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REPORT FOR DODGE CONSTRUCTION COMPANY ON
MAGNETOMETER SURVEYS IN SECTION 15, T. 25 N.,
R. 34 E., PERSHING COUNTY, NEVADA.
by E. L. Stephenson (March 1954)

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ON MAGNETOMETER SURVEYS IN SECTION 15, T. 25 N., R. 34 E.
PERSHING COUNTY, NEVADA

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E. L. Stephenson
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County, Nevada

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INTRODUCTION

This report presents the results of magnetometer surveys made for Dodge Construction Company in Section 15, T. 25 N., R. 34 E., Pershing County, Nevada, in the central part of the Buena Vista iron mining area southeast of Lovelock. The Company now is mining magnetic iron ore in the north central part of Section 15, in an area where the writer made a magnetometer survey for the U. S. Bureau of Mines in 1943. The purpose of the present work was to test the central and southwest parts of the section, where small outcrops and much high-grade iron float occur, to determine whether other commercial bodies of iron might be present. *Segerstrom-Hick*

The work included a series of long reconnaissance traverses and three detailed grids in areas showing indications of iron mineralization, and a few tests in the operating pit. In addition, there has been added to the new maps and profiles accompanying this report some of the magnetic data obtained by the writer in 1943.

The field work was done during the last week of February 1954. All measurements were made with a standard Askania vertical magnetometer having a sensitivity of 50 gammas per scale division.

GEOLOGY

The chief country rock in the surveyed area is 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 within the mineralized zones, which also are extensively faulted.

Much of the diorite contains at least small amounts of accessory magnetite and therefore is somewhat magnetic, but the magnetite content varies widely. Generally the ore lenses occur along broad mineralized zones within which the diorite is heavily but variably impregnated with magnetite. The zones are marked by broad positive magnetic anomalies within which the individual ore lenses appear as higher and sharper magnetic peaks.

MAGNETOMETER SURVEY

Plan of the survey

The plan of the magnetometer survey is shown on the accompanying base map, which also shows the plan of the 1943 Bureau of Mines grid. The zero point of the new survey is the south quarter-corner of Section 15, and the south line of the section is the south base line. A north base line running slightly north of east also was established and staked 2500 feet north of the south section line. The 0 magnetometer traverse was run northward along the quarter line of the section and parallel traverses were run at 600-foot intervals from 600E to 2300W. The 0 and 600E traverses were run to 4300N, somewhat overlapping the 1943 grid. The western lines were run to 2500N, and a parallel traverse was run northward on the west section line for 1000 feet from the southwest corner. Following this reconnaissance work three detailed grids were run as shown on the base map. For the most part magnetometer stations were occupied at 50-foot intervals on all of the traverses and intermediate 25-foot stations were added in all of the anomalous areas.

Results of the survey

The magnetic results on the long reconnaissance traverses are shown on the accompanying sheet of magnetic profiles, which is plotted on a horizontal scale of 200 feet to the inch and a vertical scale of 5000 gammas to the inch. The results in the small detailed grids are shown on the magnetic map on a scale of 100 feet to the inch and a contour interval of 5000 gammas.

The profiles show that broad areas in the central and southwest parts of Section 15 are nearly neutral magnetically, although there is considerable variation in the level of magnetic intensity. Much of the southwest quarter of the section, except the extreme southwest corner, is marked by a broad zone of weak negative values, which appear on most of the 2300W line, all of the 1800W line, and the southern parts of the 1200W, 600W and 0 lines. Northeast of this negative area the profiles show mainly moderate positive values and the north part of the 600W line and the south part of the 600E line show somewhat stronger magnetic highs. The earlier Bureau of Mines profiles to the north and the east also show moderately high values over a broad zone within which the developed ore bodies and their anomalies occur. The profiles thus indicate a very broad area of increased magnetite content in the central part of Section 15.

Within the area of increased magnetite content the profiles show local, high, very sharp peaks which indicate the presence of narrow veins or lenses of magnetite. The shape and distribution

of the peaks, however, indicate that most of the individual bodies are narrow and of short strike length, a finding confirmed by the detailed grids. By far the strongest, broadest, and most continuous ore anomalies are those on the 1943 profiles in the zone of present mining operations. In this area, as indicated by the magnetic contours on the base map, there is a long main zone of intense magnetite mineralization trending somewhat north of east, and a subparallel shorter zone in the vicinity of USBM diamond drill hole No. 4.

