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UC-700

GEOPHYSICAL INVESTIGATION
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

Prepared for

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1.0 Introduction

Geophysical surveys were conducted from November 3 through November 26, 1992, April 22 through May 7, 1993, and September 1 through October 16, 1993, on 21 sites at the Salmon Site (SS) located in Lamar County, Mississippi (Figure B-1.1). The studies are part of the Remedial Investigation/Feasibility Study (RI/FS) being conducted by IT Corporation for the U.S. Department of Energy (DOE). During the 1960s, two nuclear devices and two chemical tests were detonated 826 meters (m) (2710 feet [ft]) below the ground surface in the salt dome underlying the SS. These tests were part of the Vela Uniform Program conducted to improve the United States' capability to detect, identify, and locate underground nuclear detonations. The RI/FS is being conducted to determine if any contamination is migrating from the underground shot cavity in the salt dome and if there is any residual contamination in the near surface mud and debris disposal pits used during the testing activities. The objective of the surface geophysical surveys was to locate buried debris, disposal pits, and abandoned mud pits that may be present at the site. This information will then be used to identify the locations for test pits, cone penetrometer tests, and drill hole/monitor well installation. The disposal pits were used during the operation of the test site in the 1960s. Vertical magnetic gradient (magnetic gradient), electromagnetic (EM) conductivity, and ground-penetrating radar (GPR) surveys were used to accomplish these objectives.

Section 2.0 of this report describes the field procedures used at the SS, Section 3.0 discusses the data processing and interpretations, and Section 4.0 presents the conclusions and recommendations.

A description of the equipment used and a theoretical discussion of the geophysical methods are presented Appendix A. Because of the large number of figures relative to the number of pages of text, the geophysical grid-location maps, the contour maps of the magnetic-gradient data, the contour maps of the EM conductivity data, and the GPR traverse location maps are located in Appendix B, Tabs 1 through 22. In addition, selected GPR records are located in Appendix C.

2.0 Field Procedures

This section describes the field procedures used during the geophysical surveys. The following instruments were used for data collection: an EDA Scintrex Limited, Model Omni Plus proton-precession magnetic gradiometer; a Scintrex Limited, Model Envimag proton-precession magnetic gradiometer; a Geonics Limited, Model EM-31DL (EM31) terrain

conductivity meter coupled to an Omnidata International, Inc., polycorder®digital data logger, and a Geophysical Survey Systems Inc., SIR3 ground-penetrating radar instrument.

A description of the equipment and a theoretical discussion of the geophysical methods are presented in Appendix A.

Geophysical Surveys

Magnetic gradient, EM conductivity, and GPR surveys were conducted on the dates indicated in Section 1.0. The surveys were conducted in six areas, described as Source Areas 1 through 6. These areas are shown on Figure B-1.2. The individual grid locations in each Source Area are shown in Figures B-1.3 through B-1.8.

To provide spatial control, a 3-m by 3-m (10-ft by 10-ft) grid was marked at each site with vinyl-stemmed pin flags. Extensive brush cutting was required at most sites to provide paths for the geophysical personnel to use while collecting data. Data were collected with the magnetic gradiometers and the EM31 terrain conductivity meter at the grid points along these paths.

Magnetic data collected with the magnetic gradiometers were stored in the internal memory of each instrument, and EM conductivity data were stored in the digital data logger. The data were downloaded to a laptop computer after completion of each of the surveys or at the end of the day. The GPR data were recorded on paper records, interpreted in the field, and placed in the project field files daily.

To allow accurate interpretation of the geophysical data, the locations of all known metallic surface features were recorded in field notes and taken into consideration during data interpretation.

The EM31 was zeroed daily in accordance with the manufacturer's recommendations. The total magnetic field range for the geographic location of the site was programmed into each magnetic gradiometer prior to beginning data collection. In addition, magnetic gradiometer and EM31 readings were monitored in the field to ensure the data values were within a reasonable range. The GPR records were collected over a culvert of known depth to obtain the approximate site-specific depth of penetration of the GPR signal.

3.0 Data Processing and Interpretation

Contour maps of both magnetic gradiometer and EM31 data were generated using a geophysical mapping system. These contour maps were color enhanced to facilitate recognition and interpretation of subtle anomalies. The GPR records were inspected immediately after acquisition to determine if any anomalies were related to surface features.

The vertical magnetic gradient is calculated by subtracting the total magnetic field measured simultaneously at two elevations and dividing by the separation between the sensors. Diurnal variation (drift) affects all magnetic data collected; however, this drift affects the measurement at each sensor equally and cancels out when the gradient calculation is made. Magnetic-gradient anomalies are typically dipolar: that is, they consist of a high to the south of a ferrometallic object and a low to the north of it. A more detailed discussion of the theory of magnetic data is provided in Appendix A.

The EM31 data consist of conductivity values and in-phase component values. The data are acquired by transmitting a low-frequency EM signal into the earth and measuring the subsequent subsurface response. The conductivity data provide relative conductivity values of the subsurface, while the in-phase component is more sensitive to metallic material. A theoretical discussion of these EM data components is provided in Appendix A.

Field mapping made it possible to distinguish between magnetic and EM31 anomalies caused by metallic surface debris and those caused by buried objects.

The GPR data are acquired by directing high-frequency EM energy into the earth, then receiving and recording reflections from subsurface interfaces and objects. The GPR record is reviewed for substantial anomalies (those that the data interpreter feels are credible based on experience and on certain characteristics of the anomaly itself). More detailed information on the theory of GPR data acquisition is provided in Appendix A. Selected GPR records are presented in Appendix C.

3.1 Source Area 1

Six areas within Source Area 1 were investigated using the surface geophysical methods (Figure B-1.3).

3.1.1 E-6 Decon Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-2.1. Color-enhanced contour maps of the conductivity data and the in-phase component data are presented in Figures B-2.2 and B-2.3.

One anomaly, labeled M on the maps of the magnetic-gradient data and the in-phase component data, is attributed to buried ferrometallic material. One area of elevated conductivity is labeled C on the map of the EM conductivity. Finally, one anomaly, labeled W on the maps of the magnetic-gradient data and the in-phase component data, is attributed to abandoned Well E-6. The recommended test pit location is shown in Figure B-2.4.

3.1.2 E-14 Mud Pits Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-3.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-3.2 and B-3.3. The locations of nine GPR traverses are presented in Figure B-3.4.

One anomaly, labeled M on the maps of the magnetic-gradient data and the in-phase component data, is attributed to buried ferrometallic material. Two areas of elevated conductivity are labeled C on the map of the EM conductivity data. Finally, an anomaly attributed to abandoned Well E-14 is labeled W on all three maps. The recommended test pit location is shown in Figure B-3.5.

One magnetic anomaly was investigated with nine GPR traverses. One significant GPR anomaly is observed at coordinate 43W-12N on traverses 69 through 72. The GPR anomaly at 43W-12N is very likely related to the magnetic anomaly. The location of this anomaly is shown in Figure B-3.4.

3.1.3 Bleed-Down Plant Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-4.1. Color-enhanced contour maps of the EM conductivity data and the in-phase component data are presented in Figures B-4.2 and B-4.3. The locations of 12 GPR traverses are presented in Figure B-4.4.

One anomaly, labeled M on the maps of the magnetic-gradient data and the in-phase component data, is attributed to buried ferrometallic material. A second anomaly, labeled S,

is attributable to a buried steel culvert. One area of elevated conductivity is labeled C on the map of the EM conductivity. The recommended test pit location is shown in Figure B-4.5.

Anomalies M and S were investigated with 12 GPR traverses. A significant GPR anomaly is observed at coordinates 135E-150N, 138E-155N, and 131E-145N on traverses 73, 74, and 75, respectively. A linear anomaly, related to the anomaly described above, is observed between coordinates 136E-152N and 130E-138N on traverse 77. These anomalies appear to be related to magnetic anomaly S.

Significant GPR anomalies are observed at coordinates 15E-33.5N, 10E-32N, and 5E-33N on traverses 101, 102, and 103, respectively. These anomalies appear to be related to magnetic anomaly M. All significant GPR anomalies are shown in Figure B-4.4.

3.1.4 Cable Staging Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-5.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-5.2 and B-5.3. The locations of four GPR traverses are presented in Figure B-5.4.

Four anomalies, labeled M1 through M4 on the map of the magnetic-gradient data, are attributed to buried ferrometallic material. One area of elevated conductivity is labeled C on the map of the EM conductivity data. Three anomalies, labeled M1, M2, and I, are observed on the map of the in-phase component data and are attributed to buried ferrometallic material and undetermined causes, respectively. Finally, one anomaly, labeled P on the maps of the magnetic-gradient data and the in-phase component data, is attributed to steel pipes on the surface. The recommended test pit location is shown in Figure B-5.5.

Magnetic anomalies M1 and M2 were investigated with four GPR traverses. Significant GPR anomalies are observed at coordinates 239E-42S, 238E-44S, 238E-46S, and 237E-48S on traverses 108 through 111, respectively. It is probable that these four anomalies are related to magnetic anomaly M2. Significant GPR anomalies are observed at coordinates 259E-42S, 261E-44S, 264E-46S, and 267E-48S on traverses 108 through 111, respectively. It is probable that these four anomalies are related to magnetic anomaly M1. Significant GPR anomalies are observed at coordinates 248E-48S, 252E-46S, 253E-48S, 248E-48S, 243.5E-48S, and 223.5E-48S on traverses 110 and 111, respectively. These six anomalies

may also be related to magnetic anomaly M1 or magnetic anomaly M2. The locations of all significant GPR anomalies are shown in Figure B-5.4.

3.1.5 P.S. No. 2 Mud Pit Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-6.1. Color-enhanced contour maps of the conductivity data and the in-phase component data are presented in Figures B-6.2 and B-6.3. The locations of 12 GPR traverses are presented in Figure B-6.4.

Three anomalies, labeled M1, M2, and M3 on the maps of the magnetic-gradient data and the in-phase component data, are attributed to buried ferrometallic material. Two areas of elevated conductivity are labeled C on the map of the EM conductivity. The recommended test pit location is shown in Figure B-6.5.

Magnetic anomaly M1 was investigated with 12 GPR traverses. Significant GPR anomalies were observed at coordinates 50E-39N, 50E-66N, 30E-34N, and 60E-50N on traverses 78, 82, and 84, respectively. Significant GPR anomalies were observed at coordinates 60E-55N, 65E-60N, 42E-65N, 65E-65N, 65E-70N, and 44E-70N on traverses 86 through 89, respectively. These anomalies may be related to magnetic anomaly M1. The locations of all significant GPR anomalies are shown in Figure B-6.4.

3.1.6 Station No. 1 Mud Pit and Postshot No. 1 Slush Pit Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-7.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-7.2 and B-7.3. The locations of 11 GPR traverses are presented in Figure B-7.4.

Two anomalies, labeled M1 and M2 on the map of the magnetic-gradient data, are attributed to buried ferrometallic material. One area of elevated conductivity is labeled C on the map of the EM conductivity data. One anomaly, labeled I on the map of the in-phase component data, is associated with the area of elevated conductivity. The recommended test pit location is shown in Figure B-7.5.

Magnetic anomaly M2 was investigated with 11 GPR traverses. Significant GPR anomalies were observed at coordinates 129W-24N, 128W-24N, 127W-23N, and 126W-23.5N on traverses 93 through 96, respectively. Significant GPR anomalies were observed at

coordinates 129W-24N, 127W-23N, and 127W-22N on traverses 98 through 100, respectively. It is probable that these GPR anomalies are related to a common source and to magnetic anomaly M2. The locations of all significant GPR anomalies are shown in Figure B-7.4.

3.2 Source Area 2

Four areas within Source Area 2 were investigated using surface geophysical methods (Figure B-1.4).

3.2.1 Disposal Areas 1, 2, 3, 4, 6, and 7

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-8.1. Color-enhanced contour maps of the conductivity data and the in-phase component data are presented in Figures B-8.2 and B-8.3. Ten anomalies were investigated with GPR in this area. A total of 70 traverses were acquired and are presented in Figures B-8.4 through B-8.13.

Eighteen anomalies, labeled M1 through M18 on the map of the magnetic-gradient data, are attributed to buried ferrometallic material. Six other anomalies, labeled SD1 through SD6 on that same map, are attributed to ferrometallic debris on the surface. Two other anomalies, labeled SC1 and SC2 on that map, are attributed to steel culverts. Six areas of elevated conductivity are labeled C1 through C6 on the map of the EM conductivity data. Six anomalies, labeled I1 through I6 on the map of the in-phase component data, are associated with the largest areas of elevated conductivity. Finally, one surface-debris anomaly and the steel-culvert anomaly are labeled P and S, respectively, on the map of the in-phase component data. The recommended test pit location is shown in Figure B-8.14.

Of the 18 magnetic anomalies identified, 9 were investigated using GPR. These were anomalies labeled M1, M2, M3, M5, M6, M7, M8, M10, and M11.

Magnetic anomaly M1 was investigated with three GPR traverses. One significant GPR anomaly was observed at coordinate 1155E-200N on traverse 1 and may be related to the magnetic anomaly. The GPR traverses are shown on Figure B-8.4.

Magnetic anomaly M2 was investigated with six GPR traverses. Four significant GPR anomalies were observed on traverses 6, 8, and 9. Two of the anomalies were observed at coordinates 1200E-95N and 1200E-94N on perpendicular traverses 6 and 9, respectively, and may be related to the magnetic anomaly. The other two anomalies located at coordinates

1236E-90N and 1236E-95N were observed on parallel traverses 8 and 9, respectively. They appear to be associated with the same source, but unrelated to the magnetic anomaly. The GPR traverses are shown in Figure B-8.5.

Magnetic anomaly M3 was investigated with six GPR traverses. One significant GPR anomaly was observed at coordinate 110E-5N on traverse 11 and may be related to the magnetic anomaly. The GPR traverses are shown on Figure B-8.6.

Magnetic anomaly M5 was investigated with six GPR traverses. One significant GPR anomaly was observed at coordinate 913E-185N on traverse 21 and may be related to the magnetic anomaly. In addition, indications of disturbed soil stratification were observed on traverses 17 through 21. The locations of these anomalies are shown in Figure B-8.7.

Magnetic anomaly M6 was investigated with 16 GPR traverses. One significant GPR anomaly was observed at coordinate 800E-160N on traverse 22, and one significant GPR anomaly was observed at coordinate 795N-170N on traverse 23. One significant anomaly was observed at coordinate 820E-187N on traverse 29. Significant anomalies were observed at coordinates 810E-187N and 810E-207N on traverse 30. One significant anomaly was observed at coordinate 800E, 156N on traverse 31. Significant anomalies were observed at coordinates 790E-178N and 790E-219N on traverse 32. All significant GPR anomalies identified near magnetic anomaly M6 were located such that they may be related to the magnetic anomaly. In addition, indications of disturbed soil stratification were observed on traverses 24 through 33, 22B, 25B, and 29B. The locations of these anomalies are shown in Figure B-8.8.

Magnetic anomaly M7 was investigated with six GPR traverses. One significant GPR anomaly was observed at coordinate 520E-295N on traverse 37. One significant GPR anomaly was observed at coordinate 515E-294N on traverse 38. Both significant GPR anomalies may be related to the magnetic anomaly. In addition, indications of disturbed soil stratification were observed on traverses 36 through 39. The locations of these anomalies are shown in Figure B-8.9.

Magnetic anomaly M8 was investigated with six GPR traverses. Significant GPR anomalies were observed at coordinates 440E-372N and 440E-366N on traverse 42. Significant anomalies were observed at coordinates 447E-375N, 447E-370N, and 447E-365N on traverses

44, 45, and 46, respectively. All significant GPR anomalies may be related to the magnetic anomaly. The locations of these anomalies are shown in Figure B-8.10.

Magnetic anomaly M9 was not investigated by GPR.

Magnetic anomaly M10 was investigated with 19 GPR traverses. One significant GPR anomaly was observed at coordinate 120E, 327N on traverse 133. Significant GPR anomalies were observed at coordinates 170E-426N, 170E-413N, 170E-405N, and 170E-397N on traverse 138. Significant GPR anomalies were observed at coordinates 170E-397N, 170E-388N, and 170E-385N on traverse 139. Significant anomalies were observed at coordinates 150E-432N, 150N-429N, 150E-422N, 150E-410N, 150E-402N, 150E-395N, and 150E-378N on traverse 141. One significant GPR anomaly was observed at coordinate 250E-404N on traverse 143. One significant anomaly is observed at coordinate 250E-377N on traverse 144. Significant anomalies were observed at coordinates 20E-402N, 20E-390N, 20E-387N, and 20E-378N on traverse 147. One significant GPR anomaly was observed at coordinate 20E-316N on each of traverses 148 and 149.

All significant GPR anomalies may be related to the magnetic anomaly. In addition, indications of disturbed soil stratification are observed on traverses 131 through 136, 140 through 143, and 145 through 149. Traverses 131 through 146 and associated anomalies are shown in Figure B-8.11. Traverses 147 through 149 and associated anomalies are shown in Figure B-8.12. Because the disturbed soil stratifications are very well defined, these anomalies are labeled as a trench anomaly in Figure B-8.11.

Magnetic anomaly M11 was investigated with four GPR traverses. One significant GPR anomaly was observed at coordinate 617E-480N on traverse 153. One significant GPR anomaly was observed at coordinate 617E-483N on traverse 154. One significant GPR anomaly was observed at coordinate 613E-478N on traverse 156. All significant GPR anomalies may be related to the magnetic anomaly. The locations of these anomalies are shown in Figure B-8.13.

3.2.2 Clean Burn Pit Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-9.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-9.2 and B-9.3. No GPR traverses were conducted in this area.

One anomaly, labeled M on the map of the magnetic-gradient data, was attributed to buried ferrometallic material. One area of elevated conductivity is labeled C on the map of the EM conductivity data. One anomaly, labeled I on the map of the in-phase component data, is associated with the area of elevated conductivity. No test pits are planned for this area.

3.2.3 Disposal Area 5

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-10.1. Color-enhanced contour maps of the conductivity data and the in-phase component data are presented in Figures B-10.2 and B-10.3. The locations of two GPR traverses are presented in Figure B-10.4.

One anomaly, labeled M on the map of the magnetic-gradient data, is attributed to buried ferrometallic material. Two anomalies, labeled SD1 and SD2 on that map, are attributed to ferrometallic debris on the surface. Three areas of elevated conductivity are labeled C on the map of the EM data. One anomaly, labeled M on the in-phase component data map, is attributed to buried ferrometallic material. Finally, one anomaly, labeled SD on Figure B-10.3, is attributed to ferrometallic debris on the surface. The recommended test pit location is shown in Figure B-10.5.

The magnetic anomaly was investigated with two GPR traverses. One significant GPR anomaly was observed at coordinate 80E-210N on traverse 157. One significant anomaly was observed at coordinate 78E-210N on traverse 158. Both the magnetic anomaly and GPR anomalies are attributed to the same source. The GPR anomaly locations are shown on Figure B-10.4.

3.2.4 Gas Pump Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-11.1. Color-enhanced maps of the EM conductivity data and the in-phase component data are presented in Figures B-11.2 and B-11.3. The locations of 20 GPR traverses are presented in Figure B-11.4.

One anomaly, labeled M on the map of the magnetic-gradient data, is attributed to buried ferrometallic material. Seven anomalies, labeled SD1 through SD7, are attributed to ferrometallic debris on the surface. Three areas of elevated conductivity are labeled C on the map of the EM conductivity data. Two anomalies, labeled SD1 and SD2 on the map of the in-phase data, are associated with two of the magnetic anomalies attributed to ferrometallic

debris on the surface. One anomaly, labeled M on the map of the in-phase data, is attributed to buried ferrometallic material. The distinct area of low conductivity on the map of the EM conductivity data is caused by the instrument response to buried ferrometallic material. The recommended test pit location is shown in Figure B-11.5.

The area surrounding anomalies SD1 through SD7 was investigated with 20 GPR traverses because the lithology and topography of this area was different from the surrounding area. Significant anomalies were observed at coordinates 50E-17N, 50E-8N, and 50E-17S on traverse 47. Significant anomalies were observed at coordinates 55E-8N and 55E-17S on traverse 48. Significant anomalies were observed at coordinates 60E-6S and 60E-13S on traverse 49. One significant anomaly was observed at coordinate 65E-14S on traverse 50. Significant anomalies were observed at coordinates 45E-22N and 45E-13S on traverse 52. One significant anomaly was observed at coordinate 44E-5S on traverse 53. Significant anomalies were observed at coordinates 58E-0N and 46.5E-0N on traverse 54. One significant anomaly was observed at coordinate 58E-9S on traverse 56. One significant anomaly was observed at coordinate 58E-13S on traverse 57. One significant anomaly was observed at coordinate 56E-17S on traverse 58. One significant anomaly was observed at coordinate 58E-10N on traverse 59. One significant anomaly was observed at coordinate 58E-13N on traverse 60. One significant anomaly was observed at coordinate 55E-17N on traverse 61. One significant anomaly was observed at coordinate 57E-22N on traverse 62. Magnetic anomaly M was investigated with three GPR traverses. Significant anomalies were observed at coordinates 123E-57S, 119E-57S, and 123E-60S on traverses 150, 151, and 152, respectively. All GPR anomaly locations are shown in Figure B-11.4.

3.3 Source Area 3

Five areas within Source Area 3 were investigated using surface geophysical methods (Figure B-1.5).

3.3.1 Government Storage Area No. 1

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-12.1. Color-enhanced contour maps of the EM conductivity data and the in-phase component data are presented in Figures B-12.2 and B-12.3. The locations of five GPR traverses are shown in Figure B-12.4.

One anomaly, labeled M on the map of the magnetic-gradient data, is attributed to buried ferrometallic material. Another anomaly, labeled W on that same map, is attributed to a steel

well casing. A third anomaly, labeled SD, is attributed to ferrometallic debris on the surface. One area of elevated conductivity is labeled C on the map of the EM conductivity data. One anomaly, labeled W on the map of the in-phase component data, is attributed to the steel well casing. The recommended test pit location is shown in Figure B-12.5.

Magnetic anomaly M1 was investigated with five GPR traverses. One significant anomaly was observed at coordinate 165E-17S on traverse 127. This anomaly may be related to the magnetic anomaly. Its location is shown on Figure B-12.4.

3.3.2 E-2 and E-7 Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-13.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-13.2 and B-13.3. No GPR traverses were conducted on this site.

One anomaly, labeled W on the map of the magnetic-gradient data, is attributed to Well E-7. No significant anomalies are observed on the map of the EM conductivity data. One anomaly, labeled W on the map of the in-phase component data, is attributed to Well E-7. No test pits are planned for this site.

3.3.3 Government Storage Area No. 2

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-14.1. Color-enhanced contour maps of the EM conductivity data and the in-phase component data are presented in Figures B-14.2 and B-14.3. No GPR traverses were conducted on this site.

Five anomalies, labeled W1 through W5 on the map of the magnetic-gradient data, are attributed to steel well casings. One anomaly, labeled M on the map of the vertical magnetic gradient data, is attributed to buried ferrometallic material. One area of elevated conductivity is labeled C on the map of the EM conductivity. Five anomalies, labeled W1 through W5, and one anomaly, labeled I, are observed on the map of the in-phase component data. The anomalies labeled W1 through W5 are attributed to the steel well casings, while the one labeled I is attributed to possible buried metallic material. No test pits are recommended for this area.

3.3.4 Big Chief Drilling Storage Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-15.1. Color-enhanced maps of the EM conductivity data and the in-phase component data are presented in Figures B-15.2 and B-15.3. No GPR traverses were conducted on this site.

No significant anomalies are seen on the map of the magnetic-gradient data. One area of elevated conductivity is labeled C on the map of EM conductivity data. One in-phase component anomaly is labeled I on the map of the in-phase component data and is associated with the area of elevated conductivity. No test pits are recommended for this area.

3.3.5 Mud Storage Pit Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-16.1. Color-enhanced contour maps of the conductivity data and the in-phase component data are presented in Figures B-16.2 and B-16.3. The locations of 14 GPR traverses are presented in Figure B-16.4.

Four anomalies, labeled M1 through M4 on the map of the magnetic-gradient data, are attributed to buried ferrometallic material. Two other anomalies, labeled SD1 and SD2 on that same map, are attributed to ferrometallic debris on the surface. One area of elevated conductivity is labeled C on the map of the EM conductivity data. One in-phase component anomaly is labeled I on the map of the in-phase component data and is associated with the area of elevated conductivity. The recommended test pit location is shown in Figure B-16.5.

Magnetic anomalies M1, M2, M3, and M4 were investigated with 14 GPR traverses. Significant GPR anomalies were observed at 50W-32N, 55W-28N, 55W-42N, 60W-42N, 60W-34N, 45W-28N, 40W-27N, 35W-29N, and 35W-22N on traverses 112 through 114 and 120 through 122. These nine anomalies may be related to magnetic anomalies M1 and M2. Significant GPR anomalies were observed at coordinates 65W-72N, 70W-94N, 75W-93N, 85W-84N, and 45W-82N on traverses 115 through 117, 119, and 120. These five anomalies may be related to magnetic anomalies M3 and M4. All significant GPR anomaly locations are shown in Figure B-16.4.

3.4 Source Area 4

Three areas within Source Area 4 were investigated using surface geophysical methods (Figure B-1.6).

3.4.1 Reserve Mud Pit and Debris Burial Pit Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-17.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-17.2 and B-17.3. No GPR traverses were conducted on this site.

One anomaly, labeled M on all three maps, is attributed to buried ferrometallic material. Three other anomalies, labeled W1 through W3 on those maps, are attributed to steel well casings surrounded by concrete pads. One area of elevated conductivity is labeled C on the map of the EM conductivity data. One in-phase component anomaly is labeled I on the map of the in-phase component data and is associated with the area of elevated conductivity. No test pit locations are recommended for this area.

3.4.2 CH Fuel Storage Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-18.1. Color-enhanced contour maps of the conductivity data and the in-phase component data are presented in Figures B-18.2 and B-18.3. No GPR traverses were conducted on this site.

One anomaly, labeled SC on the map of the magnetic-gradient data, is attributed to a steel culvert under the nearby road. No significant anomalies are observed on the map of the EM conductivity data or on the map of the in-phase component data. No test pit locations are recommended for this area.

3.4.3 Cable Storage Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-19.1. Color-enhanced maps of the EM conductivity data and the in-phase component data are presented in Figures B-19.2 and B-19.3. No GPR traverses were conducted on this site.

Two anomalies, labeled SD1 and SD2 on the map of the magnetic-gradient data, are attributed to ferrometallic debris on the surface and a concrete foundation. Two areas of elevated conductivity are labeled C on the map of the EM conductivity data. Two in-phase component anomalies are labeled I on the map of the in-phase data and are associated with the areas of elevated conductivity. No test pit locations are recommended for this area.

3.5 Source Area 5

Two areas within Source Area 5 were investigated using surface geophysical methods (Figure B-1.7).

3.5.1 HT-2M Well Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-20.1. Color-enhanced contour maps of the EM conductivity data and the in-phase component data are presented in Figures B-20.2 and B-20.3. No GPR traverses were conducted on this site.

One anomaly, labeled W on the map of the magnetic-gradient data, is attributed to Well HT-2M. No significant anomalies are observed on the map of the EM conductivity data. One in-phase component anomaly is labeled W on the map of the in-phase component data and is attributed to Well No. HT-2M. No test pit locations are recommended for this area.

3.5.2 HT-2 Well Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-21.1. Color-enhanced maps of the conductivity data and the in-phase component data are presented in Figures B-21.2 and B-21.3. No GPR traverses were conducted on this site.

One anomaly, labeled W on the map of the magnetic-gradient data, is attributed to Well No. HT-2. No significant anomalies are observed on the map of the EM conductivity data. One in-phase component anomaly is labeled W on the map of the in-phase component data and is attributed to Well No. HT-2. No test pit locations are recommended for this area.

3.6 Source Area 6

One area within Source Area 6 was investigated using surface geophysical methods (Figure B-1.8).

3.6.1 Helicopter Landing Pad Area

A color-enhanced contour map of the vertical magnetic-gradient data is presented in Figure B-22.1. Color-enhanced maps of the EM conductivity data and the in-phase component data are presented in Figures B-22.2 and B-22.3. No GPR traverses were conducted on this site.

One elongate anomaly, labeled SD on the map of the magnetic-gradient data, is attributed to a wire fence parallel to the grid. No significant anomalies are seen on the maps of the EM conductivity or in-place component data. No test pit locations are recommended for this area.

4.0 Discussion and Recommendations

The magnetic-gradient data indicate the probability of buried ferrometallic material at many of the sites. The EM in-phase component data corroborate this at some of the sites while at others it does not. Because the EM31 must be located nearer to buried ferrometallic material than the magnetometer for an anomalous reading to be obtained, it is recommended that the magnetic-gradient data be considered as the primary indication of possible buried ferrometallic material. Further, it is recommended that significant magnetic-gradient anomalies be investigated by excavating test pits across them. The locations of such test pits for each area are listed below. The areas not discussed in these sections contain no significant magnetic anomalies, and no test pits are recommended.

The EM-conductivity data indicate areas of elevated subsurface conductivity at many of the sites. This may be due to the following:

- Higher soil moisture relative to the surrounding area
- Lithologic differences
- The presence of high-conductivity solutions, which may or may not be considered contaminants.

To investigate these anomalies, it is recommended that subsurface soil samples be collected from the areas with elevated conductivity and from the respective areas of lower conductivity surrounding them. The samples can be collected either by excavating a trench across the anomalies and collecting the samples from the backhoe bucket or by using a hollow-stem auger to collect split-spoon samples. These samples should first be evaluated lithologically, then chemically analyzed at an analytical laboratory. The following is a list of the recommended trench locations.

Source Area 1

• E-6 Decon Area	One test pit	Figure B-2.4
• E-14 Mud Pits Area	One test pit	Figure B-3.5

• Bleed-Down Plant Area	One test pit	Figure B-4.5
• Cable Staging Area	Four test pits	Figure B-5.5
• P.S. No. 2 Mud Pit Area	Three test pits	Figure B-6.5
• Sta. No. 1 Mud Pit/ Postshot No. 1 Mud Pit Area	Two test pits	Figure B-7.5

Source Area 2

• Disposal Areas 1, 2, 3, 4, 6, and 7	Fourteen test pits	Figure B-8.14
• Disposal Area 5	One test pit	Figure B-10.5
• Gap Pump Area	One test pit	Figure B-11.5

Source Area 3

• Government Storage Area No. 1	One test pit	Figure B-12.5
• Mud Storage Pit Area	Four test pits	Figure B-16.5

Appendix A

Theoretical Background

A. Theoretical Background

The following sections discuss the theory that governs the use of the geophysical equipment used in this survey.

A.1. Electromagnetic Induction

The electromagnetic (EM) induction equipment used during this investigation consisted of a Geonics EM-31DL terrain conductivity meter coupled to a digital data logger (EM31). The EM31 consists of small transmitting and receiving coils mounted at each end of a 12-foot-long plastic boom. An alternating current is applied to the transmitter coil, causing the coil to radiate a vertically polarized magnetic field. In accordance with Faraday's Law of Induction, this field induces eddy currents in any conducting material in the subsurface. These eddy currents have an associated (secondary) magnetic field with a strength and phase shift relative to the primary field that is dependent on the conductivity of the medium. The receiver coil measures the resultant effect of both primary and secondary fields. By comparing the signal at the receiver to that at the transmitter, the instrument records the component in-phase with (in-phase) and 90 degrees out-of-phase (quadrature) with the primary field. The EM31 is calibrated so that the out-of-phase component is converted to electrical conductivity in units of millisiemens per meter. The in-phase component is read in parts per thousand (ppt) of the primary EM field and is generally adjusted in the field to read zero response over background materials. The strength of each component is related to the electrical properties of the subsurface.

When operating in the vertical dipole mode (horizontal coils), the EM31 has an effective exploration depth of approximately 18 feet. In the absence of large metallic features such as tanks, drums, pipes, and reinforced concrete, the maximum instrument response results form materials at about 3 to 5 feet below ground surface. A single buried drum typically can be located to depths of about 5 feet whereas, depending on background noise, clusters of drums can be located to significantly greater depths. The EM31 generally must pass over or very near to a buried metallic object to detect it.

Both the out-of-phase (conductivity) and in-phase components exhibit a characteristic anomaly over near-surface metallic conductors. This anomaly consists of a narrow, high-amplitude trough centered over the target and two broader peaks of lower amplitude on both sides of the

target when the axis of the coils (instrument boom) is at an angle to the conductor; however, when the instrument boom is oriented parallel to the conductor, a broad peak is obtained.

Applications of the EM31 include the delineation of soil contamination, oil brine pits, buried metallic and nonmetallic debris, landfill boundaries, buried pipes and cables, and buried drums and tanks.

A.2. Magnetics

The magnetometer used during this investigation consisted of an EDA Omni IV proton precession magnetic gradiometer. This instrument measures the intensity of the earth's magnetic field in gammas and the vertical gradient of the magnetic field in gammas per meter. In the operation of a proton precession magnetometer, direct current is applied to a coil wrapped around a sensor bottle filled with a hydrogen-rich fluid, which temporarily polarizes the protons in the fluid. When the current is turned off, the protons oscillate (precess) around the earth's magnetic north at a frequency proportional to the total magnetic field intensity. Measurement of the precession frequency, as a voltage induced in the coil, permits the calculation of the intensity of the earth's magnetic field.

The vertical magnetic gradient is measured by simultaneously recording the magnetic field using two sensors at different heights, subtracting the upper sensor reading from the lower sensor reading, and dividing the difference by the distance between the sensors.

Anomalies in the earth's magnetic field are often due to induced magnetization; that is, they are caused by a secondary magnetic field induced in a ferromagnetic material (such as pipelines, drums, tanks, well casing, etc.) by the earth's magnetic field. The magnitude of the induced field is proportional to the intensity of the earth's magnetic field and the magnetic susceptibility of the material into which the magnetic field is induced. The shape and amplitude of an induced magnetic anomaly over a ferromagnetic object depend on the geometry, size, depth, and magnetic susceptibility of the object and on the inclination of the earth's magnetic field in the study area. Magnetic anomalies due to buried metallic objects have dimensions much greater than the dimensions of the objects themselves. As an extreme example, a magnetometer may begin to sense a buried oil well casing at a distance of more than 50 feet. In North America, induced magnetic anomalies over buried objects such as

drums, pipes, tanks, and buried metallic debris generally exhibit an asymmetrical, south-up, north-down signature (maximum amplitude on the south side and minimum on the north).

Generally, a base station magnetometer is used to record the diurnal variation (drift) of the earth's magnetic field. Base station readings are used to correct field readings for magnetic drift. Vertical magnetic gradient readings do not have to be corrected for drift because the magnetic field is measured at two sensors simultaneously and the drift cancels out.

A.3. Ground Penetrating Radar

Ground Penetrating Radar (GPR) uses an electromagnetic pulse source, transmitter and receiver antennas, and a graphic recorder to map reflections from subsurface interfaces caused by buried objects and distinct stratigraphic horizons. For a reflection to occur, an impedance contrast, which is related to the dielectric constant and conductivity of the respective materials, must be present across any such interface(s).

The GPR instrument consists of a microprocessor-based control unit, a graphic recorder, and a combined transmitter/receiver antenna. These components are interconnected through a series of cables which carry power to the antenna, relay reflected electromagnetic pulses from the antenna to the control unit, and transfer processed electromagnetic pulses from the control unit to the graphic recorder.

A number of antennas is available at frequencies which range from 80 Megahertz (Mhz) to 900 Mhz. A lower frequency antenna (e.g., 80 Mhz) will permit greater signal penetration but with less resolution, whereas a higher frequency antenna (e.g., 900 Mhz) offers greater resolution but with less signal penetration.

GPR data is collected by slowly pulling the antenna across the ground surface. A paper record output by the graphic recorder during each of these traverses is annotated in the field with the traverse location, horizontal scale, full-scale time display, and the antenna used.

Appendix B

Figures

List of Figures

List of Figures *(continued)*

List of Figures (continued)

List of Figures (continued)

List of Figures (continued)

List of Figures (continued)

1965A37 06/10/94 9:35AM JRB

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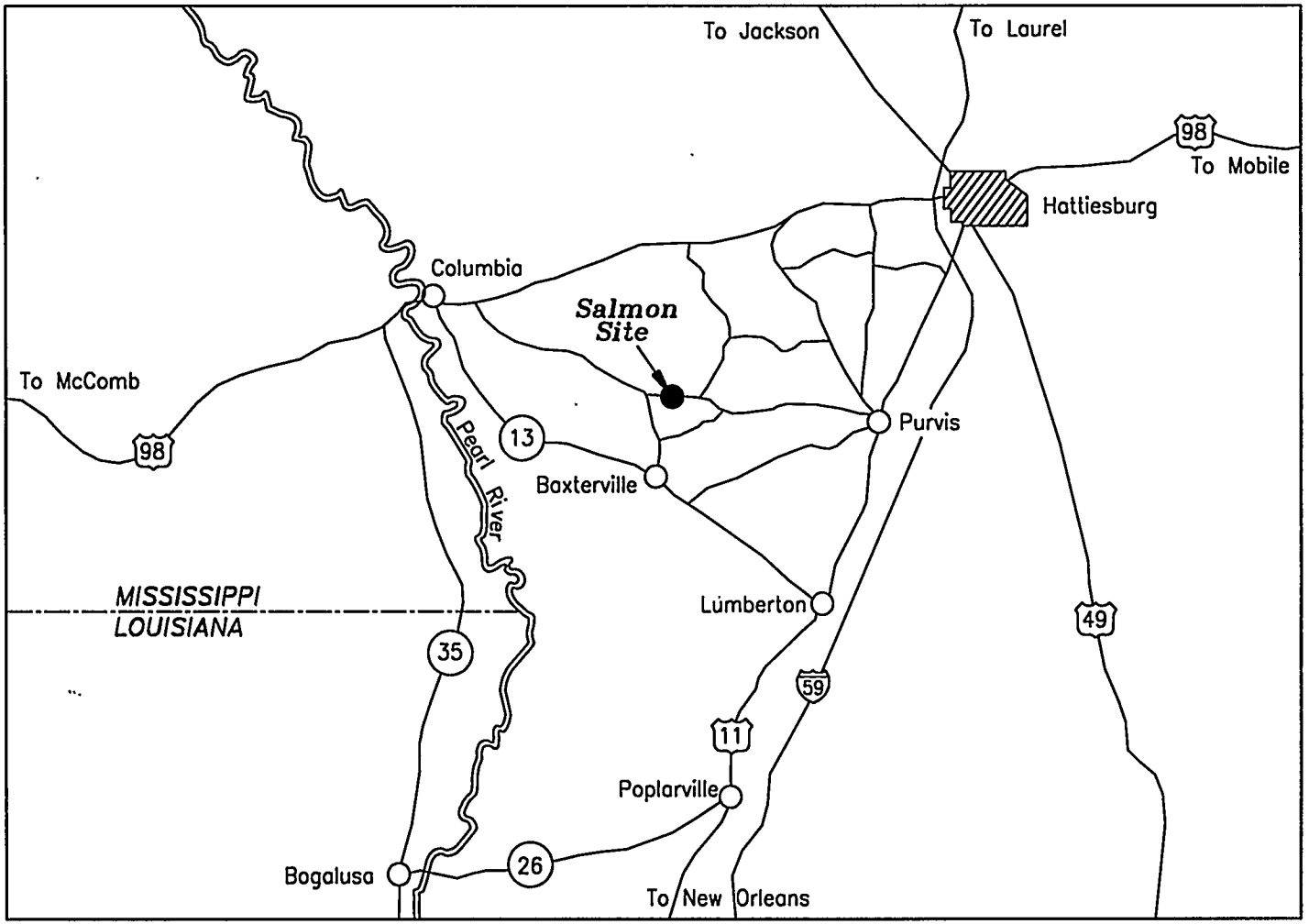


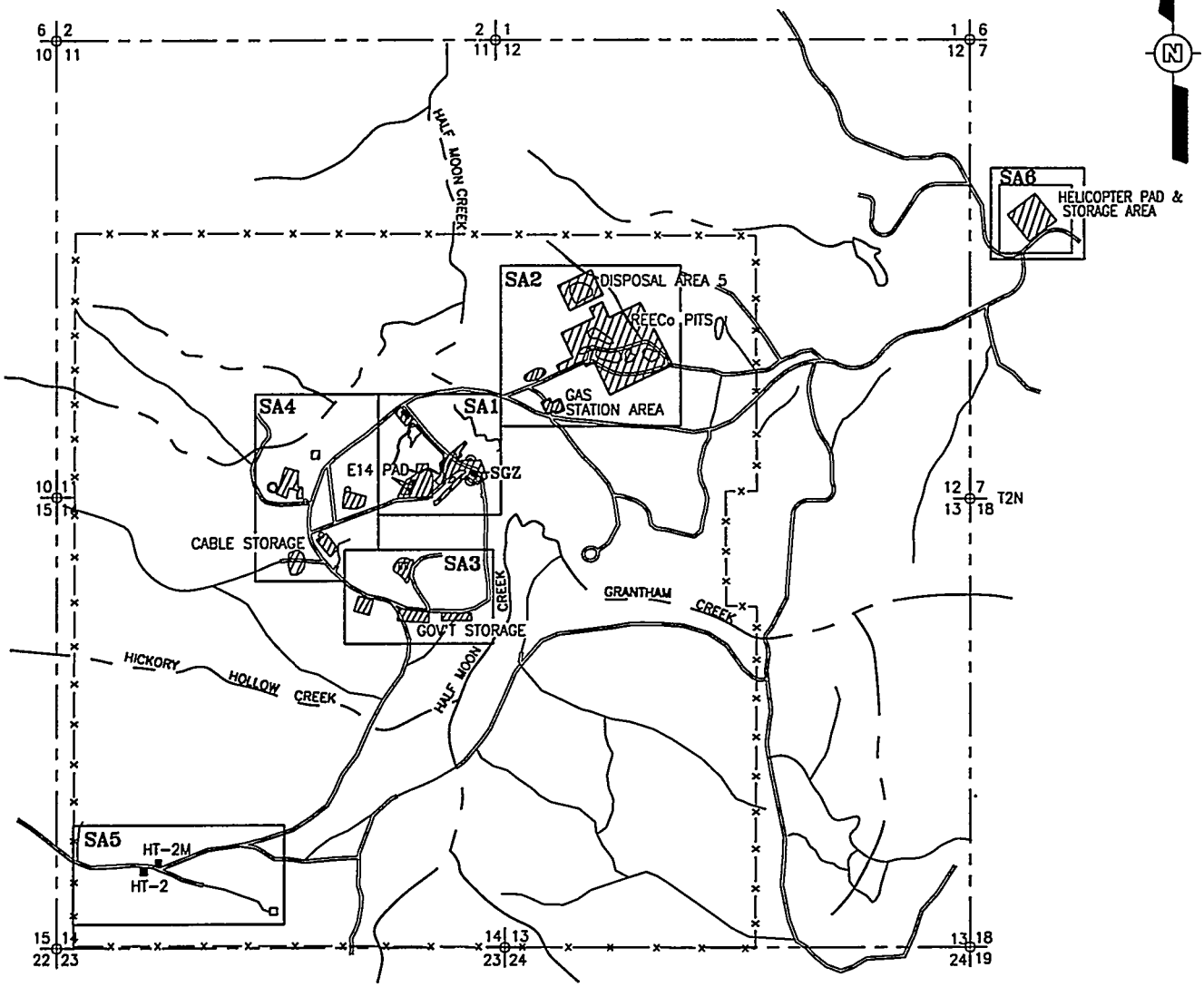
Graphic Scale

0 10 20 Miles

0 10 20 Kilometers

FIGURE B-1.1
GENERAL
LOCATION MAP OF
THE SALMON SITE

DRAWING NUMBER	301965.403.02.002	
CHECKED BY:	SAH	9/25/94
APPROVED BY:	AAC	9/26/94



SOURCE AREAS

- SA1 –SURFACE GROUND ZERO
- SA2 –REECO PITS AREA
- SA3 –SOUTHERN DISPOSAL AREA
- SA4 –WESTERN DISPOSAL AREA
- SA5 –INJECTION WELL AREA
- SA6 –HELICOPTER PAD AND STORAGE AREA

