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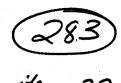
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SECOND REPORT FOR AMERICAN ORE COMPANY ON MAGNETOMETER SURVEYS FOR IRON ORE IN PERSHING COUNTY, NEVADA.
by E. L. Stephenson (January 1952)

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IN PERSHING COUNTY, HEVADA

By

E. L. Stephenson Consulting Geophysicist

> Rone, Nevada January 1952

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SECOND REPORT FOR ALERICAN ORE COMPANY ON MAGNETOLETER SURVEYS FOR IRON ORE IN PERSHING COUNTY, NEVADA

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E. L. Stophenson Consulting Goophysicist

INTRODUCTION

of magnotometer surveys made for the American Ore Company on iron ore claims located in Sections 10, 16, 22, and 23, T. 25 N., R. 34 E., Pershing County, Nevada. In addition to magnetometer measurements on seven grids, a plans table base map was made, showing claims, roads, topography, land boundaries, and iron ore outcrops in the southeastern part of Section 16, the northern and contral parts of Section 22, and a small area along the west central edge of Section 23.

The work was done in two stages. In August 1951 most of the plane table mapping was done, the first three magnetometer grids were surveyed, and a report was prepared on the results of this work, including the base map and magnetic maps and profiles. In October 1951 additional plane table mapping was done in the southeast part of the area, and magnetometer measurements were made on four additional grids. This second report, which treats both sets of data, supersedes the first report. The original base map has been revised and extended, and the new print that accompanies this report also supersedes the

earlier prints. In addition, a second base map is included, covering the area of Grid No. 7, which lies outside the boundaries of the main map. New prints of the magnetic maps and profiles also accompany this second report.

Lagnetic Base No. 1, established in the southwest corner of Section 3, was used as a reference point in both phases of the field work, and all of the magnetic data are computed in relation to this base. All of the measurements were made with a standard Askania vertical magnetometer, having a sensitivity of approximately 30 gammas per scale division.

As proparations to mine in the area were under way before the field work was started, the chief purpose of the magnetic work was not an evaluation of the area as a whole. Eather, the chief purpose was to test local areas showing outcrops of good ore, or large amounts of iron ore float; to outline the mineralized zenes, to trace possible extensions of ore under cover, to make preliminary estimates of tennages that might be available, and to determine locations for diamond drilling, bulldozer trenching, or other testing and sampling. The conclusions and recommendations herein concern choice of areas for immediate mining operations, and methods and locations for testing and sampling to determine depths, sizes, grades, stripping limits, and other data pertinent to such operations.

^{1/ 1} garma = 0.00001 gauss, the unit of magnetic intensity.
The earth's magnetic field has a total intensity of approximately 0.6 gauss, or 60,000 garmas.

GEOLOGY

The chief country rock in the iron ore area in a coursegrained intrusive dierite, and all of the known are bedies occur in
this rock. All of the dierite seems to contain at least small amounts
of accessory magnetite, and therefore it is somewhat magnetic, but
the magnetite content varies widely. Along certain zones, particularly
in the vicinity of the ore bedies, much of the dierite is heavily
impregnated with grains, stringers, and small veinlets of magnetite.
These large, irregularly magnetic masses of rock produce many strong
magnetic variations, and to a large extent they account for the positive anomalous zones. Such mineralized but noncommercial masses of
rocks also may produce much magnetite float, especially from small
included leases. They therefore tend to complicate both geologic
and magnetic interpretations, although the larger magnetite bedies
are marked by especially strong and well-defined positive anomalies.

The chief structural features in the area are normal faults, which seem to be especially numerous in the vicinity of the ore bedies. The general fault pattern probably was established prior to mineralization, but in addition the ore bedies are cut by numerous post-mineral faults. The abundant faulting, and especially the well-defined zones and bands of magnetite enrichment, which include the commercial ore bedies, strongly suggest that the mineralization was structurally controlled and occurred much later than the intrusion of the dicrite, although, in addition, there may be two phases of the intrusive rock, one much richer in magnetite than the other.

The ore bodies can best be described as irregular and disconnected replacement lenses occurring along well-defined zones. The larger bodies may have considerable length and depth extent, and in this sense they are semawhat tabular and vein-like, but there are pronounced and numerous variations in size both laterally and vertically. As a whole, the magnetite bodies have wide horizontal distribution and a fairly large vertical range in the diorite. Individual bodies vary in size from small lenses of a few tens to masses containing many thousands of tens.

LACHETOLETER SURVEIS

Plan of the survoys

The general plan of the magnetometer surveys is shown on the two base maps that accompany this report. Measurements were made in seven separate local areas, decignated by grid numbers.

Orids No. 1, No. 2, No. 3, No. 5, and No. 6 are shown on the main base map. Orid No. 7 is shown on the smaller base map, and a match line in the southeast corner of the main map shows the relationship of the two areas. The plan of Orid No. 4, which covers part of an isolated deposit in Section 10, is shown independently on the magnetic profile sheet of that grid. The grids consist of parallel traverses mainly spaced at intervals of 100 feet, but including a few intermediate 50-foot traverses. On all of these lines, magnetometer stations were occupied at intervals of 25 feet or 50 feet, depending upon the amount of magnetic detail desired.

orid No. 1, which covers the best known deposit in the surveyed area, is on a prominent knob that lies on the line between Sections 15 and 16, about 2000 feet north of the southeast corner of Section 16. This section corner is the 0-point of the grid, and the first traverse, referred to as the 0 line, was run northward for 2500 feet along the section line. Five parallel traverses were added on the west at intervals of 100 feet, to outline the magnetic anomalies associated with outcrops of iron one on the top of the knob. The first four lines begin at the 1000N point and run to the 2500N point. The westernmost line begins at 1000N and runs to 1700N. Grid No. 1 covers most of the Iron Kan claim.

