

(283) item 24

UNIVERSITY OF NEVADA
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RENO, NEVADA 89507

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REPORT FOR PARKER BROTHERS ON A MAGNETOMETER
SURVEY IN SECTION 29, T. 26 N., R. 34 E.,
PERSHING COUNTY, NEVADA.
by E. L. Stephenson (May 1953)

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ON A MAGNETOMETER SURVEY IN SECTION 29, T. 26 N., R. 34 E.,
PERSHING COUNTY, NEVADA

By

E. L. Stephenson
Consulting Geophysicist

Reno, Nevada
May 1953

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Map of magnetometer grids in the Iron Castle area, Sections 32 and 29, T. 26 N., R. 34 E., Pershing County, Nevada. Revised April 1953.

Magnetic map of Grid No. 3, Section 29, T. 26 N., R. 34 E., Pershing County, Nevada.

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INTRODUCTION

This report covers a magnetometer survey made for Parker Brothers in the southwest quarter of Section 29, T. 26 N., R. 34 E., Pershing County, Nevada. The chief purpose of the work was to obtain detailed magnetic information in an area where an outcrop and a large bulldozer cut based on earlier magnetic work indicated the presence of iron mineralization, as a guide for stripping operations or diamond drilling. The area lies north of the Iron Castle property in Section 32, where the writer made a detailed magnetic survey for Parker Brothers in October 1952. It also lies directly east of the Thomas ore body, now being mined by Parker Brothers and by H. S. Thomas, where the writer ran the Cykman magnetometer grid in November 1951.

The present magnetometer results already have been used in the field to plan the stripping operation that is now in progress, and a preliminary copy of the magnetic map has been furnished to

the field engineer. The purpose of this report therefore is to summarize and record the magnetic findings; thus the accompanying base map and magnetic map constitute the principle 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 used at the same zero setting and scale constant as used in all other surveys in the district, and the present results may be compared directly with all earlier surveys. The field work was done during April 1953.

GEOLOGY

The ore bodies in the area under consideration are more or less irregular masses of magnetite and hematite, apparently occurring along structural breaks in the country rocks. The bodies occur along rather broad zones within which the rocks have been variably impregnated with magnetite, and these zones are marked by broad positive magnetic anomalies. The bodies themselves generally are marked by much stronger magnetic peaks within the anomalous zones. Mining operations in this area show the bodies to be broken by splits and horres of waste and also by a complex system of post-mineral faults. These discontinuities produce strong local variations in the magnetic curves.

The Thomas ore body, which follows the base of a low gravel and rock terrace, was covered by a few feet of lake gravel deposited by old Lake Lahontan. The body now under consideration lies on the terrace about 900 feet east of the Thomas body. It is covered by 10-20 feet or more of lake gravel, except for the one outcrop near the center of the magnetometer grid. A deep, wide bulldozer cut, based on a preliminary magnetic survey by another party, exposed a zone of iron mineralization and intense rock alteration a short distance west of the outcrop. This cut, however, did not expose the chief mineralized centers, one of which lies under gravel at the north end of the cut and the other south of the outcrop and cut. In the area to the southeast on the same terrace level there is a large amount of iron ore float, most of it high in hematite.

MAGNETOMETER SURVEY

Plan of the Survey

As the present magnetometer survey is basically a continuation of the Iron Castle survey, it is designated as Grid No. 3. The plan of this grid has been added to the base map that accompanied the Iron Castle report, and copies of the revised map are included herewith. Grid No. 3 was laid out by running the O-line of Grid No. 1 northward to 2010N and thence westward 900 feet to establish the O-point. The O-point of Grid No. 3 therefore corresponds to 900W-2010N of Grid No. 1. From the O-point a base line was projected due north and primary east-west traverses were run at intervals of 100 feet for distances of 900 feet north and 200 feet south of the O-point. These lines were run to varying distances east and west as shown on the map. Intermediate 50-foot traverses were run between 0 and 600N and a 25-foot traverse was run at 225N to give greater magnetic detail. The southeastern area was covered by north-south magnetometer traverses run from the east-west base line to 500S at intervals of 100 feet between 100E and 900E, the latter line being the northerly extension from Grid No. 1. Intermediate 50 foot traverses also were run between 100E and 500E. On all of the lines magnetometer stations were occupied at intervals of 25 feet within the anomalous zones and at intervals of 50 feet on the borders.