The three detailed grids were run in the areas of greatest magnetic disturbance indicated by the reconnaissance traverses. In grid A three additional north-south traverses were run at 100-foot intervals between 500N and 1500N in the area of the sharp peaks found on the 600E traverse. In this area there is an abundance of iron float and several small outcrops, the largest of which is at the portal of an old adit on the 600E line. The adit follows a contact between a pod of iron ore on the west and diorite on the east, but the diamond drill hole shown on the map failed to find ore and the 600E magnetic profile shows only a minor anomaly over the adit. The center of this small mineralized zone is indicated by a sharp peak at 1350N on the 500E line. The magnetic data show that the mineralized zone is of short strike length and probably contains only small, narrow pods of iron.

Two other mineralized zones appear on Grid A, one lying between 900N and 1000N on the 500E and 600E lines and the other

extending between 400E and 600E in the vicinity of the 700N coordinate. Again, these zones are of short strike length and the magnetic peaks indicate only small pods or narrow veins of iron. The magnetic results in grid A do not appear to indicate mineable bodies of iron ore. The high narrow peak at the south end of the 600E line bordered by a pronounced negative anomaly, probably indicates a small fault slice of iron.

In grid B a series of strong but very narrow magnetic peaks occur in the east central part over a partly exposed band of iron between the 500W and 700W lines. In places 12.5-foot stations were necessary to detect the peak, and it seems probable that the average width of the iron body may be less than 10 feet. At the west end of the anomaly, where it is widest, a strong negative border on the north indicates either faulting along the strike or the bottom of the iron at very shallow depth. This band of iron is cut off sharply just beyond the 700W line, for the 750W line shows no peak whatever. To the south and west the mineralized zone extends from the 800W through the 1100W line but does not appear on the 1200W line. The strongest peaks, somewhat above 10,000 gammas, occur on the 1000W and 1050W lines and may indicate a small vein of iron under cover. It seems doubtful that this zone could be mined economically, although a certain amount of high-grade ore no doubt could be obtained in the eastern part of the zone. The 1000W traverse shows a broad area to the south above

5000 gammas, indicating a broad area of magnetite mineralization but no commercial ore. This traverse also was extended to 3000N without finding any westerly continuation of the small iron lenses exposed in the large cuts north of Grid B.

Grid C was run to cover an area of iron outcrops and very heavy iron float in the extreme southwest corner of Section 15. The heavy float at first glance gives the impression of possible extensive iron ore along the crest of the low ridge extending northeastward from the section corner. Earlier surveys had shown the ends of the strongly mineralized zone extending short distances into Sections 16 and 22. The present survey shows a very strong mineralized center close to the section corner and another in the north central part of the grid, but it also shows by negative readings that much of the central part of the ridge does not contain iron ore in place.

In the corner of the section there are two parallel anomalies that exceed 20,000 gammas, indicating two bands of iron of northwesterly strike. The northeasterly body is marked by an outcrop on the ridge top at 100N on the base line. The magnetic anomaly indicates a strike length of perhaps 100 feet, but the maximum width probably does not exceed the 20 feet shown in the outcrop, and the body may be much broken by faulting. The other body lies under shallow cover between the ridge top and the road. It has a possible strike length of more than 100 feet, extending short distances into section 16 and 22. The maximum width probably is less than 25 feet. The relationship of positive and negative readings suggests that the two bands may be faulted segments of a single body.

The body in the north central part of the grid lies mainly under cover, centering on the 100E line between 400N and 450N. It is marked at the surface, however, by several small outcrops of high-grade iron and by an exposure in the old prospect pit shown on the map. On the basis of the 20,000 gamma closure the strike length is about 100 feet, and the width may be 25 or 30 feet. South of the positive anomaly there is a very strong negative center on the 300N line which may indicate that this body bottoms at shallow depth, at least at the south end. The negative anomaly, in conjunction with the scattered small outcrops, suggests a probable zone of strong faulting at the south end of the body.