Grid No. 2 covers a narrow but prominent outcrop of iron ore in the east part of the Iron King claim, in the northeast quarter of Section 22. The deposit lies on the upper east slope of a small ridge. The O-point of the grid is the 6"x6" post that marks the south side center of the Iron King No. 1 claim. Seven traverses 500 feet long, spaced at intervals of 100 feet, were run on a due south bearing, as shown on the map. In addition, the O line was extended 400 feet northward on the Iron King No. 1 claim, to check a small showing of iron ore.

Crid No. 3 was established to test an iron outcrop area in the south central part of the Iron Queen No. 1 claim, near the center of Section 22. The outcrop lies on the south side of a low, narrow ridge. The O-point of the grid is the location post of the Iron Queen No. 1 claim. The O line was run across the ridge on a bearing of N. 21° W., and two parallel lines were run on either side, at intervals of 100 feet. In addition, two intermediate 50-foot traverses were run in the east central part of the grid, to obtain more detail on a very strong magnetic anomaly.

The plan of Grid No. 4 is shown separately on the magnetic profile sheet of that grid. It covers part of a narrow mineralized zone on the Iron Wonder claim, in the southeast corner of Section 10, one mile north of Section 22. The chief showing of iron ore occurs on a small knob, which has been opened by the main cut shown on the plan. It is reported that the first iron mined in the area was taken from this cut during the last war. The 0-point of the grid is the

location post of the Iron Wonder claim, from which the O line was run northward 400 feet and southward 800 feet, on a bearing of N. 20° W. Five parallel traverses were run on the west and one on the east, at intervals of 100 feet.

Crid No. 5 is on the Iron Pen and Iron Pen No. 1 claims, in the northwest corner of Section 22. It covers an area that contains a number of small outcrops of iron ore and much iron float. The O-point of the grid is the northwest corner of the section and is the same as the O-point of Grid No. 1. A control traverse was run castward for 1200 feet along the north line of the section, and from this line eleven traverses of varying longth were run southward at 100-foot intervals, beginning on the west line of the section. In addition, a traverse 300 foot long was run from the corner westward along the south line of Section 16, and a diagonal traverse 250 feet long was run northwestward from the corner. The magnetic readings on the south end of the O line of Grid No. 1 also have been used in preparing the magnetic map of Grid No. 5.

Crid No. 6 covers an iron outcrop area on the Iron Queen claim, in the central part of Section 22. The grid is on the northeast slope of a prominent hill, and the O-point is on a low shoulder or bench, near the end of the read shown on the map. One small iron outcrop lies on the bench, and another is exposed in a prospect cut at the southwest edge of the read. The O line was run across the bench on a bearing of N. 7° W., and four parallel traverses were run on the west and two on the east, at intervals of 100 feet. The two pasternmost lines extend northward into the Iron Heart No. 1 claim.

a prominent knob on the line between Sections 22 and 23, about 1000 feet south of the quarter corner. It covers an iron ore outcrop area on the upper east slope of the knob, in the eastern part of the Armored Knight claim. The 0-point is on the section line at the crest of the knob, and the 0 line was run 150 feet northward and 1000 feet southward along the section line. Three parallel lines were run on the east and one on the west, at intervals of 100 feet.

Results of the surveys

The results of the magnetometer surveys are shown on the magnetic maps and profile shoets that accompany this report. The magnetic data of Grid No. 1 are shown on a detailed magnetic map, which is drawn on a scale of 50 feet to the inch and contoured on an interval of 1000 gammas. For Grids No. 3, No. 5, No. 6, and No. 7, because of the magnetic complexity or the localized nature of the anomalies, the data are presented on somewhat more generalized maps showing the zenes of greatest magnetic intensity. These maps also are drawn on a scale of 50 feet to the inch, and essentially they are 5000-gamma contour maps. For Grids No. 2 and No. 4, which do not appear to be of much scenemic interest, the results are shown on profile sheets, which record the exact magnetic values along each traverse line. The profiles are plotted on a horizontal scale of 100 feet to the inch and a vertical scale of 3000 gammas to the inch.

In evaluating the magnetic data, the geologic nature of the deposite must be kept constantly in mind. As already noted, the ere bedies appear to be irregular lenses of magnetite that occur along, or in association with zones of variably mineralized country rock. This rock produces strong magnetic variations, accounting in a general way for the broad zones of high magnetic intensity, and the individual near-surface bedies of ore-grade magnetite simply are marked by stronger and more sharply localized positive anomalies.

Although the boundaries of the magnetite lenses seem to be rather charp, no specific magnetic value can be set as the dividing line between commercial and noncommercial material. This is due, aside from the variable magnetite content of the zones, to the fact that the anomalies basically represent only distortions in the earth's field in planes at varying heights above the magnetic bodies, and that they therefore cannot be expected to give exact limits. Other complications arise from the facts that the bodies are more or less irregular both laterally and vertically, that they are considerably faulted, and that they contain splits or horses of waste. Relatively nonmagnetic waste, surrounded and covered by highly magnetic material, probably would not be indicated at depth by the magnetic readings, and in the same sense the pinching or narrowing of a body vertically probably would not show at any great depth.

For these reasons it is emphasized that the magnetic surveys should be followed by drilling, if the surveys show sizable concentration of magnetite, and that carefully planned drilling should be carried shead of any extensive mining operation, especially in the early stages. Key holes may be located on the basis of the

magnetic findings, to provide more exact information on depths, tonnages, and grades, and to assist in determining stripping limits and methods of waste disposal. The additional information from these drill holes, in turn, will tend to make the magnetic data more valuable and more definitive as work progresses, so that eventually a considerable amount of drilling may be eliminated.

Grid No. 1. As shown on the magnetic map, the chief magnetic features in Grid No. 1 are strong, sharp, well-defined anomalies that reach positive values of 15,000 to 20,000 gammas and higher. The anomalies include proximent negative magnetic borders, which are expressions of the distortion caused in the earth's magnetic field by the iron bodies.