LEGEND

- SOURCE AREA BOUNDARY
- SECTION LINES
- FENCE
- GEOPHYSICAL SURVEY AREA

SCALE

0 2,000 4,000 Feet

0 600 1,200 Meters

SOURCE: DOE, 1992

FIGURE B–1.2
SALMON SITE MAP
SHOWING REECo PITS AREA

1965A38 9/20/94

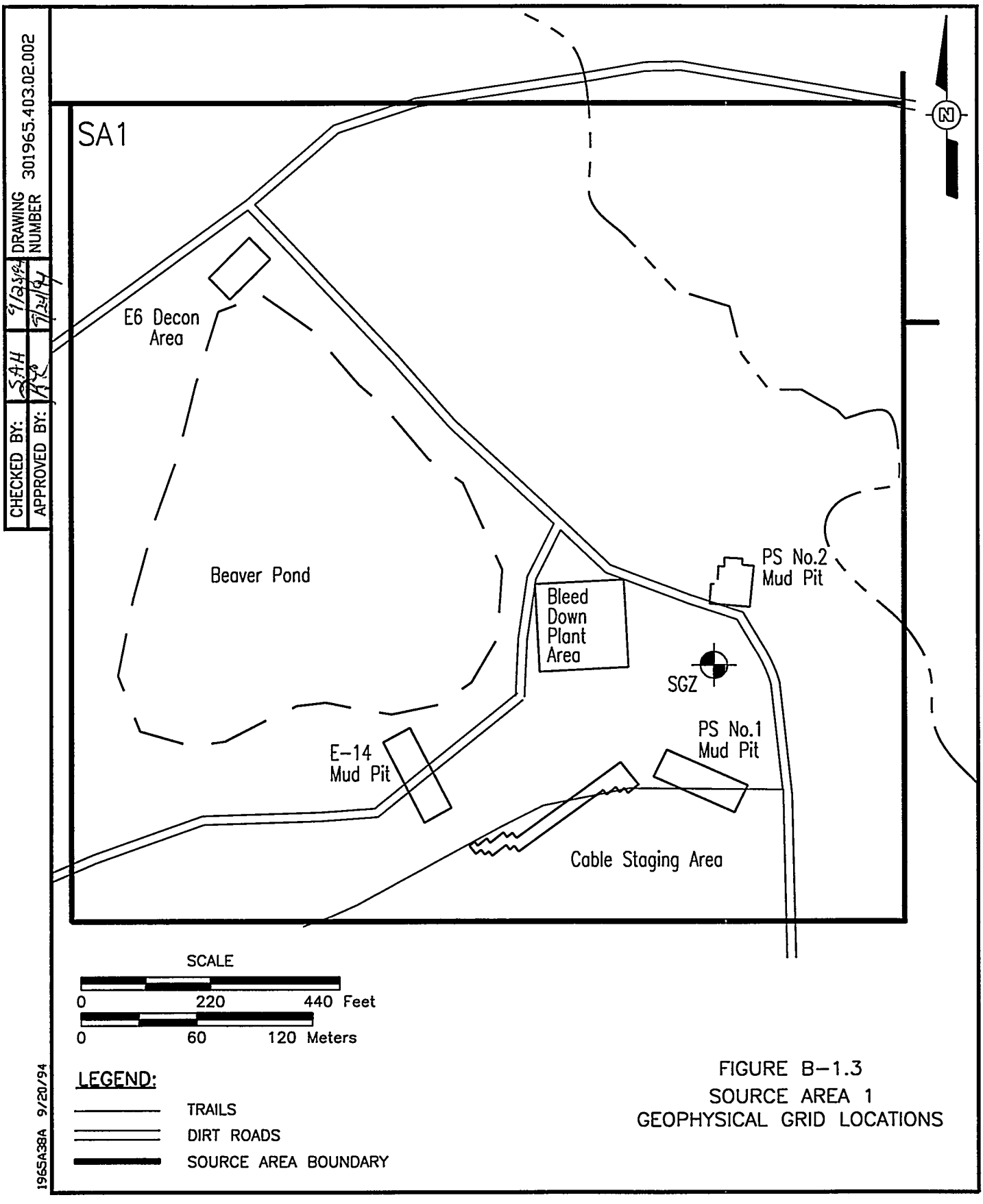


FIGURE B-1.3
SOURCE AREA 1
GEOPHYSICAL GRID LOCATIONS

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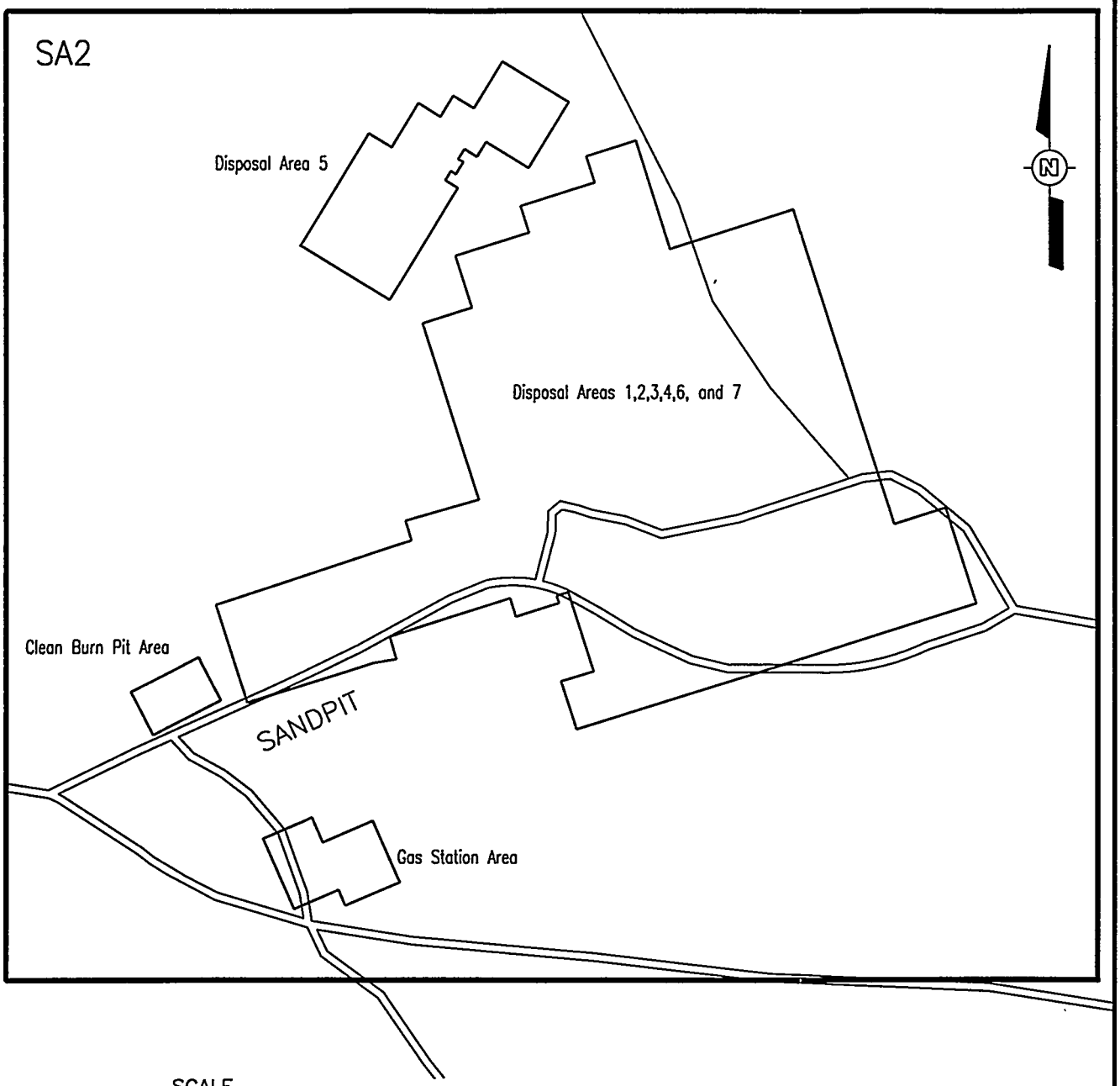
APPROVED BY:	[illegible]	9/28/94

DRAWING NUMBER 301965.403.02.002



SCALE

0 310 620 Feet

0 100 200 Meters

LEGEND:

TRAILS

DIRT ROADS

SOURCE AREA BOUNDARY

FIGURE B-1.4
SOURCE AREA 2
GEOPHYSICAL GRID LOCATIONS

1965A38B 09/20/94

1965A38C 09/20/94

CHECKED BY:	SAH	9/25/94	DRAWING NUMBER 301965.403.02.002
APPROVED BY:	FAC	9/26/94	

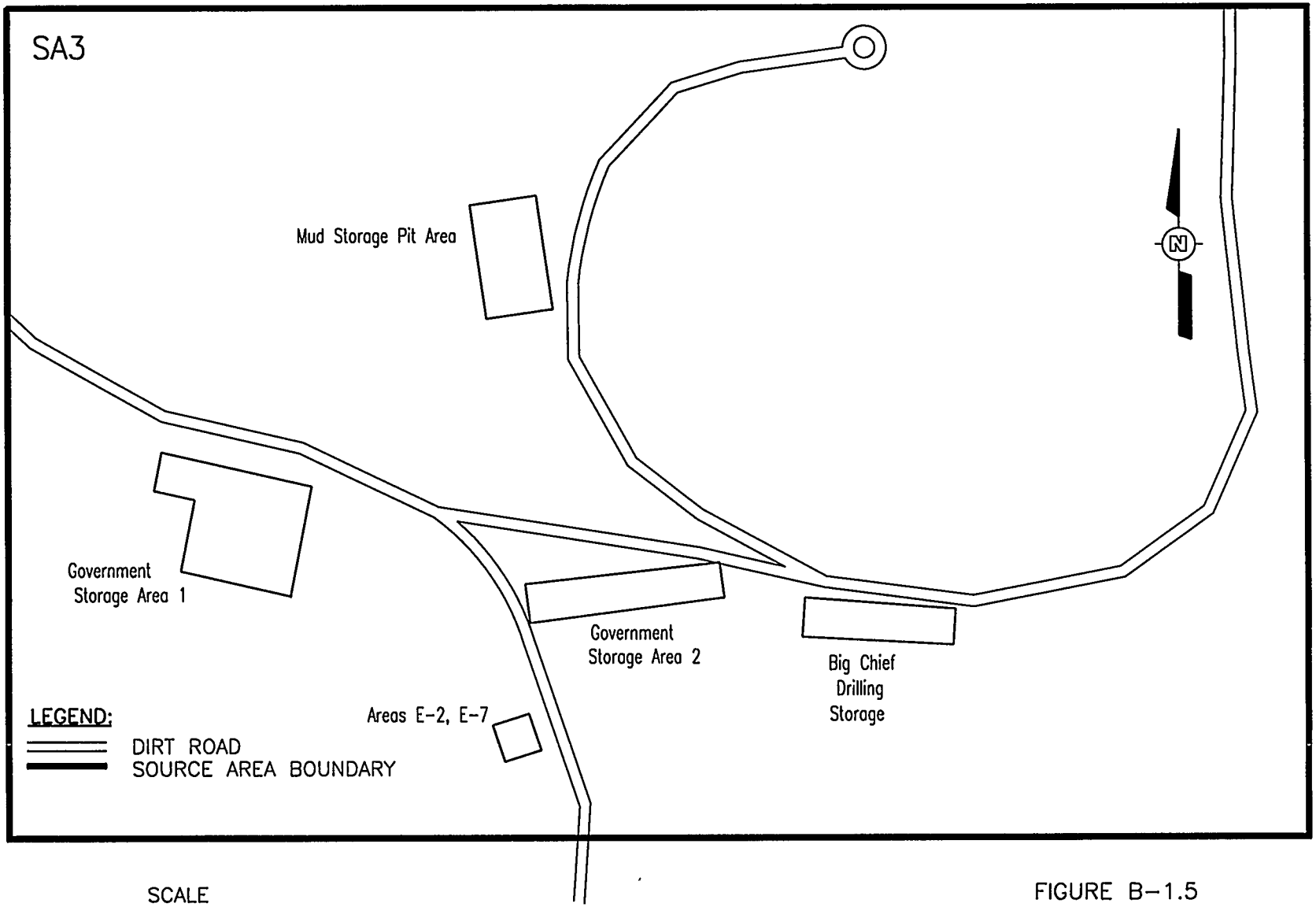
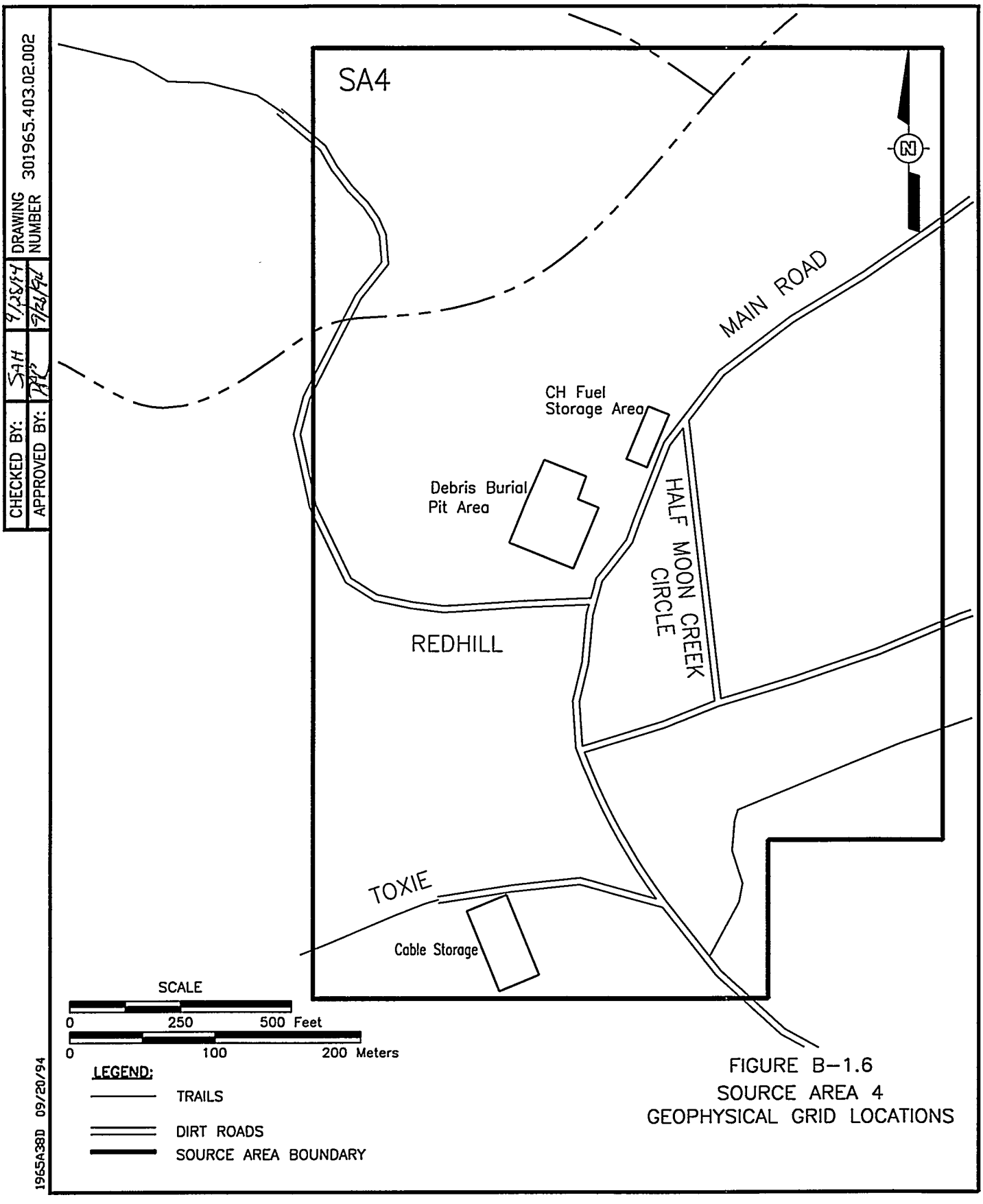


FIGURE B-1.5
SOURCE AREA 3
GEOPHYSICAL GRID LOCATIONS



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APPROVED BY:	[illegible]	9/24/94
DRAWING NUMBER	301965.403.02.002	

1965A38D 09/20/94

FIGURE B-1.6
SOURCE AREA 4
GEOPHYSICAL GRID LOCATIONS

1965A38E 09/20/94

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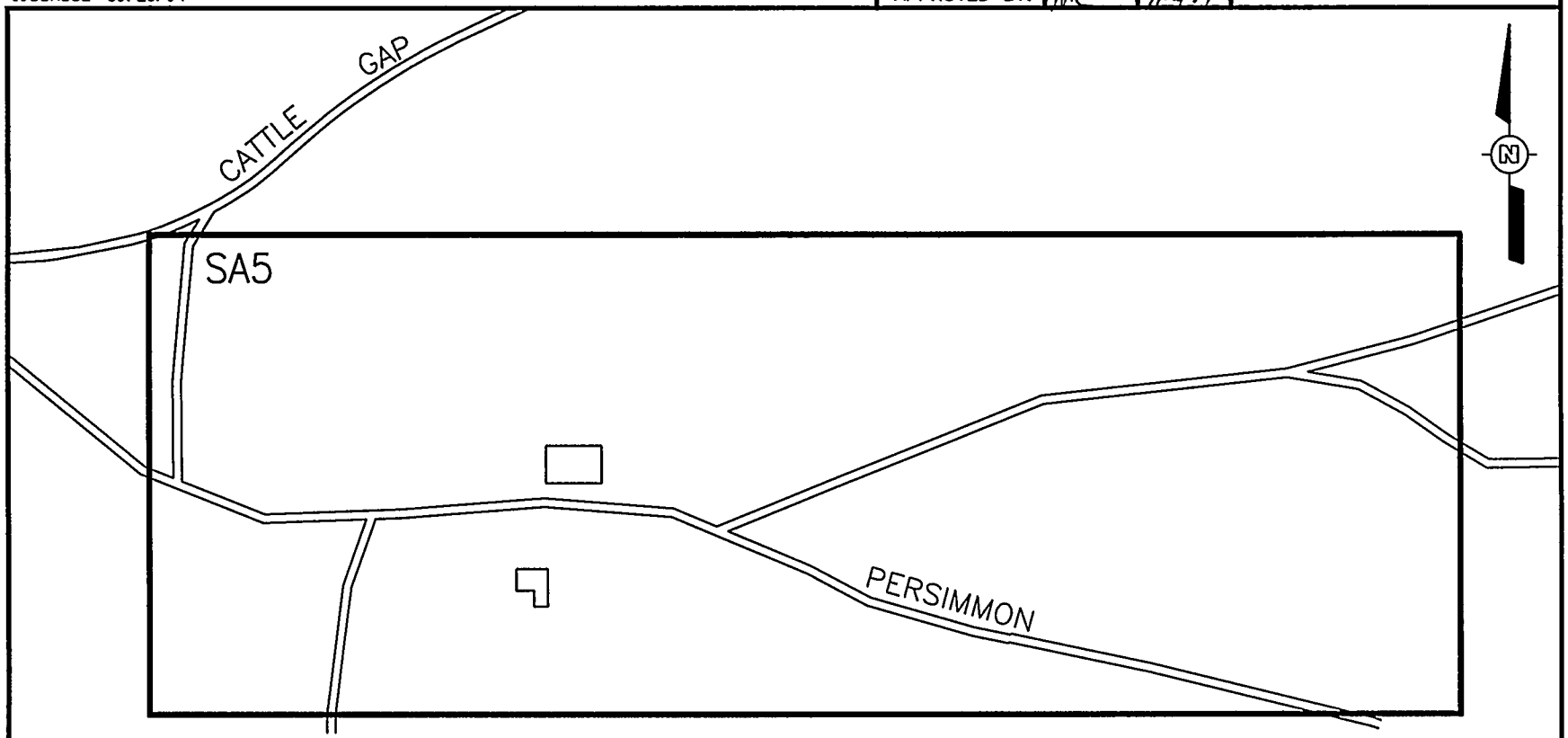
APPROVED BY:	[illegible]	9/24/94		



SCALE

0 300 600 Feet

0 90 180 Meters

LEGEND:

TRAILS

DIRT ROADS

SOURCE AREA BOUNDARY

FIGURE B-1.7
SOURCE AREA 5
GEOPHYSICAL GRID LOCATIONS

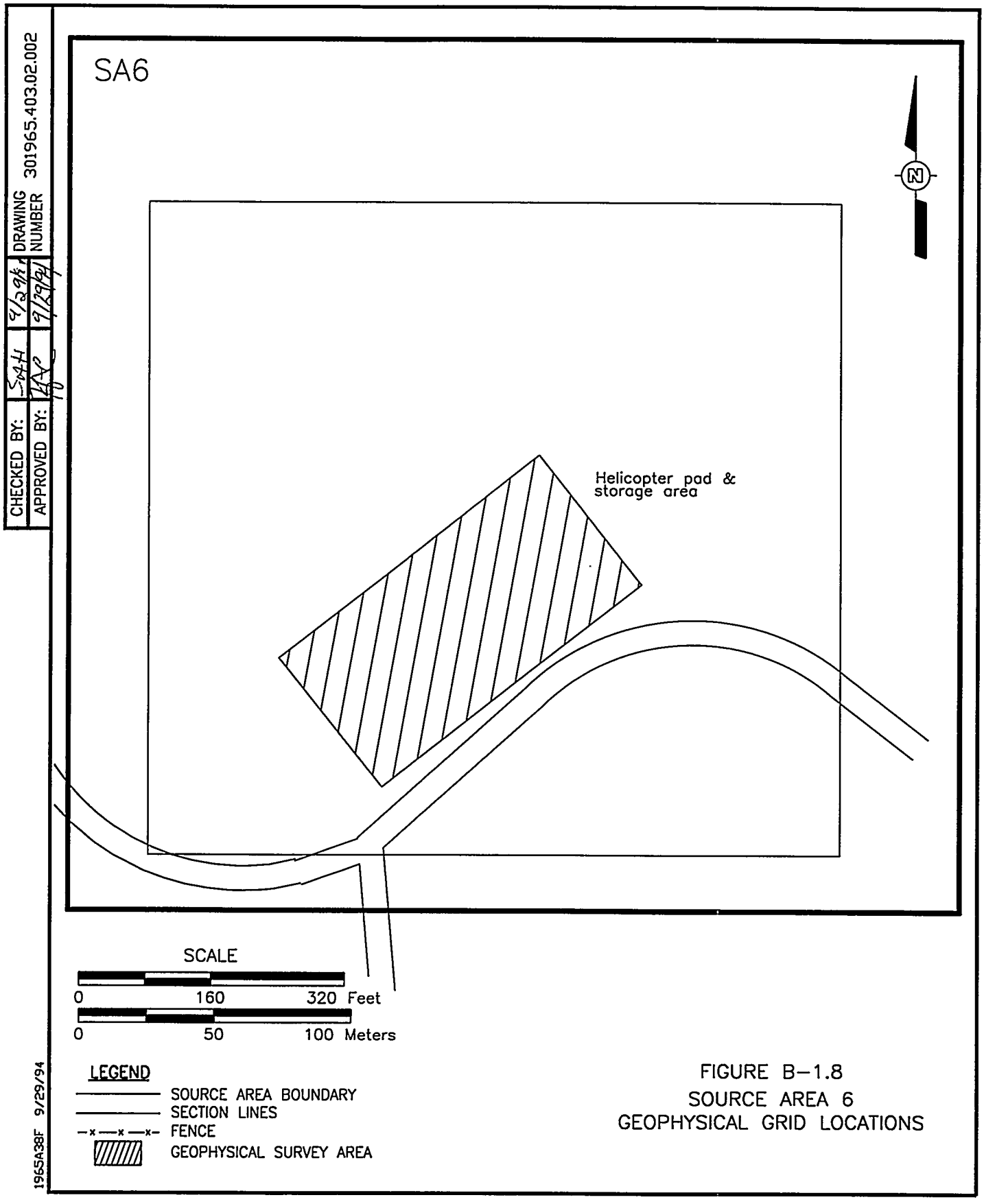
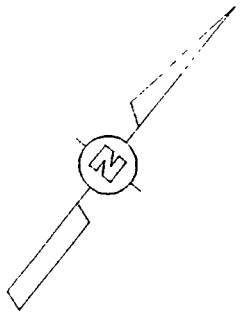
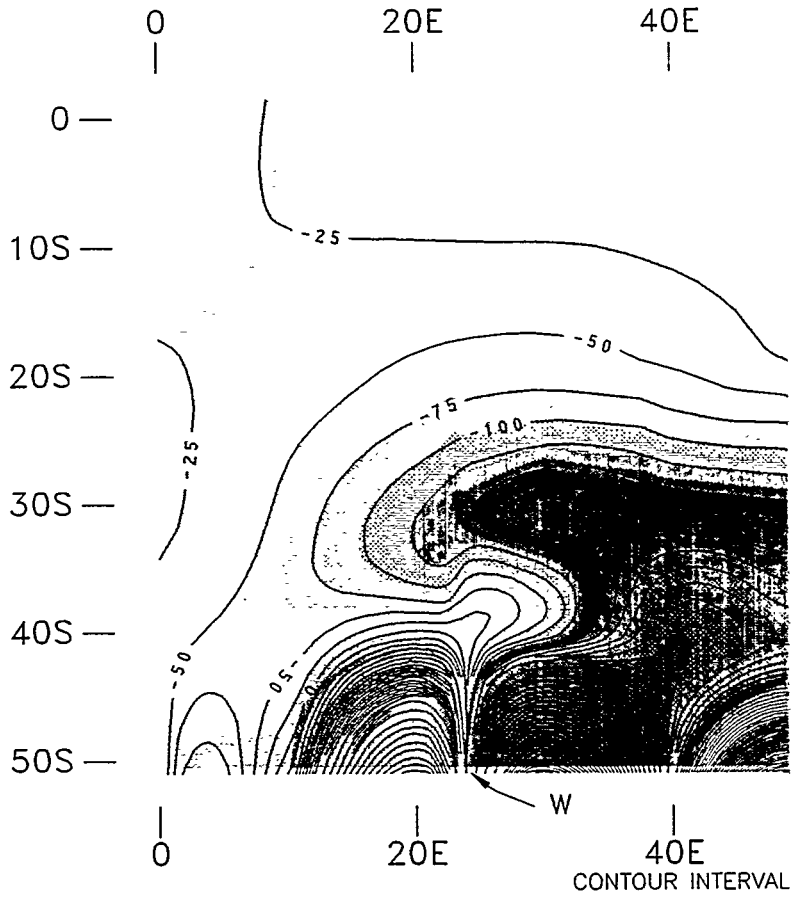


FIGURE B–1.8
SOURCE AREA 6
GEOPHYSICAL GRID LOCATIONS

DRAWING NUMBER 301965-B15

CHECKED BY	SAH 9-20-94
APPROVED BY	9/20/94

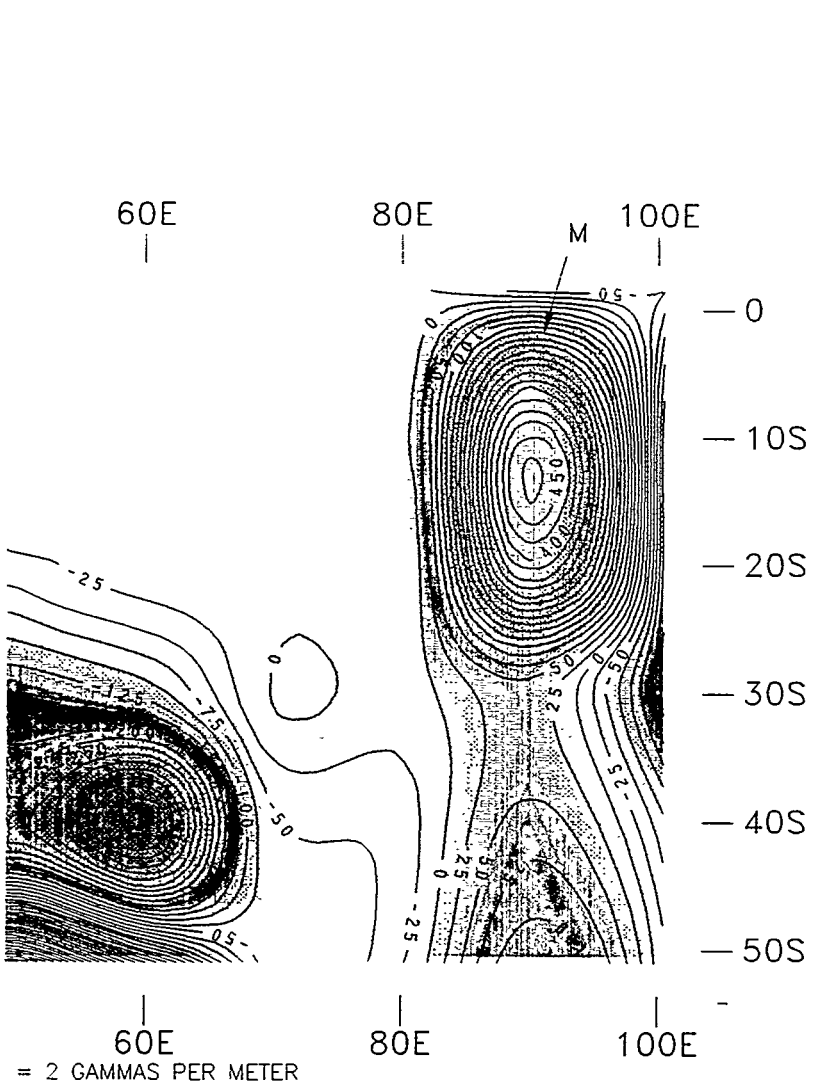




SCALE

0 15 30 Feet

0 5 10 Meters



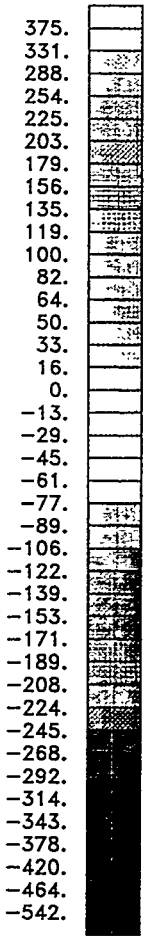


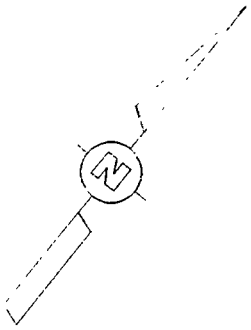
FIGURE B-2.1
SOURCE AREA 1
E-6 DECON AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

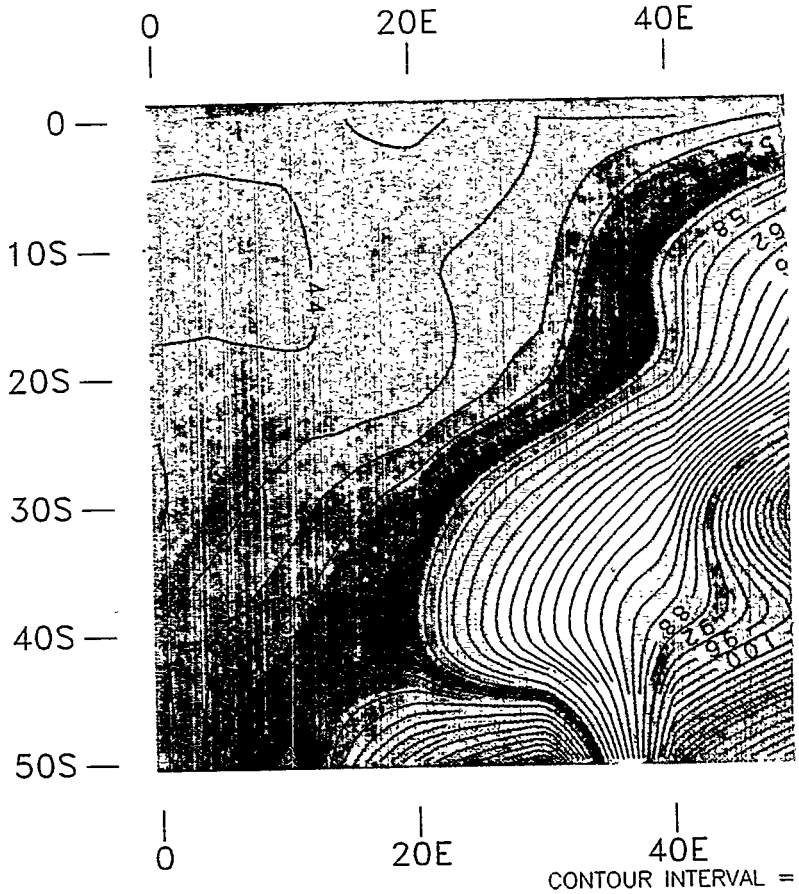
LEGEND

M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

W – ANOMALY ATTRIBUTED TO ABANDONED WELL CASING

CHECKED BY	SAH	9-20-94	DRAWING NUMBER 301965 B16
APPROVED BY	[illegible]	9/20/94	

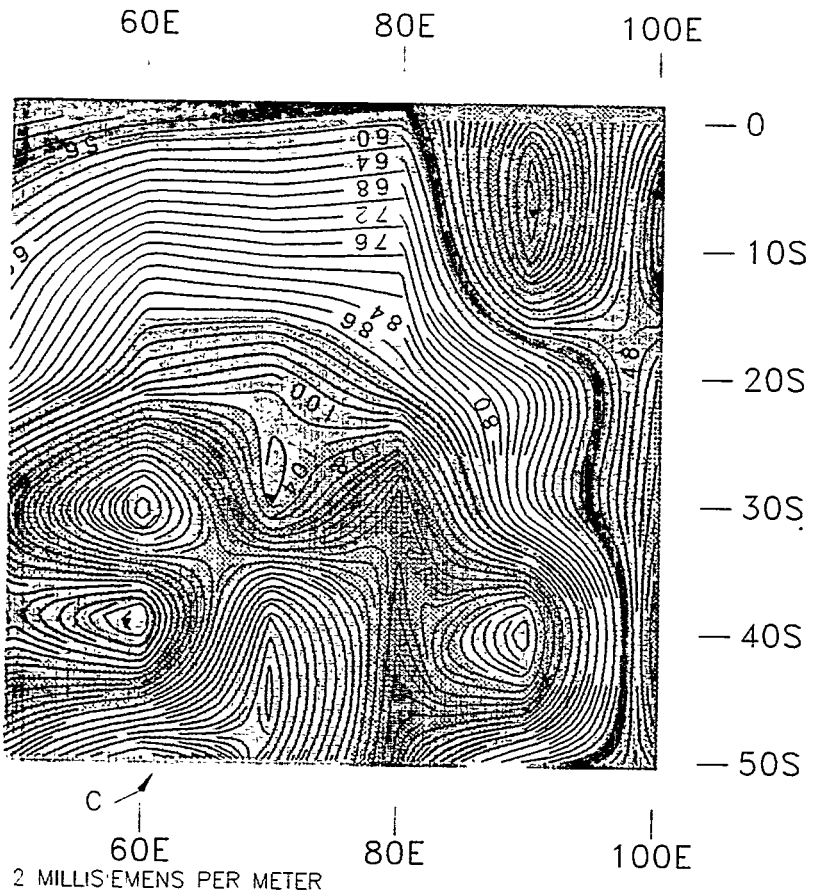




SCALE

0 15 30 Feet

0 5 10 Meters



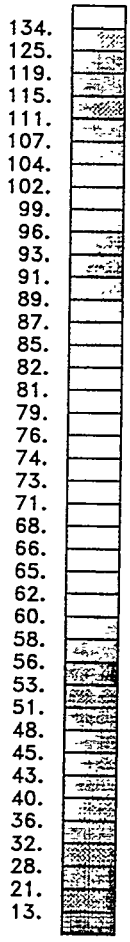


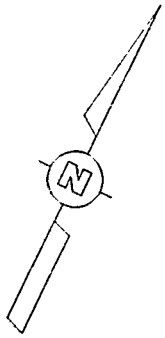
FIGURE B-2.2
SOURCE AREA 1
E-6 DECON AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

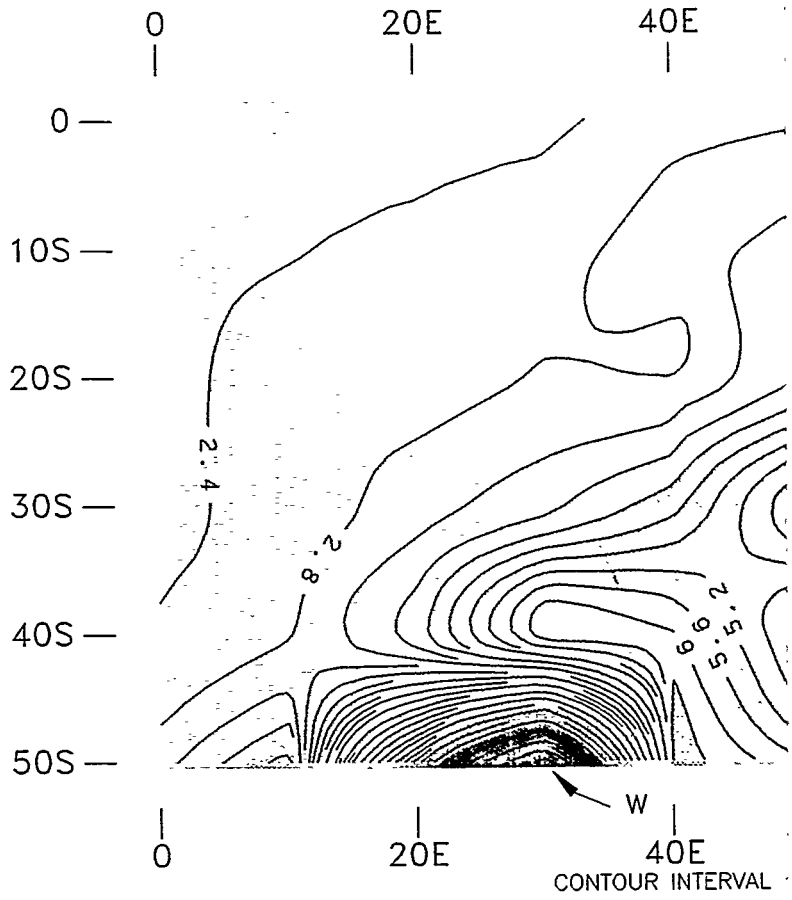
LEGEND

C – AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	SAH	9-20-94
APPROVED BY	[signature]	9/20/94

DRAWING NUMBER 301965-B17

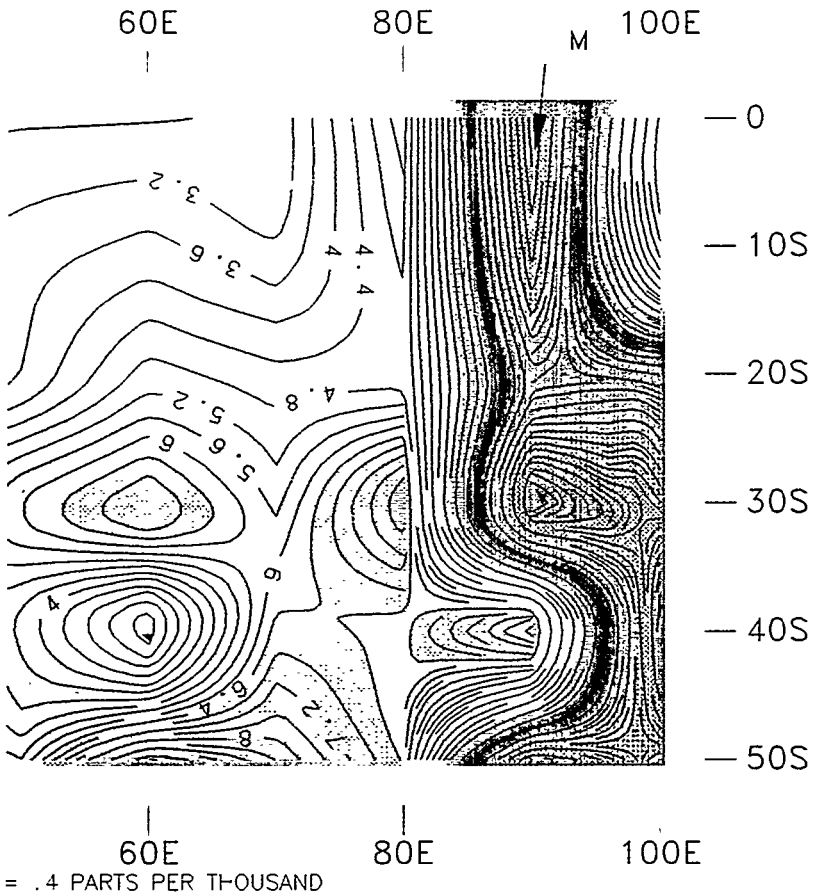


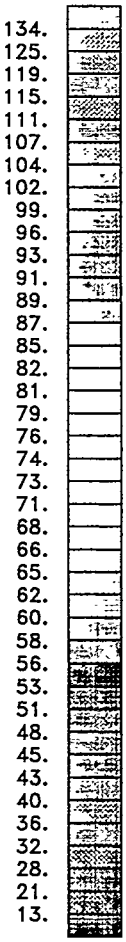


SCALE

0 15 30 Feet

0 5 10 Meters





= .4 PARTS PER THOUSAND

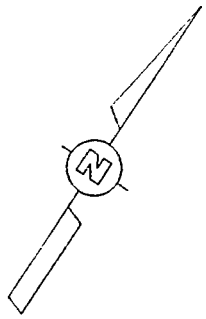
FIGURE B-2.3
SOURCE AREA 1
E-6 DECON AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

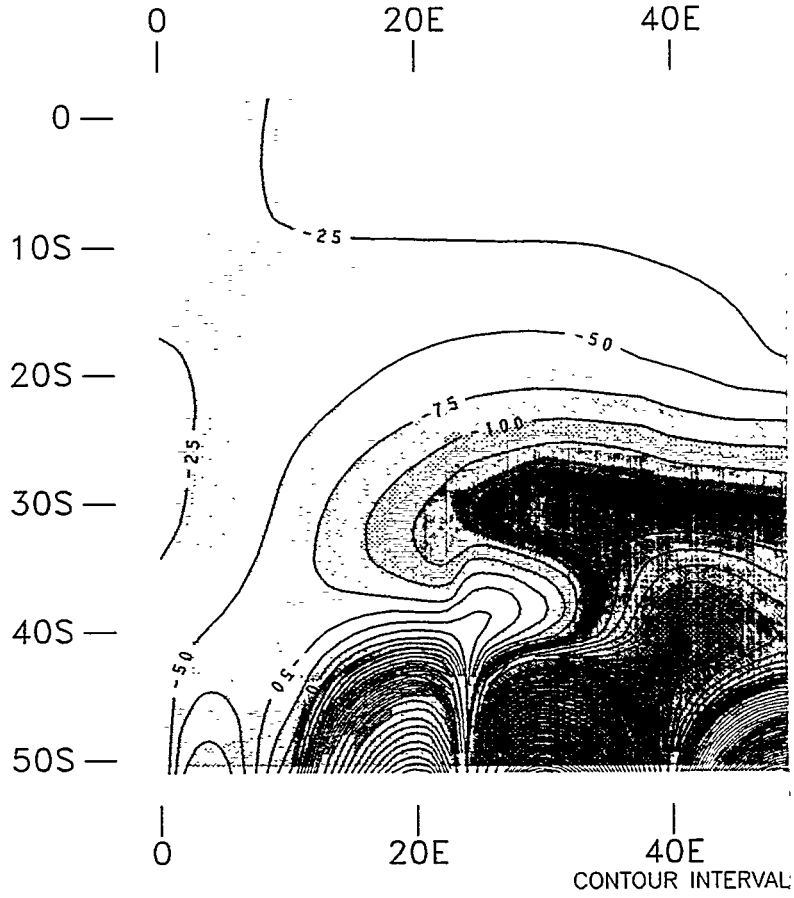
LEGEND

M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

W – ANOMALY ATTRIBUTED TO ABANDONED WELL CASING

DRAWING NUMBER	301965-B85
	9-30-94
CHECKED BY	RSAH
APPROVED BY	

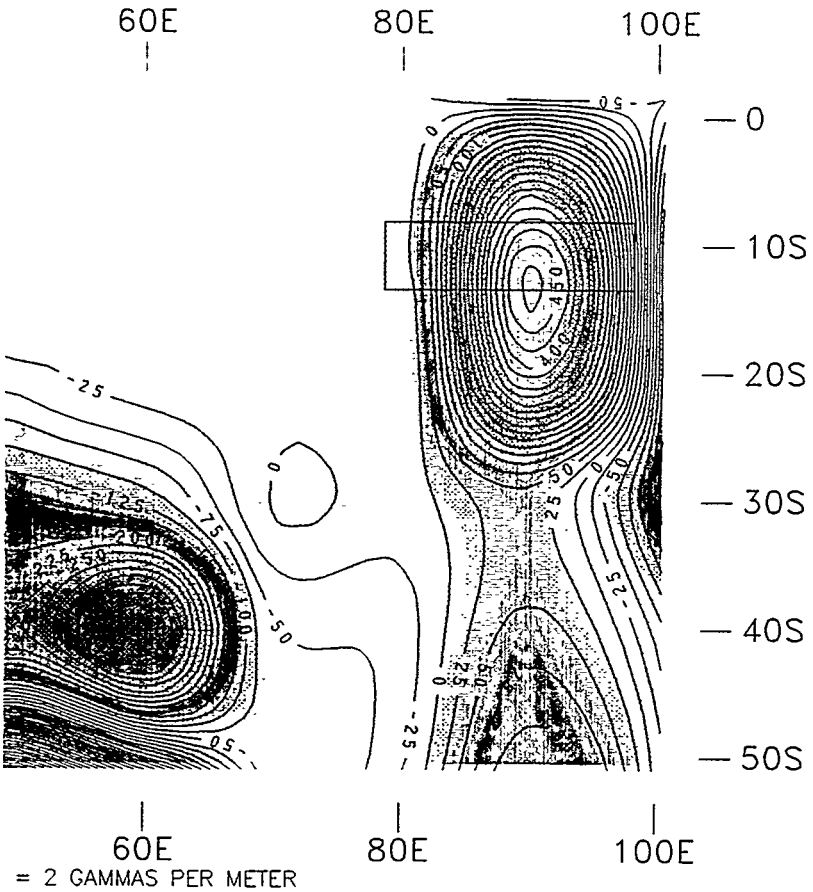




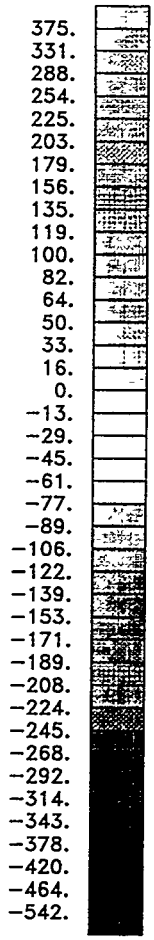
SCALE

0 15 30 Feet

0 5 10 Meters



= 2 GAMMAS PER METER



LEGEND

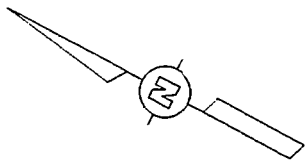
▭ – RECOMMENDED TEST PIT LOCATION

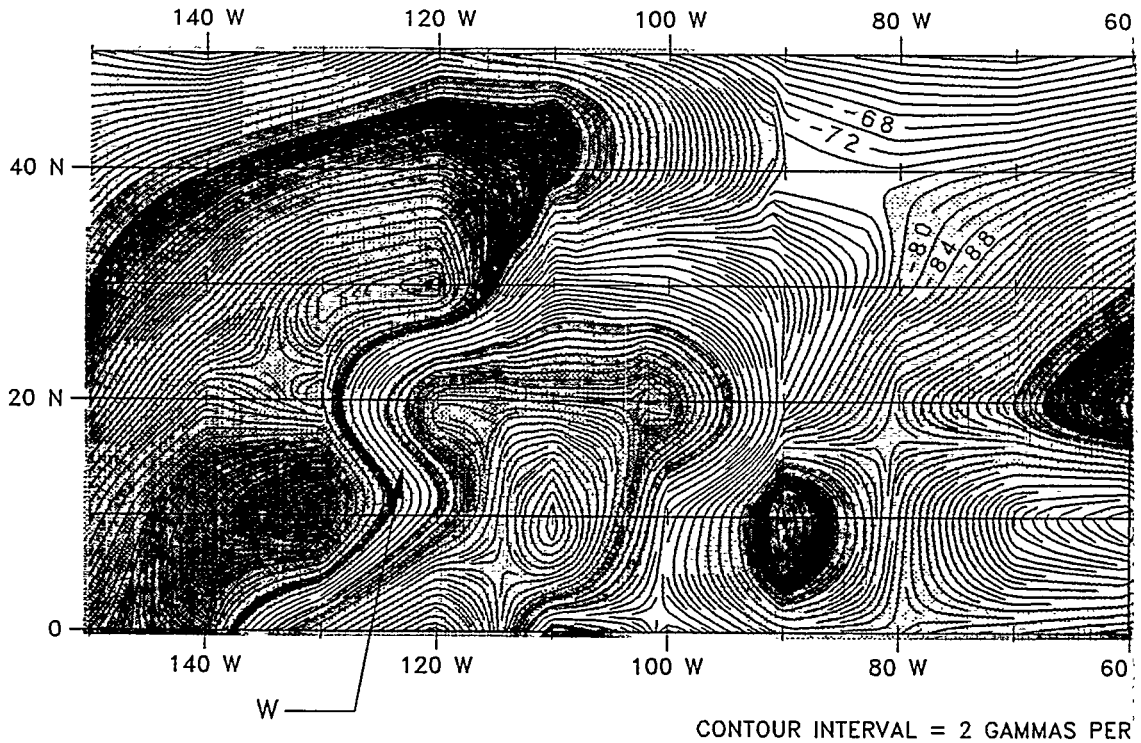
FIGURE B-2.4

SOURCE AREA 1

E-6 DECON AREA
RECOMMENDED TEST
PIT LOCATION
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWING NUMBER	301965-B18	
	9-26-94	
CHECKED BY	SAH	
APPROVED BY	9/26/94	