SUMMARY

The magnetic findings just described show that the central part of Section 15 is widely mineralized, but that most of the magnetite occurs either disseminated in the diorite or as very narrow veins and pods of short strike length. None of the present readings are believed to indicate mineable bodies of iron in the south central part of the section, with the possible exception of a small tonnage in the east part of Grid B. Although the reconnaissance traverses are spaced 600 feet apart, the general geologic and magnetic determinations suggest that no large bodies have been missed within the survey area.

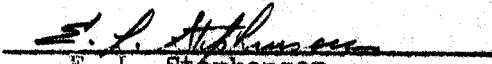
In the southwest corner of Section 15 the magnetic readings indicate three small bodies that might yield small tonnages of good grade ore. The bodies probably are much broken by faulting and may bottom at shallow depth, but shallow drilling may be warranted to check size and grade. If diamond drilling is undertaken, it is recommended that inclined holes be located at right angles to the indicated strikes and very close to the magnetic peaks. Testing perhaps can best be done by wagon drills.

A review of the magnetometer data obtained in the 1943 survey suggests that additional ore may be present in the vicinity of the main operating pit. The chief anomalies are outlined by the 20,000-gamma contours on the new base map. The central anomaly

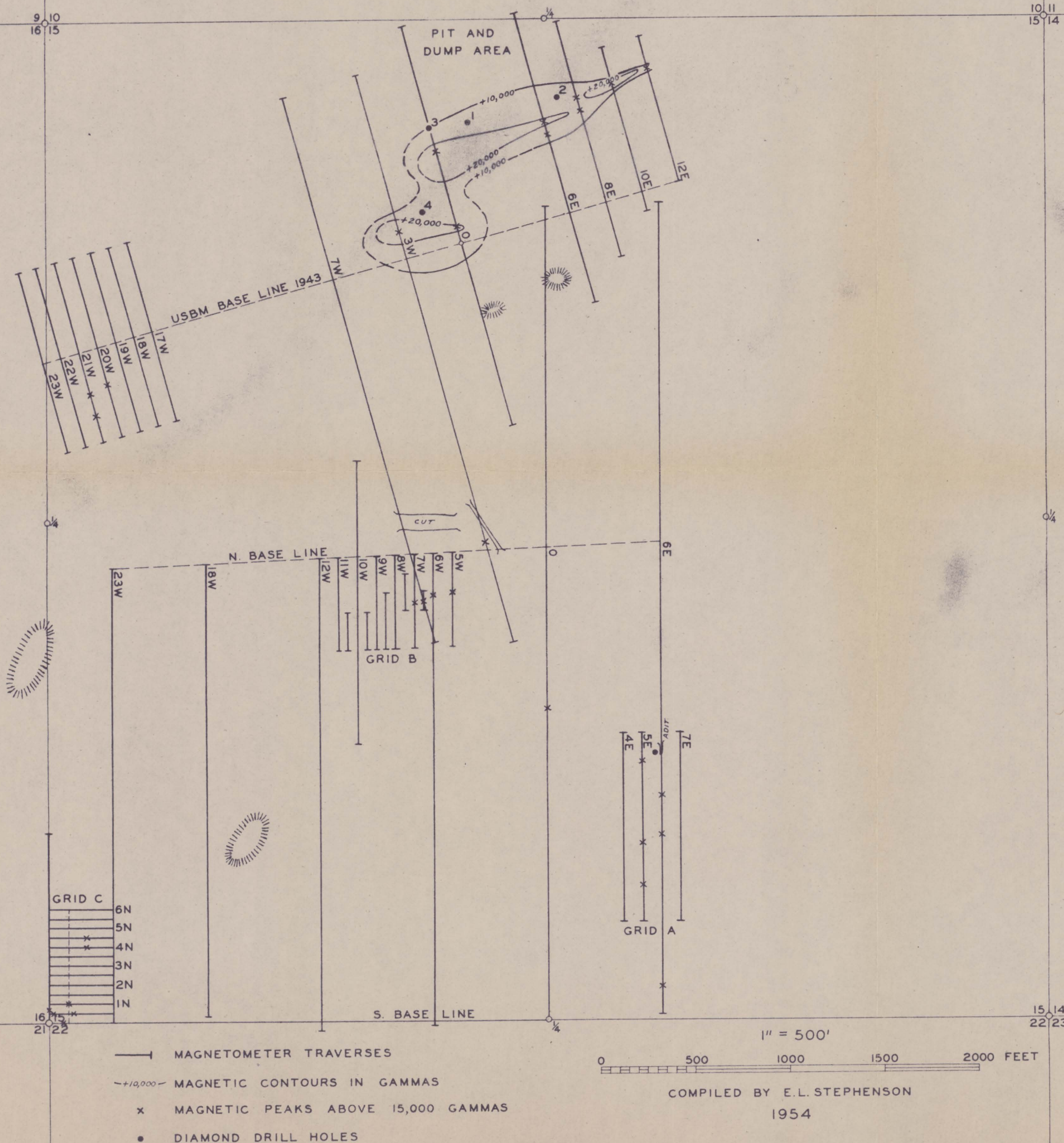
is the original magnetic expression of the body in the pit and needs no further consideration. The other two anomalies, however, may be worthy of further consideration unless testing already done has adequately determined the possibilities of commercial ore.