The largest anomaly is associated with the large outcrop of ore at the top of the knob, but it centers mainly west of the outcrop, indicating that the bulk of the cre lies in the west side of the knob. The general trend is somewhat north of west, and the pronounced asymetry of the enomaly and the strong negative border suggest a sharp north edge and a southerly dip. The general pattern of the contours suggests also that the body probably is considerably faulted, although it is difficult to locate specific faults. The sharp anomaly on the 100% line between 1700% and 1800% indicates a subordinate block of ore that probably is a fault block.

Another prominent anomaly centers on the 400% line between 1400N and 1500N, on the west side of a small, secondary knob that also shows outcrops of iron. The main positive center lies west of the

outcrops, and it indicates the presence of a block of ore at shallow depth beneath the alluvium. The 200% line shows much smaller extensions of the anomalous zone, associated with the outcrops. The main anomaly is asymmetrical, like the larger one to the north, and again it suggests a sharp north edge and a southerly dip.

To the east, another very strong, double anomaly occurs on the section line, between 1400N and 1600N. It probably is a part of the same mineralized zone, but the two positive areas are separated by a zone of low magnetic intensity which may mark a strong cross-fault. The anomaly on the section line is believed to indicate a block of ore under cover, that lies mainly in the adjoining Section 15. This anomaly is not included in the tennage estimates.

The map also shows other, small positive anomalies, some of which are associated with minor outcrops of iron. For the most part, these bodies probably are too small to be worth mining or to be included in the tonnage estimates.

Orid No. 2. The magnetic readings on Orid No. 2, as shown on the profile shoot, indicate that the deposit is a very narrow, vein-like body, and also that it is broken and discontinuous along the strike. The outcrops probably represent the best part of the deposit, both laterally and vertically. It does not appear feasible to mine this body at depth; although a few thousands of tons might be recovered from the outcrops. No specific tennage calculations are attempted for this deposit.

Orid No. 3. The magnetic variations in Orid No. 3 are especially complex, and the curves show a series of strong, narrow anomalies that are quite variable in plan. For this reason correlations between lines are somewhat questionable, but the anomalies seem to indicate a general northwesterly trend, as shown by the zones indicated on the map.

The main positive some crosses the ridge diagonally, well to the north and west of the main outcrop. It indicates the presence of highly magnetic material, probably of ore grade, lying under cover but at challow depth in the ridge. The readings further suggest that the outcrop itself is not of very great economic importance. In part, the data suggest that the magnetic material in the main zone may occur in the form of a series of narrow veins or tabular bodies, or that it may be broken by splits and horses of country rock. The anomalies on the O line and 100E line, however, seem to indicate rather sizable, solid masses. The unusual complexity of the anomalies, in addition to the normal limitations of magnetic calculations, make tennage estimates in grid No. 3 subject to possible large errors.

Grid No. 1. The magnetic profiles of Orid No. 1, like those of Orid No. 2, indicate that the mineralization is spotty, and that ore-grade material is scanty and lacks continuity along the strike. The mineralized zone is narrow, and the curves further suggest that there may be no great depth extent, at least so far as magnetite ore bodies are concerned. The zone appears to cut off just west of the

main pit. On the east, the UT line shows only one very high reading, on a very narrow outcrop, and farther to the east the surface indications do not seem favorable. It appears that at best this deposit would yield only a relatively few tons of ore.

Grid No. 5. The general area of Crid No. 5 shows a number of iron outcrops and a relatively large amount of float, although the magnetic data, as shown on the map, indicate that for the most part the individual bodies are rather small and scattered. Within the grid proper there are three main areas of fairly high magnetic intensity, one in the northwest part, one in the center, and one in the southeast part. The peaks in the northwest area are relatively low, and although some one probably is present, the anomaly may be due mainly to disseminated magnetite in the diorite. The strongest readings occur on the section line near the 15 point, suggesting that the center of mineralization may lie to the west in Section 21.

The central anomalous zone is associated with small outcrops of good ore, and the magnetic data indicate that the bulk of
the magnetite lies between the outcrops. As indicated by peaks on
the 3E and 4E lines, the sxis appears to trend a little north of east,
and the shape of the magnetic curves indicates a southerly dip. The
body probably is narrow, but it may have a considerable depth extent.

The southeast area, which is fairly broad, shows substantial iron outcrops and much float. The magnetic curves are somewhat orratic, however, showing several strong but narrow peaks. The anomalies probably represent a mineralized zone containing separate lenses of

magnetite, some of which may be of economic size. The curves indicate a steep southerly dip for the zone as a whole.

In addition to the anomalies within Grid No. 5, the map also shows parts of an anomalous zone that lies at and near the section corner, but mainly outside of Section 22, and that contains the strongest anomalies found in the Orid 5 area. High magnetic peaks that appear on the north line of Section 22, on the O line of Orid No. 1, and on the northwest diagonal traverse apparently mark the edge of a heavily mineralized zone that lies mainly in the southwest corner of Section 15, an area that also contains prominent outcrops of iron ore. Parts of these bodies extend into Sections 16 and 22, but it probably is not feasible to mine here because of the interference of the property lines.

grid No. 6. The magnetic map of Grid No. 6 shows three small genes of fairly high magnetic intensity, two in the central part of the grid and one in the northeastern part. The central anomalies are ansociated with small outcrops of good iron ore. The eastern one appears as a high, narrow peak on the 0 line only, and it indicates that the outcrop represents the approximate size of the magnetic lens, which therefore appears too small to mine. The western anomaly is broader and longer, appearing as rather strong peaks on the 2% and 3% lines. The zone has a northeasterly trend, and the magnetic curves indicate a steep southerly dip. The northeastern zone has a northwesterly trend and a southerly dip. The positive magnetic anomaly is fairly wide, but it is erratic and the main peaks

are quite nerrow. The anomaly probably indicates a zone of magnetite enrichment in the diorite, which probably contains small lenses or voins of magnetits.

