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REPORT FOR W. S. MOORE CO. ON MAGNETOMETER
SURVEYS IN THE BUFNA VISTA DISTRICT, PERSHING
COUNTY, NEVADA.

by E. L. Stephenson (July 1962)

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ON MAGNETOMETER SURVEYS IN THE BUENA VISTA DISTRICT
PERSHING COUNTY, NEVADA

By

E. L. Stephenson
Consulting Geophysicist

Reno, Nevada
July, 1962

Contents

	<u>Page</u>
Introduction.	1
Iron Horse-Iron Colt survey	3
Plan of survey	3
Magnetic findings.	4
Eight Ball survey.	9
Plan of survey.. . . .	9
Magnetic findings.	9

Illustrations

Magnetic map of the Iron Horse and Iron Colt properties, Section 6,
T. 25 N., R. 34 E., Pershing County, Nevada.

Magnetic map of the Eight Ball property, Section 8, T. 25 N.,
R. 34 E., Pershing County, Nevada.

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INTRODUCTION

In the early summer of 1962 the writer made two magnetometer surveys for W. S. Moore Co. on iron properties in the Buena Vista district, Pershing County, Nevada, located some 17 or 18 miles southeast of Lovelock. The magnetic measurements were made with an Askania vertical magnetometer having a sensitivity of 30 gammas per scale division.

One survey covered most of the Iron Horse and Iron Colt properties, except certain parts of the Iron Horse occupied by mining pits or dumps. It included special traverses run in the immediate area of the pits. The purpose of the general survey was to determine what magnetic indications of iron ore might be present in a large area immediately surrounding the Iron Horse mine on the east, south, and west. The special traverses were run to test certain areas between or close to the present pits. The other survey furnished reconnaissance magnetic coverage of the Eight Ball property, located in the next section to the southeast.

In brief summary, the Iron Horse-Iron Colt survey outlines a broad anomalous zone more or less surrounding the area of the main ore bodies at the Iron Horse mine. The increased magnetic intensity is an expression of the general mineralized zone within which the iron ore bodies occur, but as a whole it does not indicate abnormal amounts of magnetite of more than a few per cent in the underlying rocks. Within the general anomalous zone are several positive anomalies that mark relatively long and narrow zones of more intense mineralization, two of which appear to be the southeasterly extensions of the main ore zones in which mining has been done. None of these anomalies are especially strong magnetically, however, and they indicate that the zones outside of the present mining area are of relatively low grade and small volume.

The Night Ball survey outlines a single broad and weak positive anomaly that may be caused by dark volcanic rocks, probably basalt or andesite, that are exposed near the center of the anomaly. If the anomaly is caused by magnetite mineralization, the iron either lies at extreme depth or is of very low grade.

IRON HORSE-IRON COLT SURVEY

Plan of survey

The Iron Horse and Iron Colt groups of claims are located in Section 6, T. 25 N., R. 34 E, and the surrounding odd-numbered sections are held by Southern Pacific Land Co. The plan and results of the magnetic survey are shown on the accompanying magnetic map (in pocket), on a scale of 200 feet to the inch and a contour interval of 1,000 gammas. Except in the area of the pits and dumps, the survey is in the form of a grid, of which the 0-point is the south quarter corner of Section 6 and the base line is the south section line. Between 10W and 26E, traverse lines bearing due north are spaced at intervals of 200 feet. In the central part of the section the lines end at the south edge of the large dumps, which produce magnetic interference. Farther east the traverses extend entirely across the section, or to 5,300N. Traverses also were run, as shown on the map, at 15W, 20W, and the west section line. Magnetometer measurements were made at 100-foot intervals on all of the traverses except the 0 line, where a 50-foot interval was used. In the area of the pits and dumps grid measurements could not be made, but, as shown on the map, six traverses were run between or around the pits to check undined areas. Measurements were made at 50-foot intervals on all of these lines.

Magnetic findings

The 1,000-gamma contour on the magnetic map outlines a broad area of abnormal magnetic intensity south and east of the Iron Horse mining area. This general anomalous zone also embraces the mining area and includes a westerly extension in the west central part of Section 6 and a broad southerly extension in the southeast quarter of the section. The anomalous zone marks a broad area of mineralization in which there is an over-all increase in magnetite content of the underlying rocks, but in itself it is of no economic significance as the average increase probably amounts to only a few percent at most. The Iron Horse ore bodies occur in the northwest part of the general zone. The findings show that there is little or no magnetite mineralization in the southwest quarter of Section 6, along the east margin of the section, or in the northwest corner.

