos. 5, 6, and 7 were staked to cover possible easterly extensions in the area of the gravel terrace.

Iron Castle No. 3 claim was staked to cover open ground at the extreme west end of the southern anomalous zone. Iron Castle No. 4 claim was staked to cover a small fraction of open ground between Grid No. 1 and the Cykman grid.

SUMMARY

The detailed magnetometer survey in Grid No. 1, covering the southern part of the Iron Castle group in Section 32, shows a broad, complex anomalous zone that trends somewhat south of east entirely across the grid. It may be related to the Thomas zone to the northwest, but the two are separated by a rather wide neutral magnetic area.

The general zone is divided into two sub-parallel zones, the southernmost of which extends southeastward beyond the boundary of the grid. Each of these sub-zones has a complex series of small positive anomalies, at least some of which mark bodies of commercial ore. Diamond drilling, stripping, and pit operations, however, indicate that the individual bodies are small and, further, that the entire zone is very badly broken by post-mineral faults. The magnetic results show that there is no one large body at or near the surface, and all of the data now at hand indicate that the Iron Castle zone does not contain much ore that can be mined economically at present. The possibility remains that larger bodies might occur at depth in the zone, but the general magnetic pattern does not seem to favor this idea, and no further development work is recommended at this time.

Grid No. 2, covering the mineralized center that lies mainly in the southeast quarter of Section 29, shows much higher general magnetic intensity and more magnetic uniformity for the

zone as a whole. Essentially, the area is marked by one main anomaly, within which there are strong positive peaks that are associated with fairly large outcrops of high grade ore. Three inclined diamond drill holes, however, show mainly intensely mineralized diorite that is of submarginal grade. The outcrops may represent the largest individual bodies that may be expected within this zone, and if so it is doubtful that any extensive mining can be done. The entire anomaly may be due to this magnetite-impregnated diorite, but the strength, size, and uniformity suggest that more massive iron ore may occur at depth. It probably will be well to test this area further by one or two fairly deep vertical holes.

Grid No. 2 also shows a strong, broad anomaly in the extreme southeast corner, where there is a heavy cover of lake gravel. This anomaly, which is strong enough to be caused by commercial ore at depth, extends eastward or southeastward beyond the grid. At a later date it will be well to trace this zone by additional magnetic measurements on the southeast, and to follow by drilling if a favorable anomaly is found. Three new claims have been staked in the Iron Castle group, to cover this possible easterly extension.