Orid No. 7. The central part of Grid No. 7 shows a broad positive anomalous zone of general easterly trend. On the whole, the curves are erratic and not especially high, indicating only magnetite emrichment in the dicrite, but they also show strong, rather narrow peaks that are closely associated with the outcrops of iron ore. Both the anomalies and the outcrops indicate that most of the ore lies between the LE and 2E lines. The deposit appears to have a northwesterly trend and a nearly vertical dip. The other smaller positive areas in Grid No. 7 show only minor peaks, which probably represent very small lenses or veins of magnetite.

Preliminary tomage estimates

For the reasons already enumerated on page 9, the magnetic data alone do not give the exact boundaries of the magnetite bodies, nor do they give any exact information as to grade. Tennage estimates based on the magnetic anomalies therefore must be considered preliminary only, and subject to possible large errors. The actual tennages of commercial one may vary rather widely either way. A further limitation in this area is the irregular and lenticular nature of the deposits, and the presence of horses of waste. Although a given zone may contain a certain tennage of magnetite to a given depth, the ratio, at any point,

between waste that must be moved and ore that can be recovered may prevent economic mining. This factor is especially pertinent in relation to the smaller deposits, where long projections are highly speculative at best.

With those limitations in mind, calculations based on the larger and stronger anomalies and on outcrops indicate the following tonnages, to depths of 100 feet:

Crid No. 1:	Nain north anomaly 160,000 South branch 20,000 Southwest anomaly 100,000 Other outcrops 50,000	
		330,000
Grid No. 2:		
Grid No. 3:	Wain anomaly, cost 80,000	
		140,000
Orid No. 4:	141.	
Grid No. 5:	Central anomaly & 30,000 Southeast anomaly	
	& outcrops 30,000	
		60,000
Grid No. 6:	Anomalies & outcrops	20,000
Crid No. 7:	Central anomaly & outcrops	50,000
	Total.	600,000 tons.

RECOLARADATIONS

The next main development step should be diamond drilling, which should be undertaken at the earliest practicable time. As already suggested, such drilling should be carried well ahead of actual mining work, in order to best plan the development of the pits, with regard to ore supply, stripping limits, access roads, and waste disposal. In some places the drilling probably can be supplemented to advantage by bulldozer trenching. Considering the nature of the deposits, and the fact that mining plans are well advanced, it would seem best at this time to avoid any large amount of deep or long-range drilling. Most of the drilling should be to test areas for immediate pit operations, to provide a larger, more varied, and more flexible source of ore.

The attached list gives the locations, bearings, angles, and estimated depths of seven recommended drill holes, four in Grid No. 1 and one each in Grids No. 3, No. 5, and No. 7. These are also shown in red on the respective magnetic maps. They are planned with respect to the assumed dips, the topography, the outcrops, and other factors, and they should provide good first tests of the more favorable anomalies. Grid No. 1 is the most favorable area, and it is recommended that the drilling be started there. The sequence as a whole may be altered, however, as field considerations may suggest. The actual depths to be drilled in each hole will have to be determined by field examination of the cores. Flanning of additional holes should swait the findings of this first drilling.

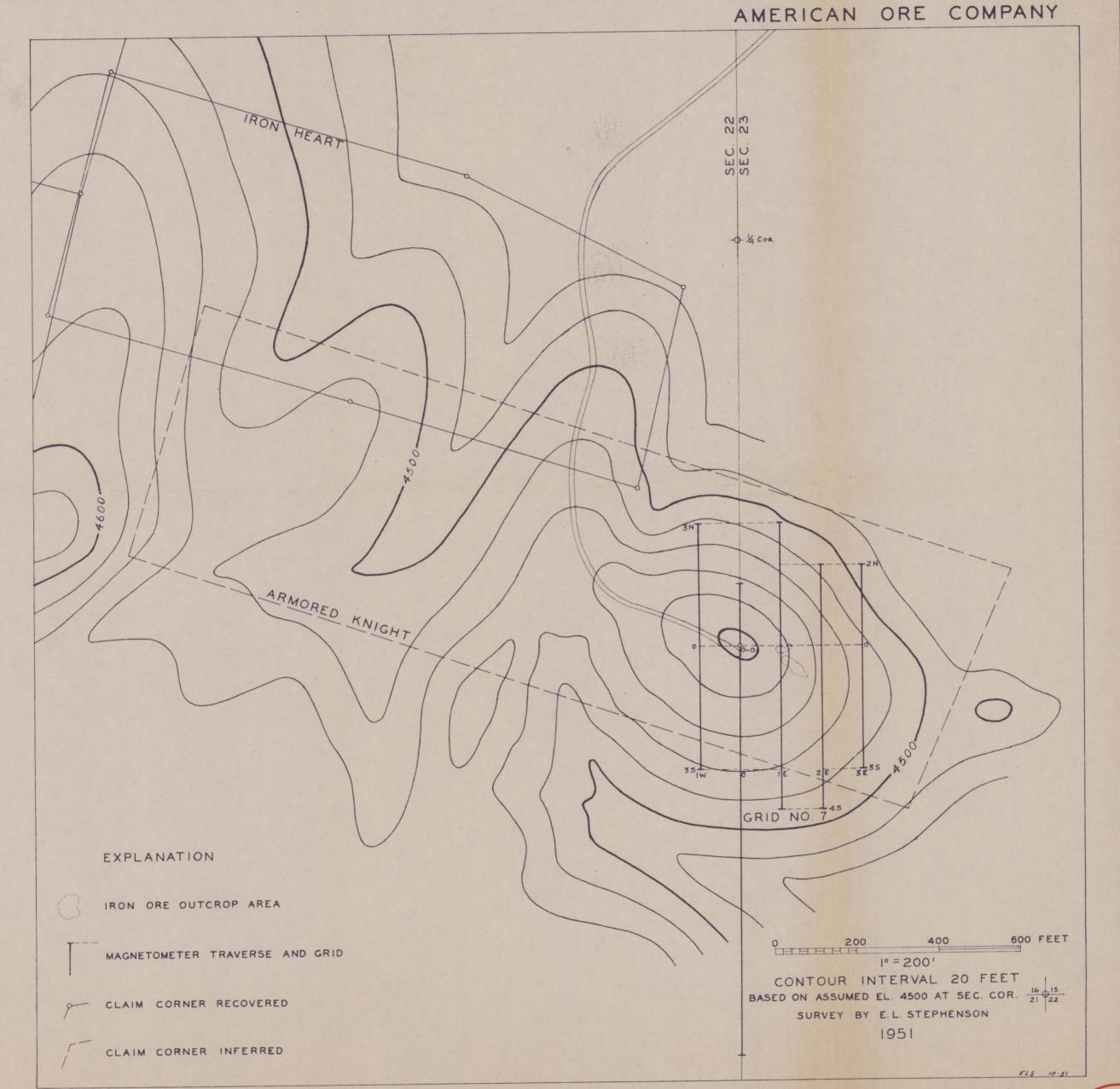
No drill holes are recommended at this time in Grids No. 2, No. 4, or No. 6, although it may prove desirable to do a certain