Within the general anomalous zone there are several individual anomalies of higher magnetic intensity that mark local concentrations of magnetite. Although somewhat complex in detail, the anomalies are relatively long and narrow, and their average trend is a little north of west. They indicate irregularly tabular or vein-like mineralized zones that vary considerably along the strike. The general absence of pronounced negative borders indicates considerable depth extent for the zones as a whole. Most of the individual peaks are in the range of 3,000 to 5,000 gammas, however, and thus are much weaker magnetically than the peaks associated with the main Iron Horse ore bodies, which ranged from 10,000 to

20,000 or 25,000 gammas as measured before mining was done.

Beginning on the north, a positive anomaly centers on the 14E line, where a peak of a little over 5,000 gammas occurs at 49N. The anomaly terminates abruptly on the east or southeast in the sharp magnetic gradient of the general anomalous zone. It also decreases somewhat on the north end of the 12E line, but any northwesterly continuation of this zone will lie in Southern Pacific ground beyond the limits of the present survey. The portion of this anomaly within the Iron Horse ground does not appear to be of much economic importance, and it is probable that the center of mineralization lies a considerable distance below the surface.

Two closely related positive anomalies occur in the northeast part of the grid directly east of the main dumps and mining area, and they mark the probable southeasterly continuation of the zones that have been mined in the main pit and the narrower east pit. In general the magnetic intensity decreases southeastward, and the anomalies taper out near the 22E line. In detail the zones are somewhat complex and show much variation along the strike, indicating somewhat erratic mineralization. The north zone is generally narrow and weak east of the 12E line but shows a peak above 8,000 gammas at 40N on the 10E line as the pits are approached. The south zone shows a fairly strong peak that approaches 6,000 gammas at 35N on the 18E line, but the intensity decreases sharply in both directions along the strike. The intensity again increases on the 10E line as the mining area is approached. These anomalies show that the main Iron Horse mineralized zones continue for some 1,500 feet

southeast of the present mining area, and that there are local concentrations of magnetite near the surface, but that the mineralization is relatively weak and erratic southeast of the pits.

Another positive anomaly occurs in the central part of the grid just south of the main dumps. The 2,000-gamma closure has a strike length of about 2,500 feet, extending from the 18E line nearly to the 6W line. The eastern part has a northwesterly trend, but between the 12E and 10E lines the trend swings nearly due west, and the zone continues with diminishing magnetic intensity to the west line of the section. In the east part the peaks are fairly sharp and range above 3,000 gammas, but to the west the anomaly is smoother, broader, and of lesser intensity, suggesting a westward pitch of the zone as a whole. In the west part, the north slope of the magnetic profiles could not be determined because of the dumps, but depth calculations based on the south part of the 2W profile indicate a depth of about 500 feet to the top of the magnetic body. This anomaly is persistent but is not very strong magnetically, and its exact significance is somewhat in doubt. Drilling would be required here to obtain more exact information on this zone.

A relatively small positive anomaly occurs in the southerly extension of the general anomalous zone. It centers on or near the 10E line, where the peak approaches 3,000 gammas at 13N. The anomaly indicates a local concentration of magnetite, but it probably is of little or no economic importance.

The six traverses in the area of the pits were run to test the unmined ground between or around the pits and to correlate with the three recent diamond drill holes shown on the map.

No magnetic contours can be drawn on the basis of these traverses, which test only the borders of the main ore zones, but the magnetic values in gammas are shown on the map, and the areas above 5,000 gammas are indicated in black; and the chief peaks by crosses.

Traverse 1 and the north end of traverse 4 show steadily increasing values up to the south wall of the north pit and thus show only the border phase of the anomaly associated with the ore body in the pit. Traverse 2 shows a related peak of a little over 7,000 gammas in the same vicinity. Diamond drill hole No. 3 near the northwest edge of this zone shows only relatively low-grade mineralization, thus correlating well with the magnetic findings.

Traverse 3, which follows the rib between the two main pits, shows a peak of only about 4,600 gammas east of diamond drill hole No. 1. This hole showed only very low-grade mineralization, and so both the drilling and magnetic results indicate that the rock in the rib is not strongly mineralized.

Traverse 6, which lies close to the south wall of the main pit, shows a peak of 8,700 gammas about 150 feet east of diamond drill hole No. 2. This peak is the approximate west end of the original main magnetic anomaly, in an area where the overburden is fairly thick. Hole No. 2 shows medium-grade ore beginning at a depth of about 135 feet, and it probably would have found magnetite

at shallower depth to the east. The magnetic findings, however, do not indicate any high-grade mineralization in the underlying rock along the edge of the pit.

EIGHT BALL SURVEY

Plan of survey

As shown on the accompanying magnetic map (in pocket), the Eight Ball survey comprises a series of magnetometer traverses in the southeast part of Section 8, T. 25 N., R. 34 E. The base line or O-point of each traverse is the south line of the section, and, beginning on the east line of the section, seven traverses were run on a due north bearing at intervals of 0.1 mi. An eighth, intermediate traverse was run at the 0.15 mi. interval to obtain additional magnetic detail. All of the lines were run 3,000 feet northward, thus covering the Eight Ball group of claims. Magnetic measurements were made at 100-foot intervals on all of the lines.