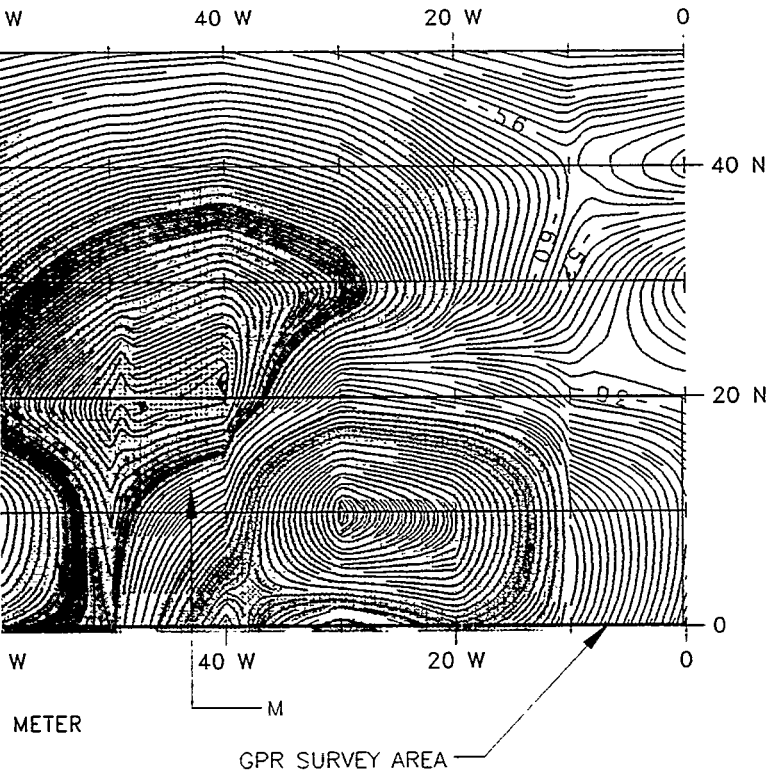


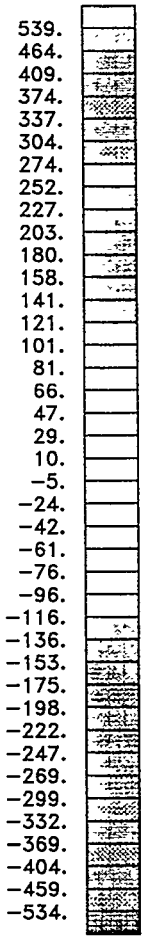
CONTOUR INTERVAL = 2 GAMMAS PER

SCALE

0 15 30 Feet

0 5 10 Meters





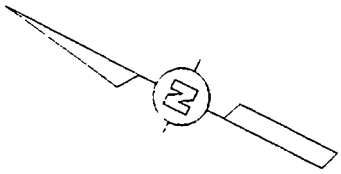
LEGEND

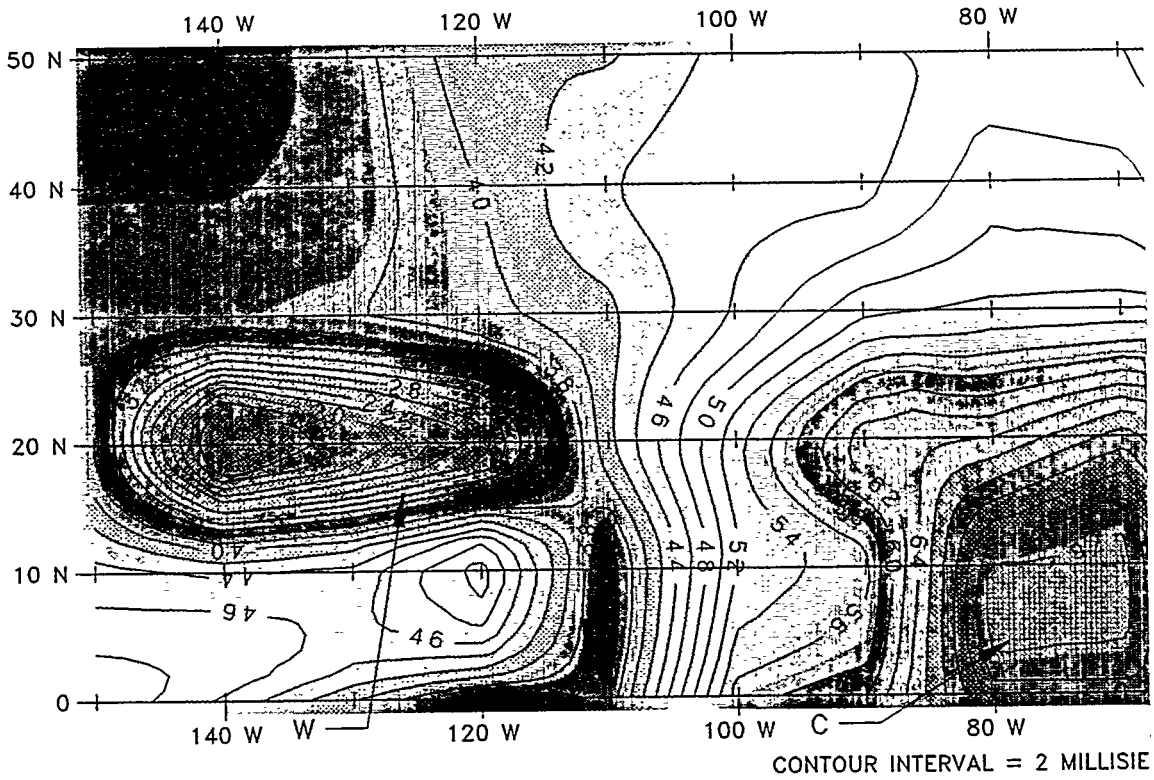
M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

W – ANOMALY ATTRIBUTED TO ABANDONED WELL E-14

FIGURE B-3.1
SOURCE AREA 1
E-14 MUD PITS AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWING NUMBER	301965-B19
	9-20-94
CHECKED BY	RSA H
APPROVED BY	9/20/94



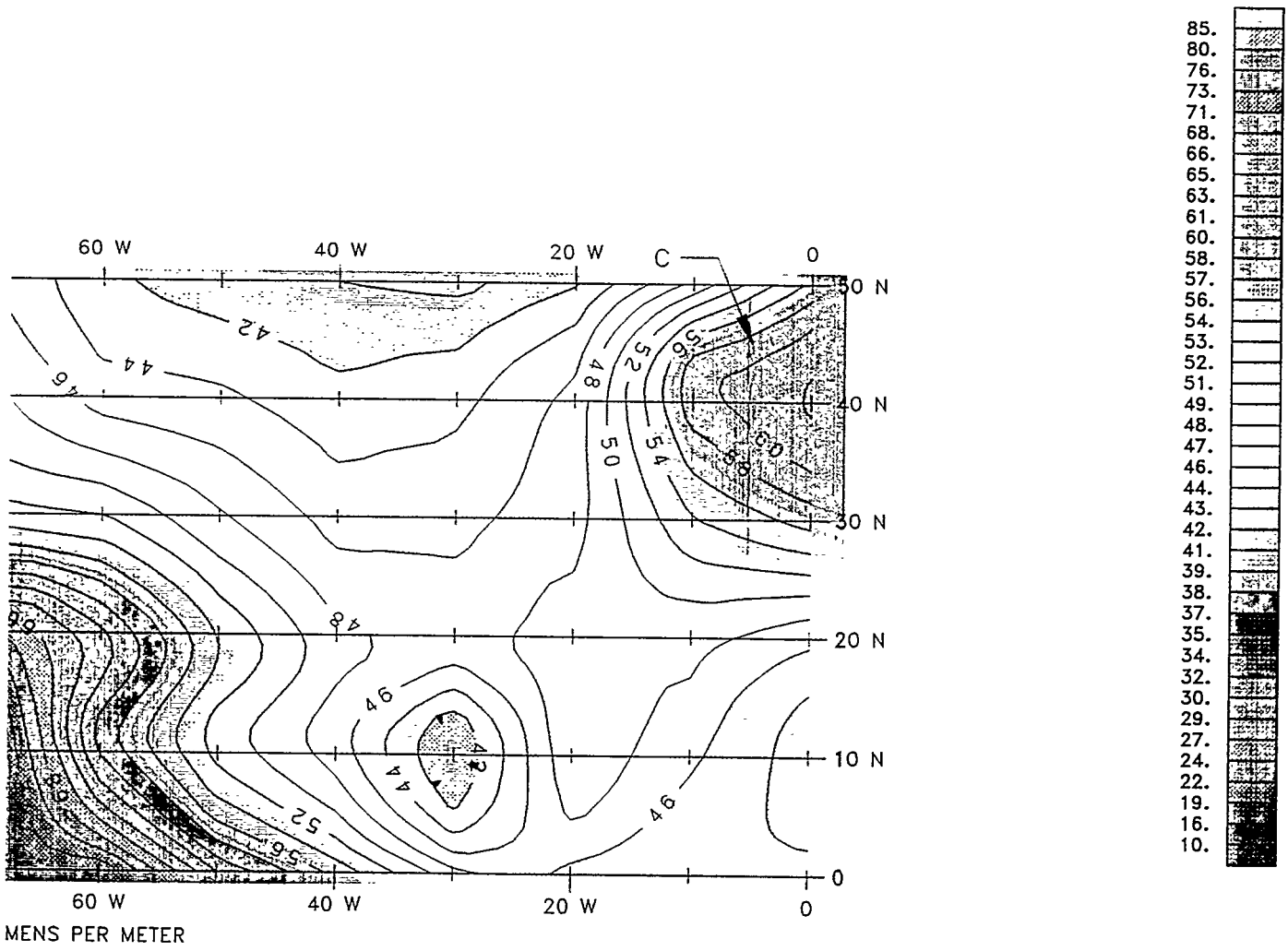


CONTOUR INTERVAL = 2 MILLISIE

SCALE

0 15 30 Feet

0 5 10 Meters



MENS PER METER

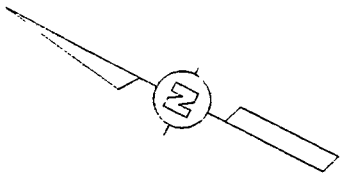
FIGURE B-3.2
SOURCE AREA 1
E-14 MUD PITS AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

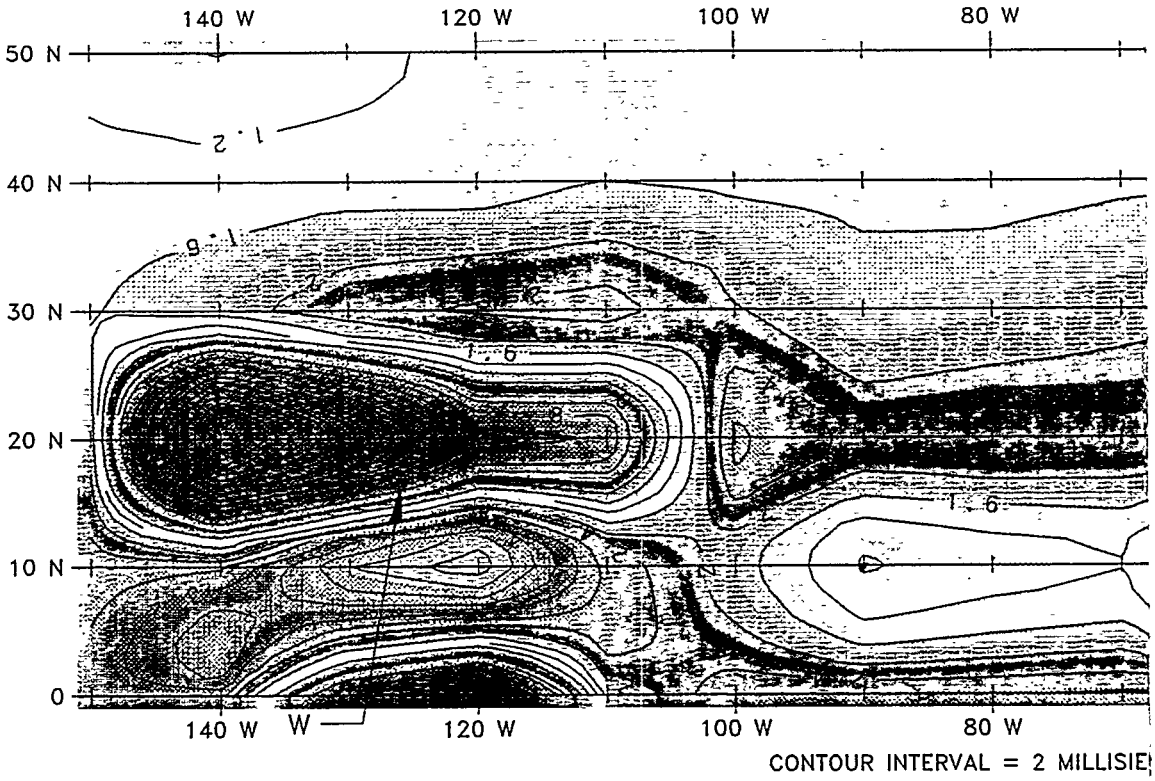
LEGEND

C - AREAS OF ELEVATED CONDUCTIVITY

W - ANOMALY ATTRIBUTED TO ABANDONED WELL E-14

DRAWING NUMBER	301965-B20
	9-22-94
CHECKED BY	SAH
APPROVED BY	9/20/94





CONTOUR INTERVAL = 2 MILLISIE

SCALE

0 15 30 Feet

0 5 10 Meters

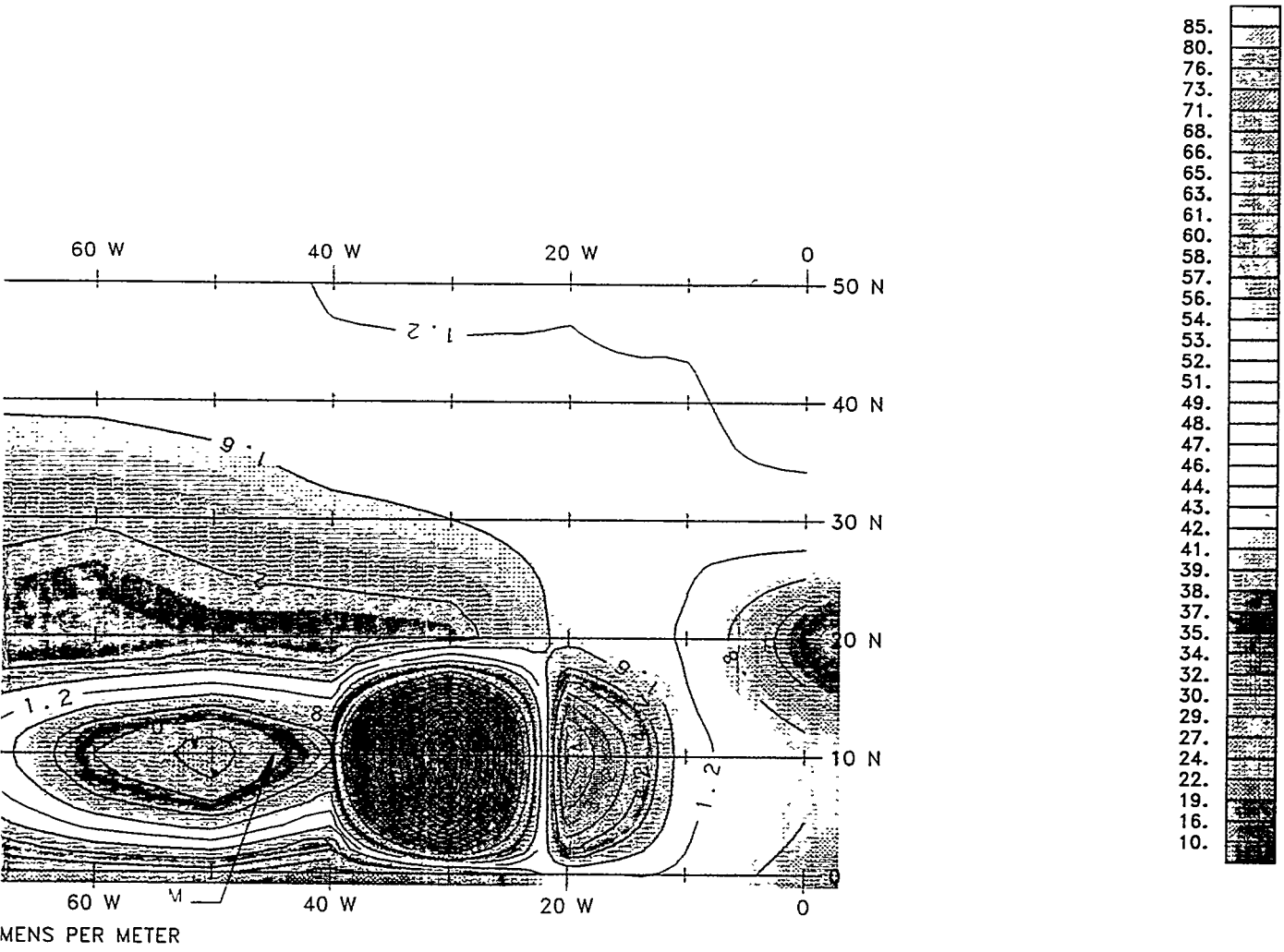


FIGURE B-3.3
SOURCE AREA 1
E-14 MUD PITS AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

M – MAGNETIC AND IN-PHASE COMPONENT ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

W – ANOMALY ATTRIBUTED TO ABANDONED WELL E-14

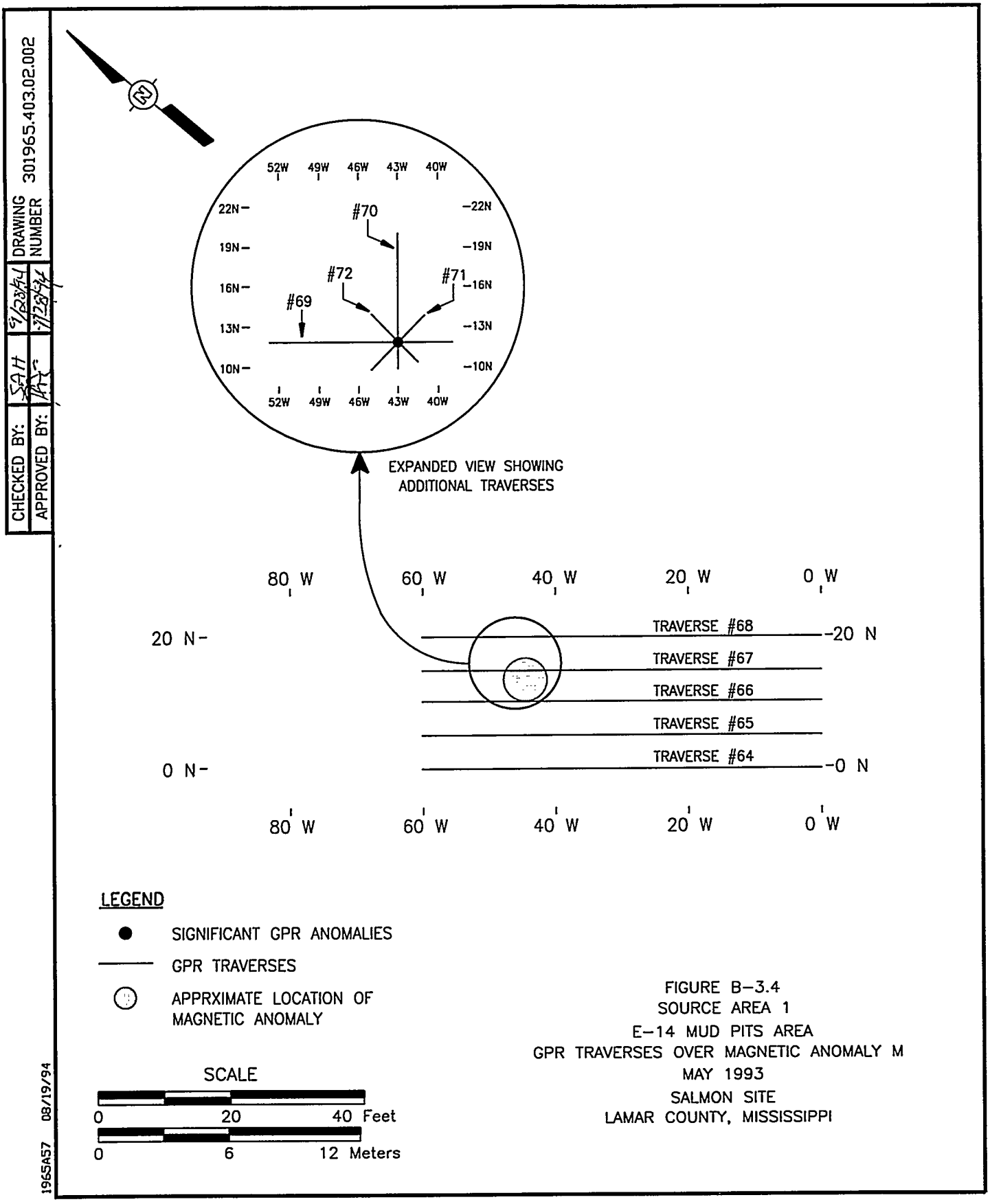
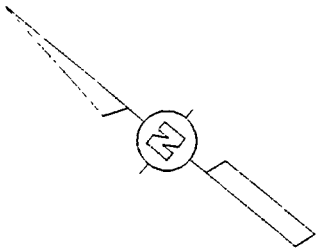
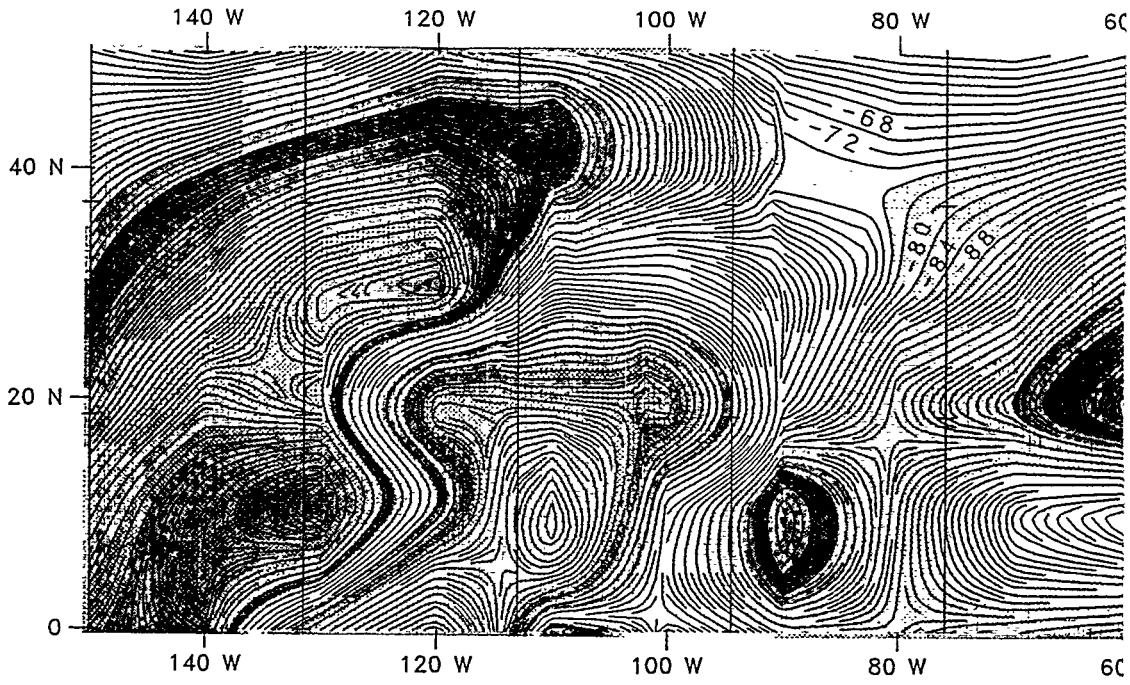


FIGURE B–3.4
SOURCE AREA 1
E–14 MUD PITS AREA
GPR TRAVERSES OVER MAGNETIC ANOMALY M
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

CHECKED BY	SAH	9-20-94
APPROVED BY	[illegible]	9/20/94
DRAWING NUMBER	301965-B86	



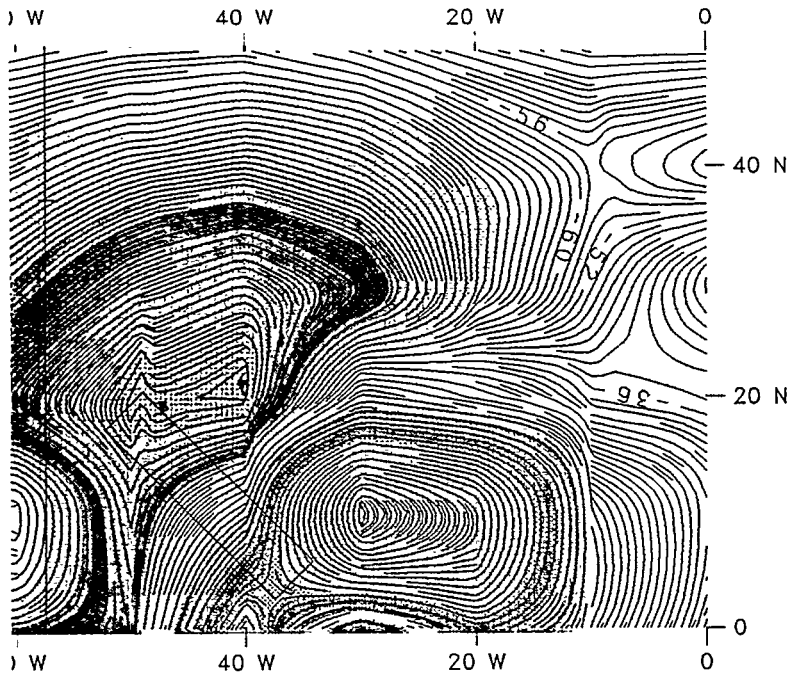


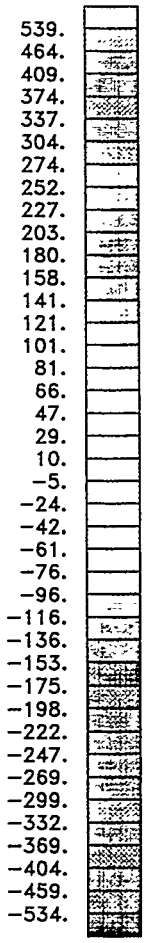
CONTOUR INTERVAL = 2 GAMMAS PE

SCALE

0 17 34 Feet

0 6 12 Meters





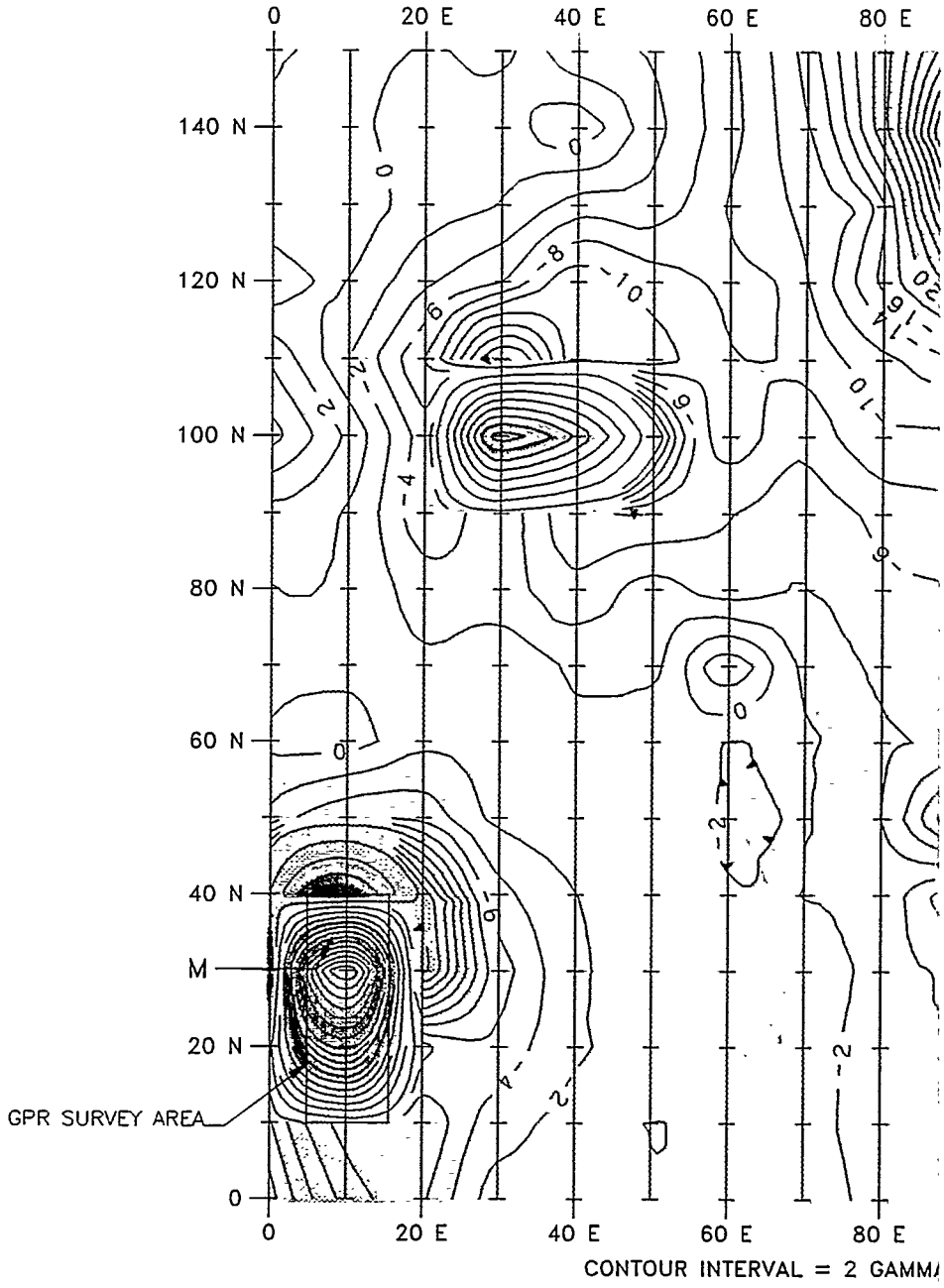
R METER

FIGURE B-3.5
SOURCE AREA 1
E-14 MUD PITS AREA
RECOMMENDED TEST
PIT LOCATION
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

▭ – RECOMMENDED TEST PIT LOCATION

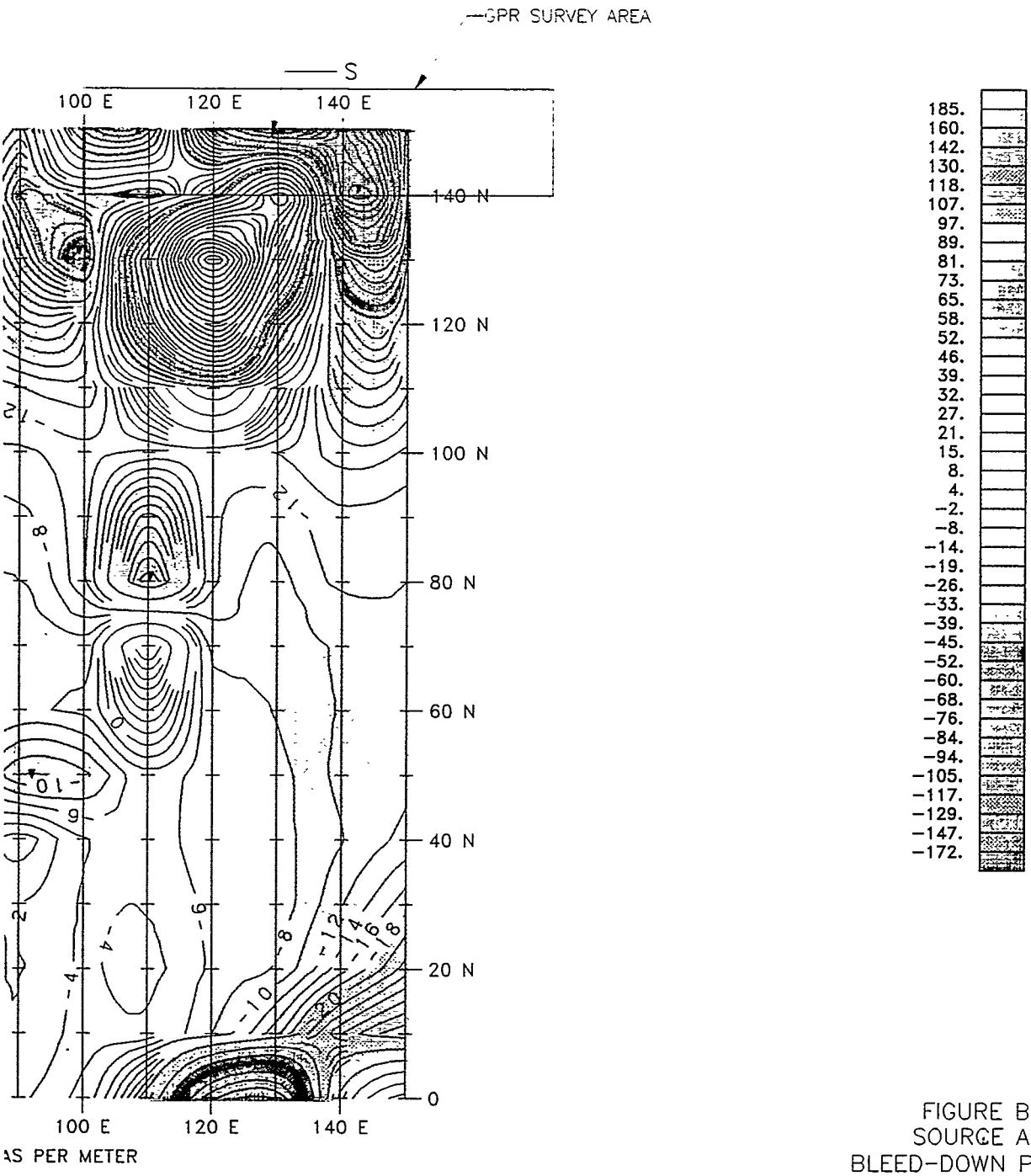
DRAWING NUMBER	301965-B21	
	9-20-94	
CHECKED BY	SAH	
APPROVED BY	9/20/94	



SCALE

0 25 50 Feet

0 8 16 Meters



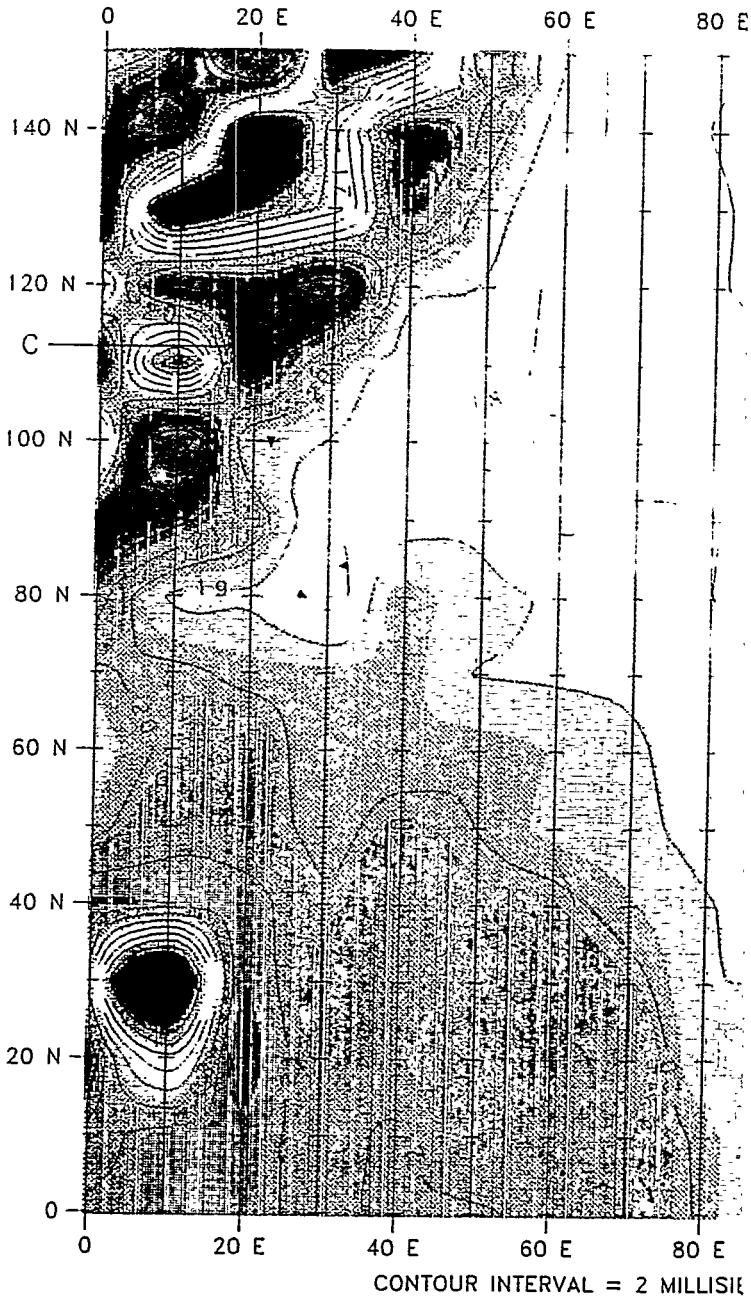
LEGEND

S – ANOMALY ATTRIBUTED TO BURIED STEEL CULVERT

M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

▭ – GPR SURVEY AREA

FIGURE B-4.1
SOURCE AREA 1
BLEED-DOWN PLANT AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI



SCALE

0 25 50 Feet

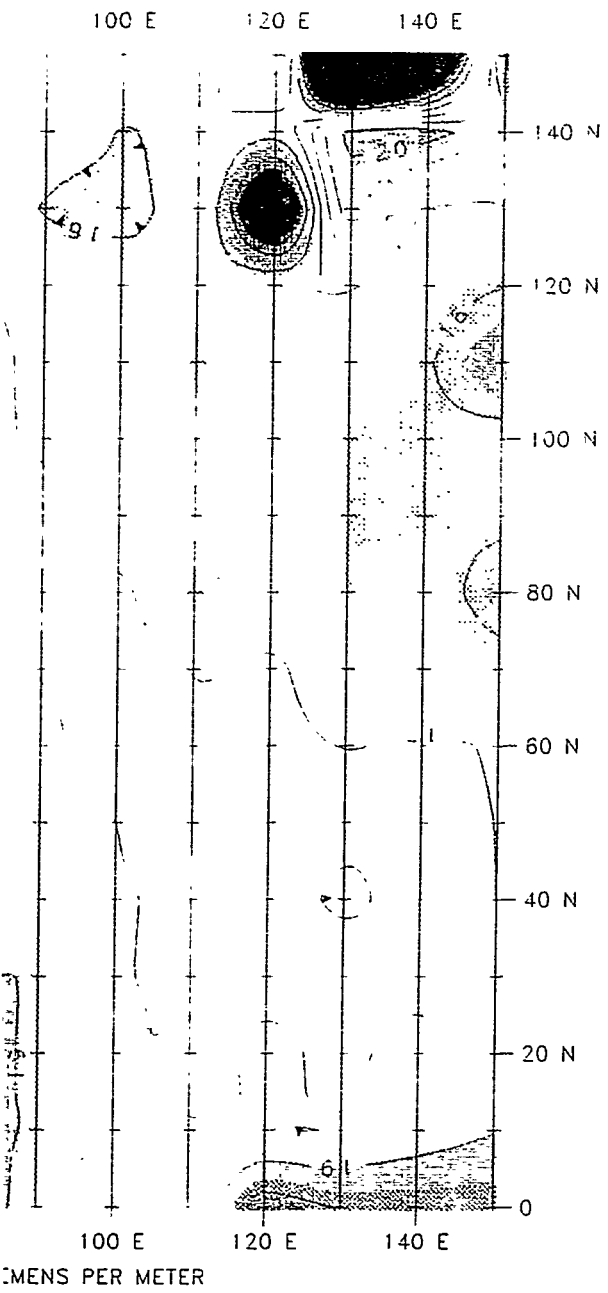
0 8 16 Meters

CHECKED BY
APPROVED BY

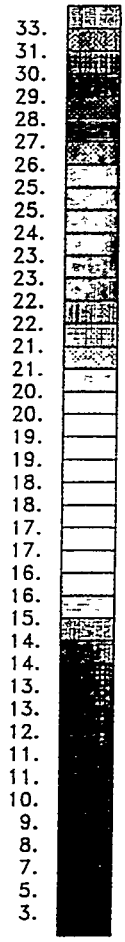
SAH

9-20-74
9/20/74

DRAWING NUMBER 3011965-B



CMENS PER METER

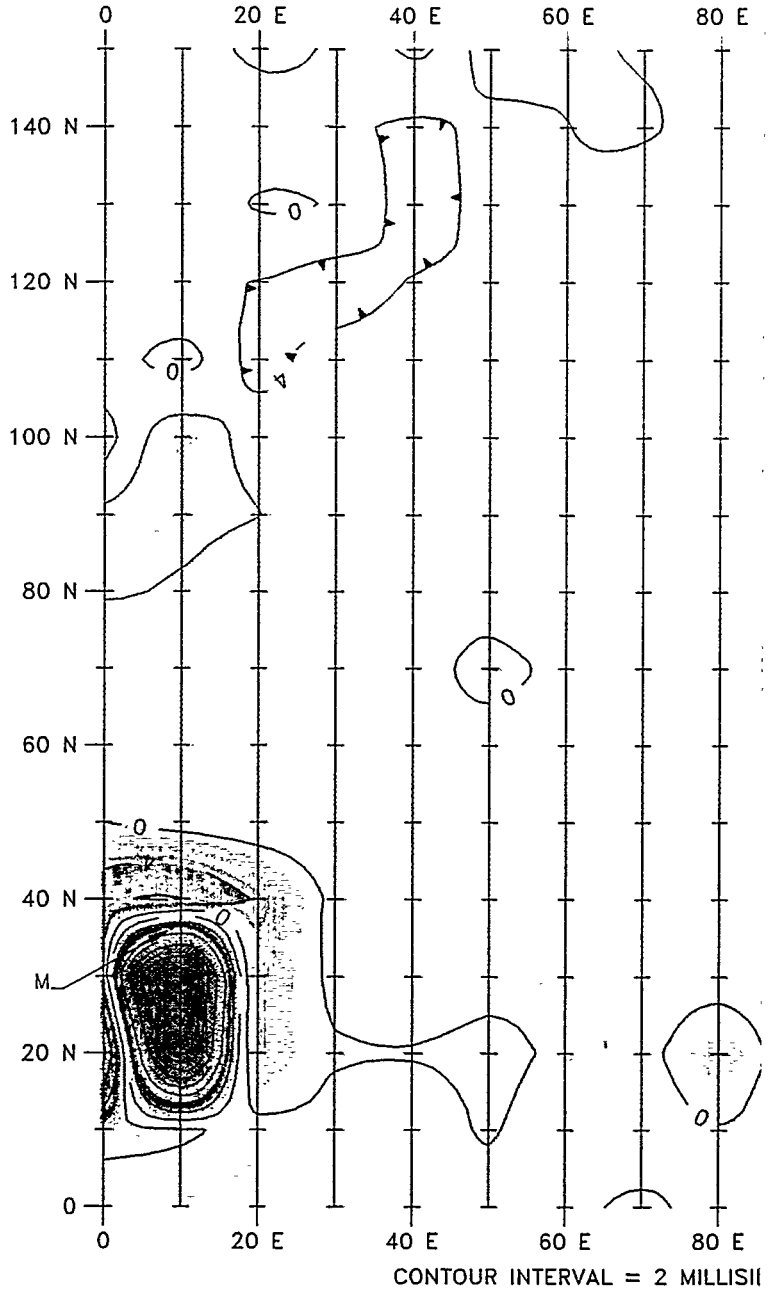


LEGEND

- AREA OF ELEVATED CONDUCTIVITY

FIGURE B-4.2
SOURCE AREA 1
BLEED-DOWN PLANT AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISS

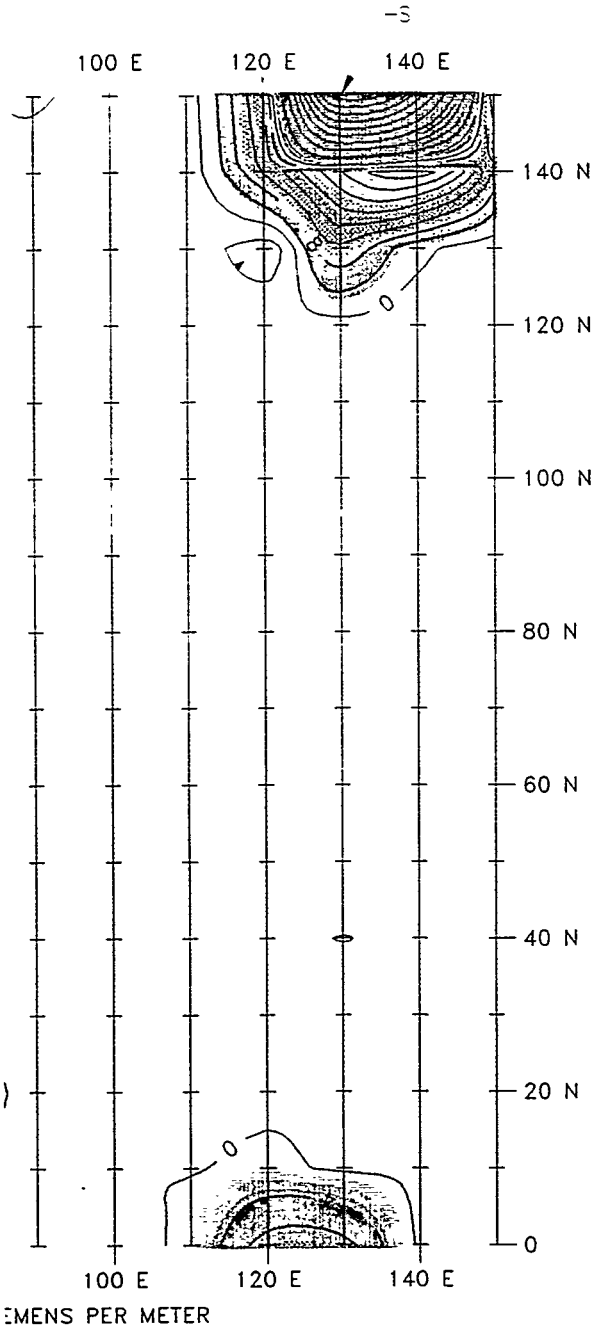
CHECKED BY	SAH	9-20-94	DRAWING NUMBER 301965-B23
APPROVED BY		9/20/94	

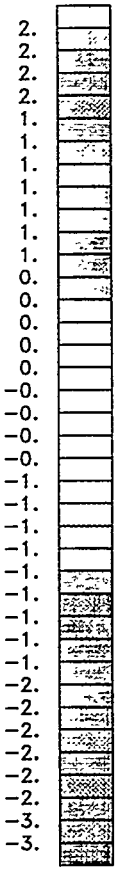


SCALE

0 25 50 Feet

0 8 16 Meters



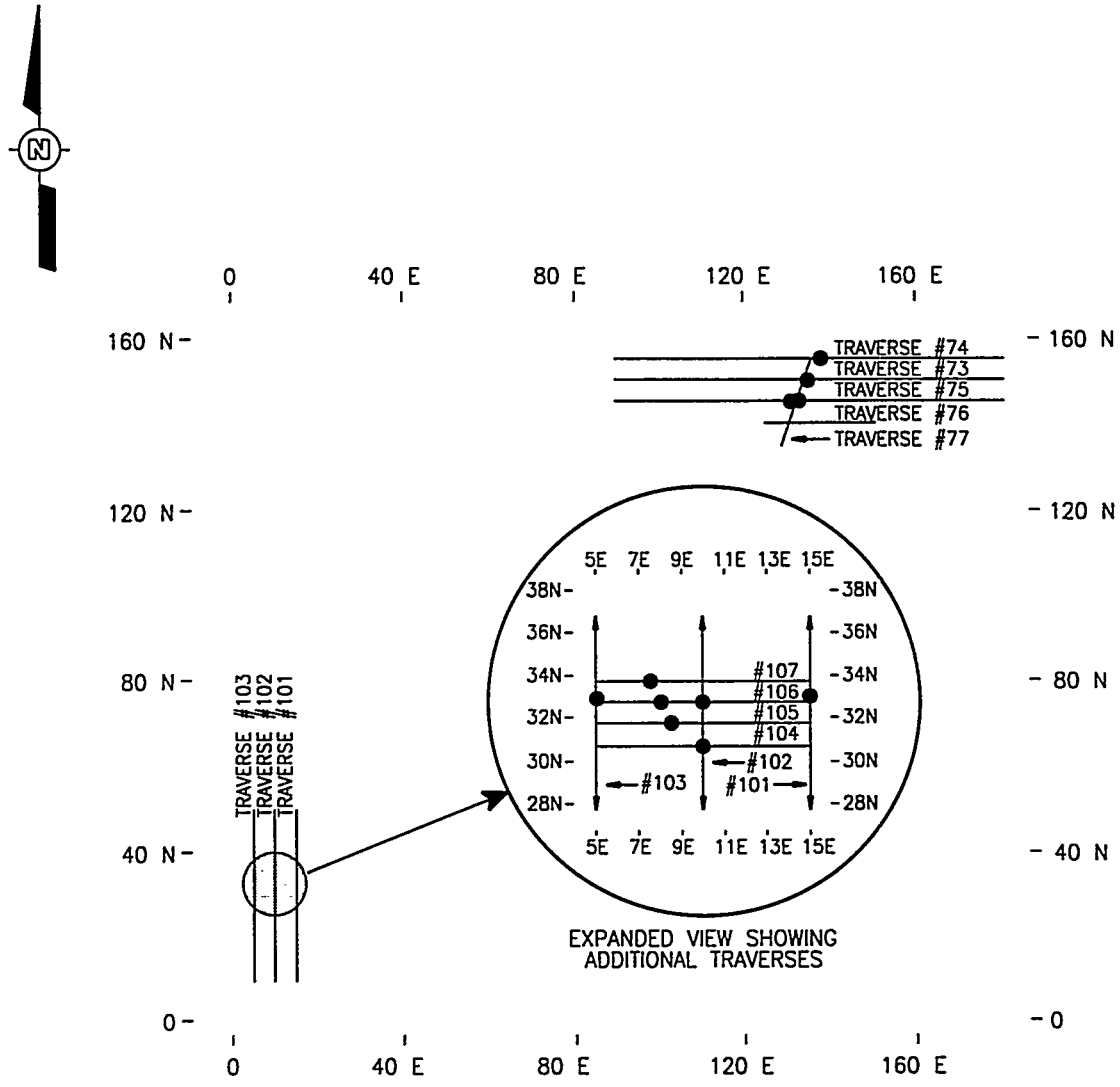


LEGEND

S - ANOMALY ATTRIBUTED TO BURIED STEEL CULVERT

M - MAGNETIC AND IN-PHASE COMPONENT ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

FIGURE B-4.3
SOURCE AREA 1
BLEED-DOWN PLANT AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 45 90 Feet

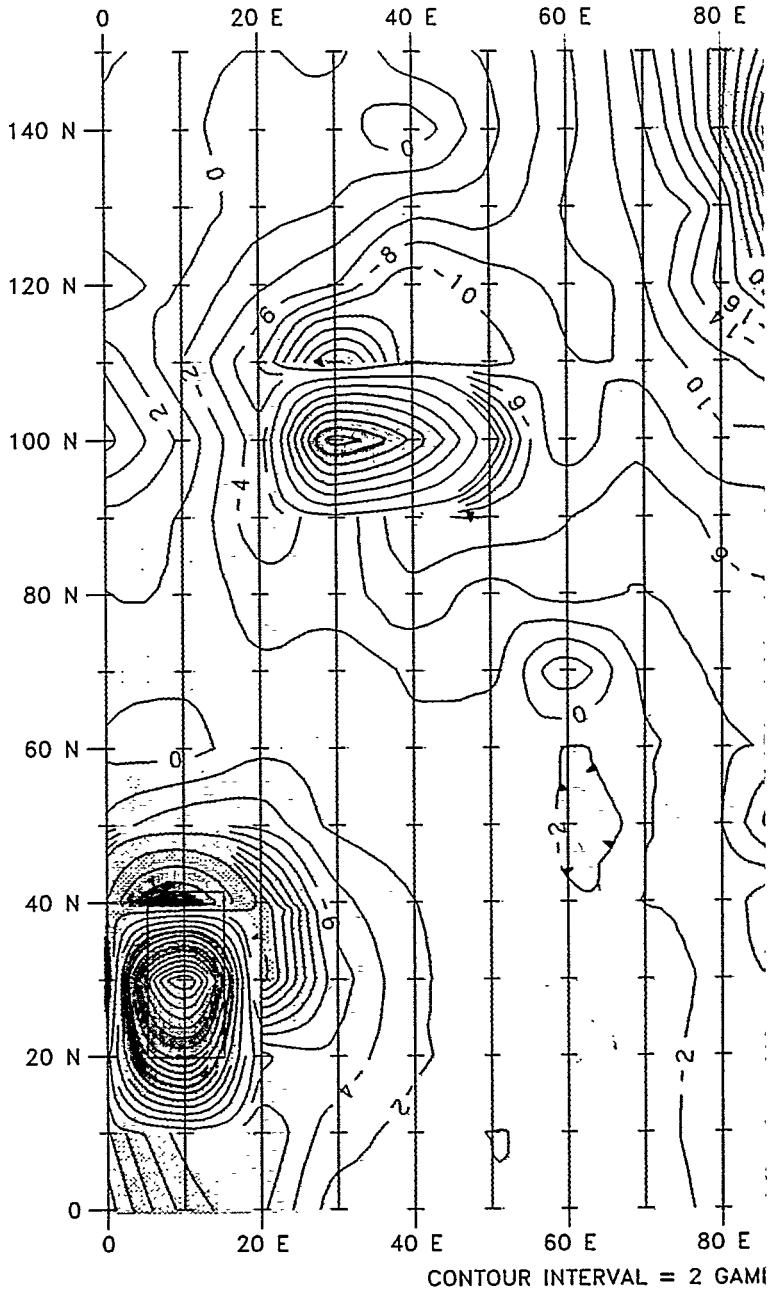
0 14 28 Meters

FIGURE B-4.4
SOURCE AREA 1
BLEED-DOWN PLANT AREA
GPR TRAVERSES OVER MAGNETIC ANOMALY M
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

CHECKED BY: SAH 9/23/94
APPROVED BY: [illegible] 9/24/94
DRAWING NUMBER 301965.403.02.002

1965A40 08/19/94

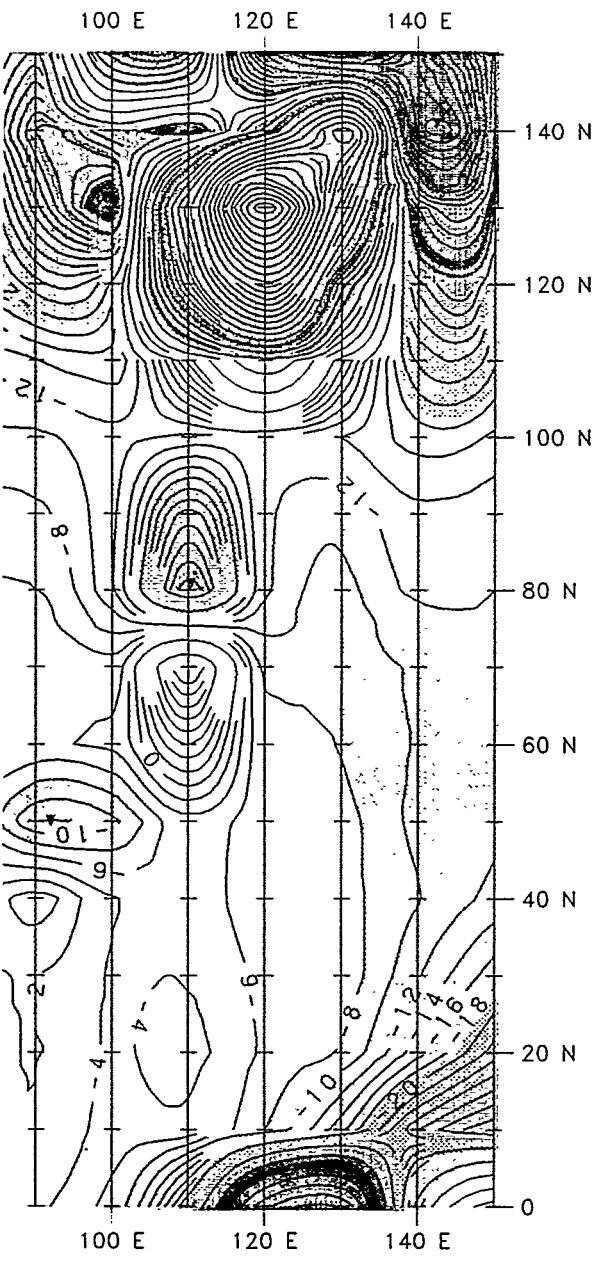
CHECKED BY	SAH	DRAWING NUMBER 301965-B87
APPROVED BY	9-20-94	
	9/20/94	



SCALE

0 25 50 Feet

0 8 16 Meters



MAS PER METER

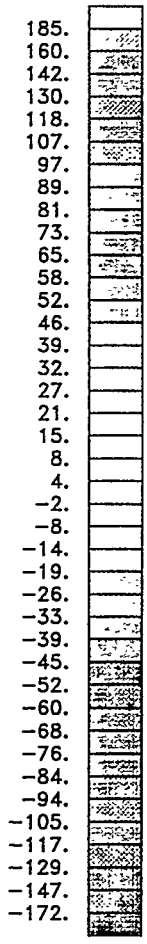
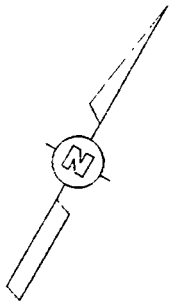


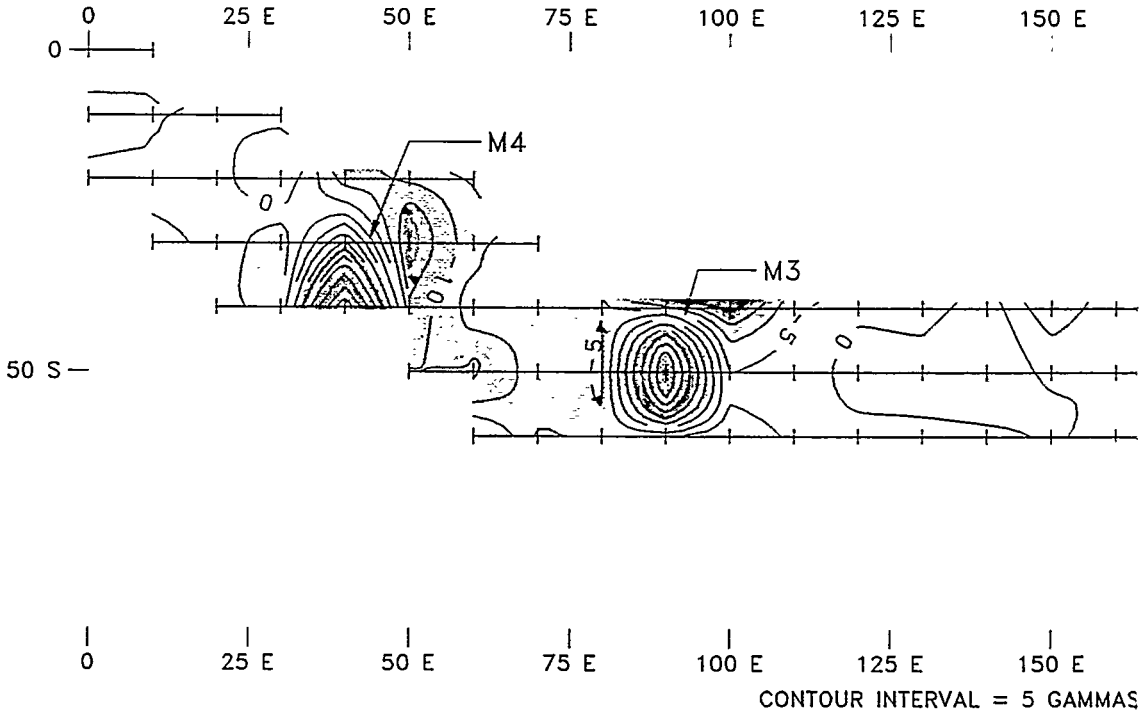
FIGURE B-4.5
SOURCE AREA 1
BLEED-DOWN PLANT AREA
RECOMMENDED TEST
PIT LOCATION
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

▭ – RECOMMENDED TEST PIT LOCATION

CHECKED BY	SAH	4/25-94
APPROVED BY	[signature]	5/2/94
DRAWING NUMBER	301965-B24	



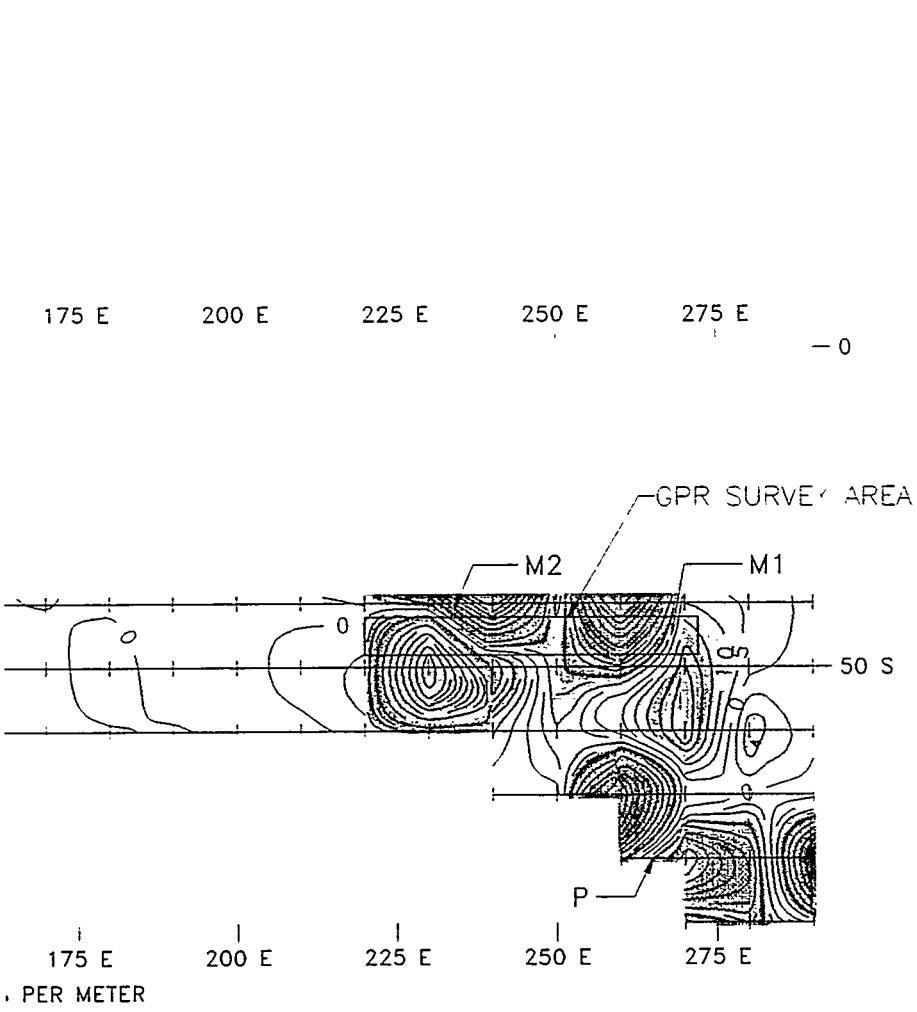


CONTOUR INTERVAL = 5 GAMMAS

SCALE

0 30 60 Feet

0 10 20 Meters



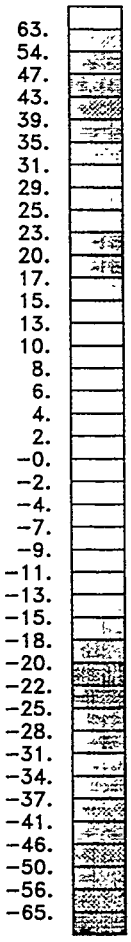


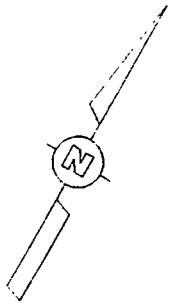
FIGURE B-5.1
SOURCE AREA 1
CABLE STAGING AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

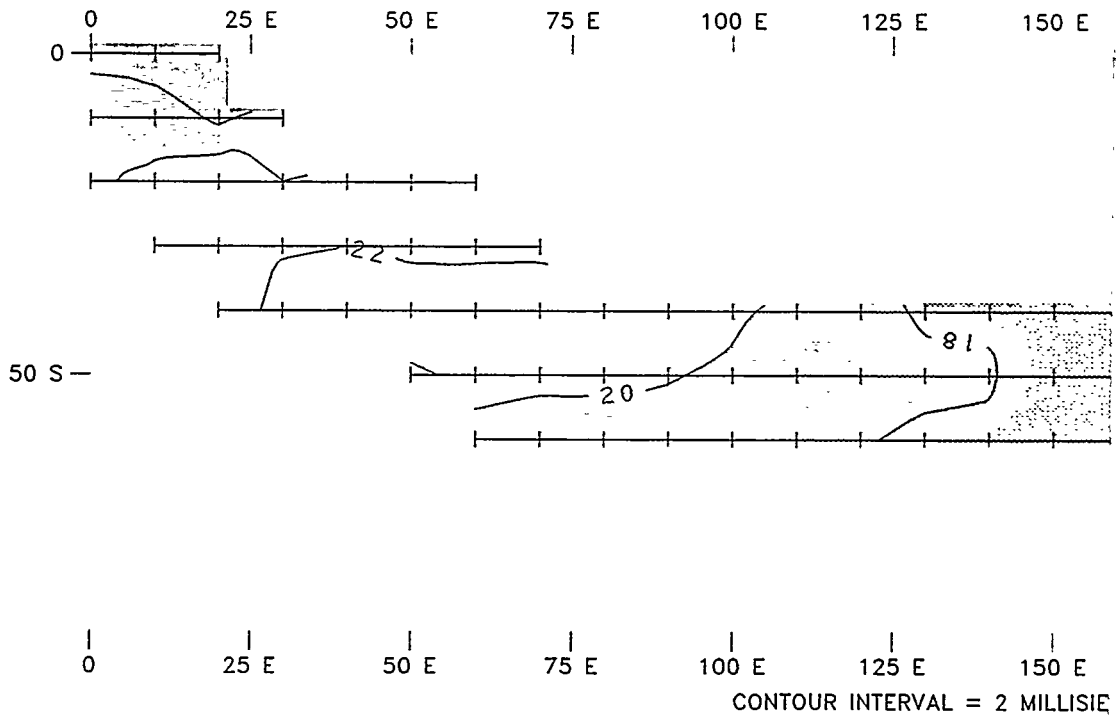
LEGEND

P – ANOMALY CAUSED BY STEEL PIPES ON THE SURFACE

M1 – ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

DRAWING NUMBER	301965-B25
	9-26-94
	9/26/94
CHECKED BY	RSAH
APPROVED BY	



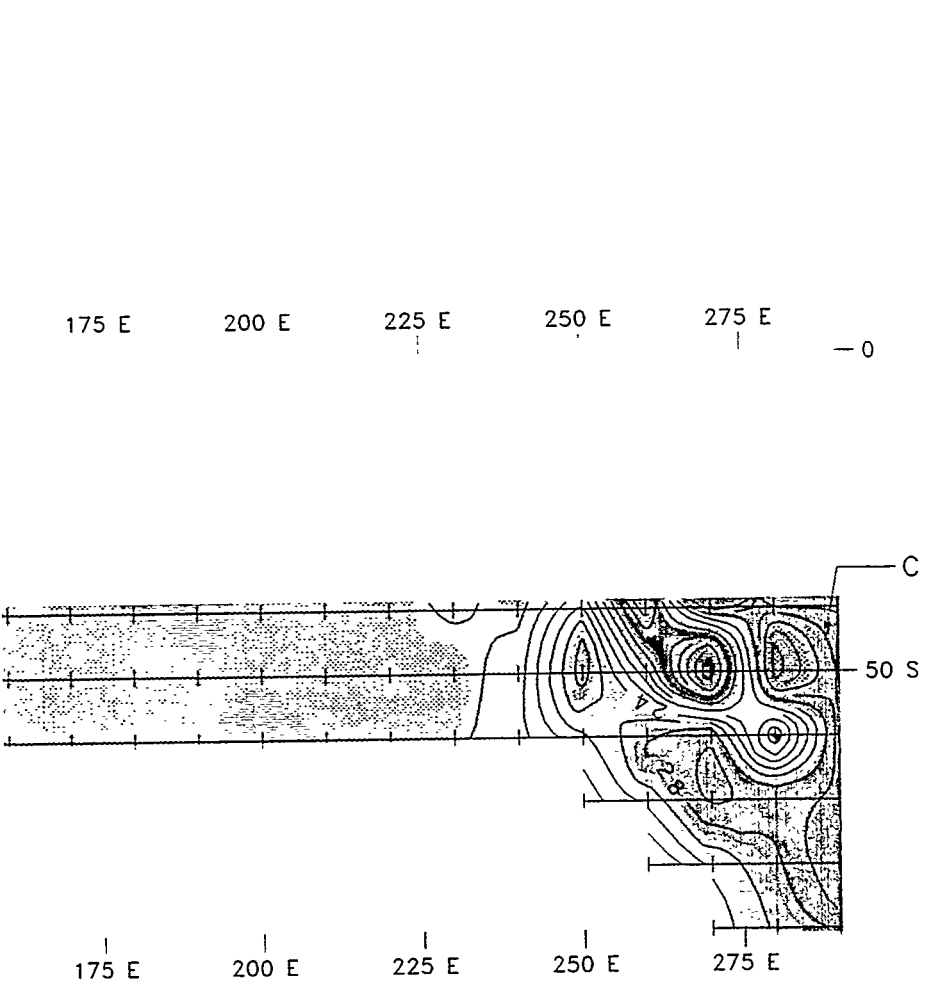


CONTOUR INTERVAL = 2 MILLISIE

SCALE

0 30 60 Feet

0 10 20 Meters



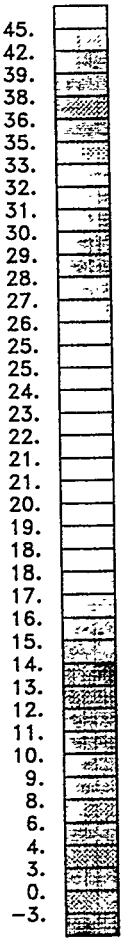


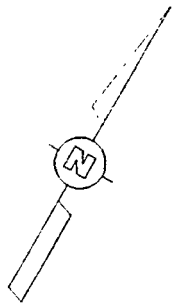
FIGURE B-5.2
SOURCE AREA 1
CABLE STAGING AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

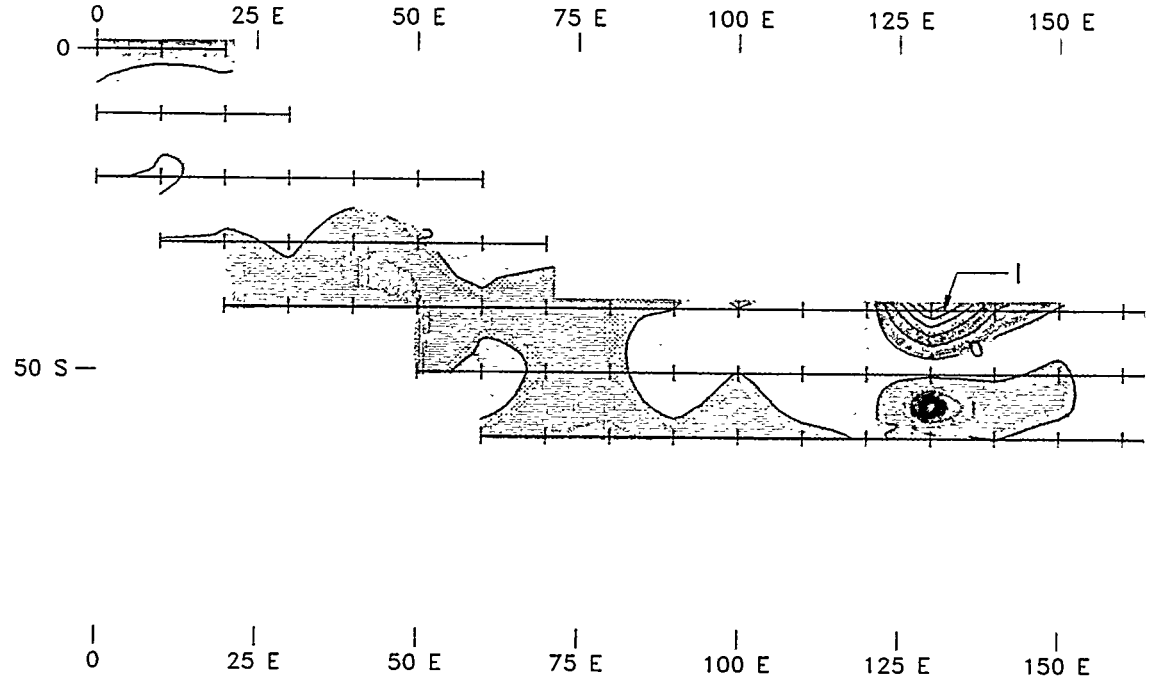
LEGEND

C – AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	SAH	9/20/94
APPROVED BY	[signature]	9/20/94

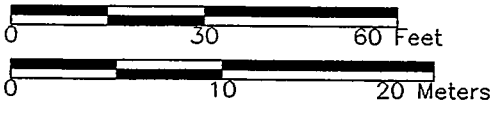
DRAWING NUMBER 301965-B2

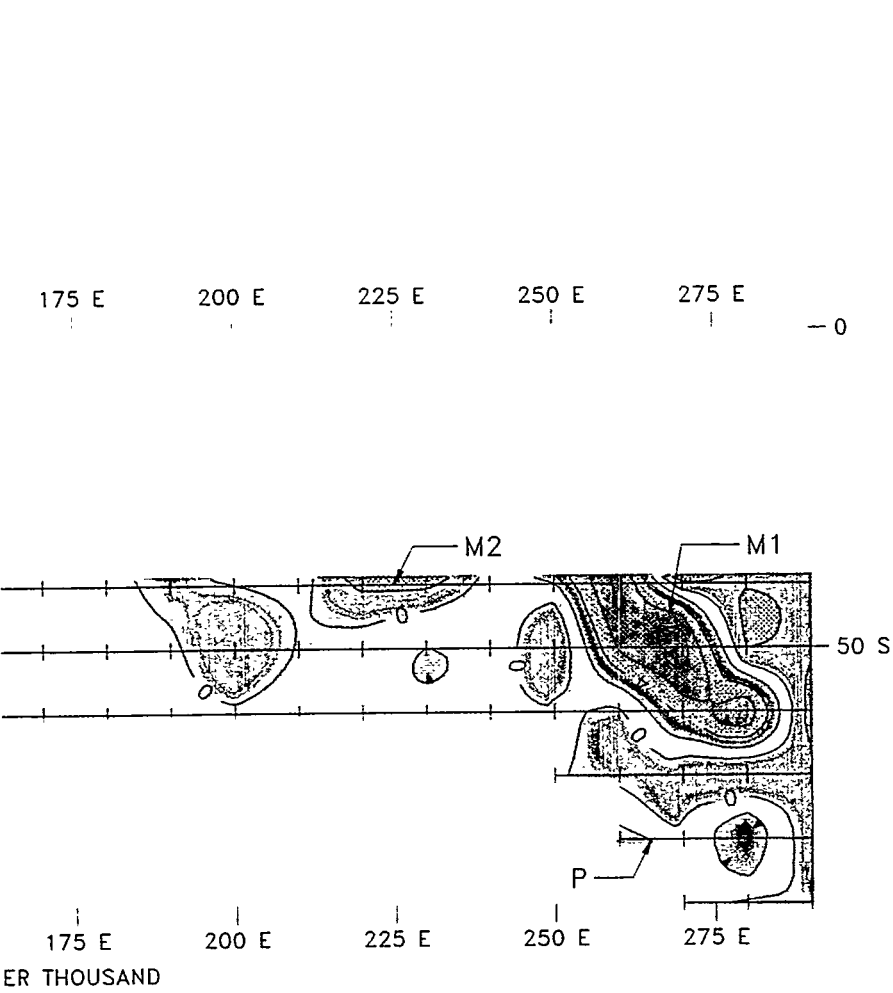




CONTOUR INTERVAL = .2 PARTS P

SCALE





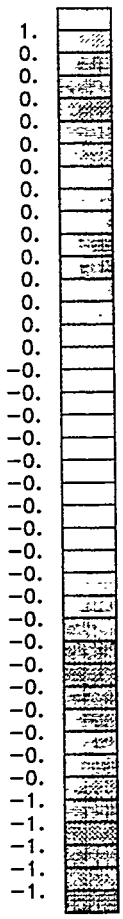


FIGURE B-5.3
SOURCE AREA 1
CABLE STAGING AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

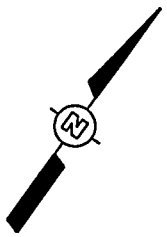
LEGEND

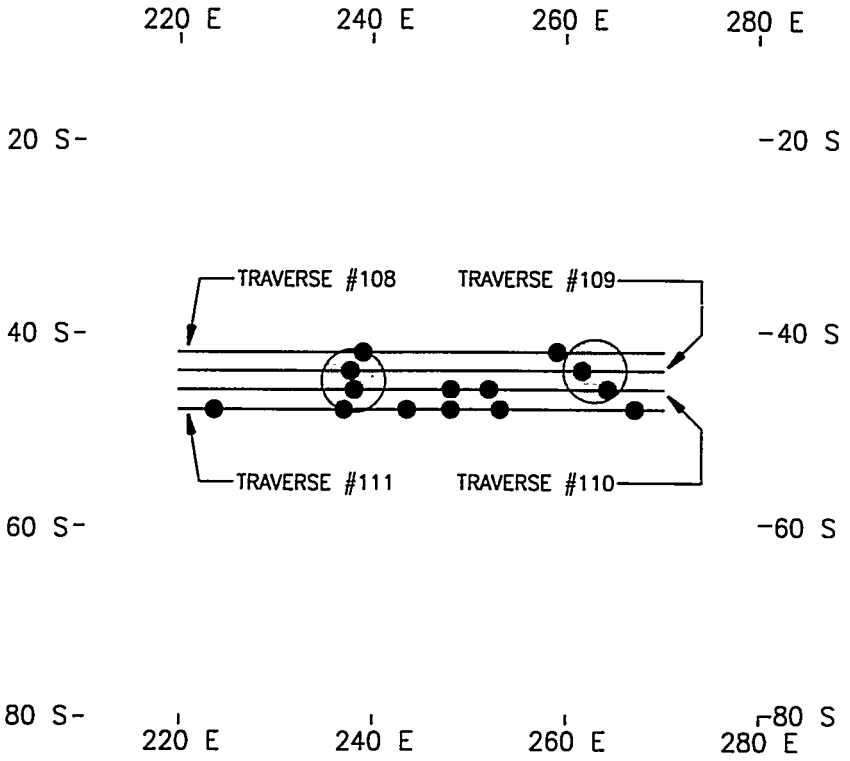
P – ANOMALY CAUSED BY STEEL PIPES ON THE SURFACE

M1 – MAGNETIC AND IN-PHASE ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

I – ANOMALY ATTRIBUTED TO OTHER BURIED METALLIC MATERIAL

DRAWING NUMBER	301965.403.02.002
	9/24/94
CHECKED BY:	SAH
APPROVED BY:	RAC 9/24/94





LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

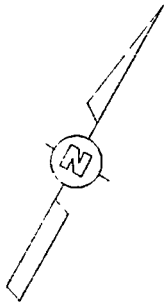
0 20 40 Feet

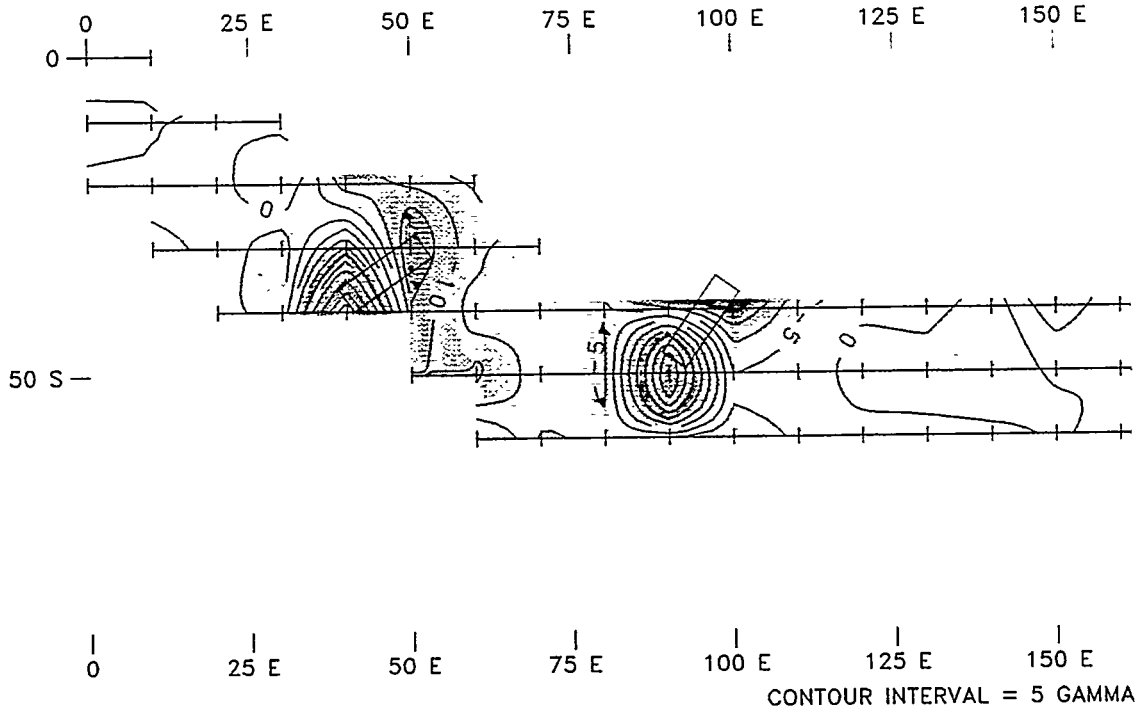
0 6 12 Meters

FIGURE B-5.4
SOURCE AREA 1
CABLE STAGING AREA
GPR TAVERSES OVER MAGNETIC ANOMALIES M1 AND M2
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A41 08/15/94

DRAWING NUMBER	301965-B88
	SAH 9/20/94
	BY 9-20-94
CHECKED BY	
APPROVED BY	



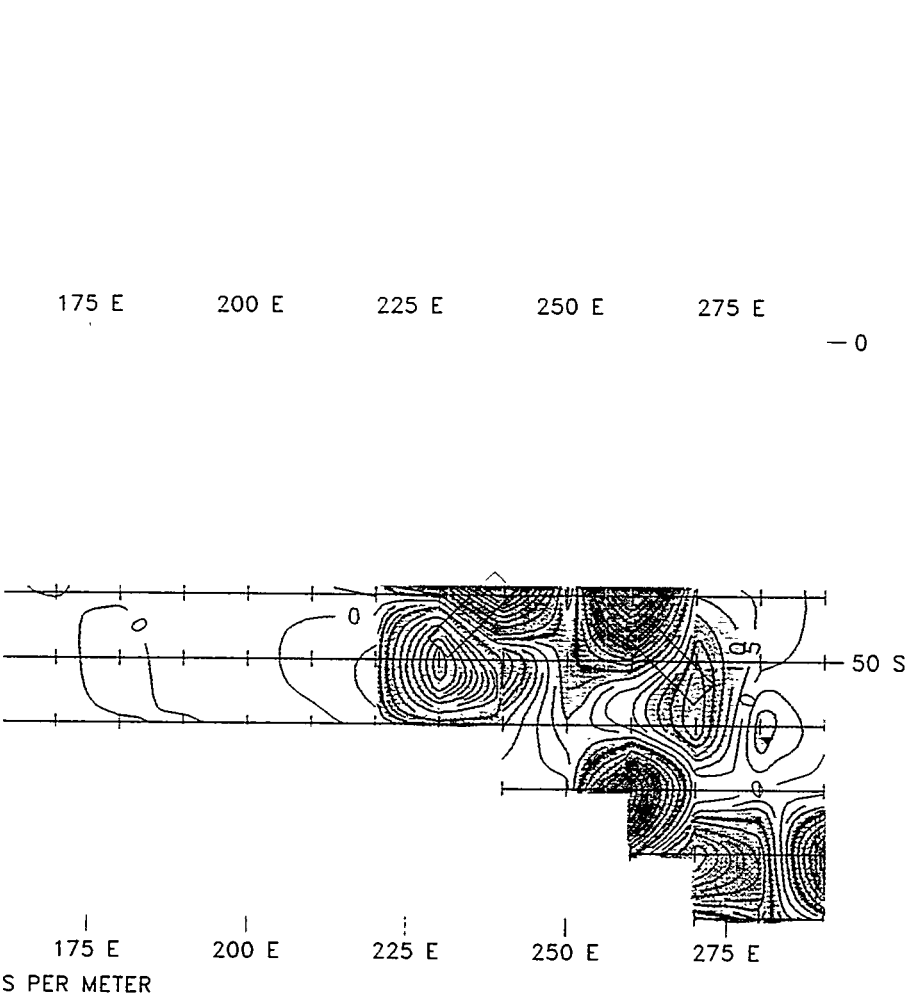


CONTOUR INTERVAL = 5 GAMMA

SCALE

0 30 60 Feet

0 10 20 Meters



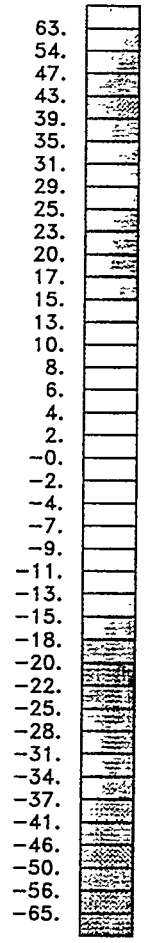
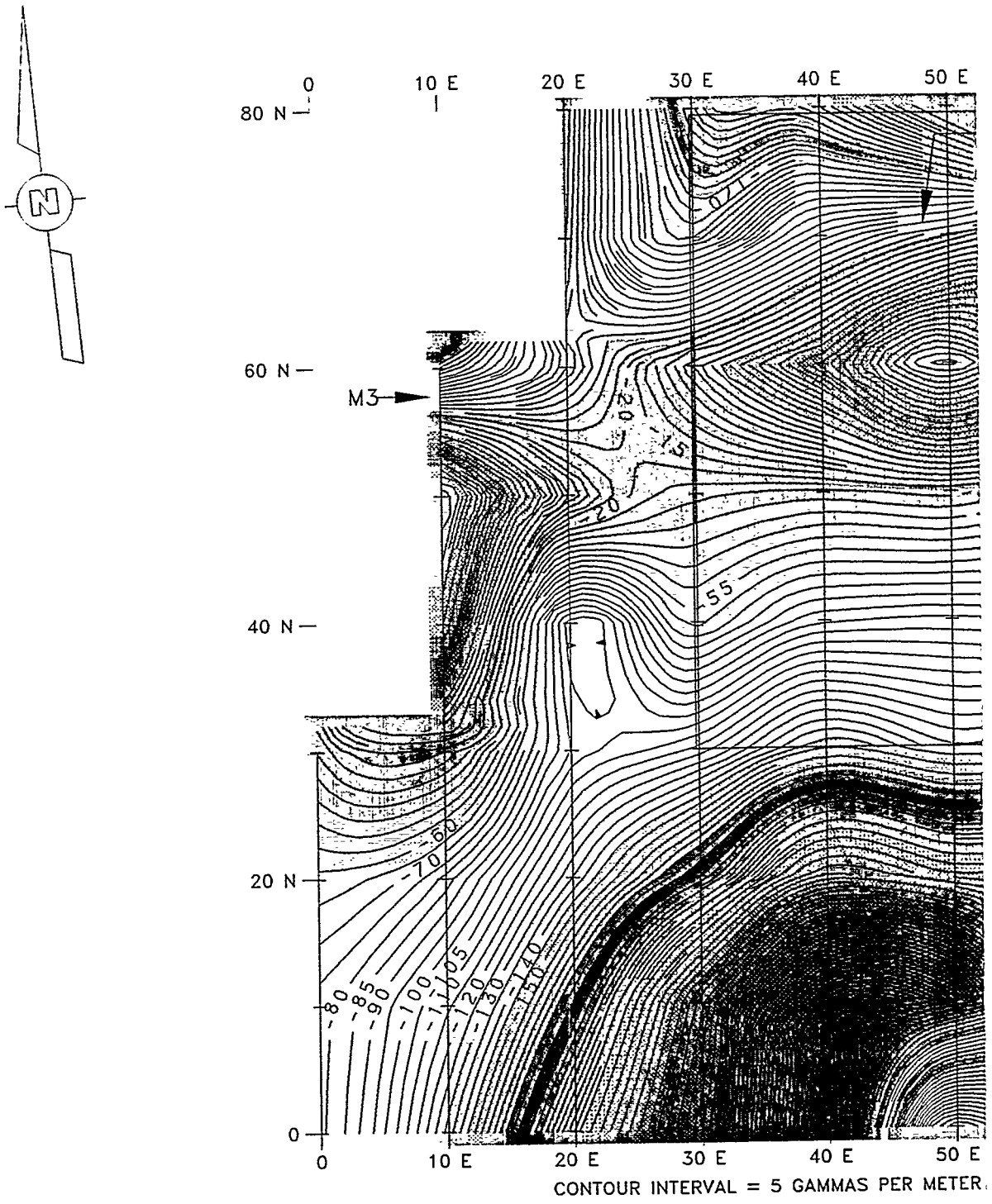