RECOMMENDED DRILL HOLES

Hole	Location	Bearing A	ngle	Estimated depth
No. 1	Orid 1 - 125W-1800N	n. 27° E.	-50°	1551
No. 2	- 2h3n-1863n	N, 27° E.	-50°	1201
No. 3	- 1037-1700N	N.	-50°	901
No. 4	* - 4007-1375N	N.	-50°	1701
No. 5	Orid 3 - 505-1258	N. 5° E.	-25°	1801
No. 6	Orid 5 - 400E-3253	H.	-450	125'
No. 7	Grid 7 - 1005-758	n. 30° E.	-50°	1251

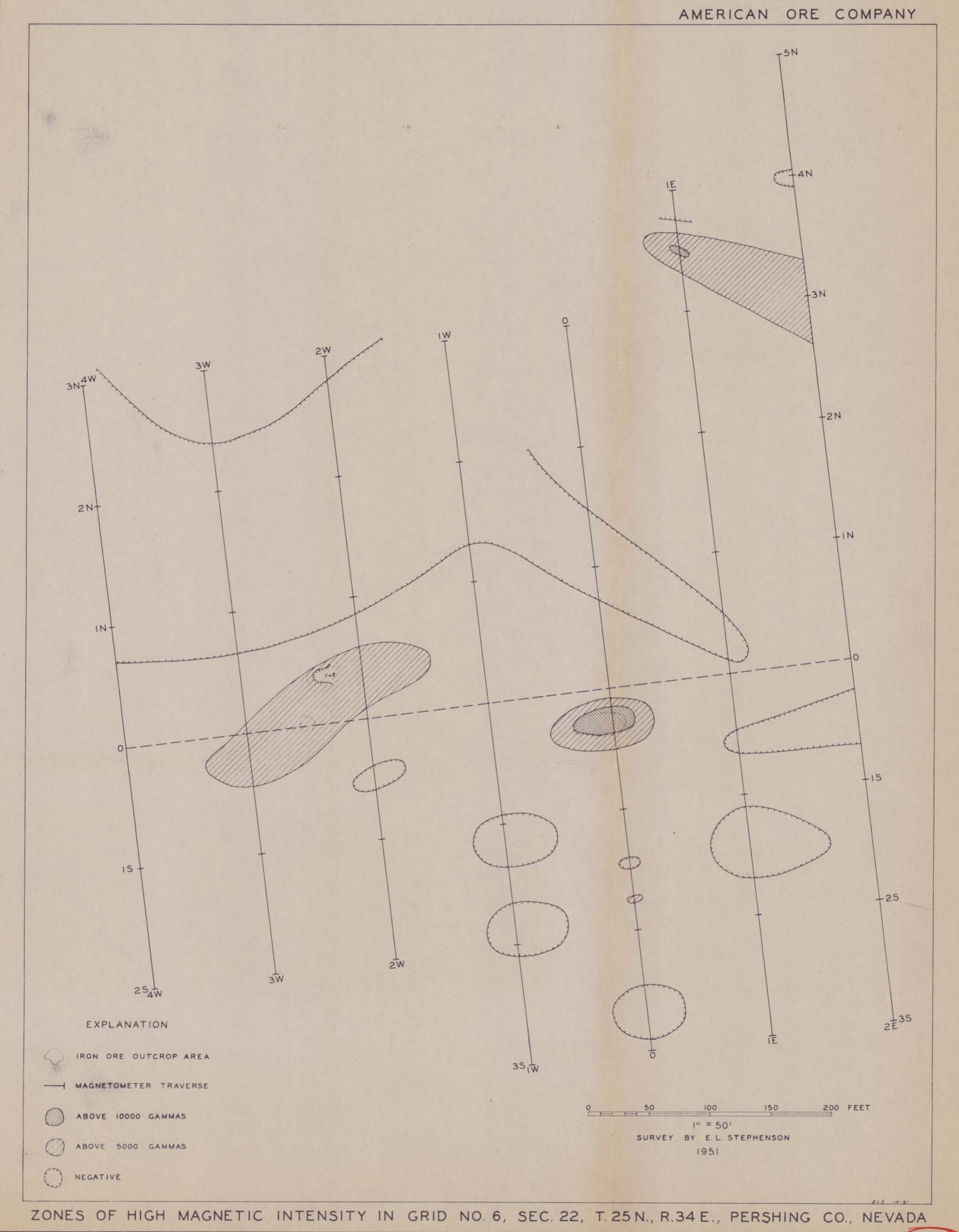
amount of drilling in these areas later on. For the present, bulldeser trenching might be done, and samples be taken for assay. It
also may be well to do bulldozer trenching in some of the other areas,
particularly in Grids No. 3 and No. 5. In general, the trenches
should be cut more or less across the trends of the magnetic anomalies,
with due regard to topography. There the mineralized zones can be
uncovered in this way, the resulting geologic and assay information
will be a valuable addition to the information from the drill holes.