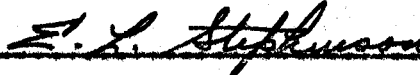
Magnetic findings

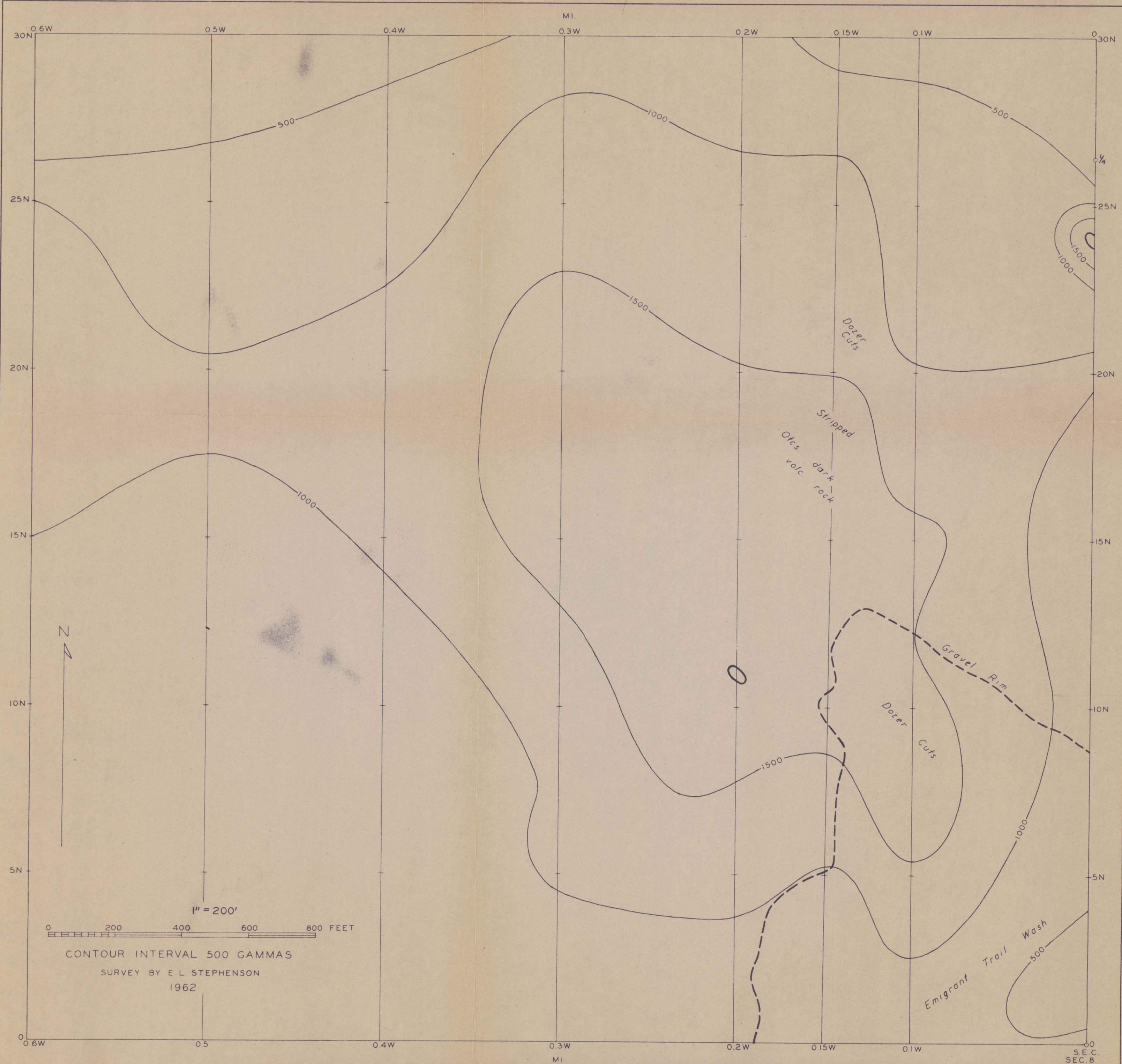
As shown on the magnetic map, a broad positive anomaly that reaches maximum values between 1,500 and 2,000 gammas occurs in the central part of the southeast quarter of Section 8, and a much weaker and narrower offshoot extends westward through the 0.6W line. In general the curves are smooth, but the eastern ones show numerous very small local variations such as often occur over volcanic rocks. The sharp local anomaly at 24N on the east section line occurs on a prominent outcrop of dark volcanic rock, and similar rocks crop out over a considerable area between 15N and 20N on the 0.15W and 0.2W lines. It therefore is possible, if not prob-

able, that the positive anomaly is entirely the magnetic expression of a fairly thick body of these volcanic rocks. The broad maximums on the curves and the rather abrupt decreases in intensity on the north would tend to support this conclusion.