FIGURE B-5.5
SOURCE AREA 1
CABLE STAGING AREA
RECOMMENDED TEST
PIT LOCATIONS
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

▭ – RECOMMENDED TEST PIT LOCATIONS



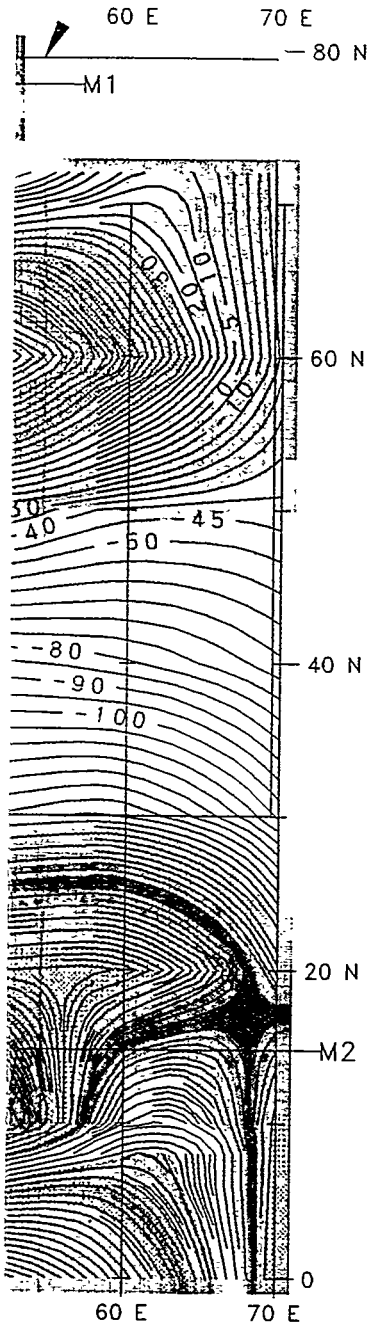
SCALE

0 13 25 Feet

0 4 8 Meters

DRAWING NUMBER 301965-B2

CHECKED BY	RSAH 9/20/94
APPROVED BY	9/20/94



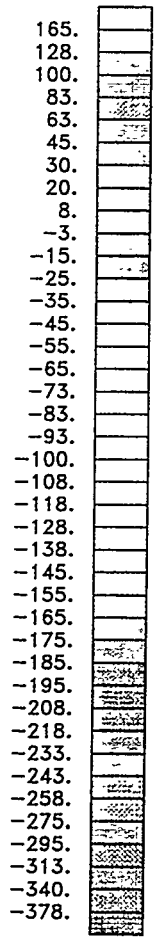
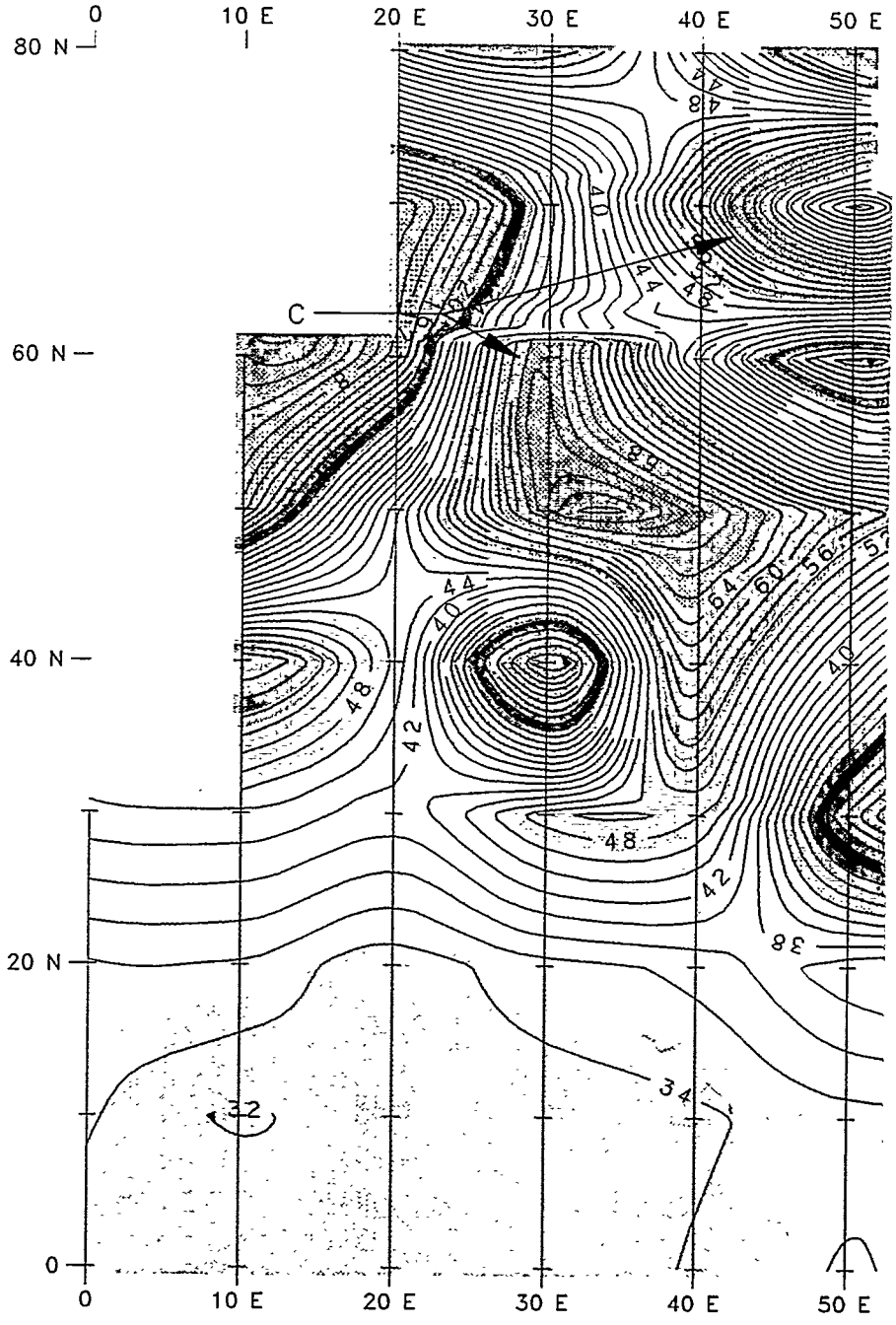


FIGURE B-6.1
SOURCE AREA 1
P.S. NO. 2 MUD PIT AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

M1 – ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

DRAWING NUMBER	301965-B28
	9-22-94
CHECKED BY	SAH
APPROVED BY	9/20/94

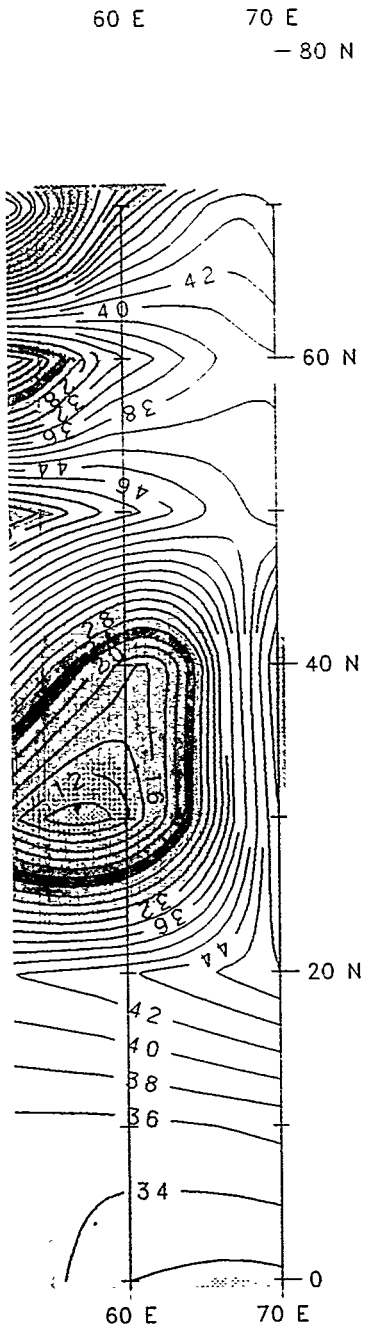


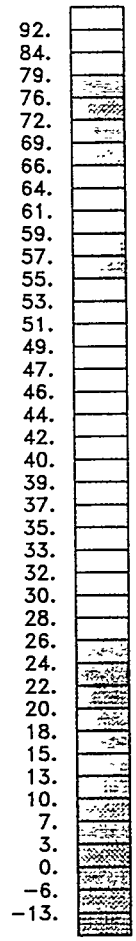
CONTOUR INTERVAL = 2 MILLISIEMENS PER METE

SCALE

0 13 25 Feet

0 4 8 Meters





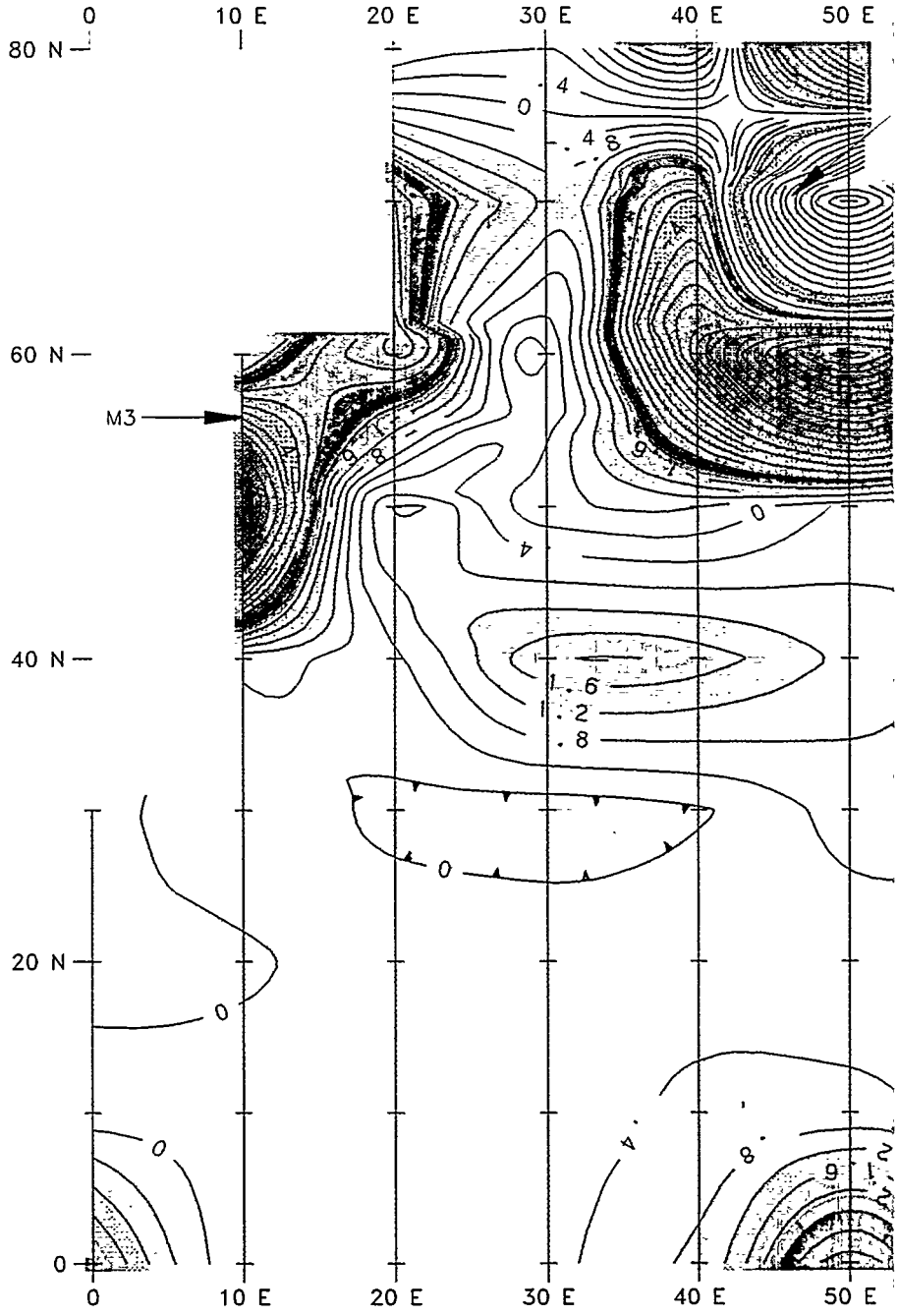
:R

FIGURE B-6.2
SOURCE AREA 1
P.S. NO. 2 MUD PIT AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C – AREAS OF ELEVATED CONDUCTIVITY

DRAWING NUMBER	301965-B24	
	9-20-94	9/20/94
	SAH	
CHECKED BY		
APPROVED BY		

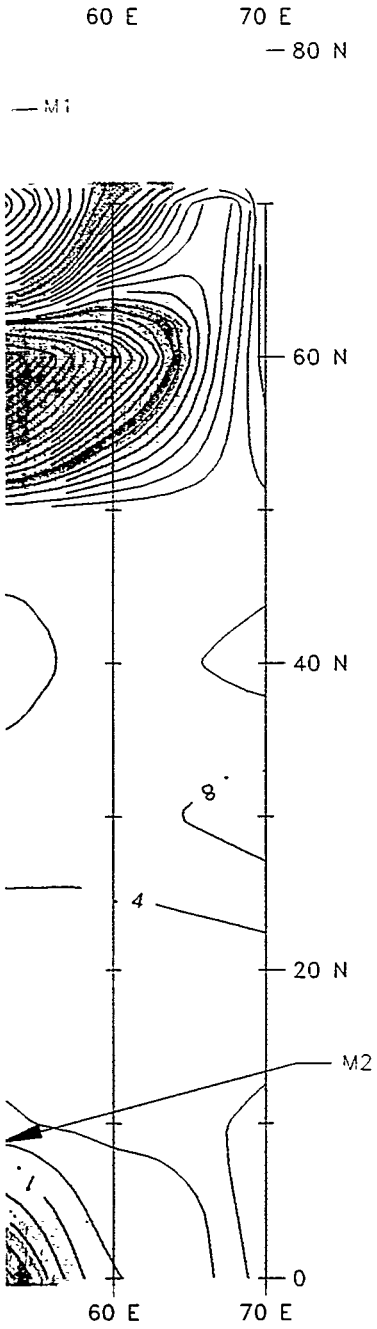


CONTOUR INTERVAL = 2 MILLISIEMENS PER METE

SCALE

0 13 25 Feet

0 4 8 Meters



R

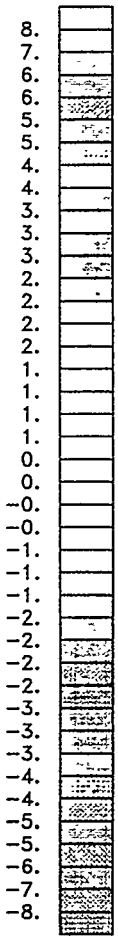


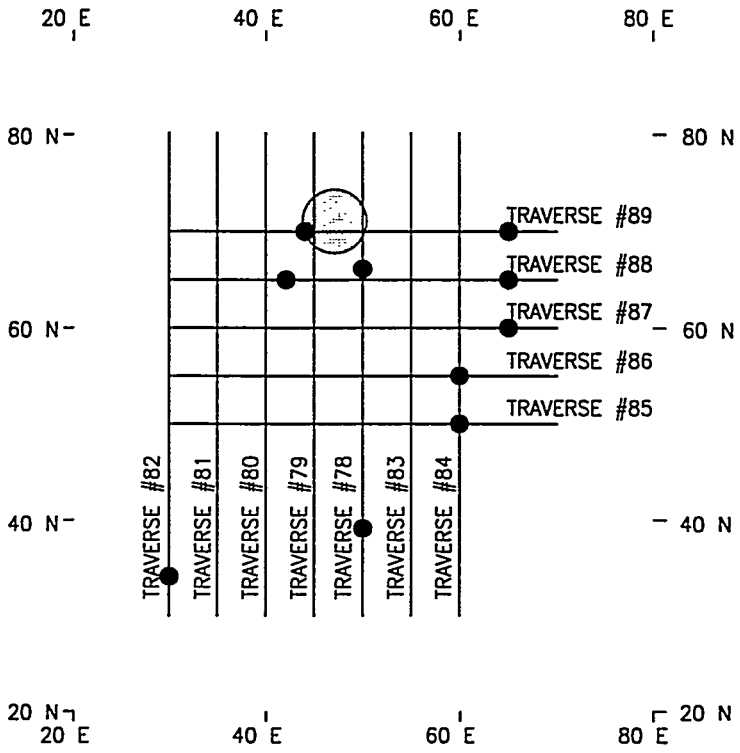
FIGURE B-6.3
SOURCE AREA 1
P.S. NO. 2 MUD PIT AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

M1 – MAGNETIC AND IN-PHASE COMPONENT ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

CHECKED BY:	SAH	8/24/94
APPROVED BY:	[illegible]	[illegible]

DRAWING NUMBER 301965.403.02.002



LEGEND

- ● SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- ○ APPROXIMATE LOCATION OF MAGNETIC ANOMALY

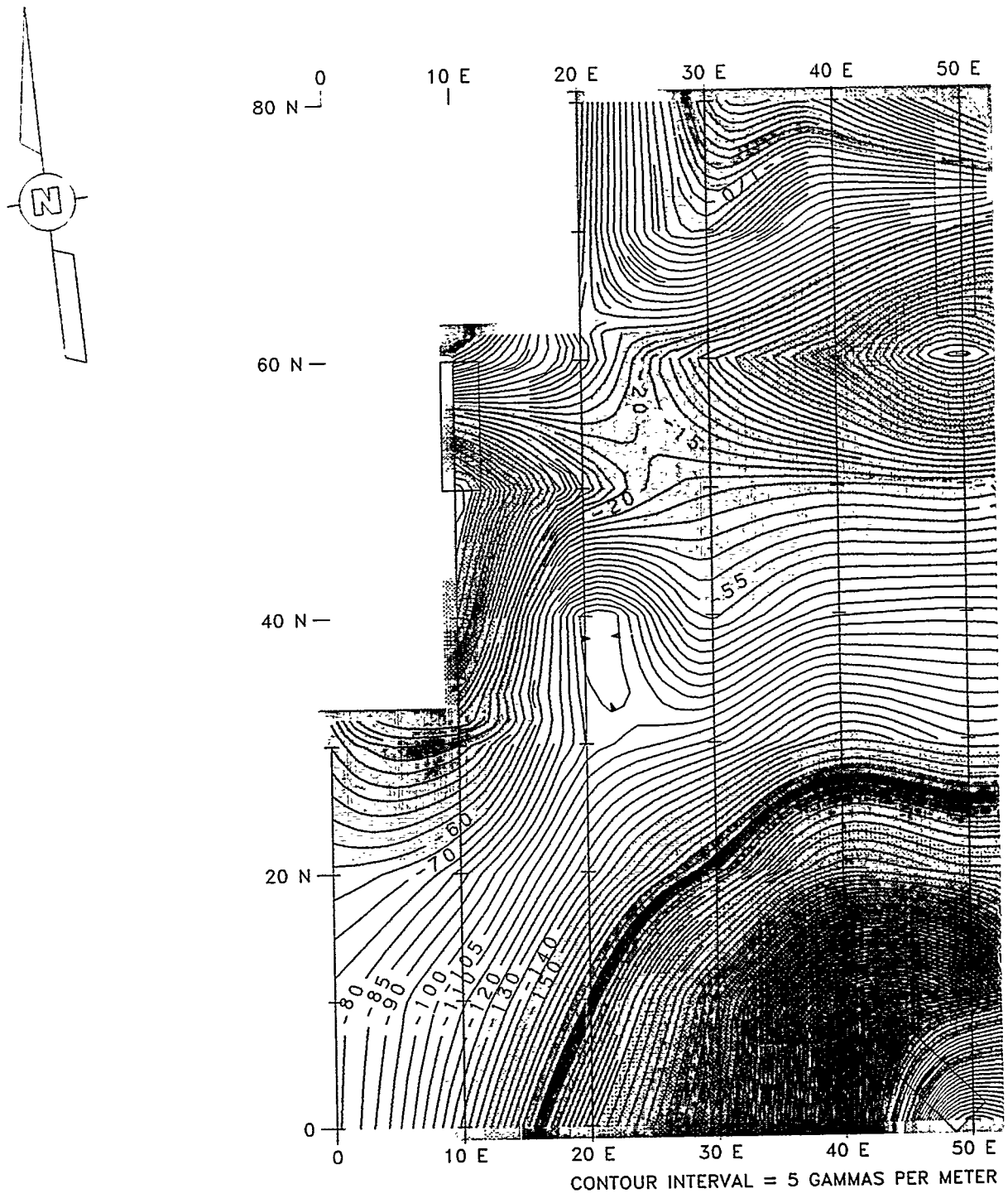
SCALE

0 20 40 Feet

0 6 12 Meters

FIGURE B-6.4
SOURCE AREA 1
P.S. NO. 2 MUD PIT AREA
GPR TRAVERSES OVER MAGNETIC ANOMALY M1
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A42 08/19/94

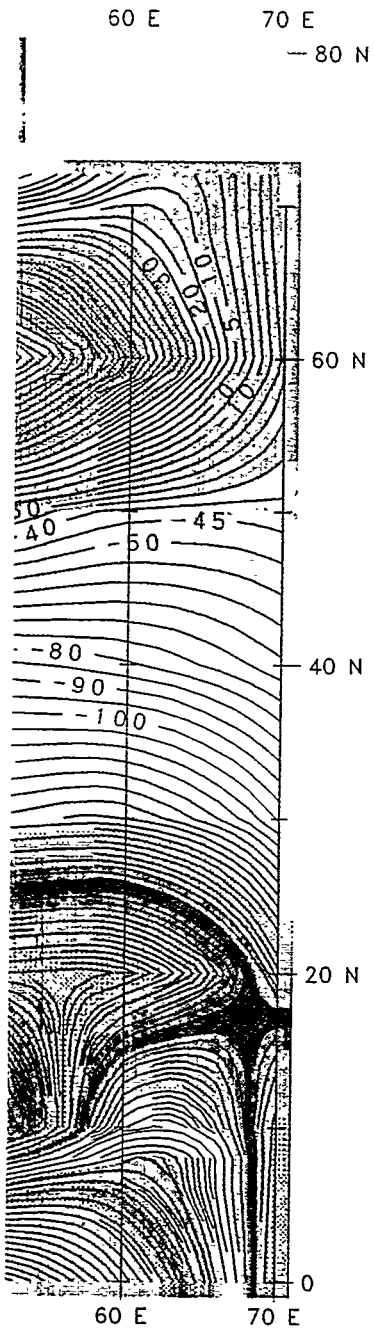


SCALE

0 13 25 Feet

0 4 8 Meters

CHECKED BY	RSAH	DRAWING NUMBER
APPROVED BY	9/20/94	



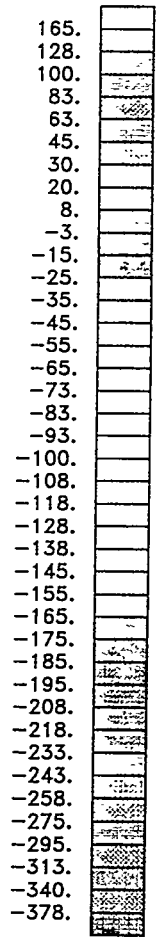
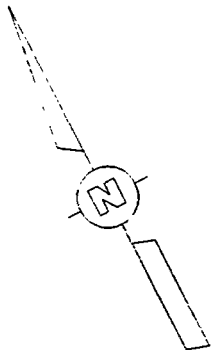


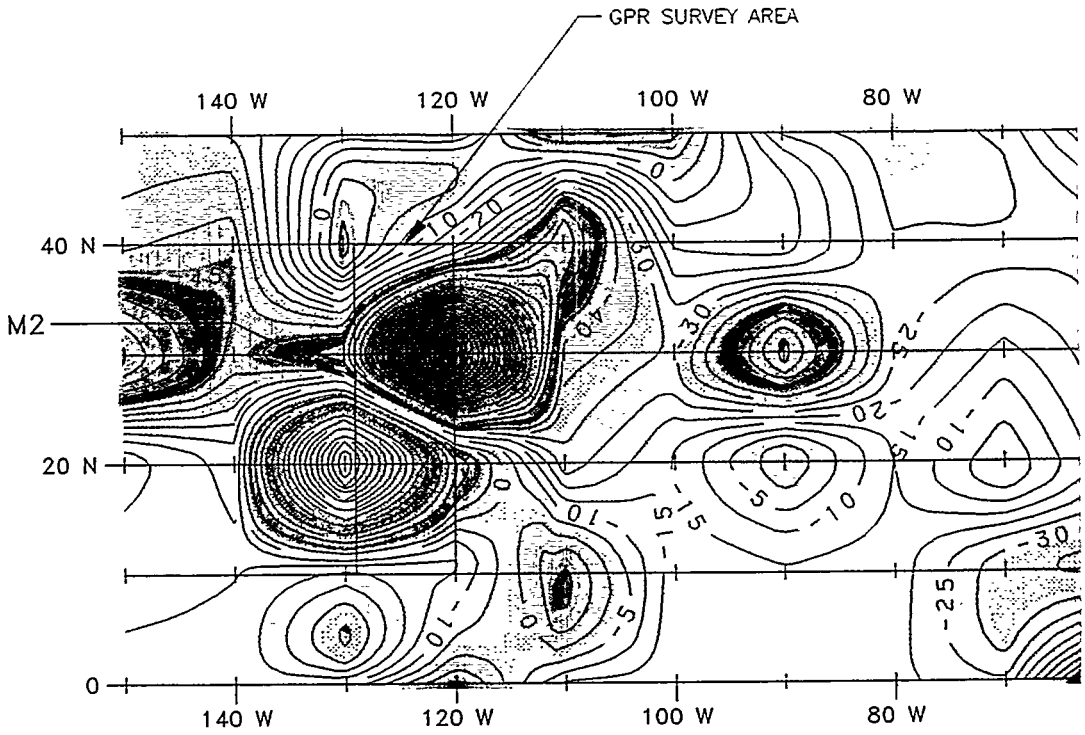
FIGURE B-6.5
SOURCE AREA 1
P.S. NO. 2 MUD PIT AREA
RECOMMENDED TEST
PIT LOCATIONS
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

▭ – RECOMMENDED TEST PIT LOCATIONS

DRAWING NUMBER	301965-B30	
	9-Dec-94	SAH
CHECKED BY	9/20/94	Brad
APPROVED BY		



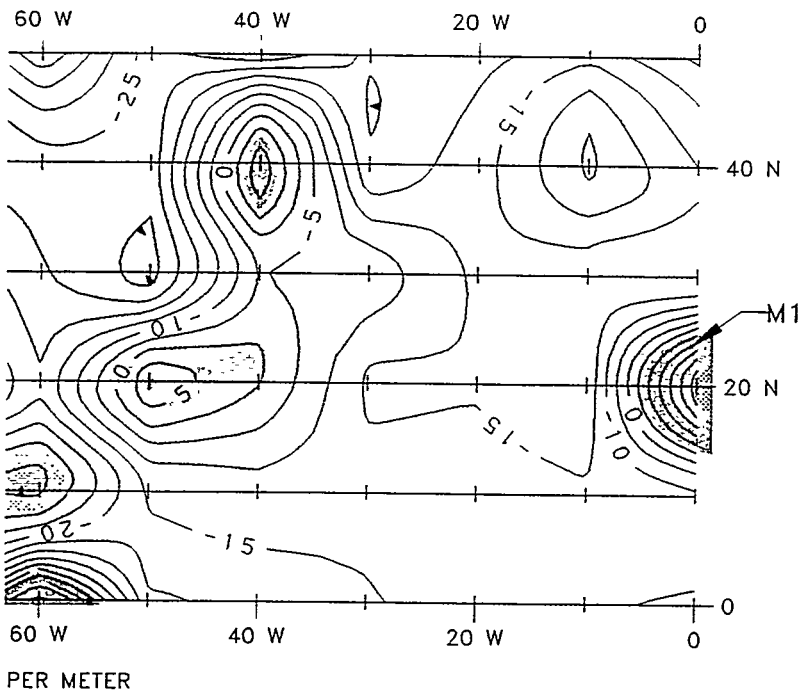


CONTOUR INTERVAL = 5 GAMMAS

SCALE

0 18 35 Feet

0 6 11 Meters



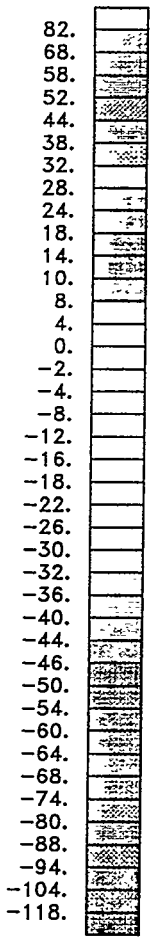


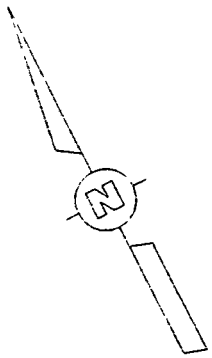
FIGURE B-7 1
SOURCE AREA 1
STATION NO. 1 MUD PIT AND
POSTSHOT No. 1 SLUSH PIT AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

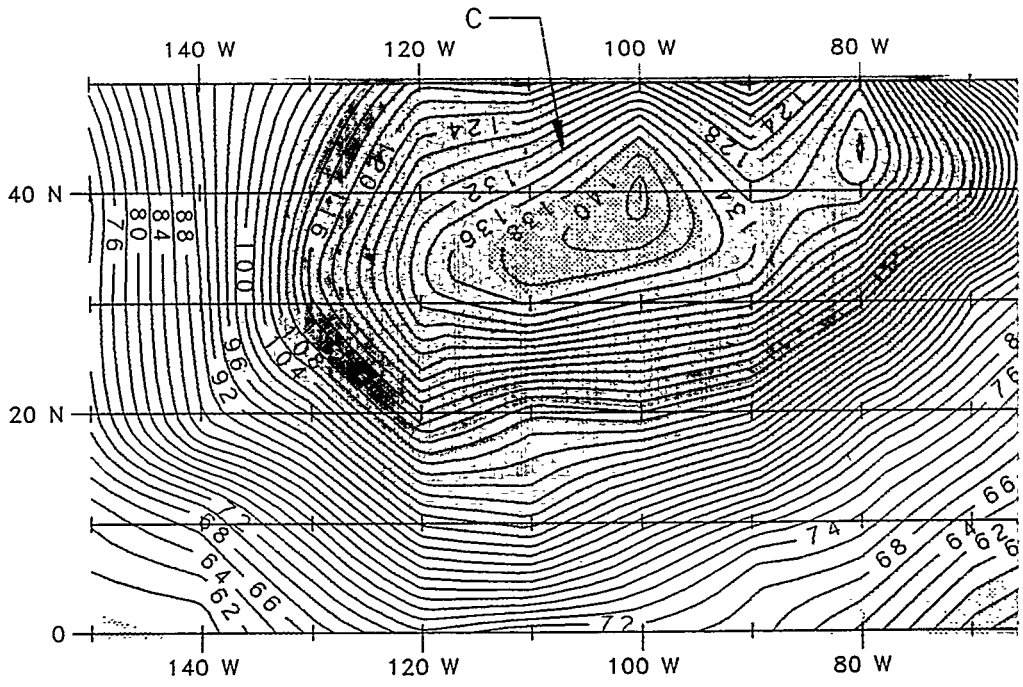
LEGEND

M1 - ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

CHECKED BY	SAH	9-30-94
APPROVED BY	[illegible]	9/30/94

DRAWING NUMBER 301965-B31



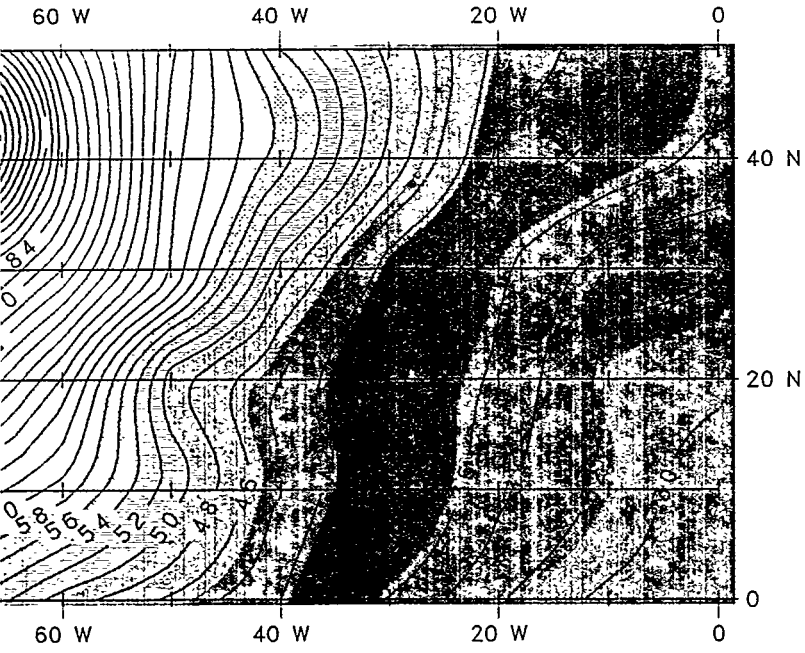


CONTOUR INTERVAL = 2 MILLISIEM

SCALE

0 18 35 Feet

0 6 11 Meters



MHENS PER METER

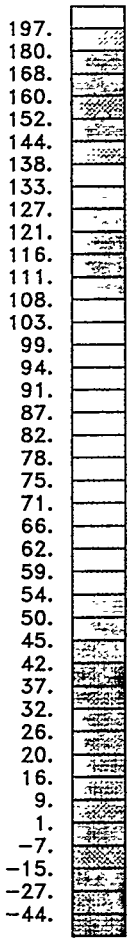
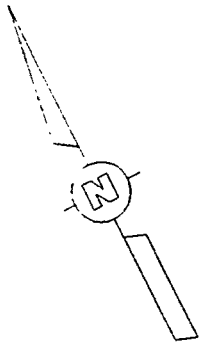


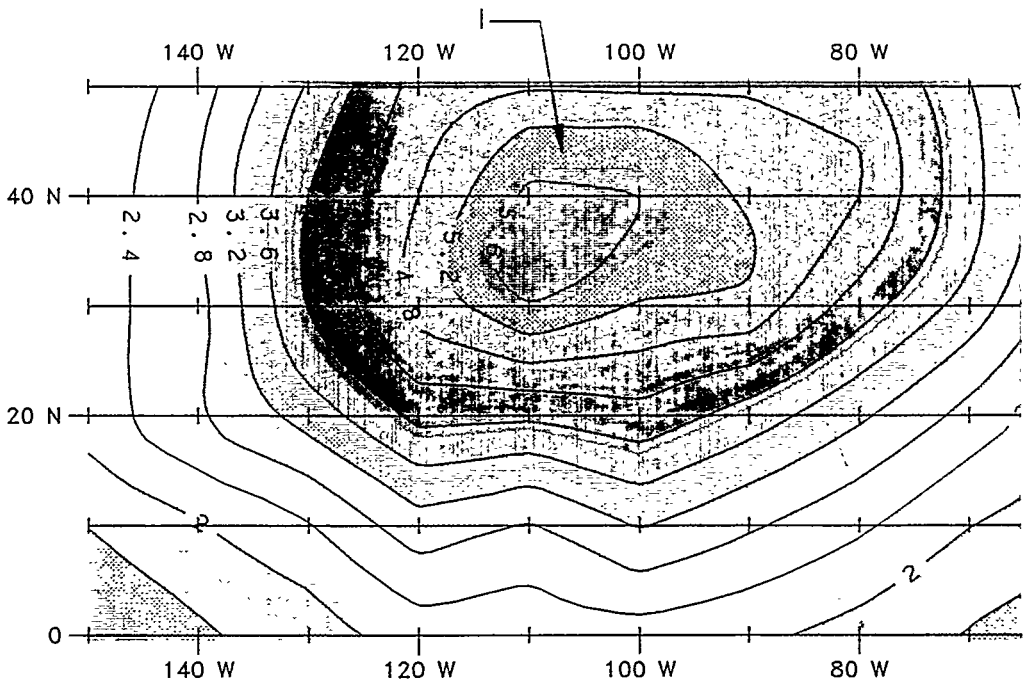
FIGURE B-7.2
SOURCE AREA 1
STATION NO. 1 MUD PIT AND
POSTSHOT No. 1 SLUSH PIT AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C - AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	SAH	9-30-94	DRAWING NUMBER
APPROVED BY	BAG	9/30/94	301965-B3-



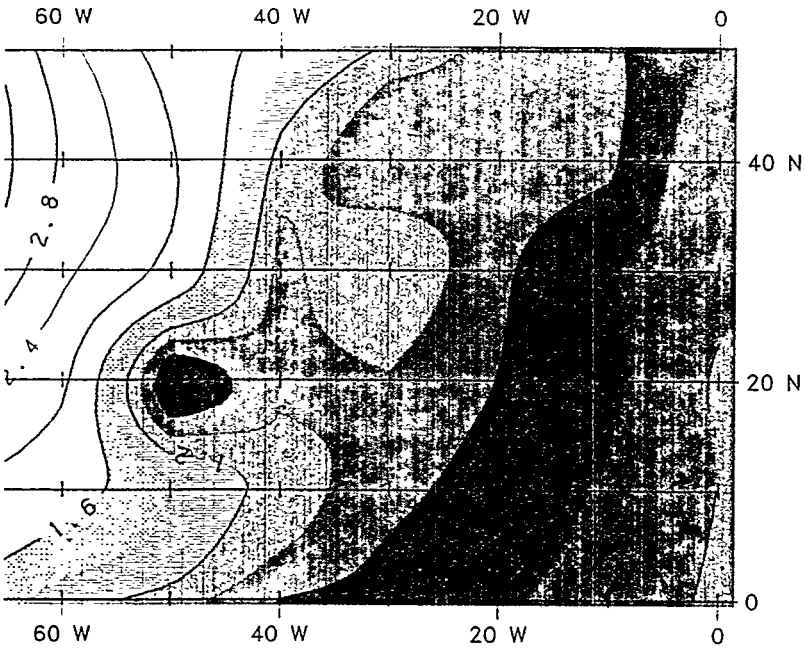


CONTOUR INTERVAL = 2 MILLISIEM

SCALE

0 18 35 Feet

0 6 11 Meters



ENS PER METER

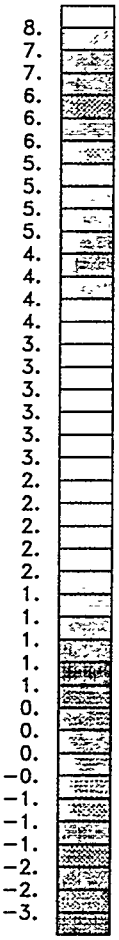
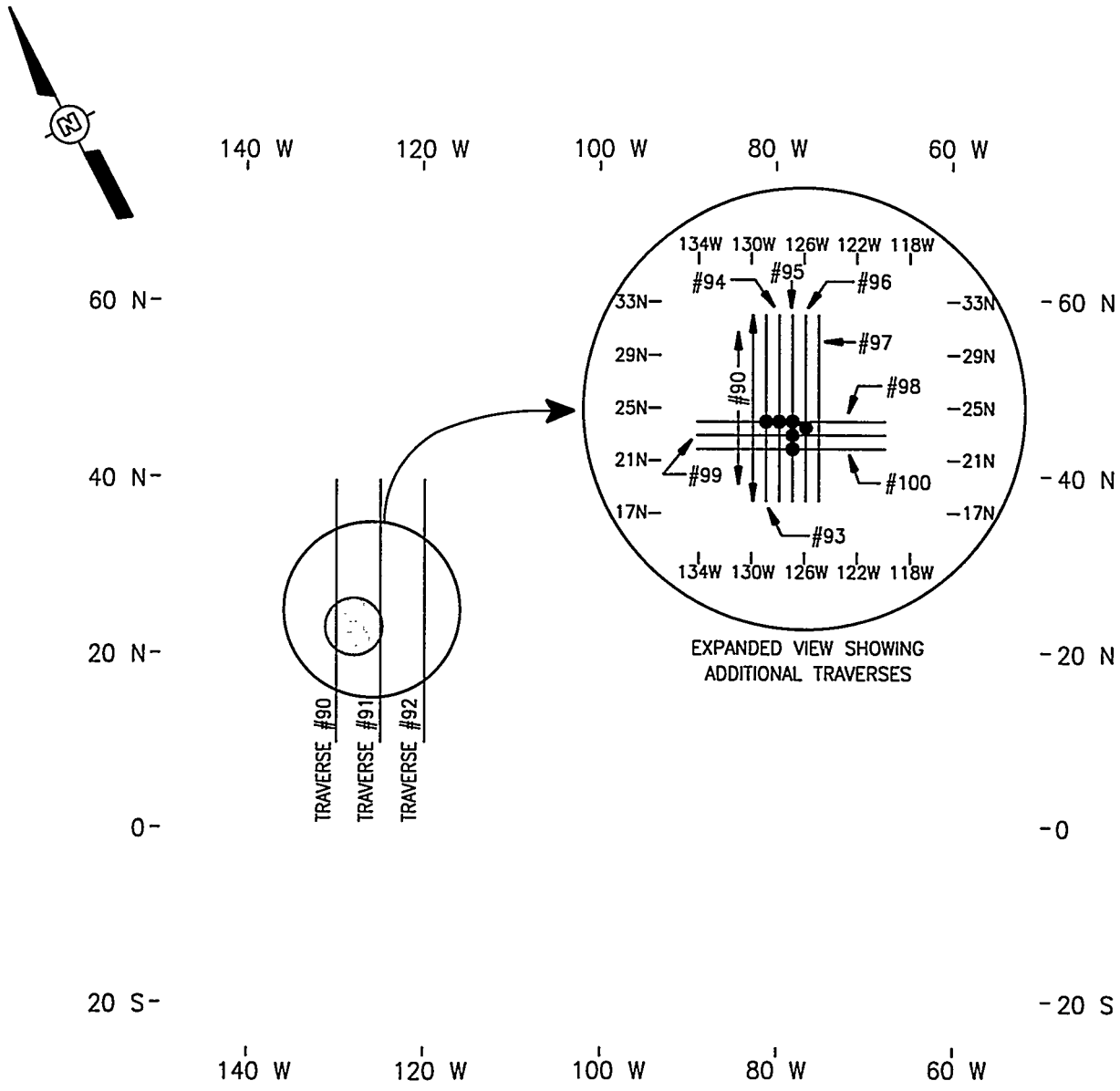


FIGURE B-7.3
SOURCE AREA 1
STATION NO. 1 MUD PIT AND
POSTSHOT No. 1 SLUSH PIT AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