Reno, Nevada January 1952 E. L. Stephenson Consulting Geophysicist

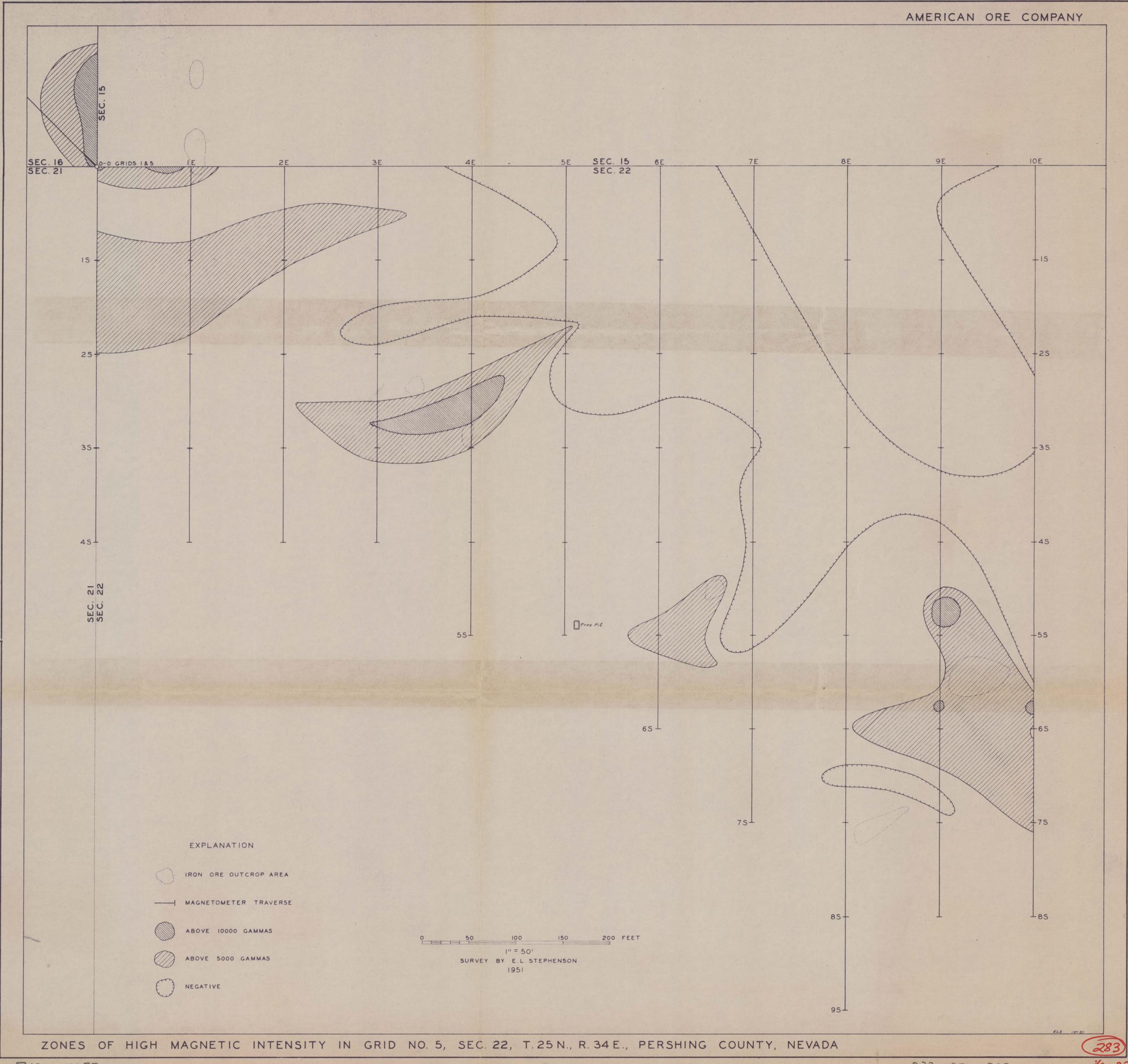


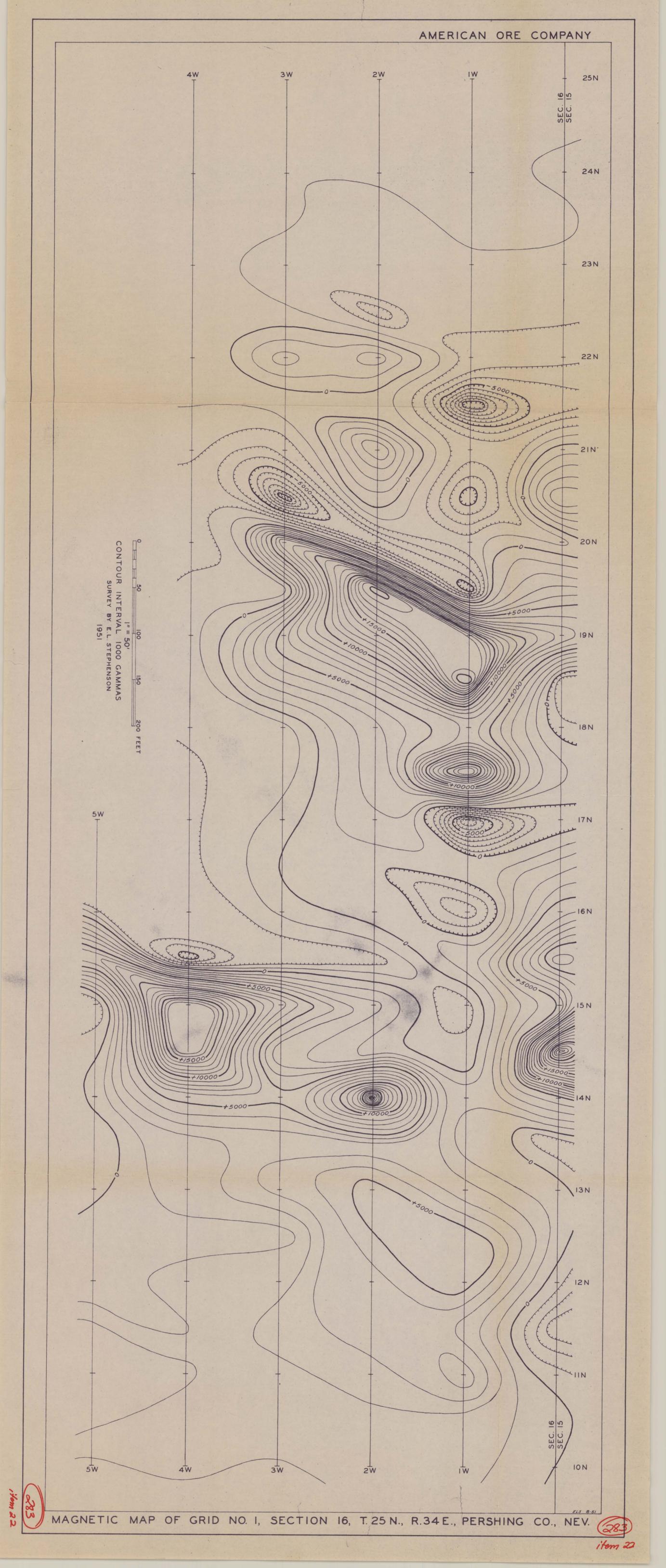
BASE MAP OF GRID NO. 7, SEC. 22 & 23, T. 25 N., R. 34 E., PERSHING CO., NEVADA