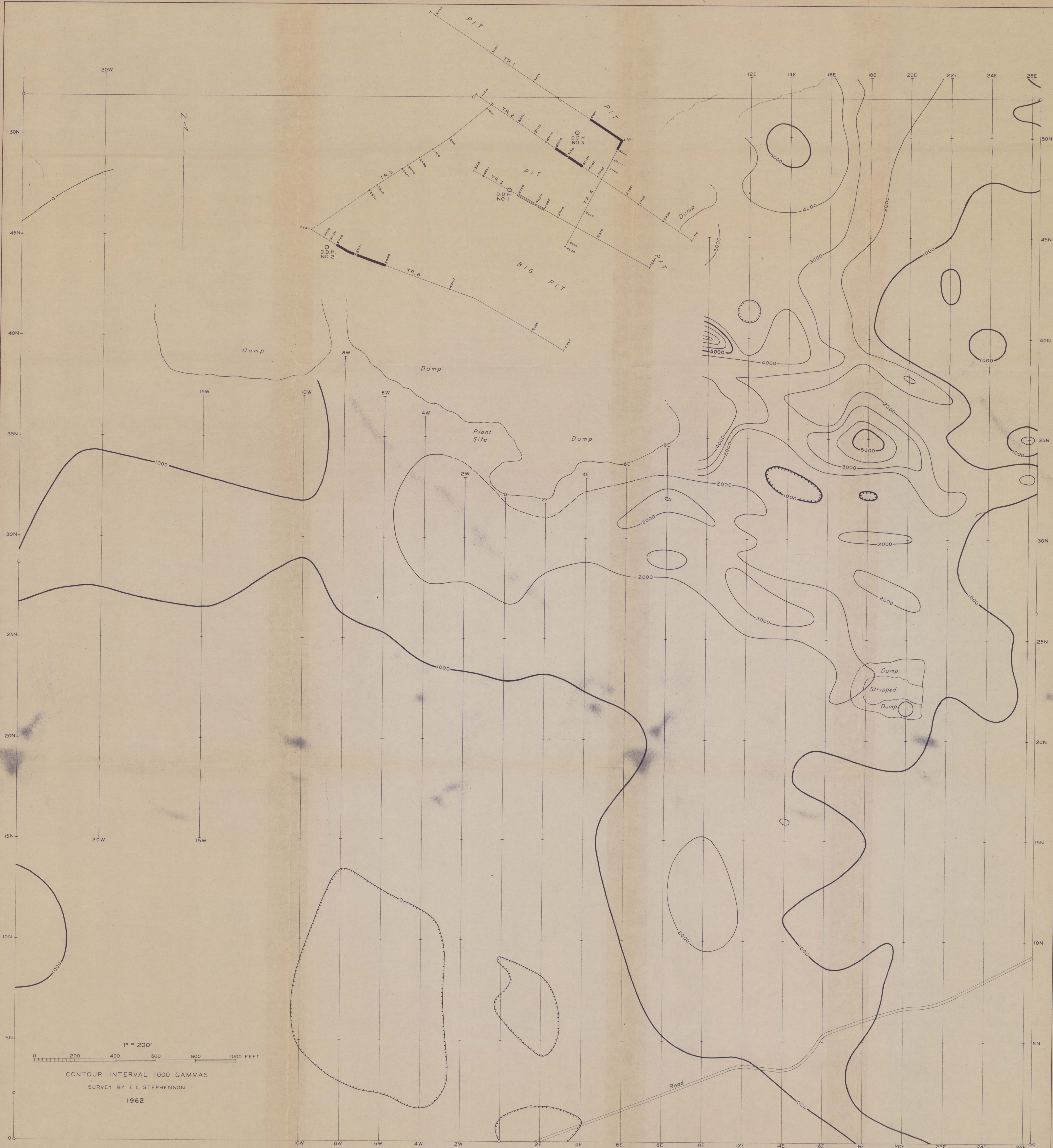
In view of findings in other parts of the district, however, the anomaly possibly might be caused by a body of magnetite at depth. The magnetic nature of the curves suggests that such a body probably would not be of high grade. The curves are such that depth calculations are uncertain, but, assuming a body of magnetite, they suggest depths on the order of 1,000 feet. Drilling in the central part of the anomaly would be necessary to obtain more exact information as to the nature of the underlying material.

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MAGNETIC MAP OF THE EIGHT BALL PROPERTY, SECTION 8, T. 25 N., R. 34 E., PERSHING COUNTY, NEVADA



MAGNETIC MAP OF THE IRON HORSE AND IRON COLT PROPERTIES, SECTION 6, T. 25N., R. 34E., PERSHING COUNTY, NEVADA