Results of the survey

The results of the survey are shown on the accompanying magnetic map, which is drawn on a scale of 100 feet to the inch. Most of this map is contoured on a magnetic interval of 1000 gammas except within the main anomaly, where a 5000-gamma interval is used because of the very high magnetic intensity.

The main mineralized zone in the northwest part of Grid No. 3 is marked by a broad positive anomaly that extends in a direction a little west of north entirely across the grid from 200S to 900N. The anomaly is assymetrical, having a steep east slope and a more gradual west slope. It is bordered on the east by a broad zone of low magnetic intensity, whereas the level on the west remains higher throughout. This general form indicates a westerly dip of the mineralized zone as a whole and probably also of the individual ore bodies, a dip opposite to that of the Thomas ore body, which dips steeply eastward.

Within the general anomalous zone the area of most intense mineralization is marked by strong sharp magnetic peaks and by sharp local variations in the magnetic field. The anomalies indicate two main centers of mineralization, one centering at about 150W between the 350N and 550N lines and the other centering at about 50W between the 50N and 250N lines. The northern anomaly, marking a probable ore body, occurs in the north end of the cut, but here the cut did not extend through the gravel, and the body is not exposed.

In the southern anomaly a very sharp high peak occurs on the 225N line directly over the outcrop and a broader peak occurs on the 100N line south of the outcrop and the south end of the cut. This southern anomaly is bordered on the north and east by very sharp magnetic reversals and strong negative centers. On the north the negative anomalies extend into the cut on the 225N and 250N lines. To the northeast a small sharp positive peak occurs on the 350N line. This magnetic pattern indicates that the ore zone is considerably faulted. It is probable that a strong cross fault cuts the zone in the area marked by the north negative centers, and it also is probable that the southern body itself is broken by one or more faults between the 150N and 200N lines.

Both the north and the south anomalies indicate ore bodies that probably can be mined economically, and plans have been made for stripping and pit operation. The sharpness of the magnetic peaks, in addition to the outcrop, and the exposures in the cut, indicate that the bodies are covered only by a relatively thin blanket of gravel.

The southeast part of Grid No. 3 shows a large number of small local magnetic variations in the area of iron float. For the most part the anomalies appear to indicate only weak and erratic mineralization, and it may be that the float is derived only from small veins and lenses of iron. The southwest part of this east grid extension, however, shows a broad, weak positive anomaly of general northwesterly trend extending from the 150E

line to the 450E line. The anomaly is bordered on the northeast by pronounced negative zones. Tests on hand samples indicate that the iron ore in this area is only moderately or even weakly magnetic, and it is possible that mineable ore occurs in this zone.

East of the positive anomaly the 500E line is marked mainly by very low or negative magnetic values, separating the zone just discussed from a broad but very weak positive zone to the east. The latter is probably the westerly extension of the mineralized zone partly exposed by earlier mining operations east of the grid. It does not seem likely that iron of economic value occurs under the east end of Grid No. 3.


SUMMARY

The magnetic survey of Grid No. 3 shows a well-defined broad positive anomaly centering in the general area of the outcrop and the cut. The central part of the anomaly is marked by two areas of high magnetic intensity, each of which probably marks iron ore bodies of mineable grade and size. Although no specific magnetic value can be assigned as the dividing line between commercial and non-commercial material, experience in the district permits the making of preliminary tonnage estimates on the basis of the magnetic anomalies. Based on the closure of the 15,000-gamma contour, which should be a conservative marker, the north body may yield about 28,000 tons to a depth of 50 feet below the base of the over-burden and the south body may yield about 24,000 tons. If projected to a depth of 100 feet these figures would of course be doubled. Calculations based on the 10,000-gamma contour indicate about 56,000 tons in the north block and about 47,000 tons in the south block to a depth of 50 feet, which probably would be a maximum figure. These figures of course are only tentative but are meant to give an indication of the possible economic significance of the bodies. The magnetic findings are believed to justify further stripping operations which already have been planned and started.

As already indicated, the chief positive anomaly in the southeast part of Grid No. 3 is weak and somewhat erratic and it may indicate only submarginal mineralization in the country rocks.