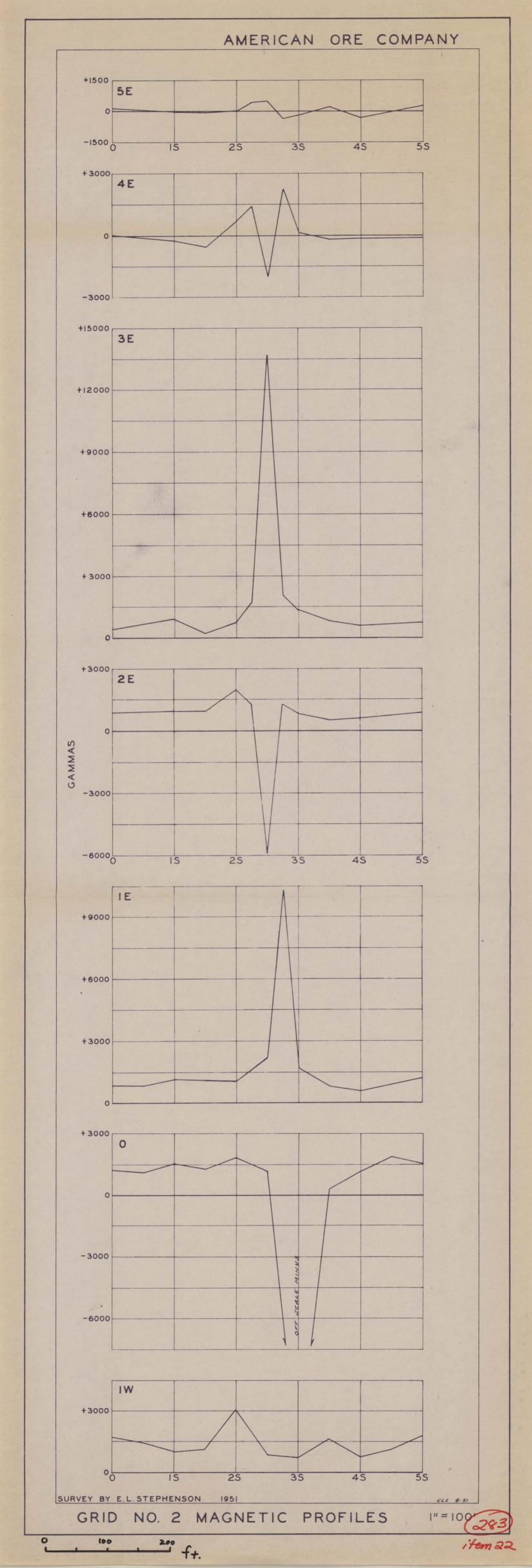
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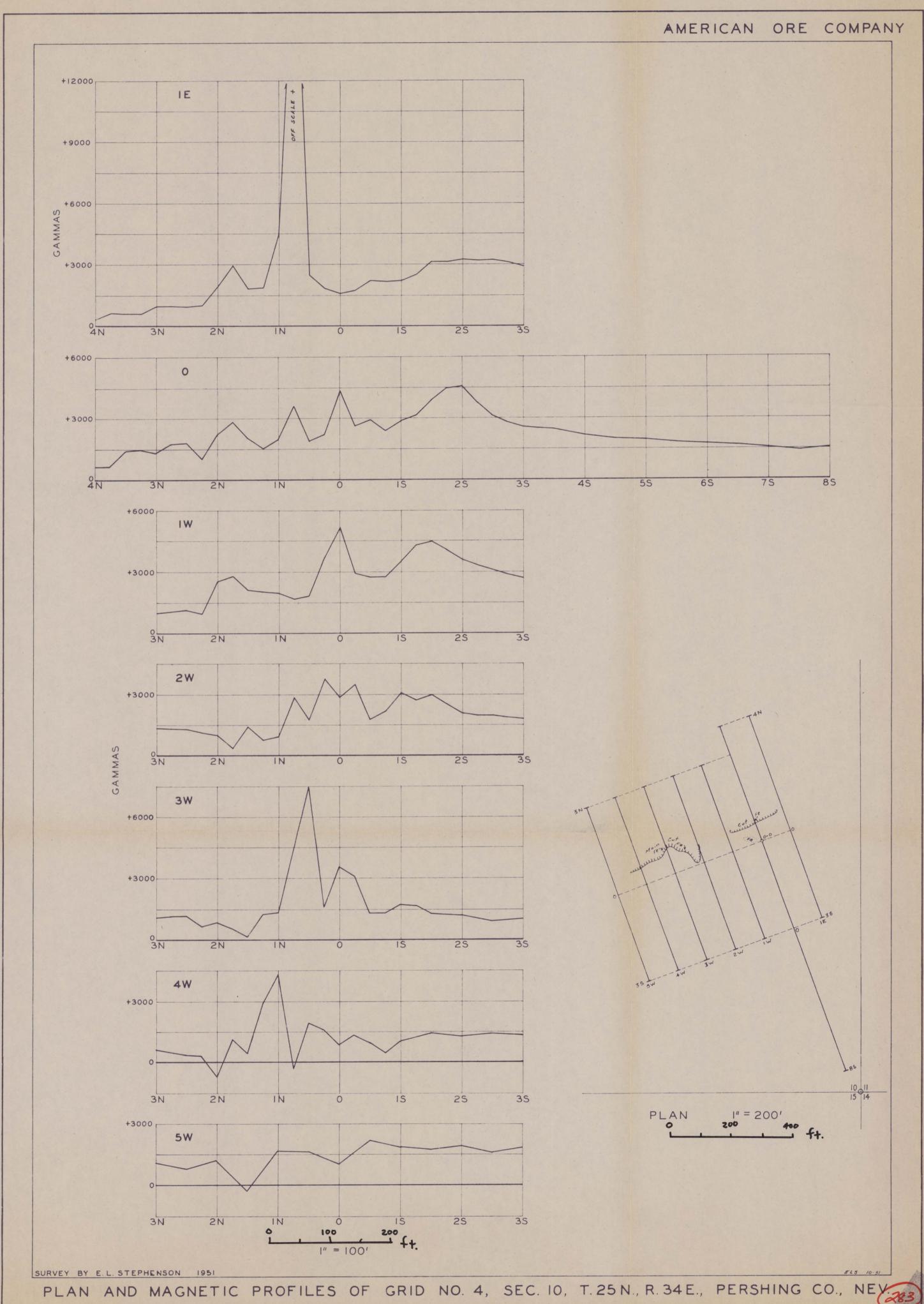