USBM drill hole No. 4, in the southwestern anomaly, showed only intense submarginal mineralization, but as the hole crossed the axis of the anomaly at a depth of about 120 feet the possibility remains that an ore body might lie between this drill hole and the surface. The northeastern anomaly apparently was not tested in the Bureau drilling. It is suggested that the Company review all pertinent data in these areas.

Reno, Nevada
March 1954


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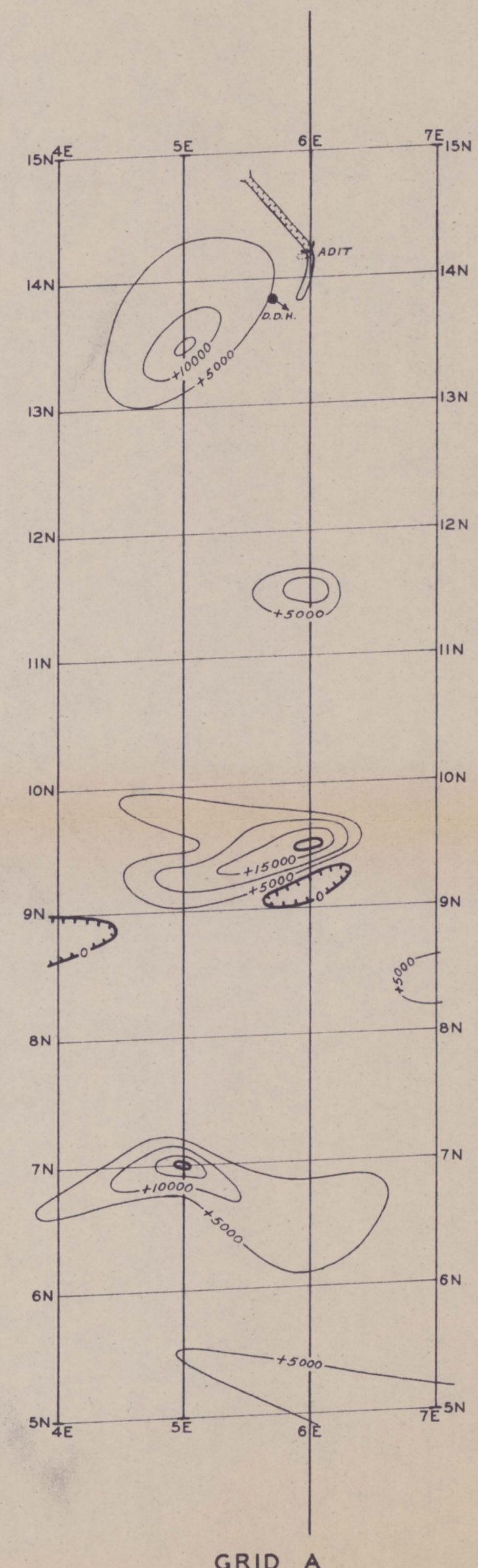
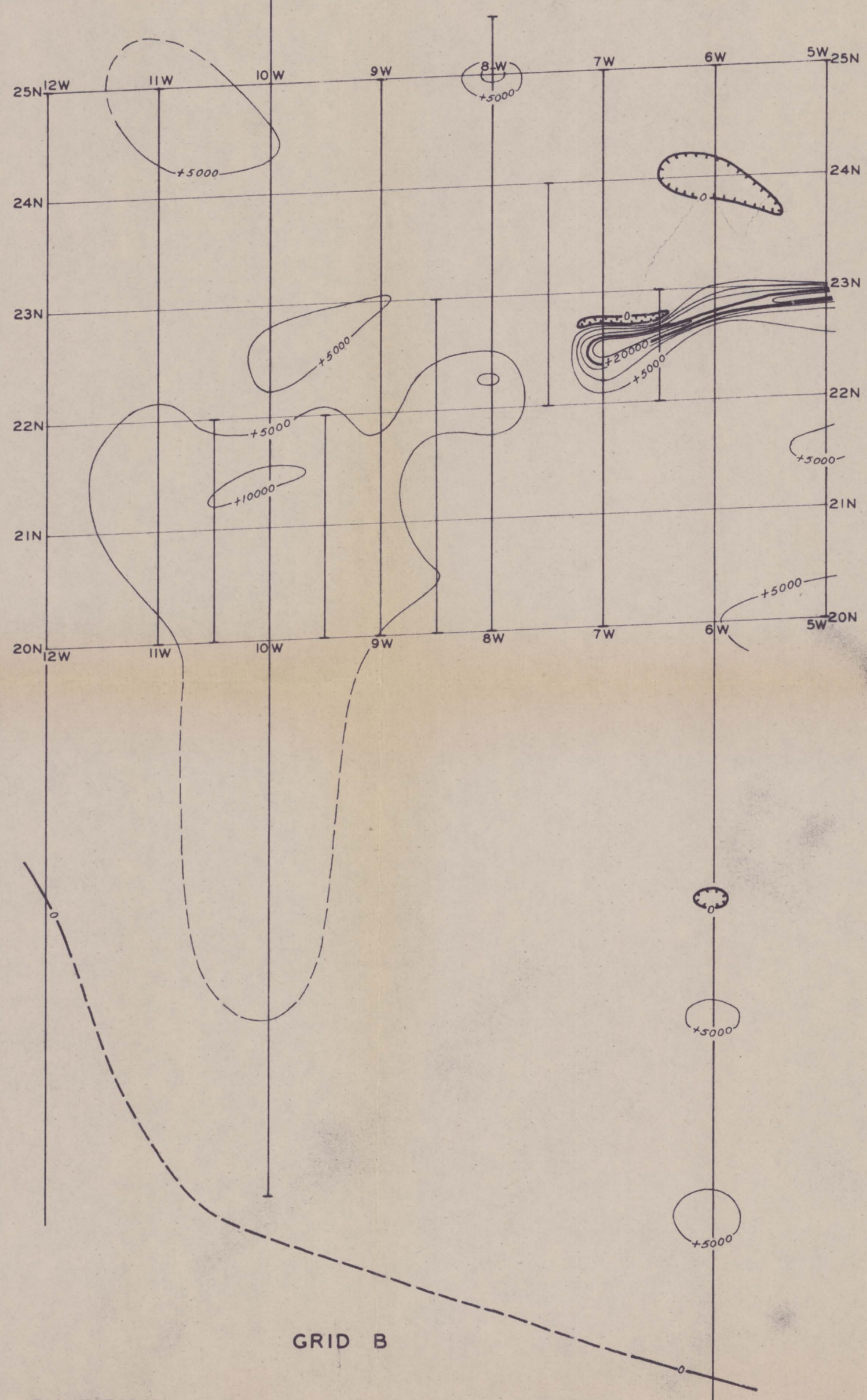
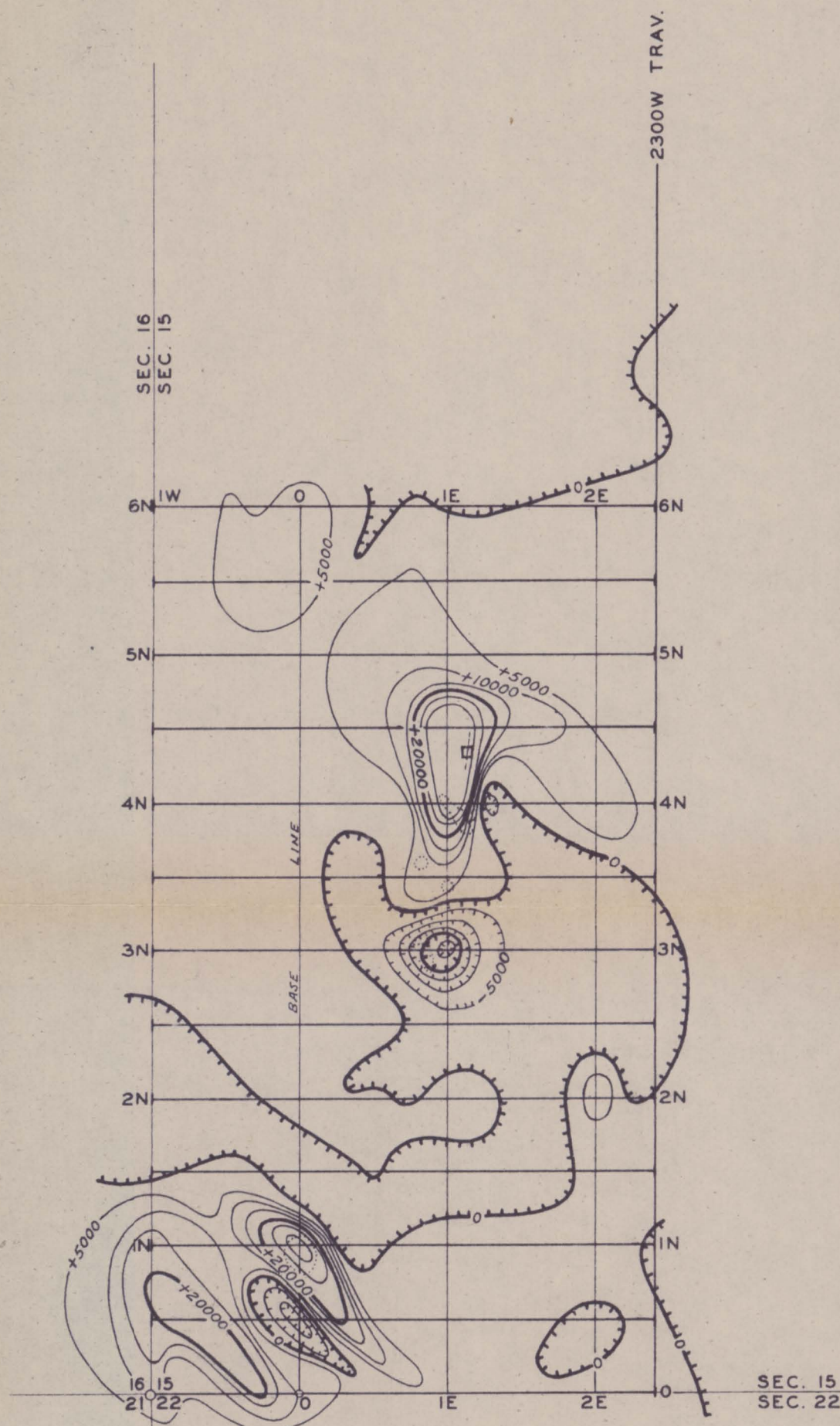
DODGE CONSTRUCTION COMPANY



BASE MAP OF MAGNETOMETER SURVEYS IN SECTION 15, T. 25 N., R. 34 E., PERSHING CO., NEV.

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1" = 100'

0 100 200 300 400 FEET

CONTOUR INTERVAL 5000 GAMMAS

SURVEY BY E.L. STEPHENSON

1954

○ IRON OUTCROPS

— MAGNETOMETER TRAVERSES

MAGNETIC MAPS IN SECTION 15, T. 25 N., R. 34 E., PERSHING COUNTY, NEVADA

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