Small outcrops of good ore do occur here, however, in addition to a large amount of float, and tests on hand samples indicate that this ore contains a large percentage of hematite and is only moderately magnetic. Under these conditions the positive anomaly might be of economic importance and it is suggested that it be tested by one vertical diamond drill hole if possible. The hole should be collared at 3005 on the 200E line and should be drilled to a vertical depth of at least 100 feet.

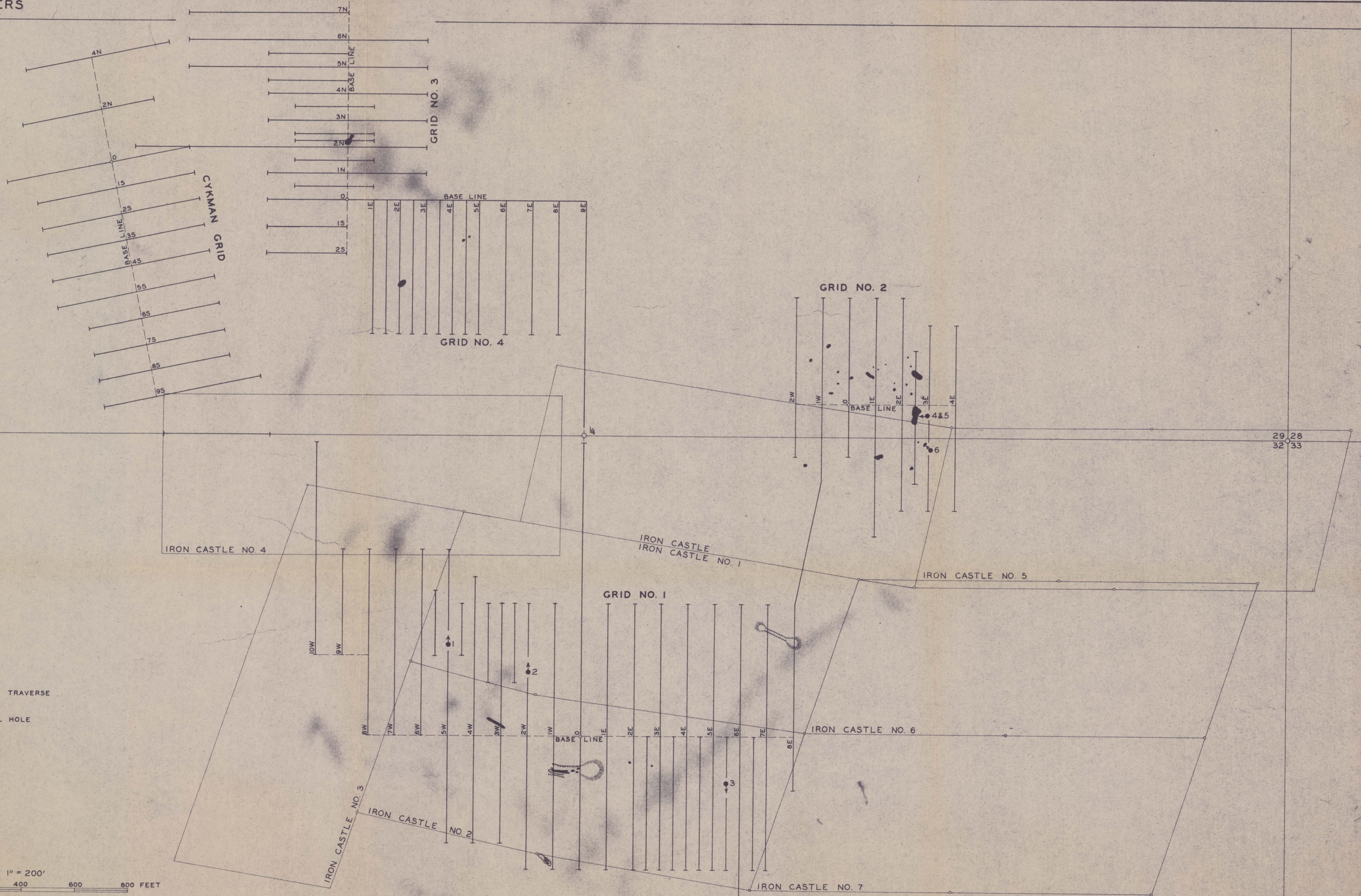
Reno, Nevada
May 1953

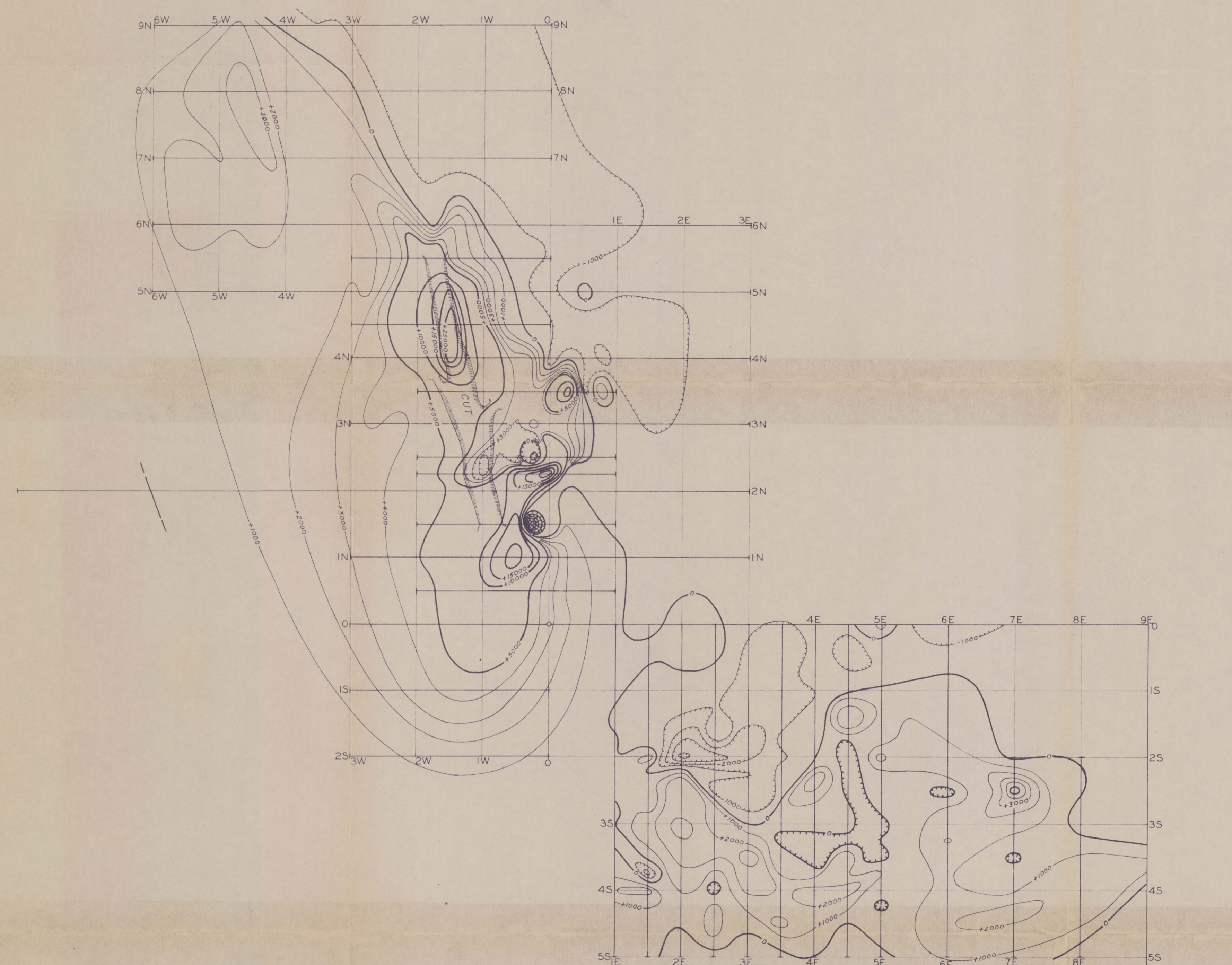

E. L. Stephenson
Consulting Geophysicist

- IRON OUTCROP
- MAGNETOMETER TRAVERSE
- DIAMOND DRILL HOLE

0 200 400 600 800 FEET
1" = 200'
SURVEY BY E.L. STEPHENSON
1952

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





SECTION 29
SECTION 32

1" = 100'
0 100 200 300 400 500 FEET
CONTOUR INTERVAL 1000 AND 5000 GAMMAS
SURVEY BY E. L. STEPHENSON
1953

ION OF GRID NO. 1