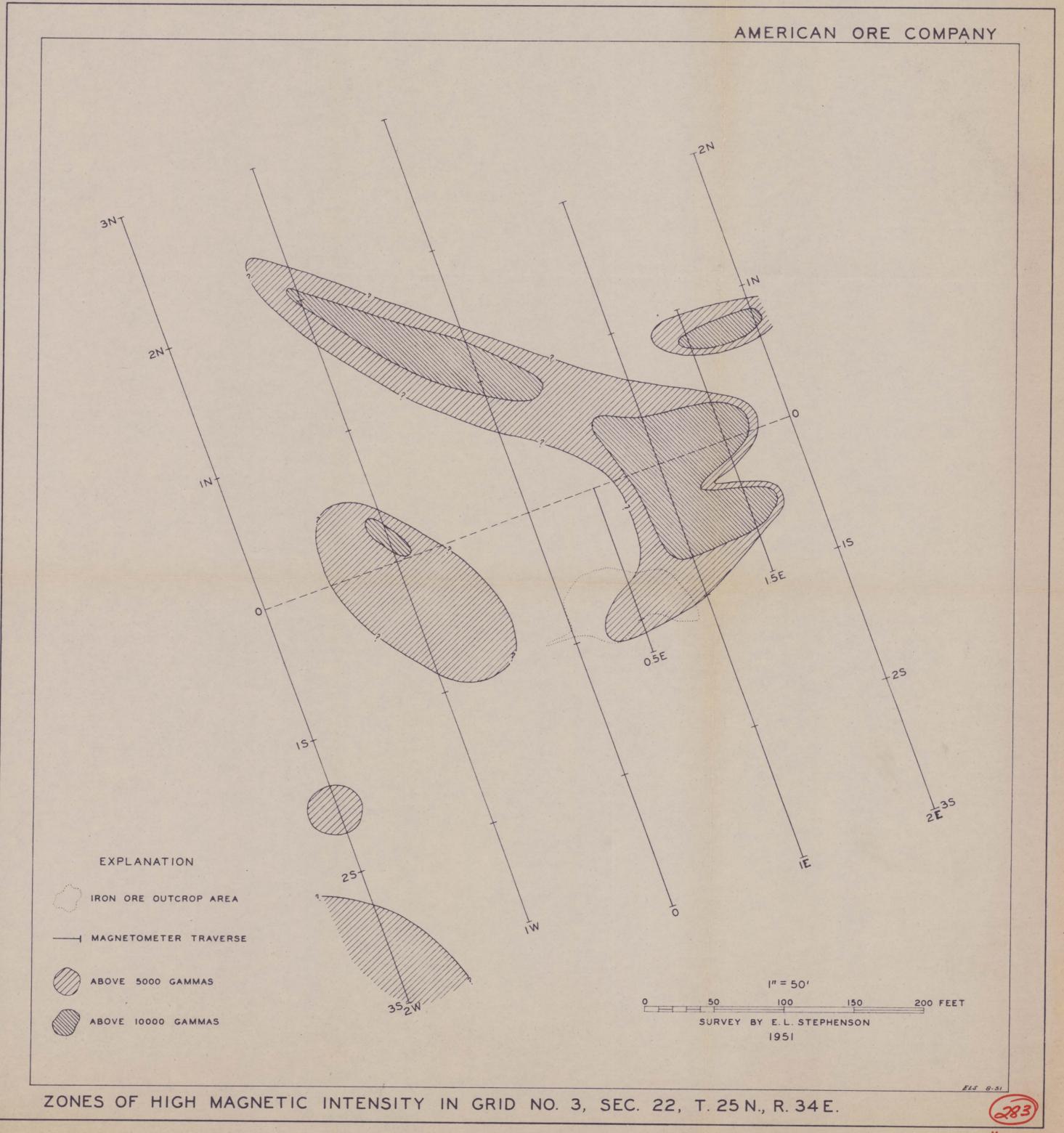
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