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Reno, Nevada
December 1952

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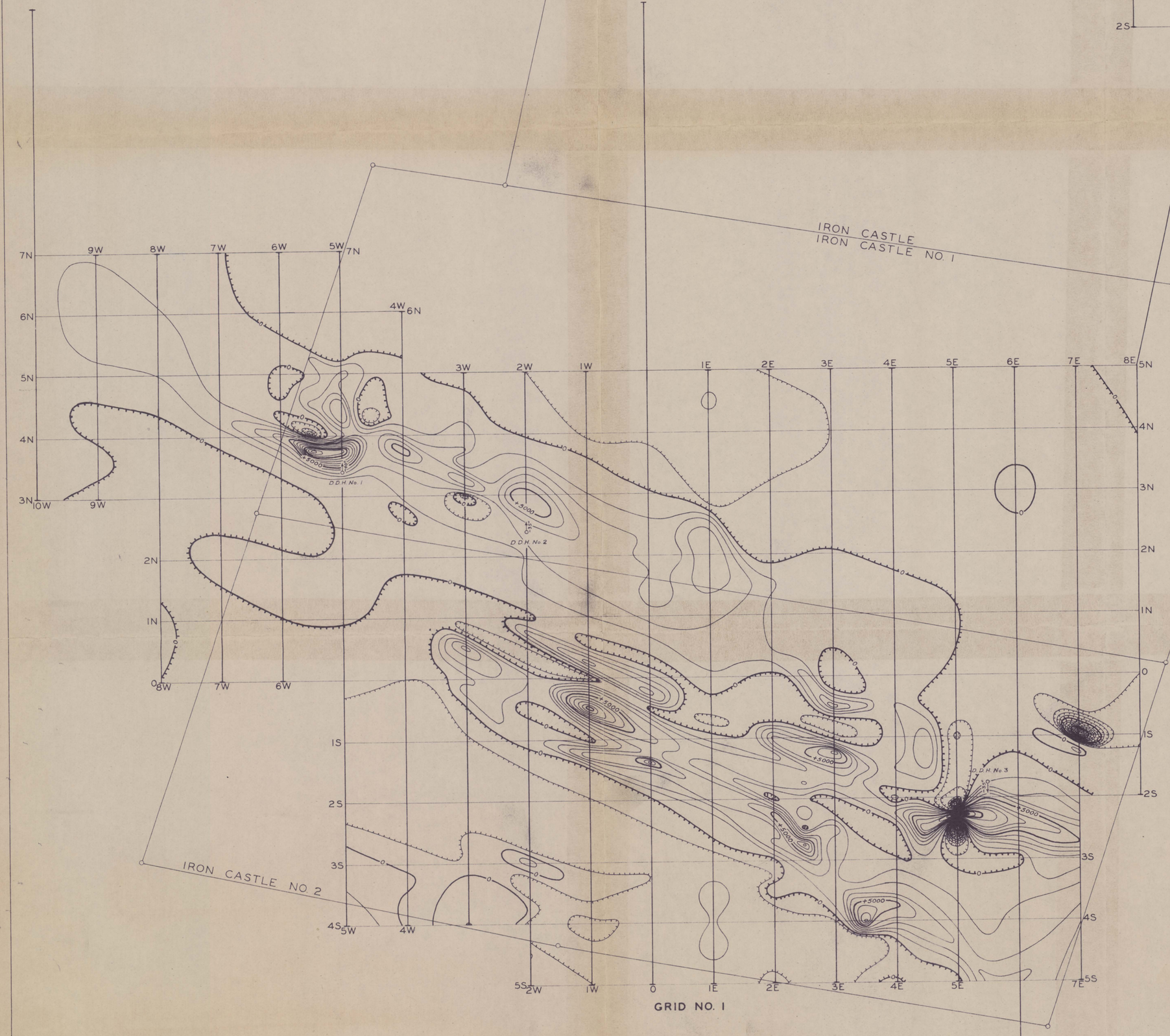
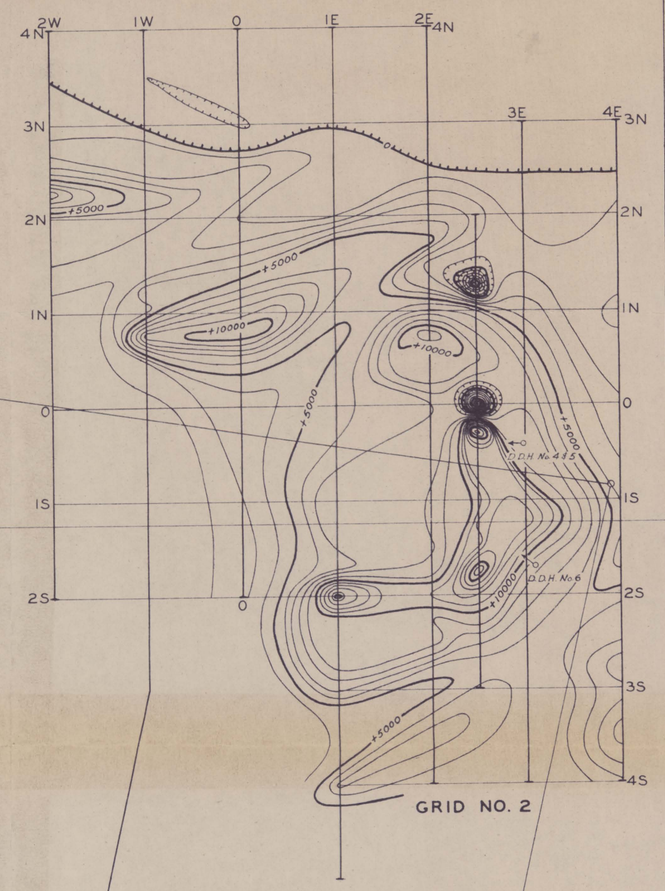
PARKER BROTHERS





1" = 100'

0 100 200 300 400 FEET

CONTOUR INTERVAL 1000 GAMMAS

SURVEY BY E.L. STEPHENSON

1952

MAGNETIC MAP OF THE IRON CASTLE AREA, SECTIONS 32 AND 29, T. 26 N., R. 34 E., PERSHING COUNTY, NEVADA