I - IN-PHASE COMPONENT ANOMALY ASSOCIATED WITH AREA OF ELEVATED CONDUCTIVITY



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANAOMALY

SCALE

0 20 40 Feet

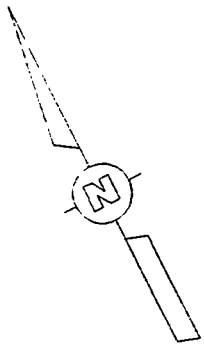
0 6 12 Meters

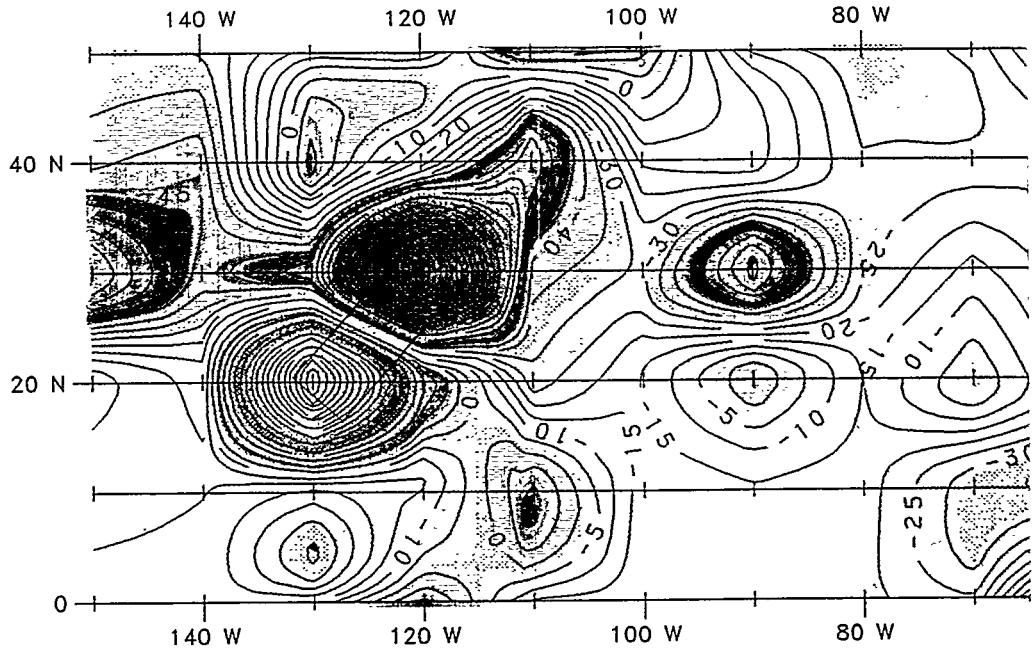
FIGURE B-7.4
SOURCE AREA 1
STATION NO. 1 MUD PIT AND
POSTSHOT NO. 1 SLUSH PIT AREA
GPR TRAVERSES OVER MAGNETIC ANOMALY M
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWING NUMBER 301965.403.02.002
CHECKED BY: SAH 9/25/94
APPROVED BY: [illegible] 9/26/94

1965A44 08/22/94

CHECKED BY	SAH	9-20-94	DRAWING NUMBER 301965-B90
APPROVED BY	[signature]	9/26/94	



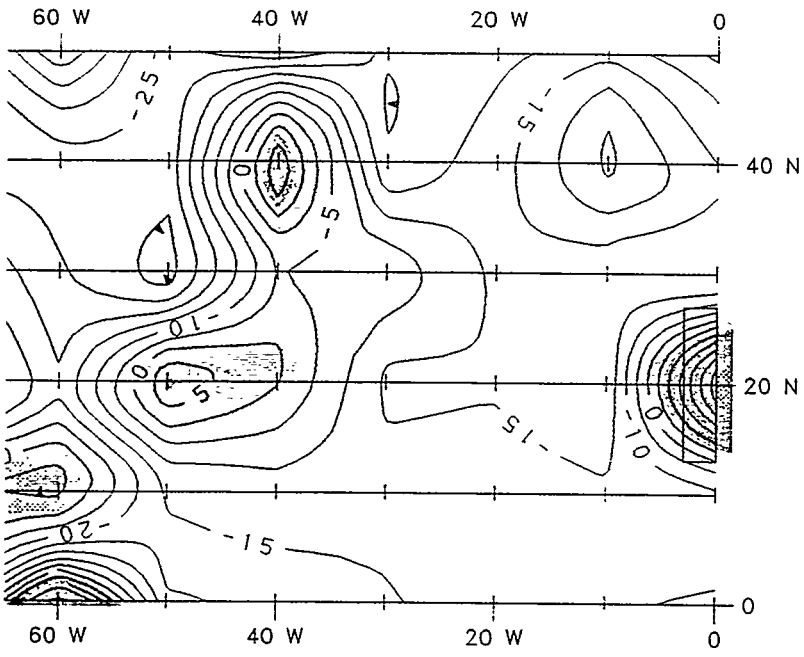


CONTOUR INTERVAL = 5 GAMMAS

SCALE

0 18 35 Feet

0 6 11 Meters



S PER METER

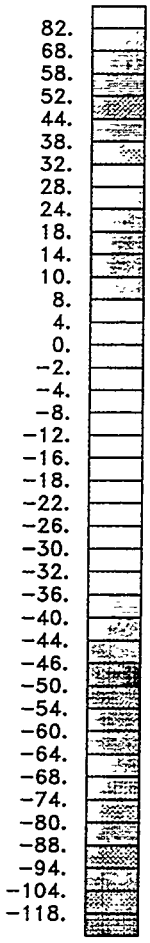
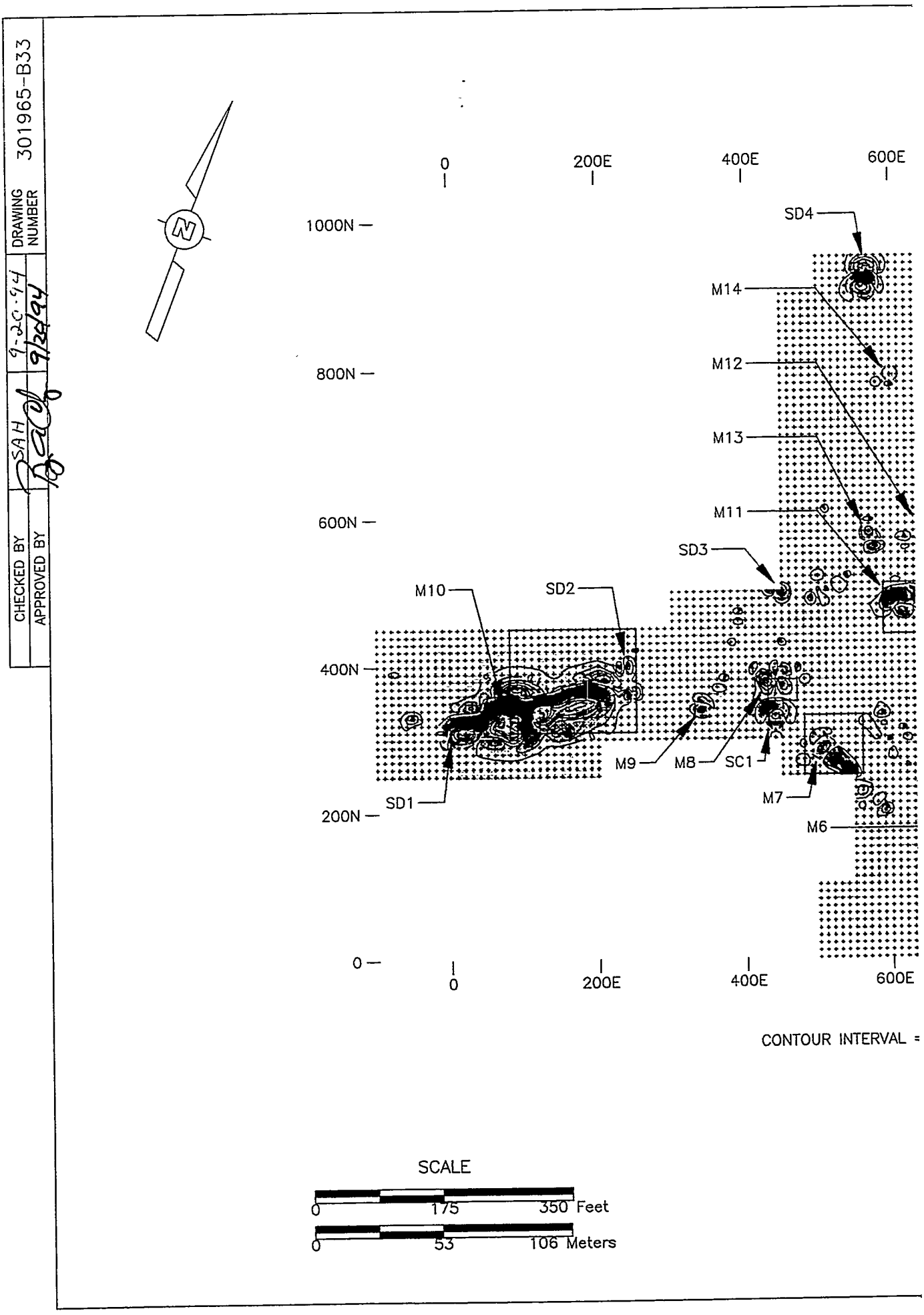
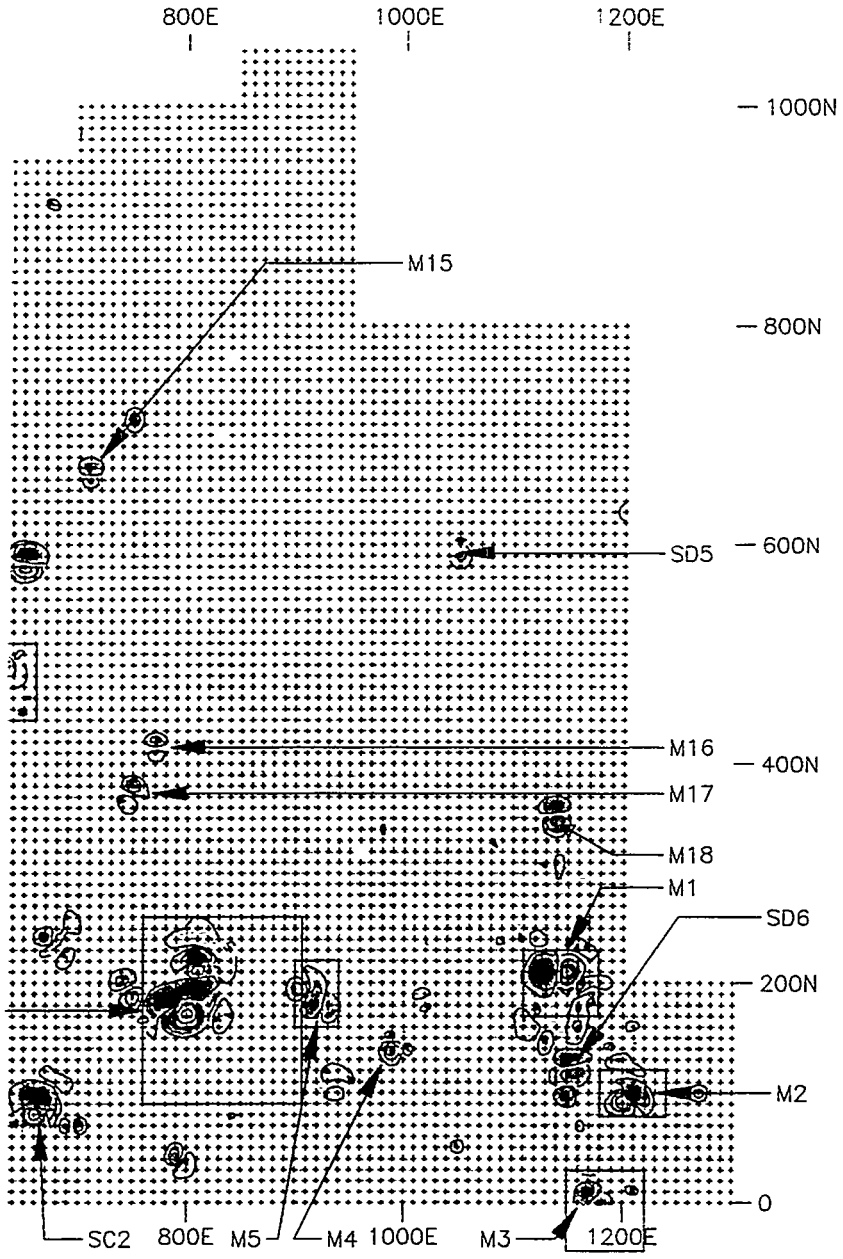


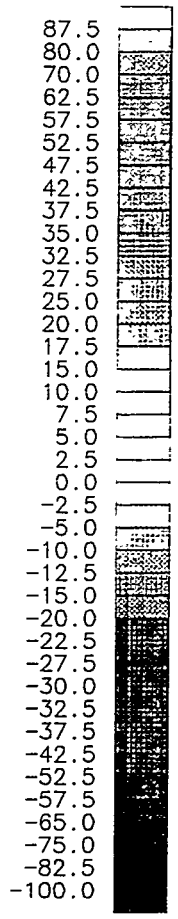
FIGURE B-7.5
SOURCE AREA 1
STATION NO. 1 MUD PIT AND
POSTSHOT No. 1 SLUSH PIT AREA
RECOMMENDED TEST
PIT LOCATIONS
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

▭ - RECOMMENDED TEST PIT LOCATION


DRAWING NUMBER 301965-B33
CHECKED BY SAH 9-20-94
APPROVED BY 9/22/94
N
0
200E
400E
600E
1000N
800N
600N
400N
200N
0
SD4
M14
M12
M13
M11
SD3
M10
SD2
M9
M8
SC1
M7
M6
SD1
CONTOUR INTERVAL =
SCALE
0 175 350 Feet
0 53 106 Meters





= 5 GAMMAS PER METER

FIGURE B-8.1
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

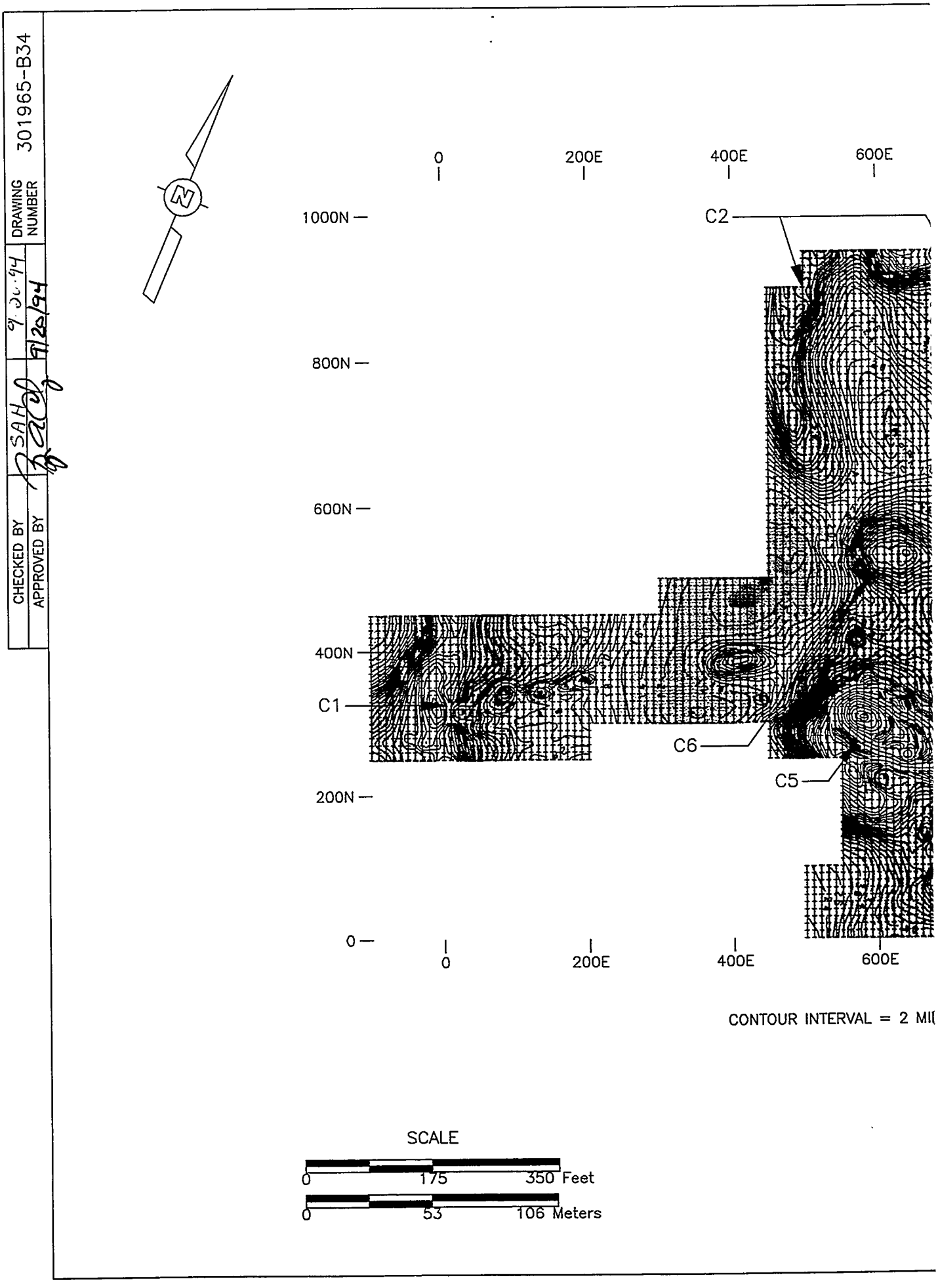
LEGEND

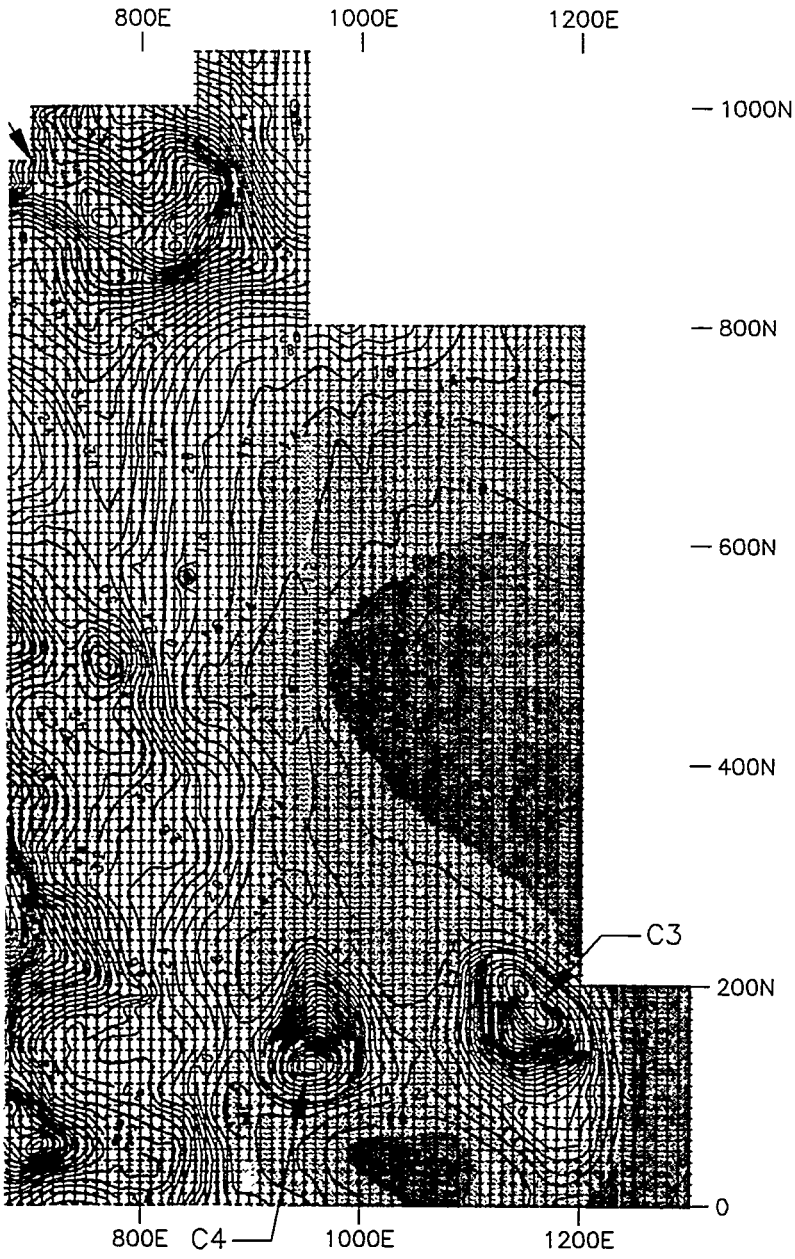
M1 – ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

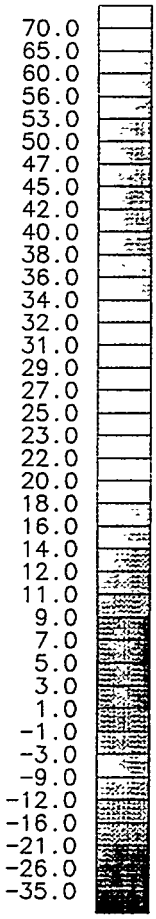
SD1 – ANOMALIES ATTRIBUTED TO FERROMETALLIC DEBRIS ON THE SURFACE WITH SEQUENTIAL NUMBERING

SC1 – STEEL CULVERTS

▭ – GPR SURVEY AREAS


DRAWING NUMBER 301965-B34
CHECKED BY SAH 9.20.94
APPROVED BY 9/20/94
0
200E
400E
600E
1000N
800N
600N
400N
200N
0
C1
C2
C5
C6
CONTOUR INTERVAL = 2 MI
SCALE
0 175 350 Feet
0 53 106 Meters



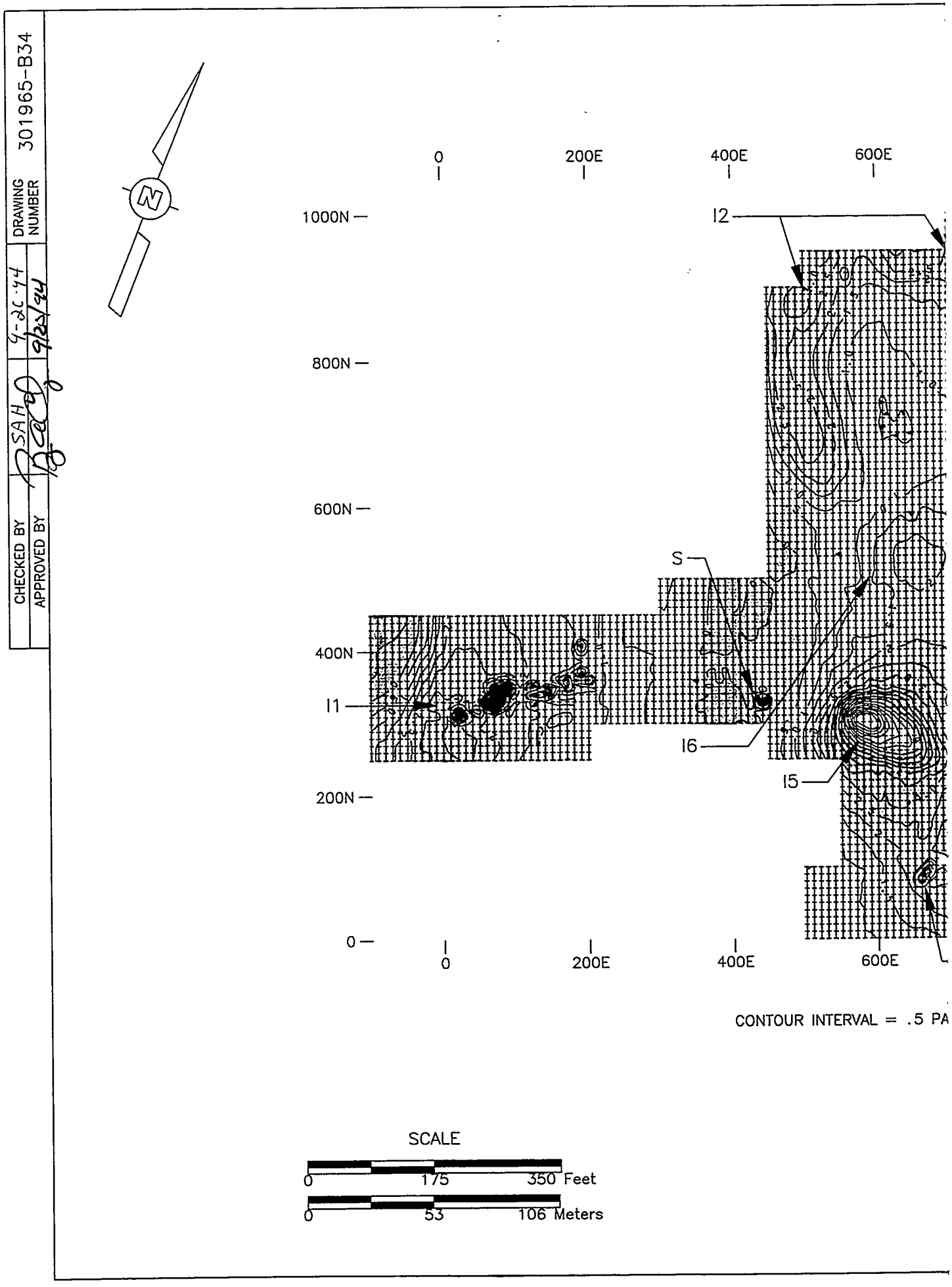


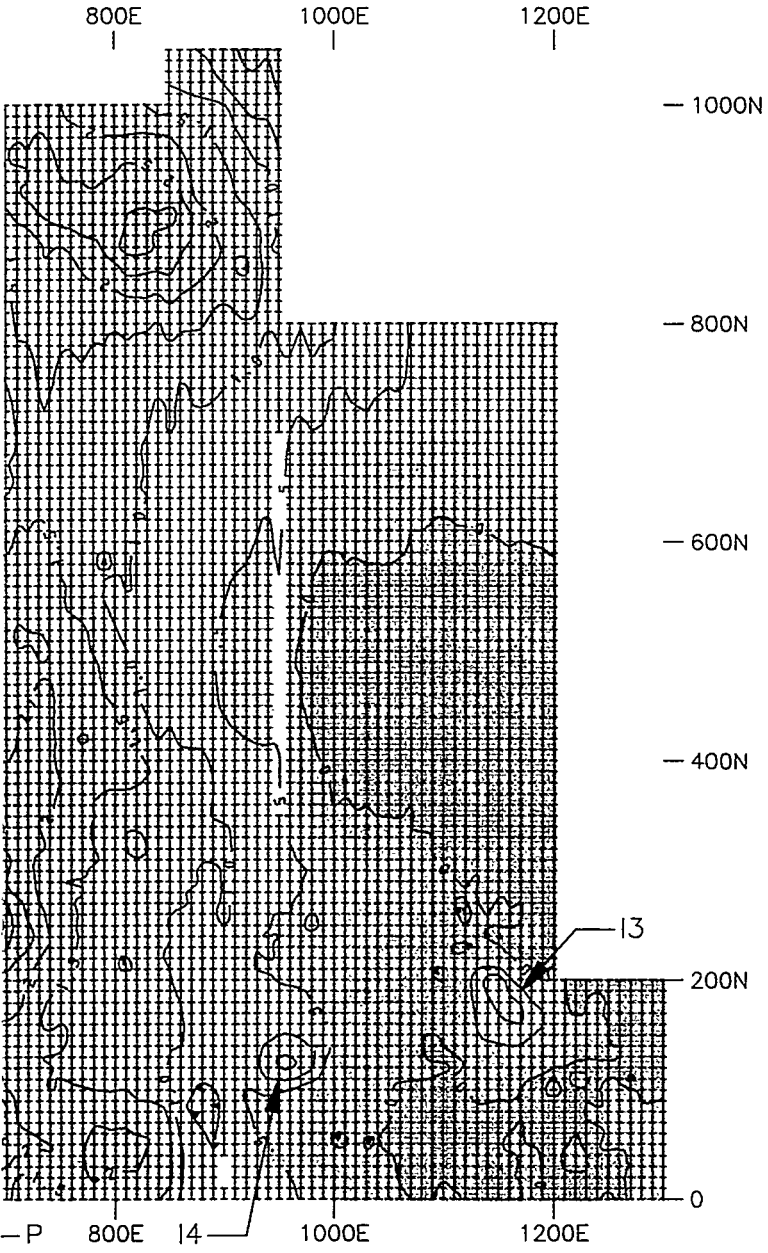
LISIEMENS PER METER

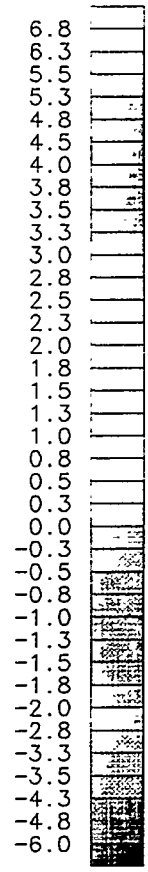
FIGURE B-8.2
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C1 – AREAS OF ELEVATED CONDUCTIVITY WITH SEQUENTIAL NUMBERING


DRAWING NUMBER 301965-B34
CHECKED BY SAH 4-26-94
APPROVED BY 9/23/94
0
200E
400E
600E
1000N
800N
600N
400N
200N
0
I2
S
I1
I6
I5
CONTOUR INTERVAL = .5 PA
SCALE
0 175 350 Feet
0 53 106 Meters





RTS PER THOUSAND

FIGURE B-8.3
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

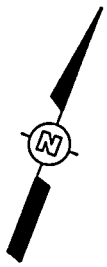
LEGEND

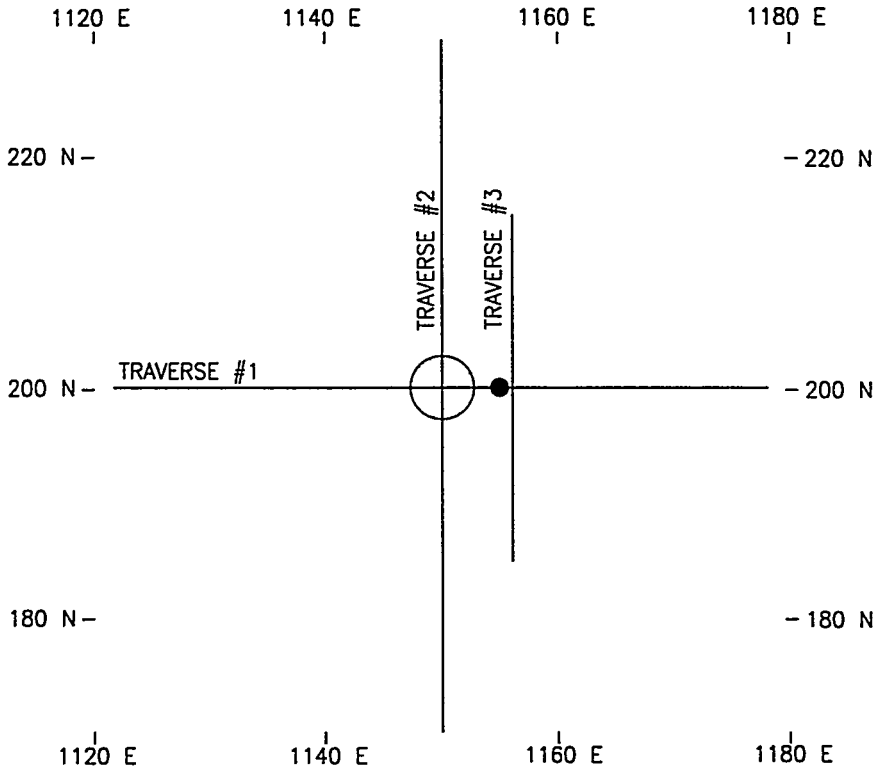
I - IN-PHASE COMPONENT ANOMALY ASSOCIATED WITH AREAS OF ELEVATED CONDUCTIVITY WITH SEQUENTIAL NUMBERING

S - ANOMALY ATTRIBUTED TO STEEL CULVERT

P - ANOMALY ATTRIBUTED TO FERROMETALLIC SUFACE DEBRIS

CHECKED BY:	SAH	9/28/94
APPROVED BY:	[illegible]	9/28/94
DRAWING NUMBER	301965.403.02.002	





LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

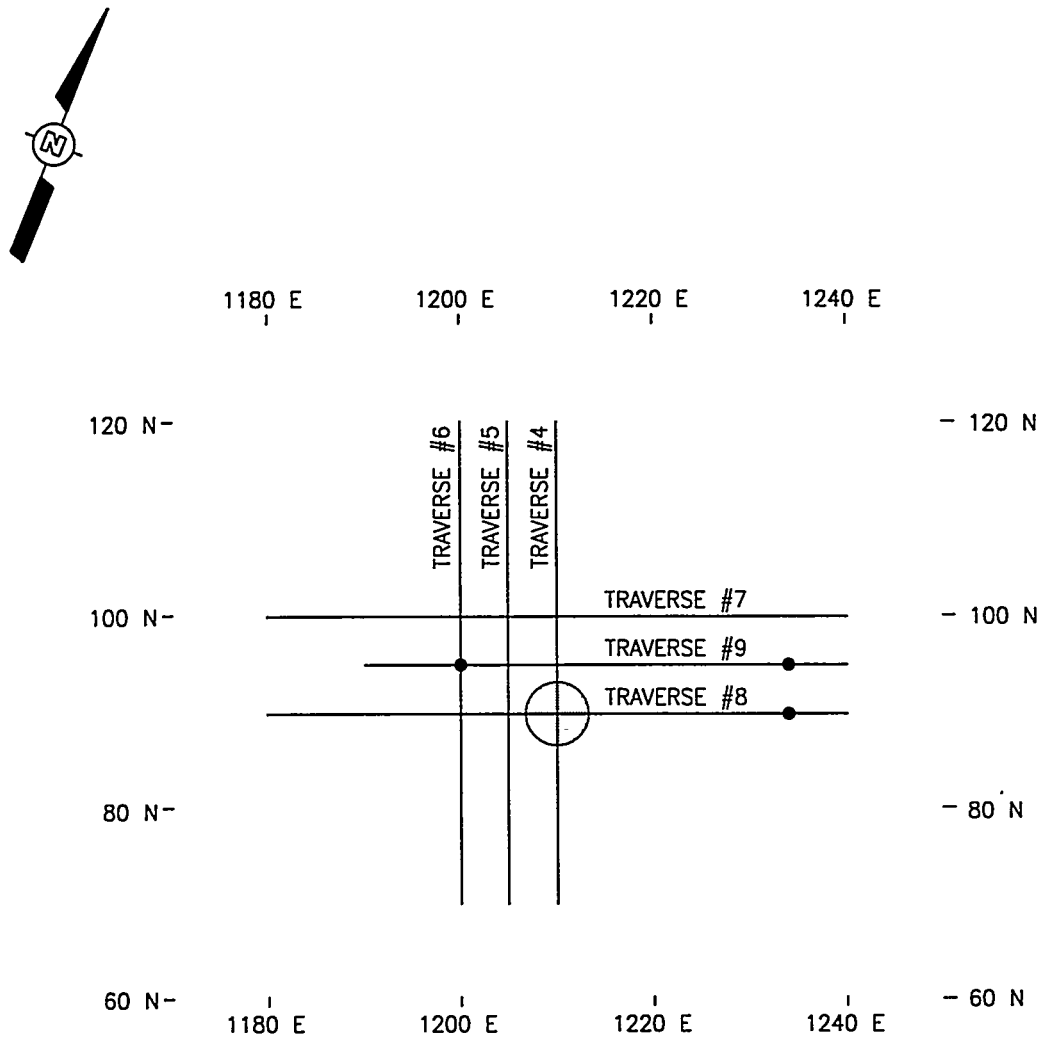
SCALE

0 20 40 Feet

0 6 12 Meters

FIGURE B-8.4
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M1
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSPPI

1965A52 08/15/94



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 20 40 Feet

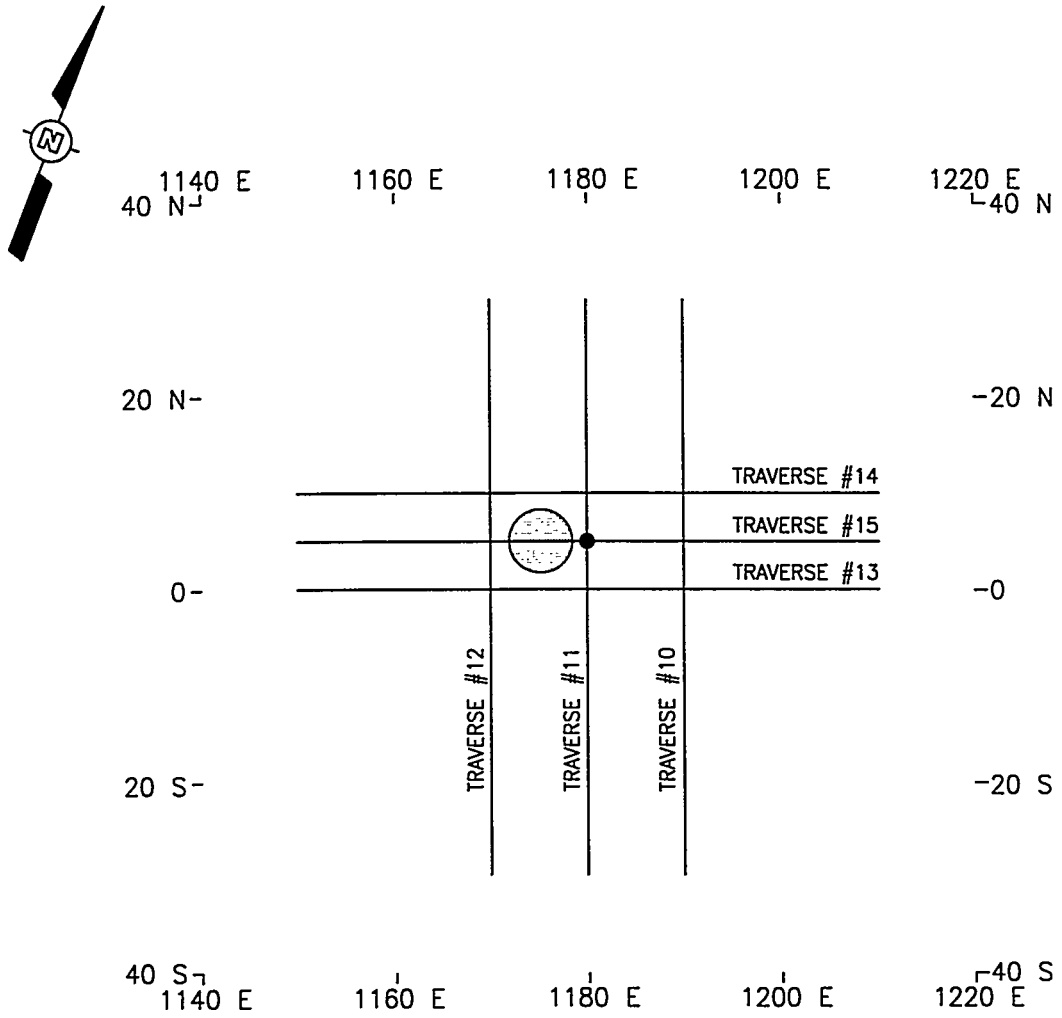
0 6 12 Meters

FIGURE B-8.5
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M2
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWING NUMBER 301965.403.02.002
CHECKED BY: SAH 9/28/94
APPROVED BY: [illegible] 9/28/94
08/19/94
1965A56

CHECKED BY:	SAH	5/25/94
APPROVED BY:	WAC	5/26/94

DRAWING NUMBER 301965.403.02.002



LEGEND

- ● SIGNIFICANT GPR ANOMALIES
- —— GPR TRAVERSES
- ○ APPROXIMATE LOCATION OF MAGNETIC ANOMALY

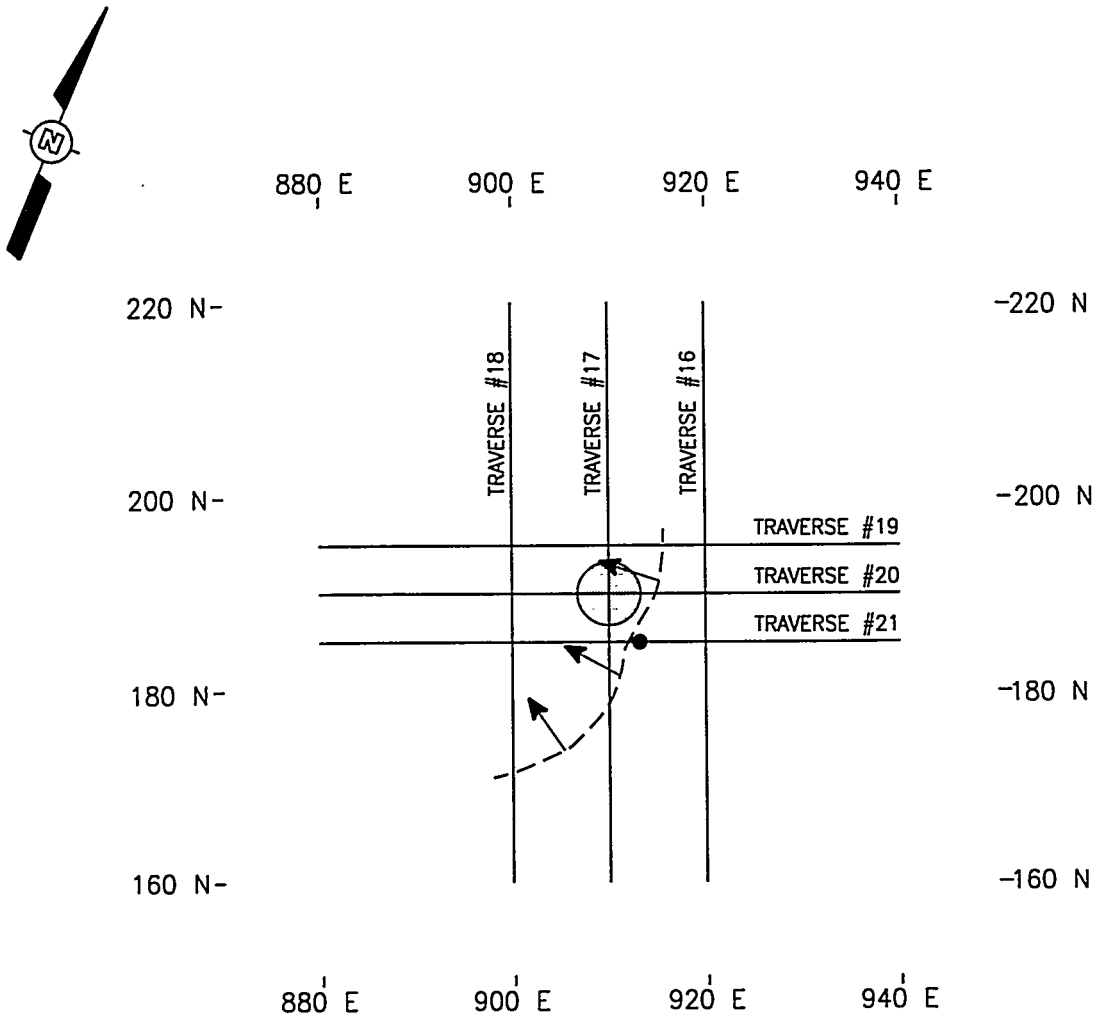
SCALE

0 20 40 Feet

0 6 12 Meters

FIGURE B-8.6
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M3
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A50 08/15/94



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- AREA OF DISTURBED SOIL STATIFICATION (ARROWS POINT TOWORD DISTURBED SOIL)
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 20 40 Feet

0 6 12 Meters

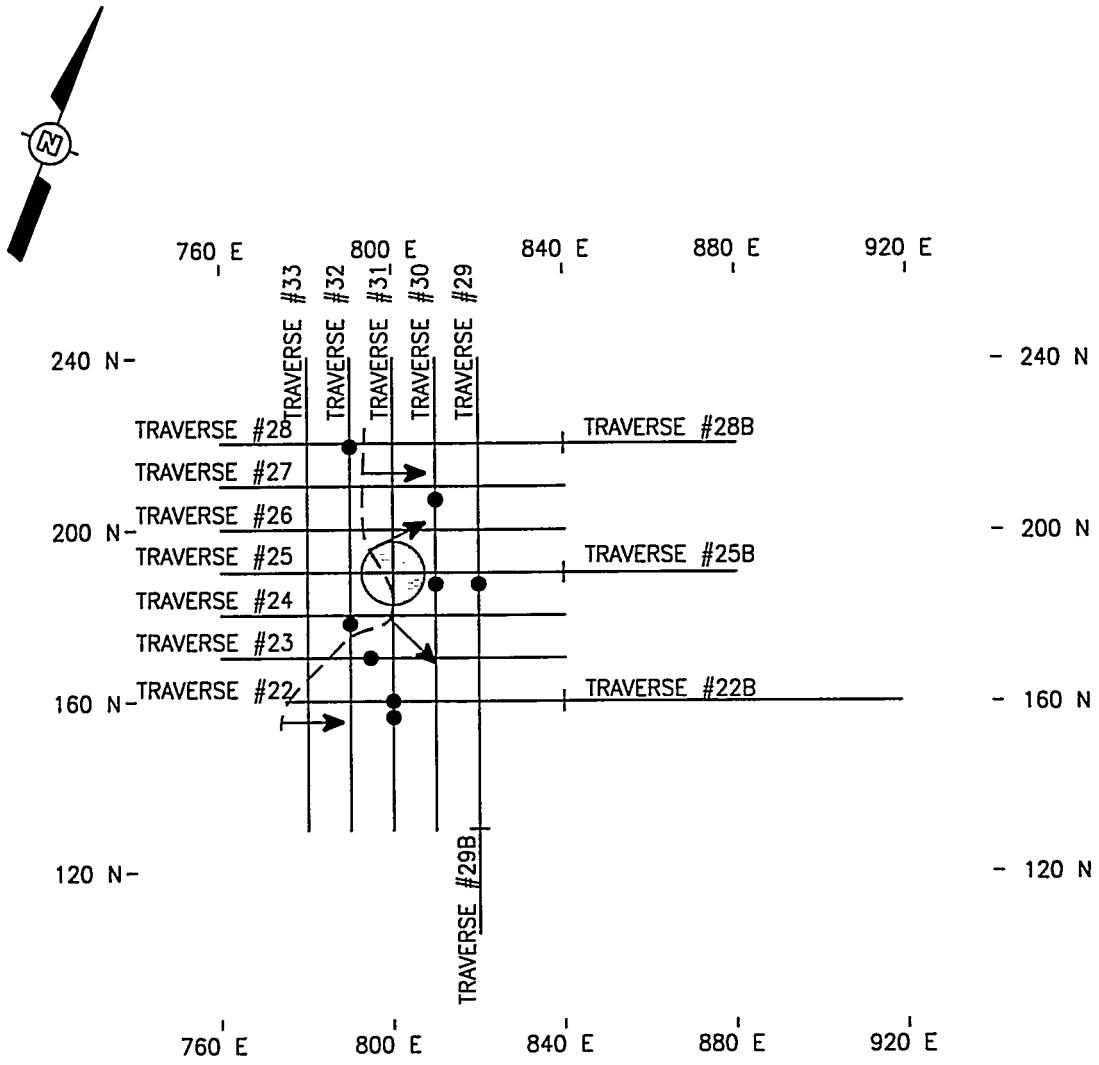
FIGURE B-8.7
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M5
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWING NUMBER 301965.403.02.002
CHECKED BY: SAH 7/25/94
APPROVED BY: [illegible] 7/27/94
08/15/94
1965AS1

DRAWING NUMBER 301965.403.02.002

CHECKED BY: SAH 7/25/94

APPROVED BY: HAC 7/26/94



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- AREA OF DISTURBED SOIL STRATIFICATION (ARROWS POINT TOWARD DISTURBED SOIL)
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 45 90 Feet

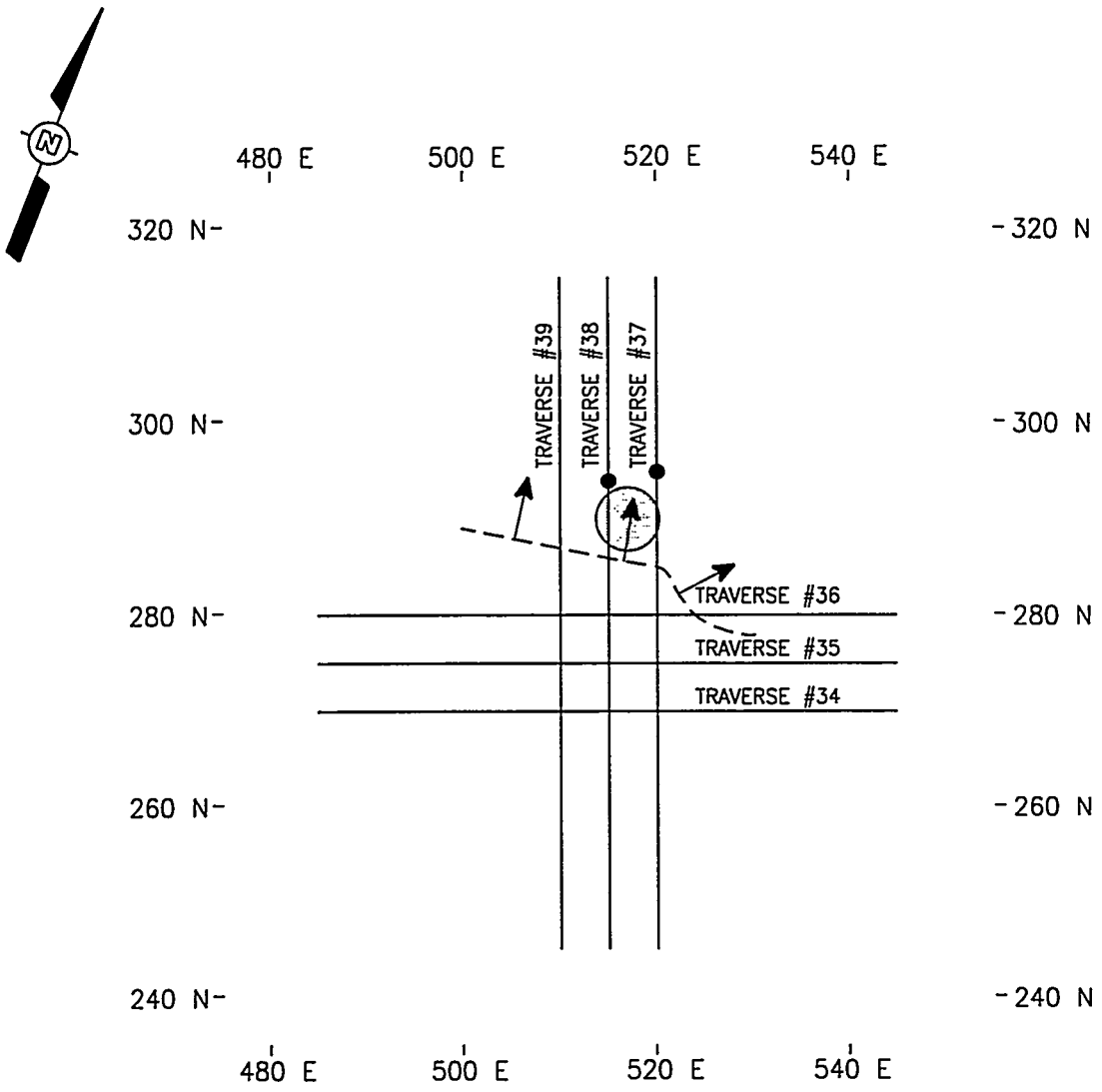
0 15 30 Meters

FIGURE B-8.8
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M6
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A49 08/19/94

CHECKED BY:	SAH	9/23/94
APPROVED BY:	[illegible]	[illegible]

DRAWING NUMBER 301965.403.02.002



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- AREA OF DISTURBED SOIL STRATIFICATION (ARROWS POINT TOWARD DISTURBED SOIL)
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

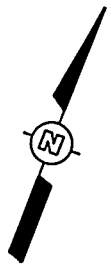
0 20 40 Feet

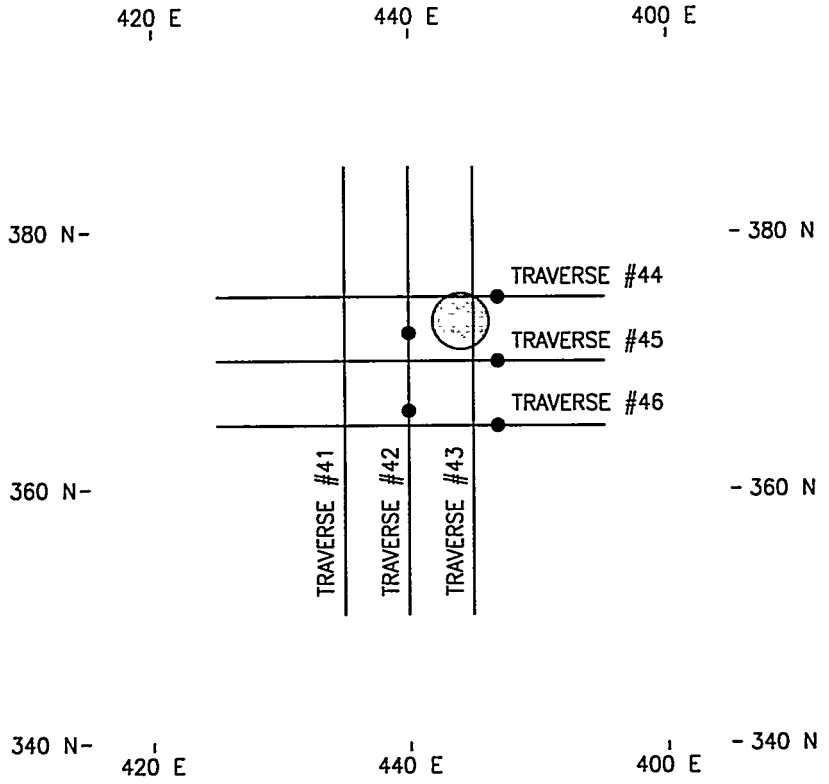
0 6 12 Meters

FIGURE B-8.9
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M7
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A47 08/15/94

CHECKED BY:	SAH	9/28/94
APPROVED BY:	[illegible]	[illegible]
DRAWING NUMBER	301965.403.02.002	





LEGEND

- ● SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- ○ APPROXIMATE LOCATION OF MAGNETIC ANOMALY

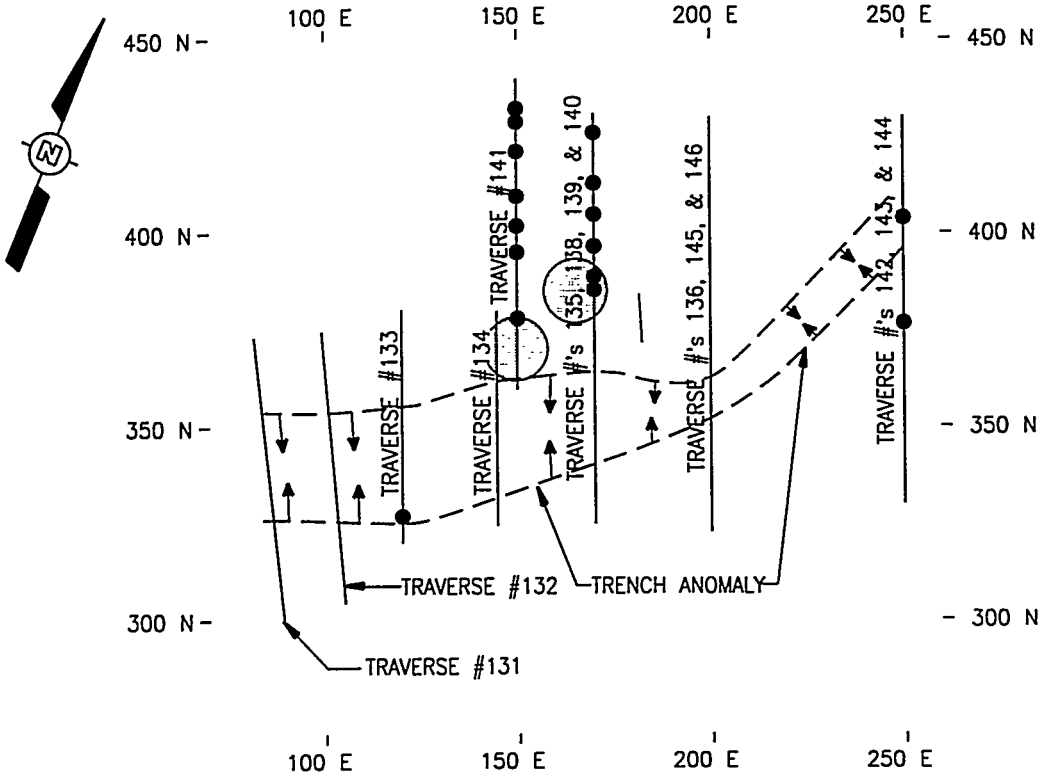
SCALE

0 15 30 Feet

0 5 10 Meters

FIGURE B-8.10
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M8
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A48 09/28/94



NOTE:

Traverses showing multiple traverse numbers contain an overlap between traverses. Traverse lengths are as follows:

#135 – 380N/325N, #138 – 430N/390N, #139 – 400N/360N, #140 – 370N/330N; #136 – 380N/320N, #145 – 430N/370N, #146 – 380N/330N; #142 – 415N/380N, #143 – 430N/380N, #144 – 390N/330N.

LEGEND

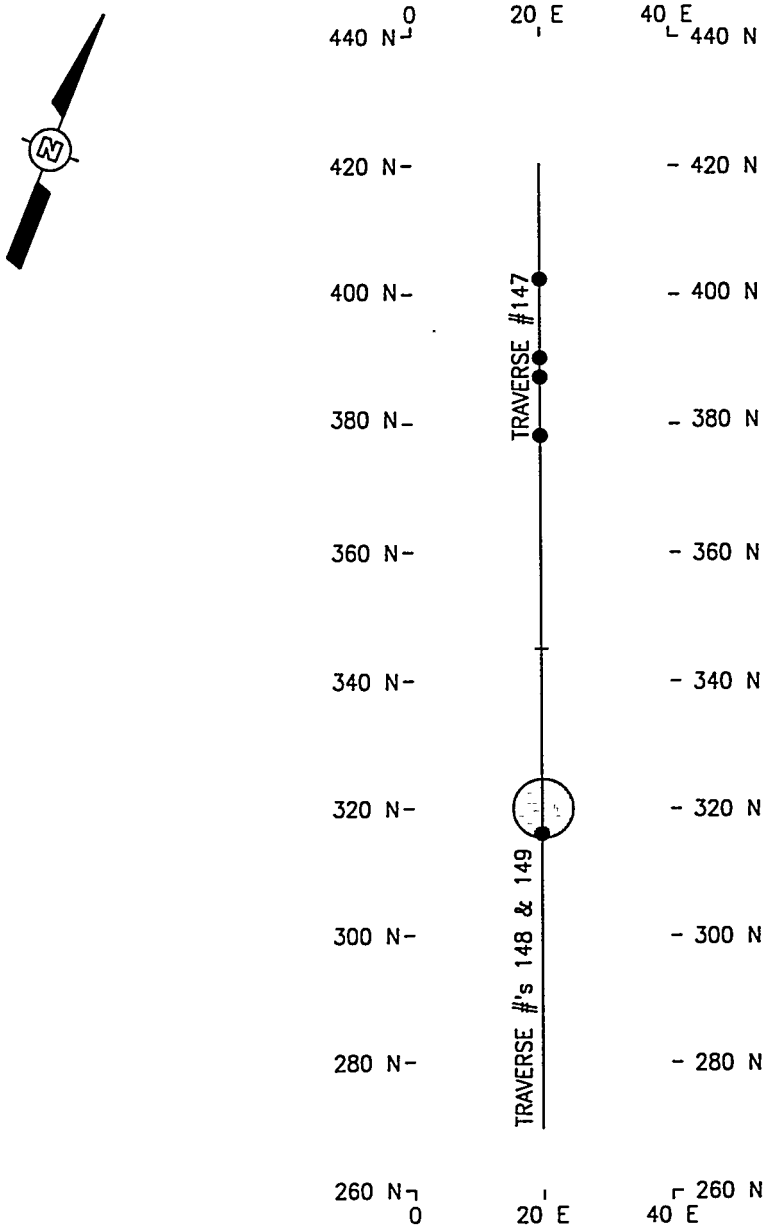
- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- TRENCH ANOMALY INDICATING DISRUPTED AREA
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 50 100 Feet

0 15 30 Meters

FIGURE B–8.11
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES ACROSS MAGNETIC ANOMALY M10
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 30 60 Feet

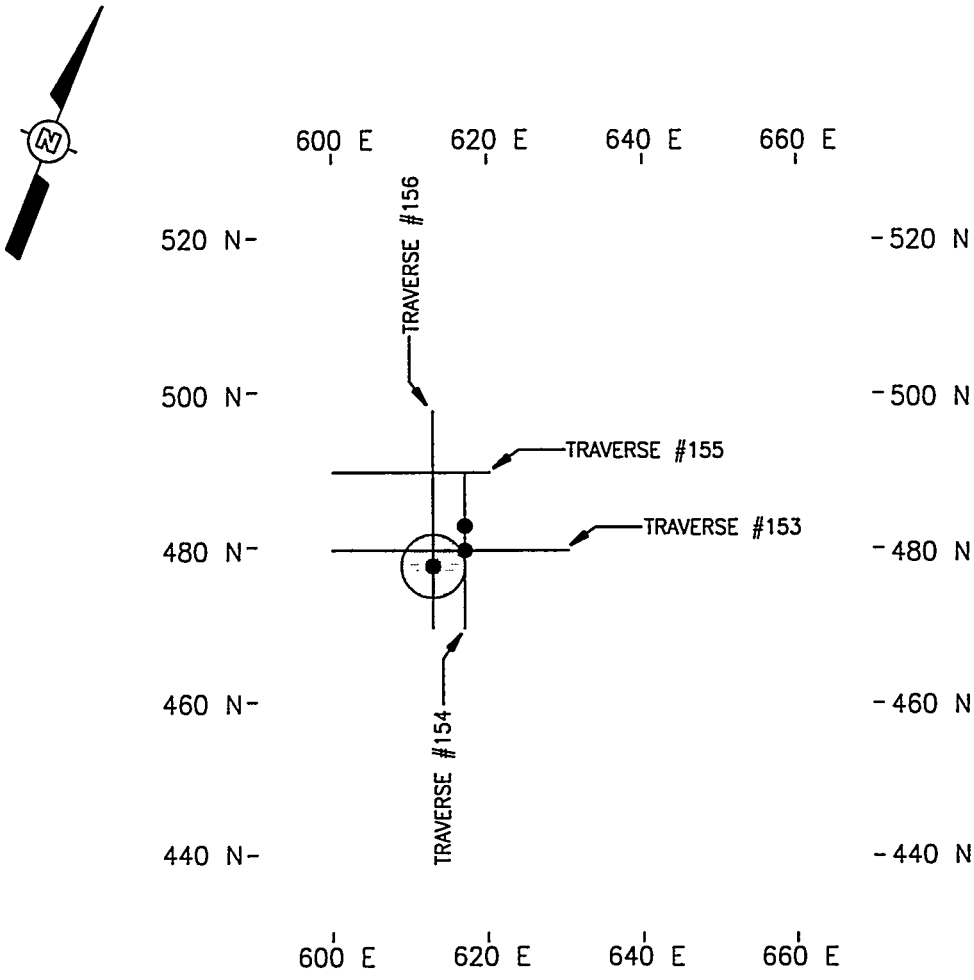
0 10 20 Meters

FIGURE B-8.12
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M10
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

CHECKED BY:	SAH	1/28/94
APPROVED BY:	PAC	1/28/94
DRAWING NUMBER	301965.403.02.002	

1965A45 08/19/94

CHECKED BY:	SAH	4/28/94
APPROVED BY:	HAC	5/26/94
DRAWING NUMBER	301965.403.02.002	



LEGEND

- SIGNIFCANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

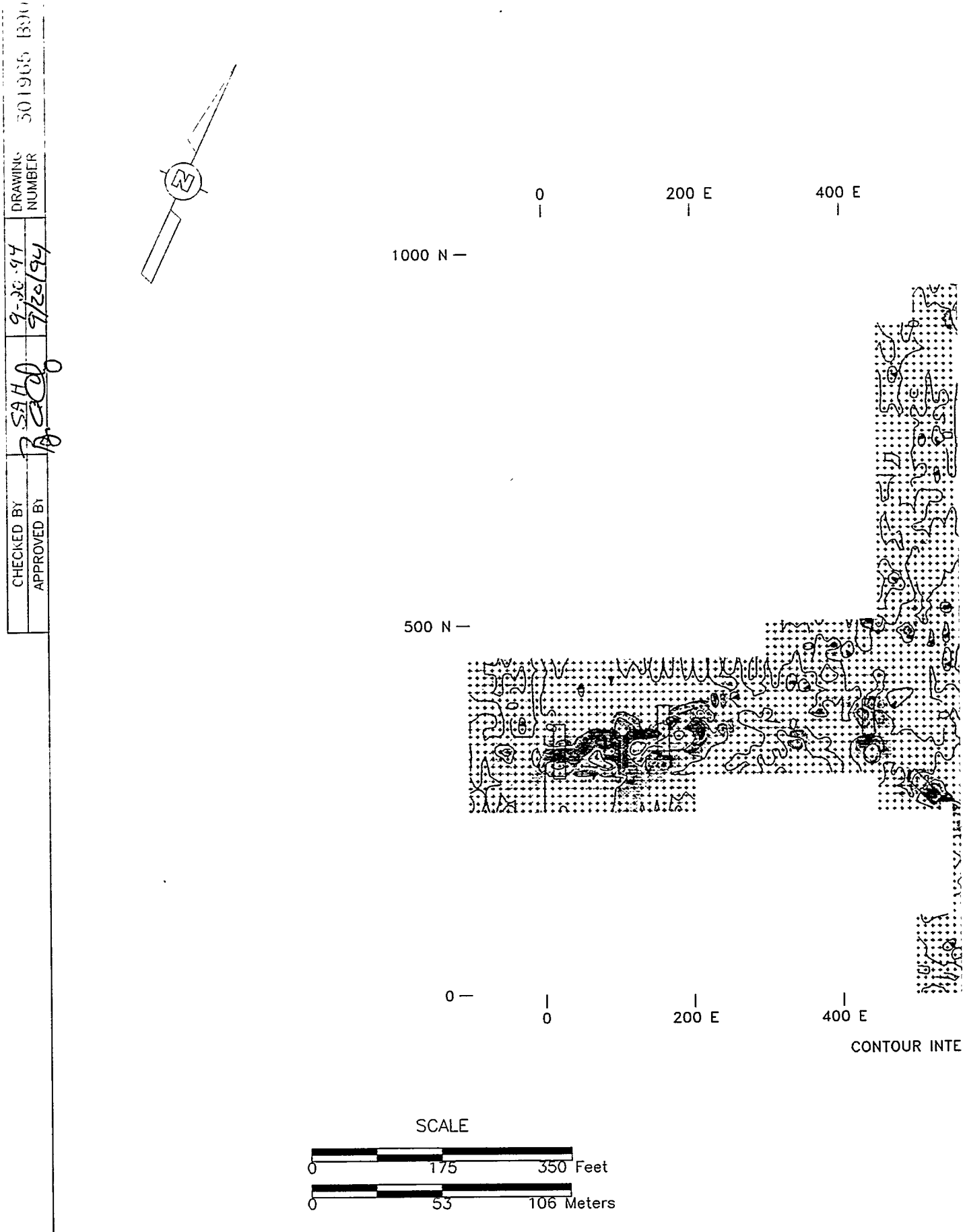
SCALE

0 25 50 Feet

0 8 16 Meters

FIGURE B-8.13
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, AND 7
GPR TRAVERSES OVER MAGNETIC ANOMALY M11
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A43 08/19/94


DRAWING NUMBER 301965 B30
9-30-94
9/26/94
CHECKED BY SAH
APPROVED BY B.Zab
0
200 E
400 E
1000 N
500 N
0
0
200 E
400 E
CONTOUR INTE
SCALE
0 175 350 Feet
0 53 106 Meters

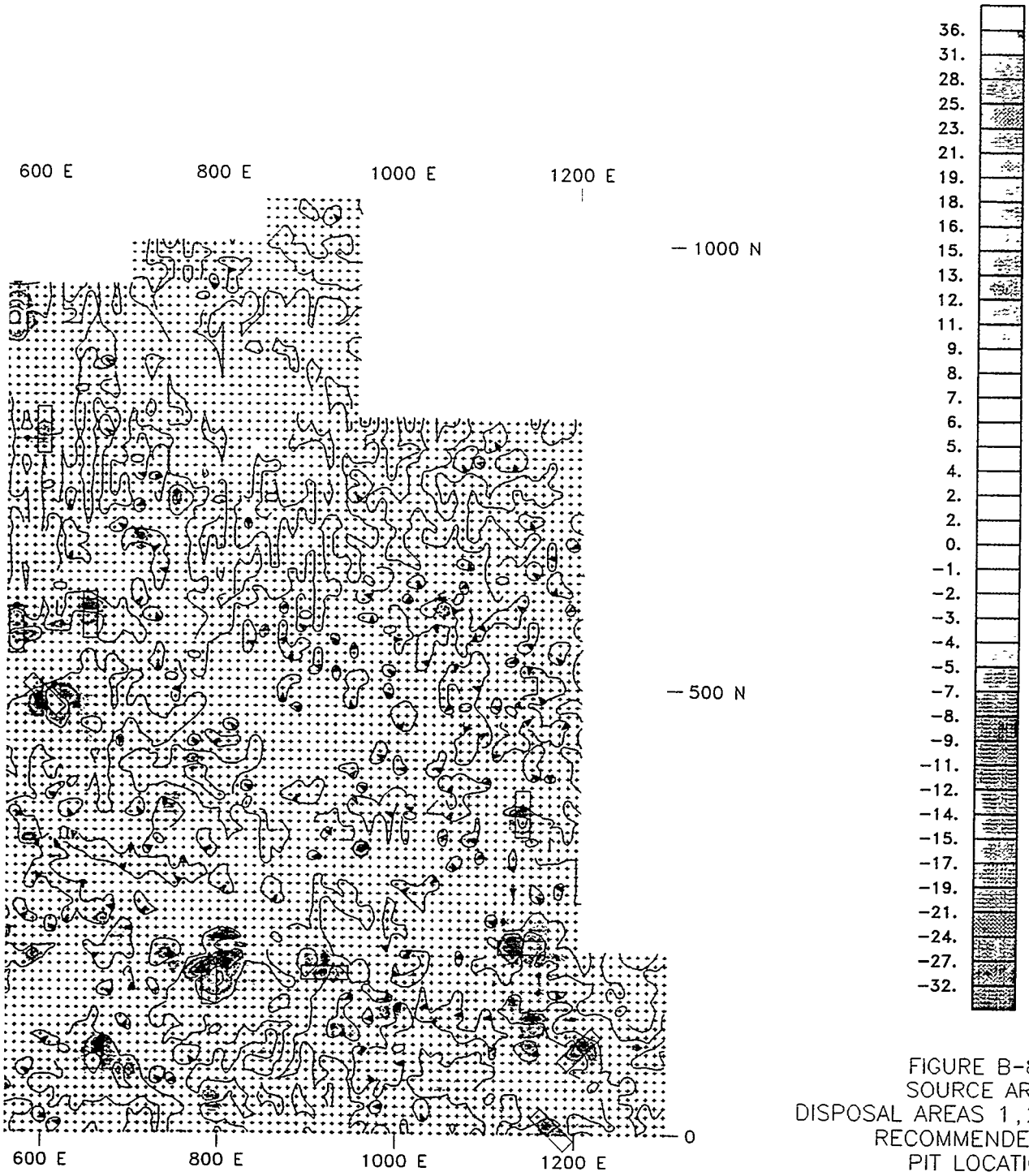
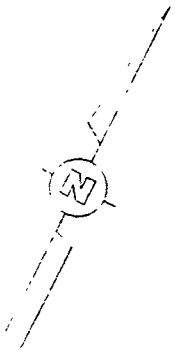


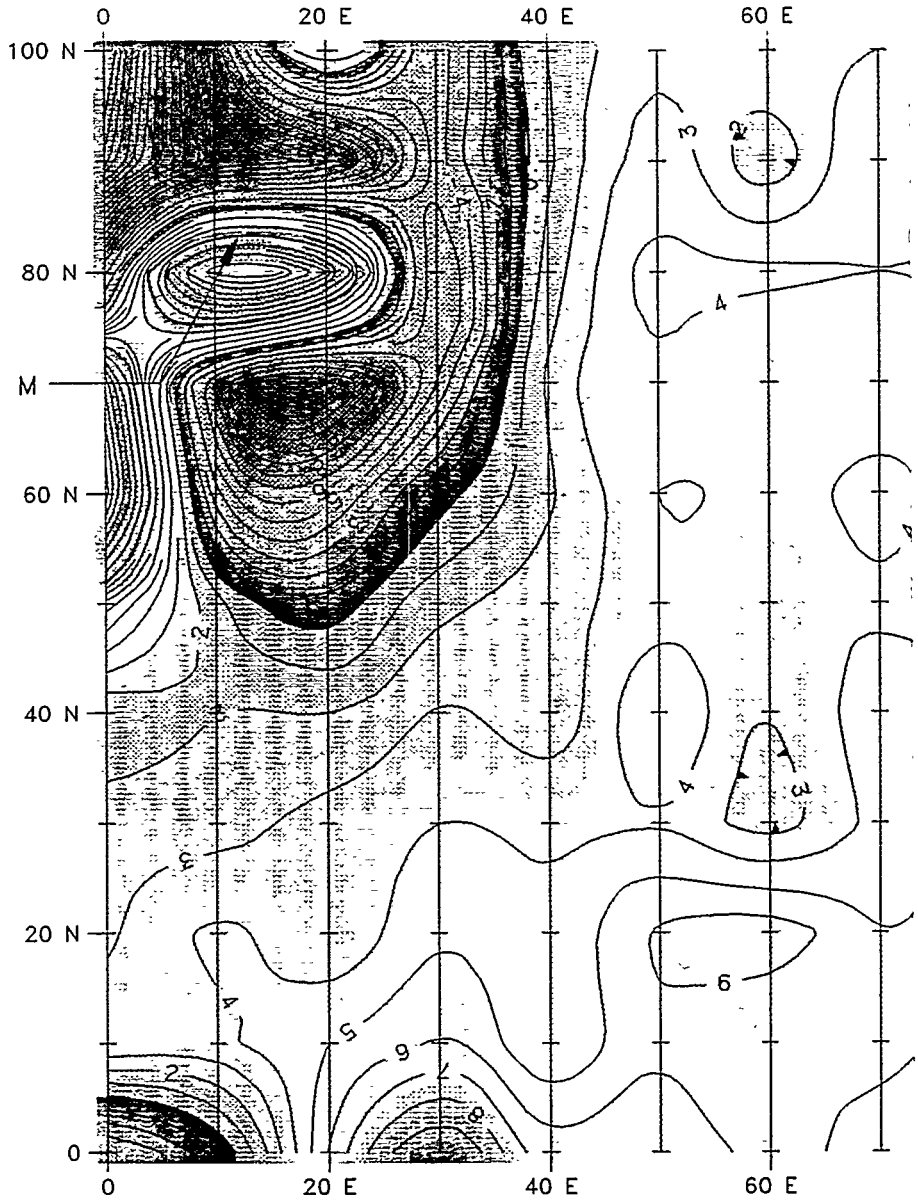
FIGURE B-8.14
SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, & 7
RECOMMENDED TEST
PIT LOCATIONS
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

▭ – RECOMMENDED TEST PIT LOCATIONS

DRAWING NUMBER		301965-B36
	9-30-94	
	9/20/94	
CHECKED BY	SJH	
APPROVED BY	RGD	



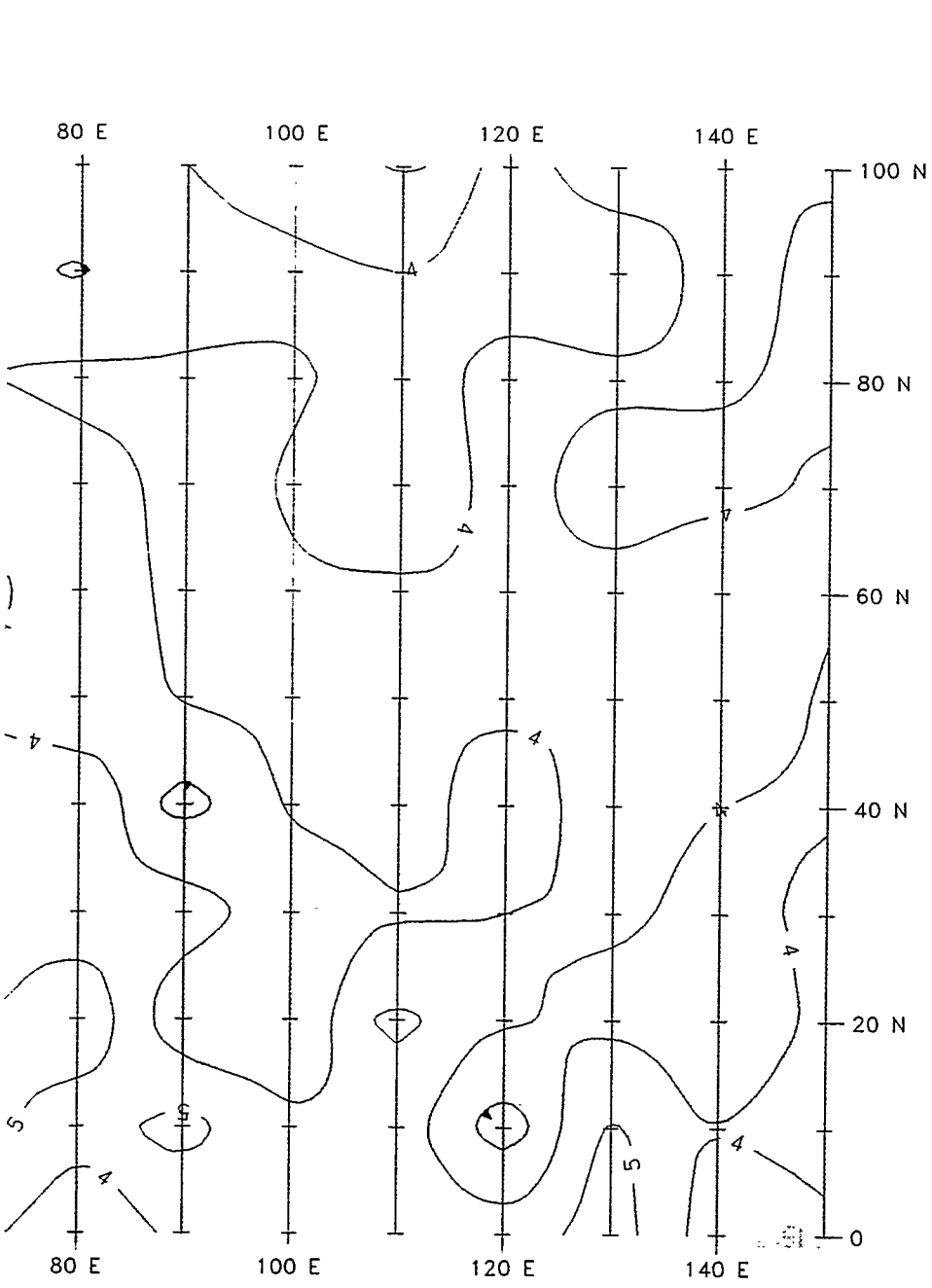


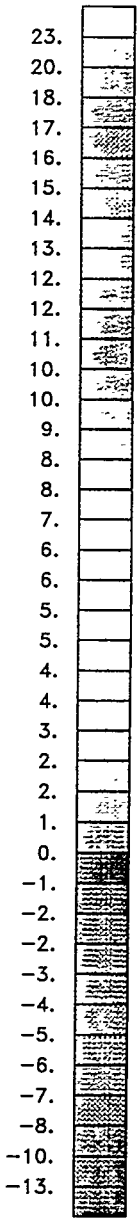
CONTOUR INTERVAL

SCALE

0 18 35 Feet

0 6 11 Meters





= 1 GAMMA PER METER

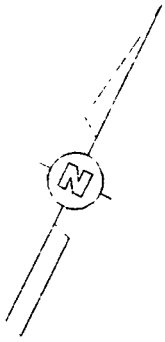
FIGURE B-9.1
SOURCE AREA 2
CLEAN BURN PIT AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

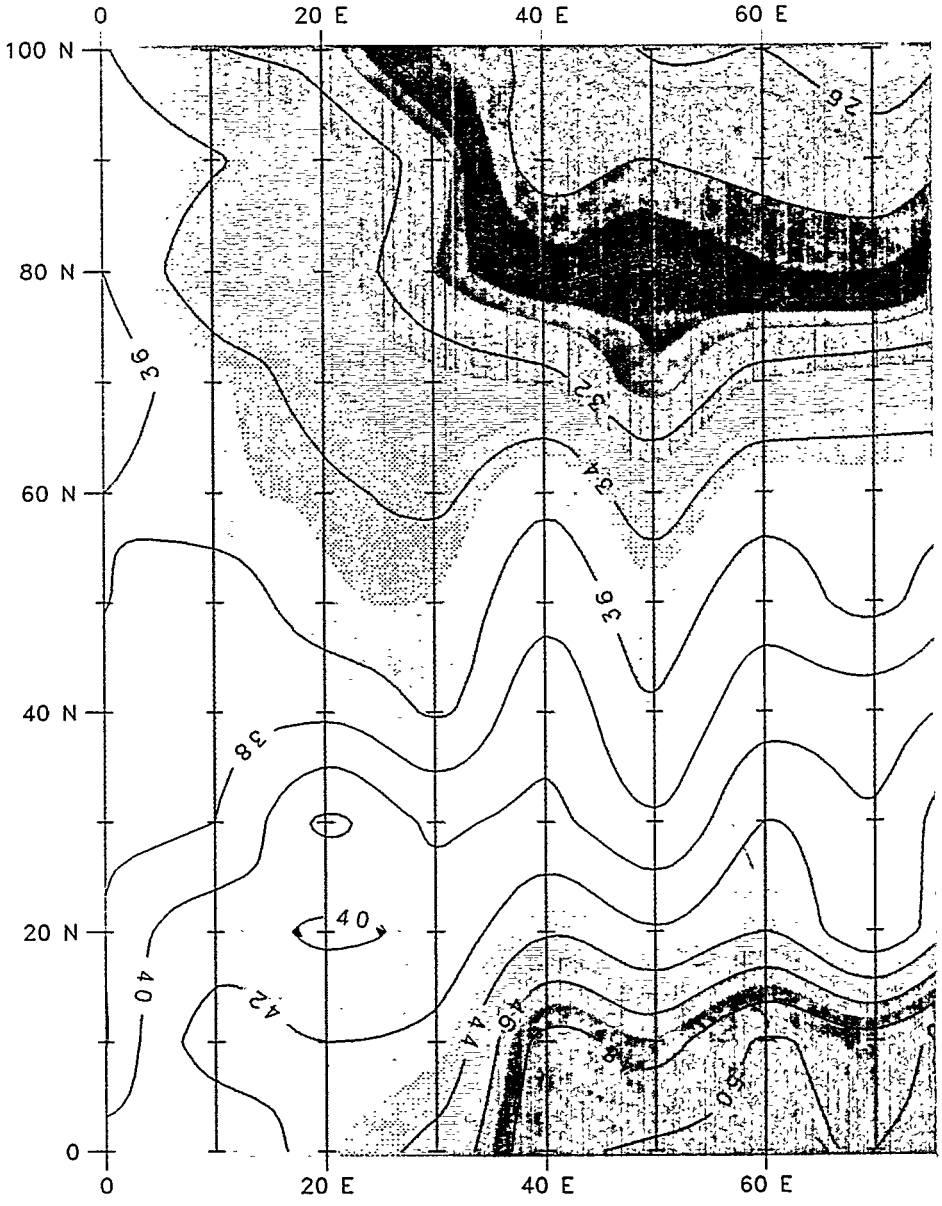
LEGEND

M - ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

CHECKED BY	SAH	9-30-94
APPROVED BY	BRG	9/28/94

DRAWING NUMBER 301965-B3



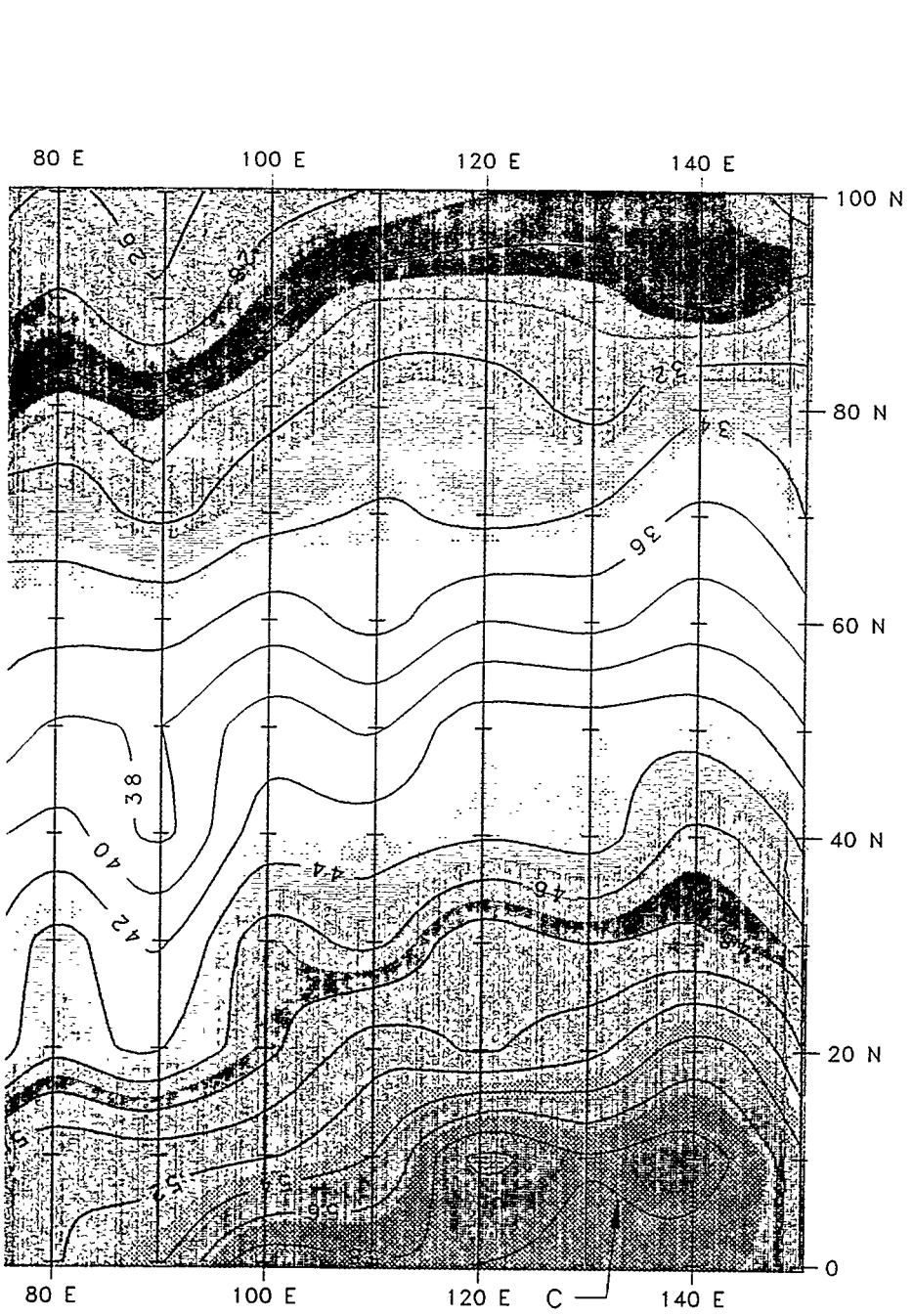


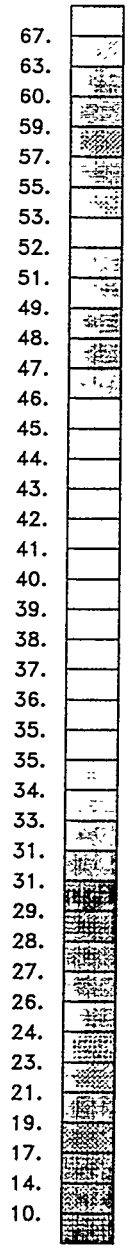
CONTOUR INTERVAL = 2 f

SCALE

0 18 35 Feet

0 6 11 Meters





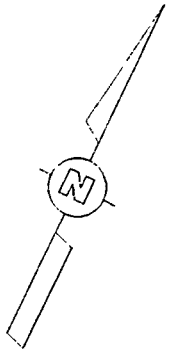
MILLISIEMENS PER METER

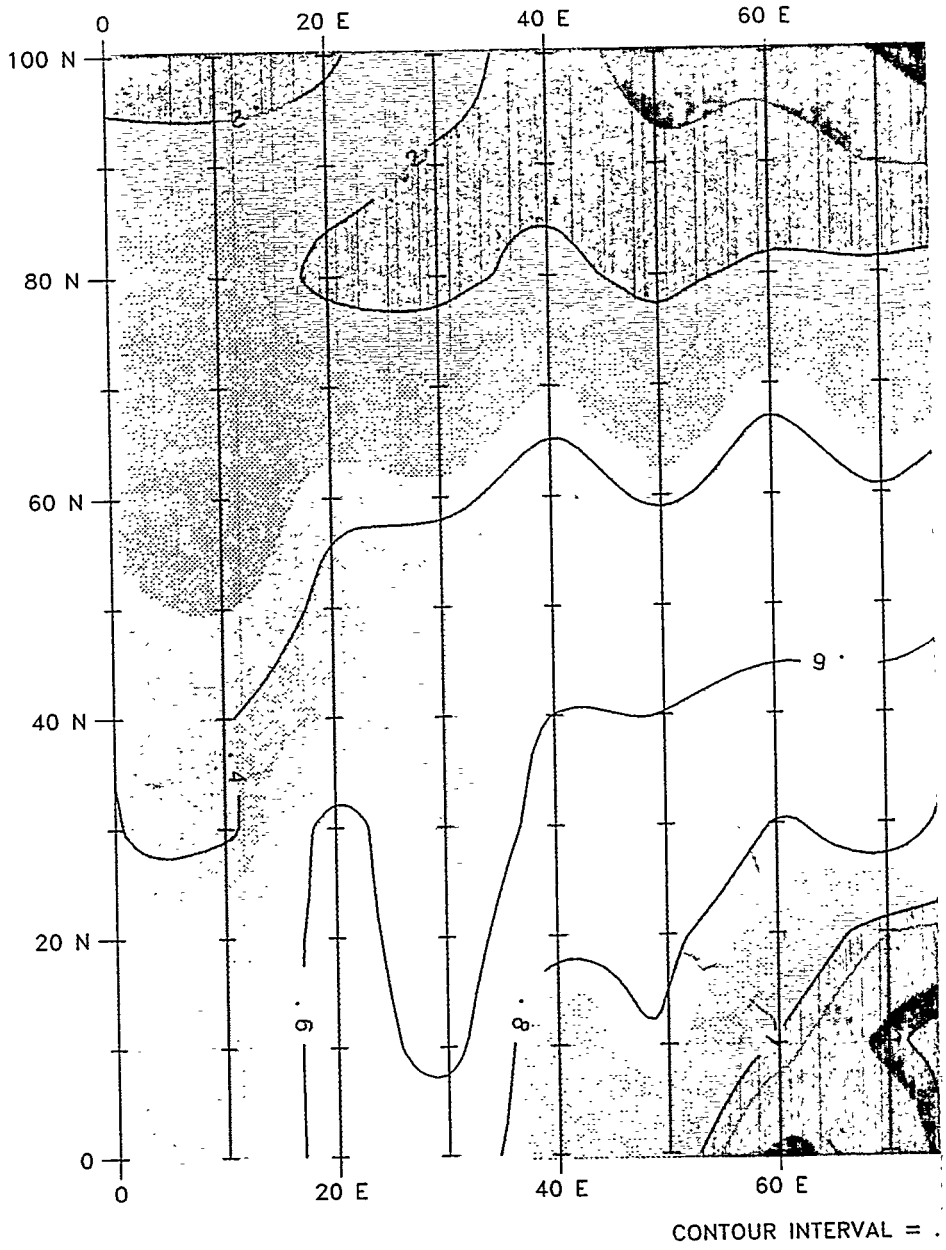
FIGURE B-9.2
SOURCE AREA 2
CLEAN BURN PIT AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C – AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	RSAH	9-30-94	DRAWING NUMBER 301965-B38
APPROVED BY	RJCG	9/26/94	



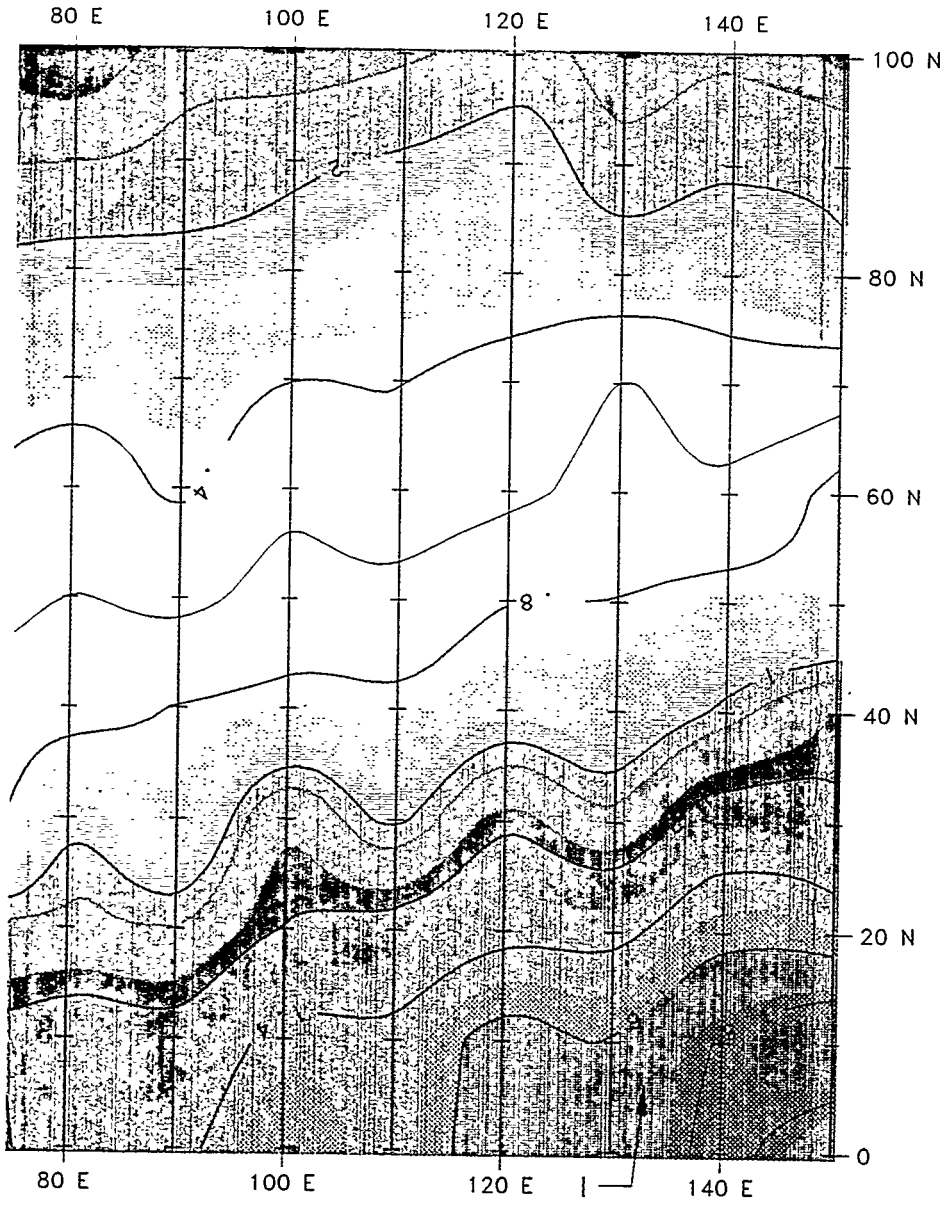


CONTOUR INTERVAL = .

SCALE

0 18 35 Feet

0 6 11 Meters



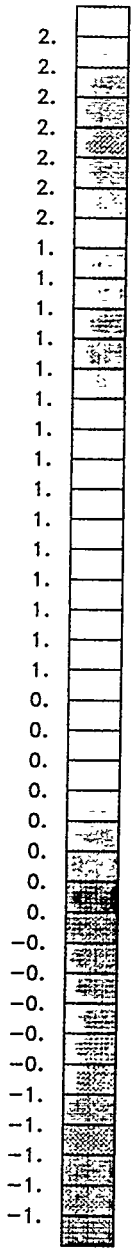
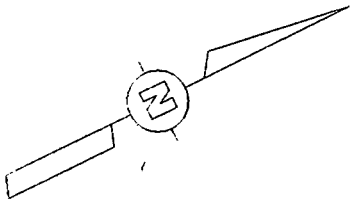


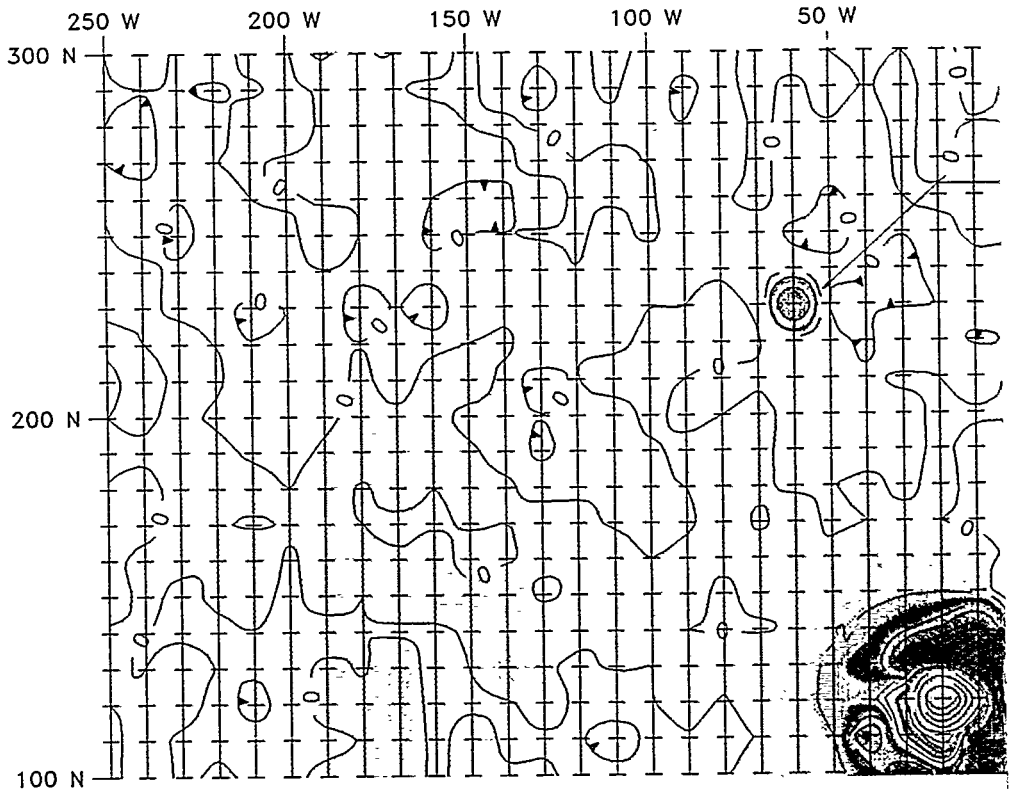
FIGURE B-9.3
SOURCE AREA 2
CLEAN BURN PIT AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

I – IN-PHASE COMPONENT ANOMALY ASSOCIATED WITH AREA OF ELEVATED CONDUCTIVITY

DRAWING NUMBER	301965-B39	
	9-26-94	
CHECKED BY	SAH	
APPROVED BY	9/26/94	





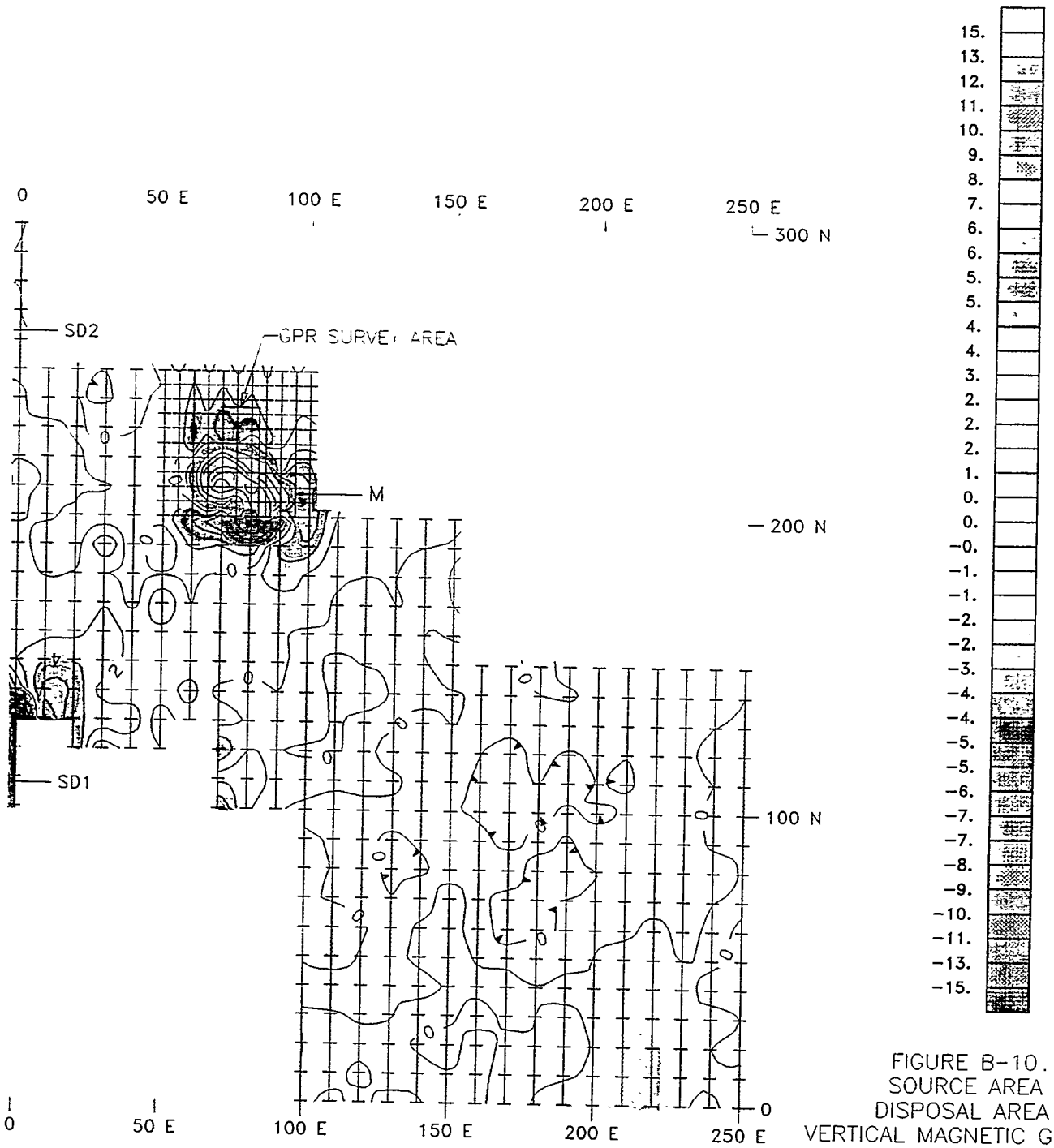
0
250 W | 200 W | 150 W | 100 W | 50 W

CONTOUR INTERVAL =

SCALE

0 53 106 Feet

0 17 34 Meters



2 GAMMAS PER METER

FIGURE B-10.1
SOURCE AREA 2
DISPOSAL AREA 5
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

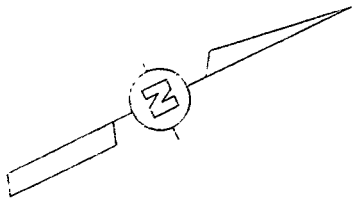
LEGEND

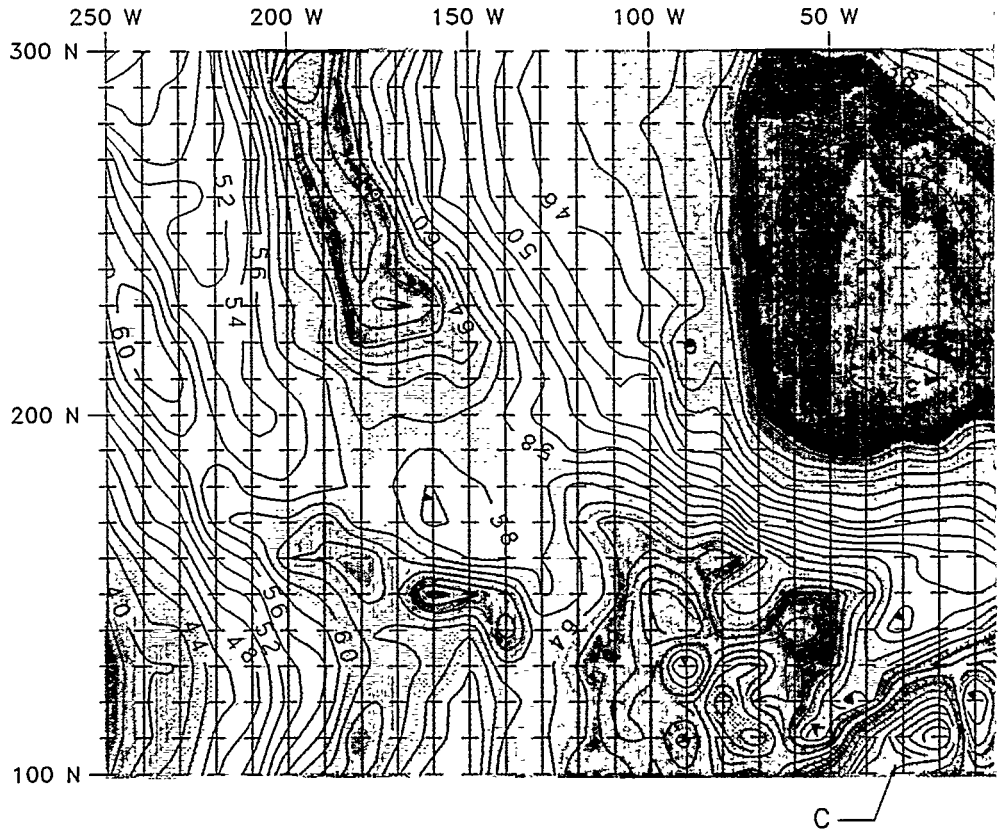
SD1 – ANOMALIES ATTRIBUTED TO FERROMETALLIC DEBRIS ON THE SURFACE WITH SEQUENTIAL NUMBERING

M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

CHECKED BY	SHH	9-30-94
APPROVED BY	[illegible]	9/20/94

DRAWING NUMBER 30196[illegible]-B40





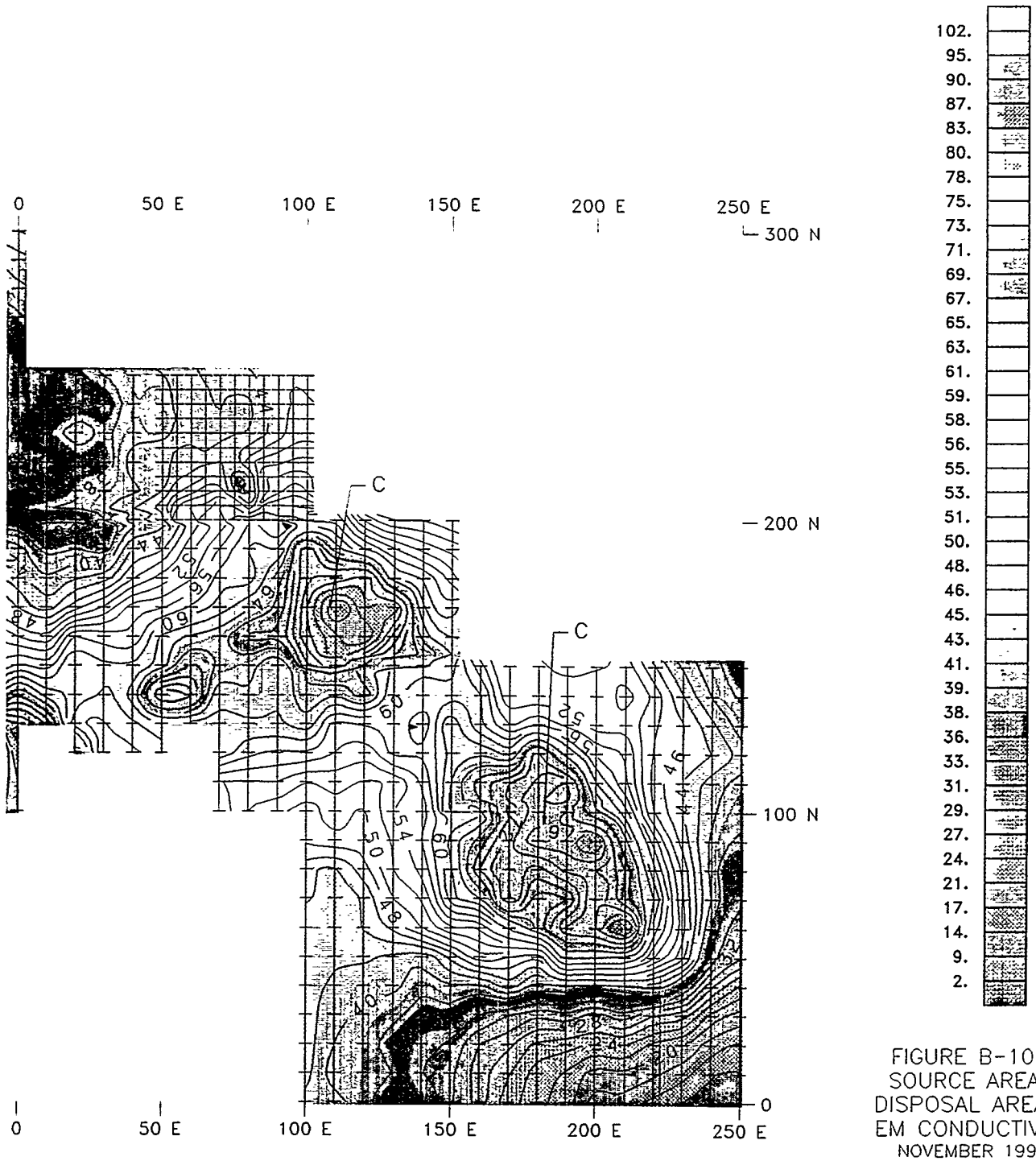
0
250 W | 200 W | 150 W | 100 W | 50 W

CONTOUR INTERVAL = 2

SCALE

0 53 106 Feet

0 17 34 Meters



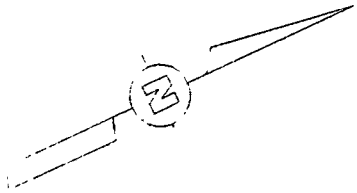
MILLISIEMENS PER METER

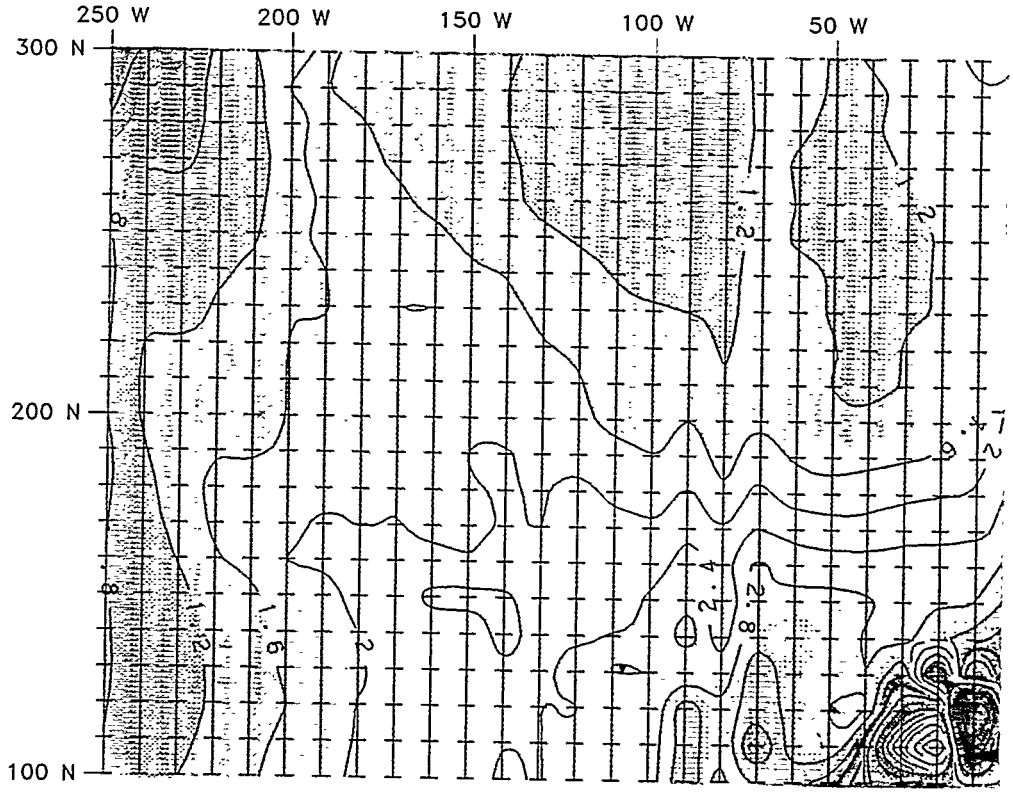
FIGURE B-10.2
SOURCE AREA 2
DISPOSAL AREA 5
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C – AREAS OF ELEVATED CONDUCTIVITY
WITH SEQUENTIAL NUMBERING

CHECKED BY	SMK	9-30-94	DRAWING NUMBER 301965 B41
APPROVED BY	RAG	9/20/94	





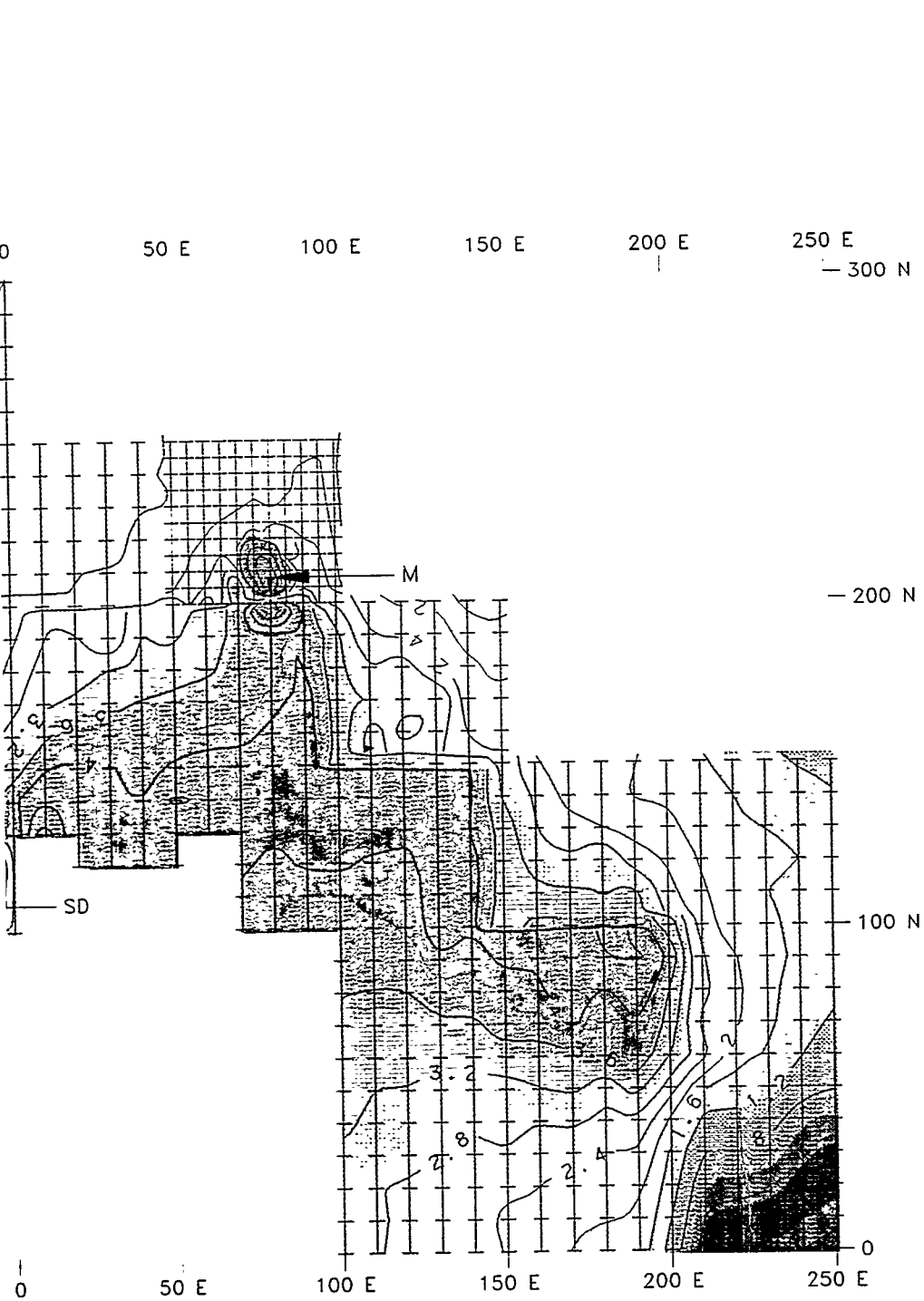
0
250 W 200 W 150 W 100 W 50 W

CONTOUR INTERVAL = .

SCALE

0 53 106 Feet

0 17 34 Meters



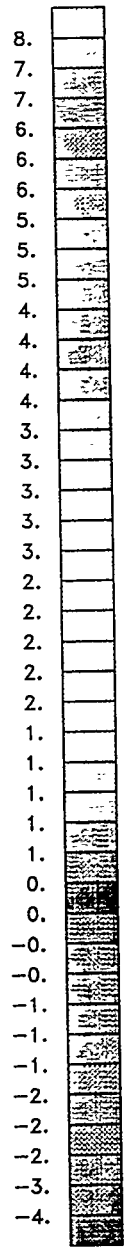


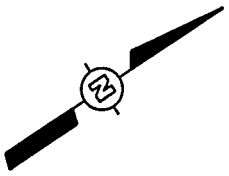
FIGURE B-10.3
SOURCE AREA 2
DISPOSAL AREA 5
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

SD - ANOMALY CAUSED BY FERROMETALLIC DEBRIS ON THE SURFACE

M - MAGNETIC AND IN-PHASE COMPONENT ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

DRAWING NUMBER	301965.403.02.002	
CHECKED BY:	SAH	9/28/94
APPROVED BY:	RAC	9/28/94



60 E 80 E 100 E

250 N

250 N

TRAVERSE #157

TRAVERSE #158

200 N

200 N

60 E 80 E 100 E

LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

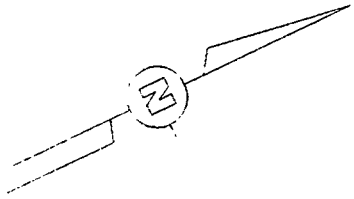
0 20 40 Feet

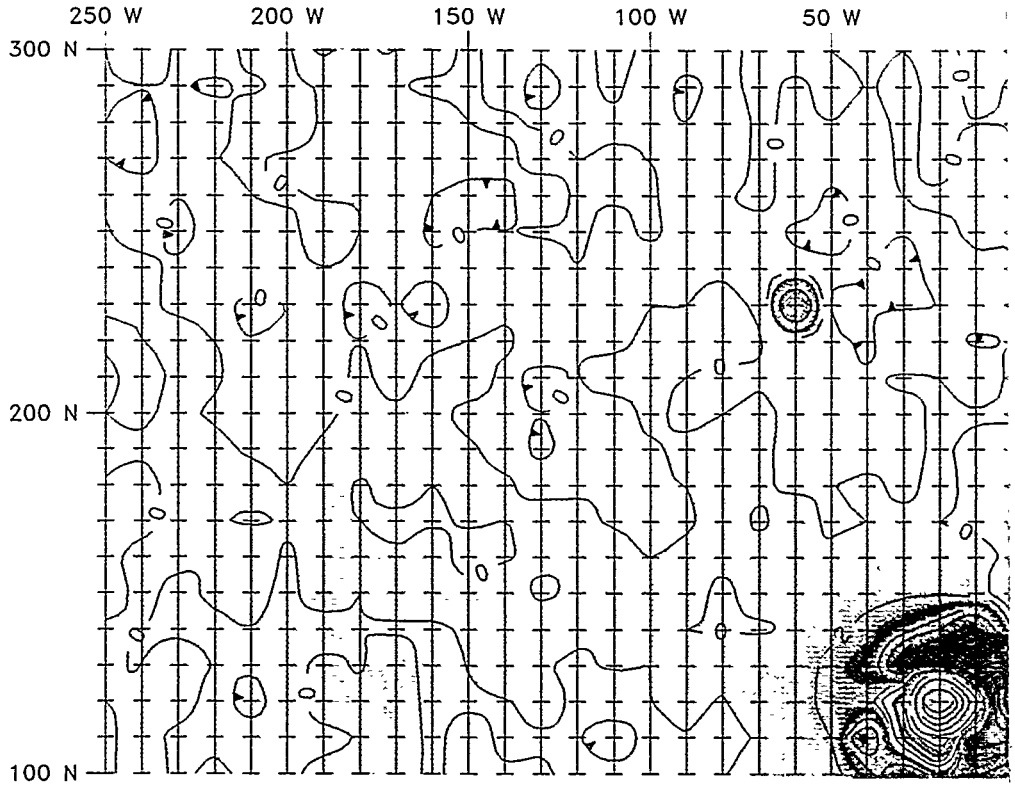
0 6 12 Meters

FIGURE B-10.4
SOURCE AREA 2
DISPOSAL AREA 5
GPR TRAVERSES OVER MAGNETIC ANOMALY M
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A54 08/15/94

CHECKED BY	SAH
APPROVED BY	RCO
	9-20-94
DRAWING NUMBER	301965





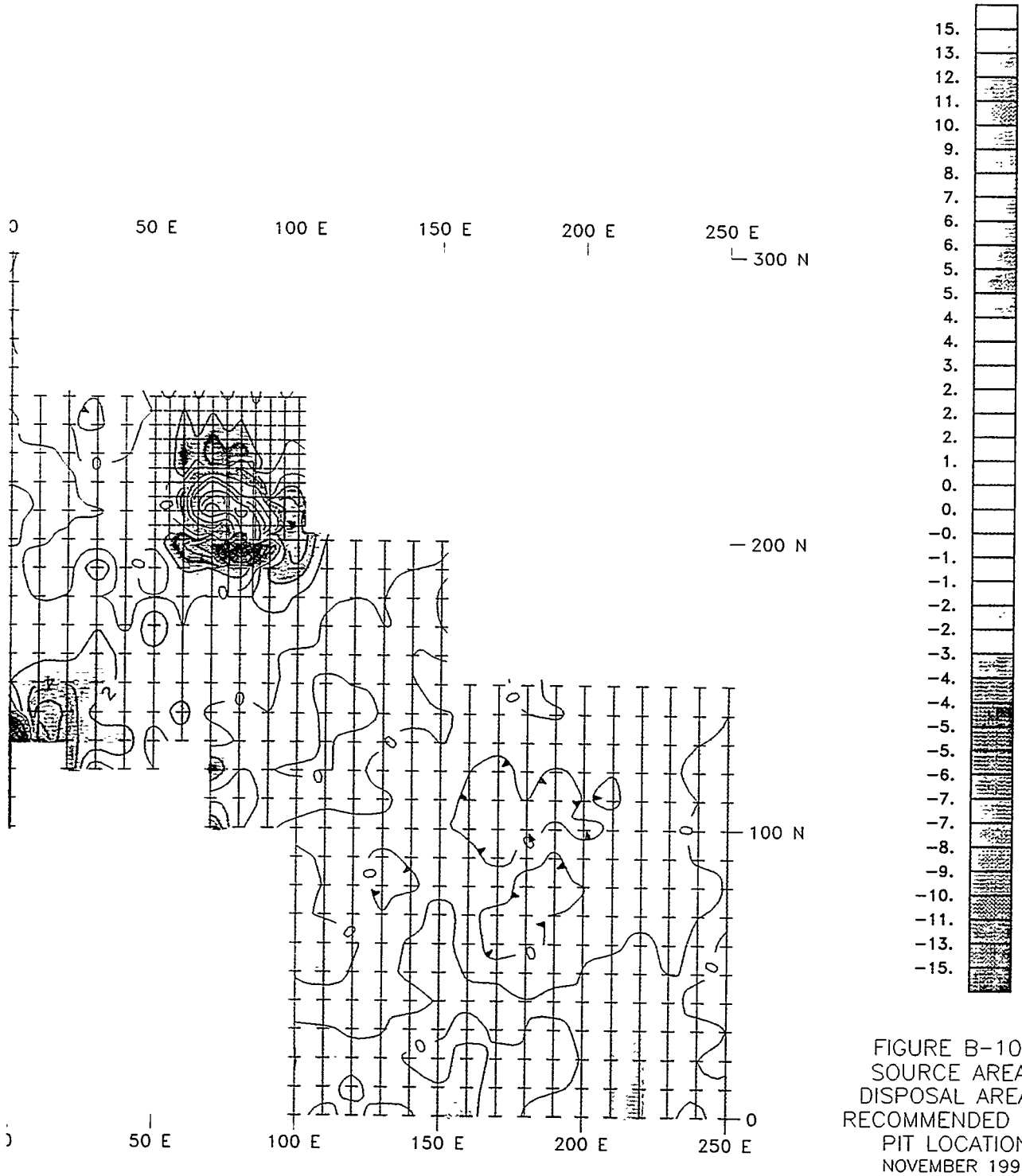
0
250 W 200 W 150 W 100 W 50 W

CONTOUR INTERVAL =

SCALE

0 53 106 Feet

0 17 34 Meters



2 GAMMAS PER METER

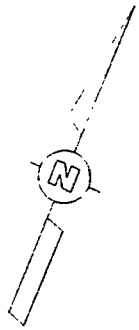
LEGEND

▭ – RECOMMENDED TEST PIT LOCATION

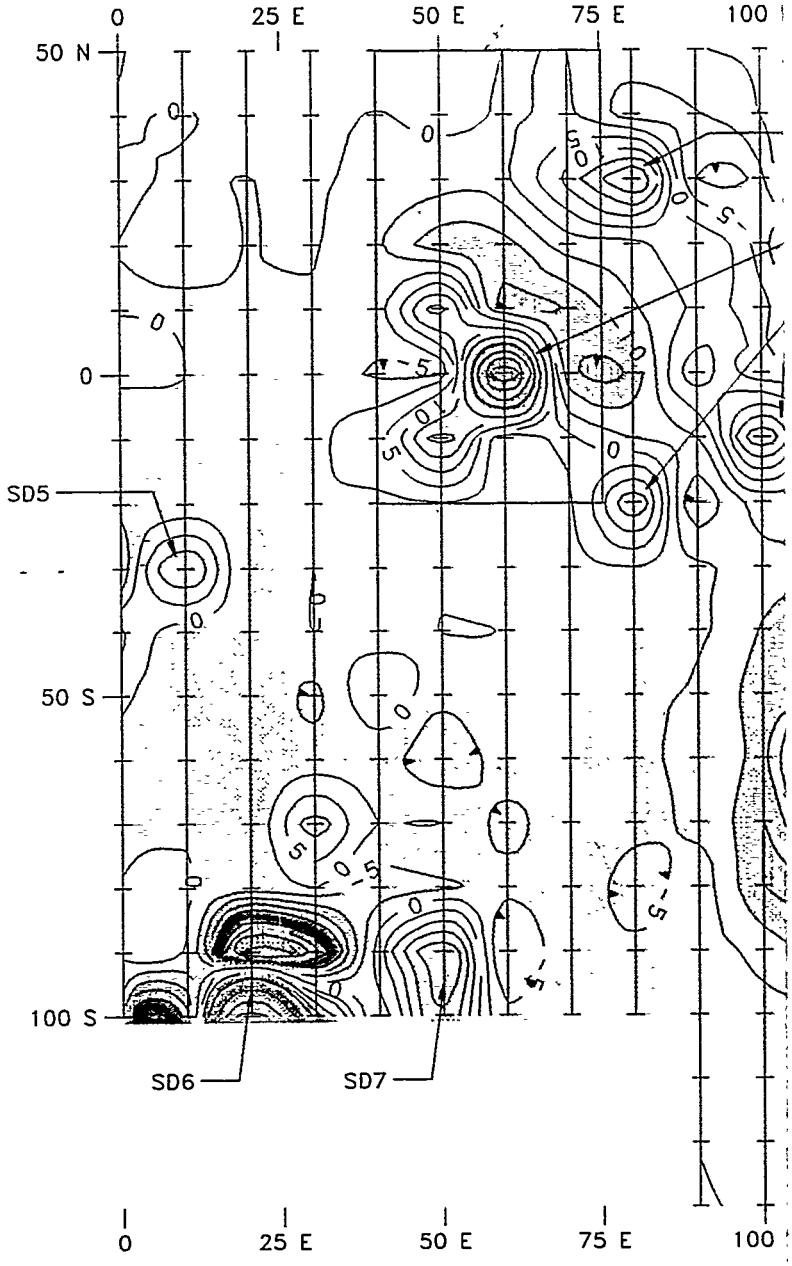
FIGURE B-10.5
SOURCE AREA 2
DISPOSAL AREA 5
RECOMMENDED TEST
PIT LOCATION
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

CHECKED BY	SAH	9-30-94
APPROVED BY	BAC	9/20/94

DRAWING NUMBER 301965-B42



GPR SURVEY AREA

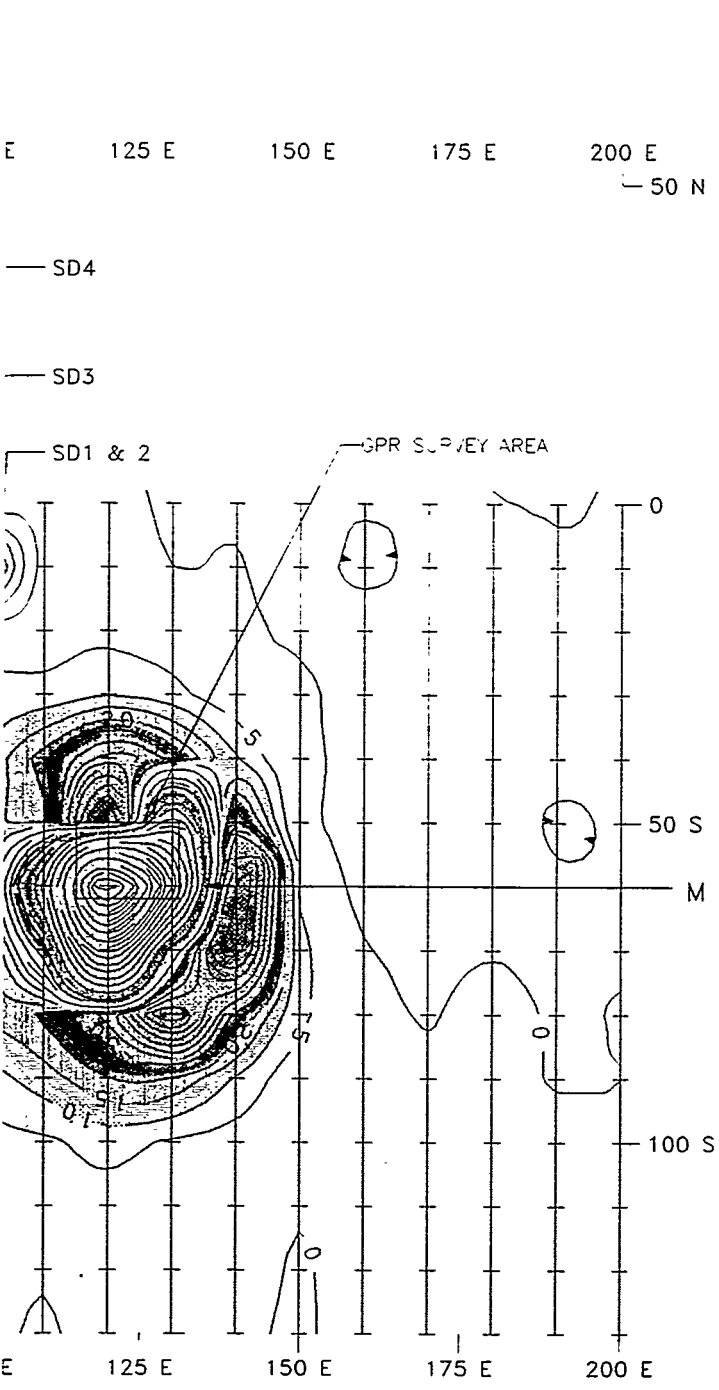


CONTOUR INTERVAL = 5

SCALE

0 30 60 Feet

0 10 20 Meters



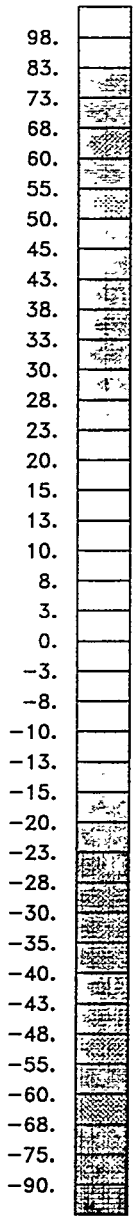


FIGURE B-11.1
SOURCE AREA 2
GAS PUMP AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

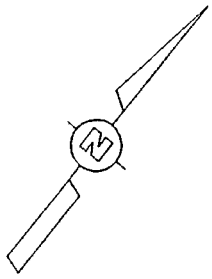
LEGEND

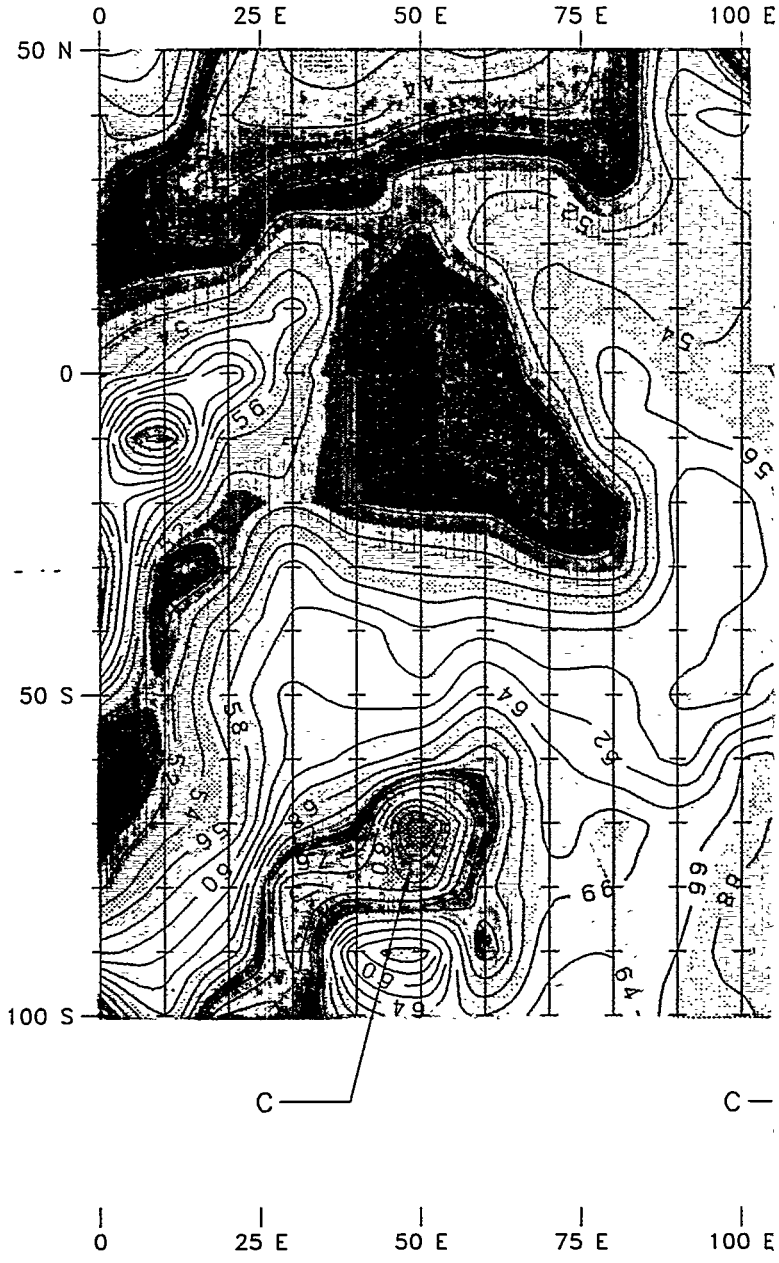
SD1 – ANOMALIES ATTRIBUTED TO FERROMETALLIC DEBRIS ON THE SURFACE WITH SEQUENTIAL NUMBERING

M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

CHECKED BY	SAH	9-20-94
APPROVED BY	[illegible]	9/20/94

DRAWING NUMBER 301965-B43



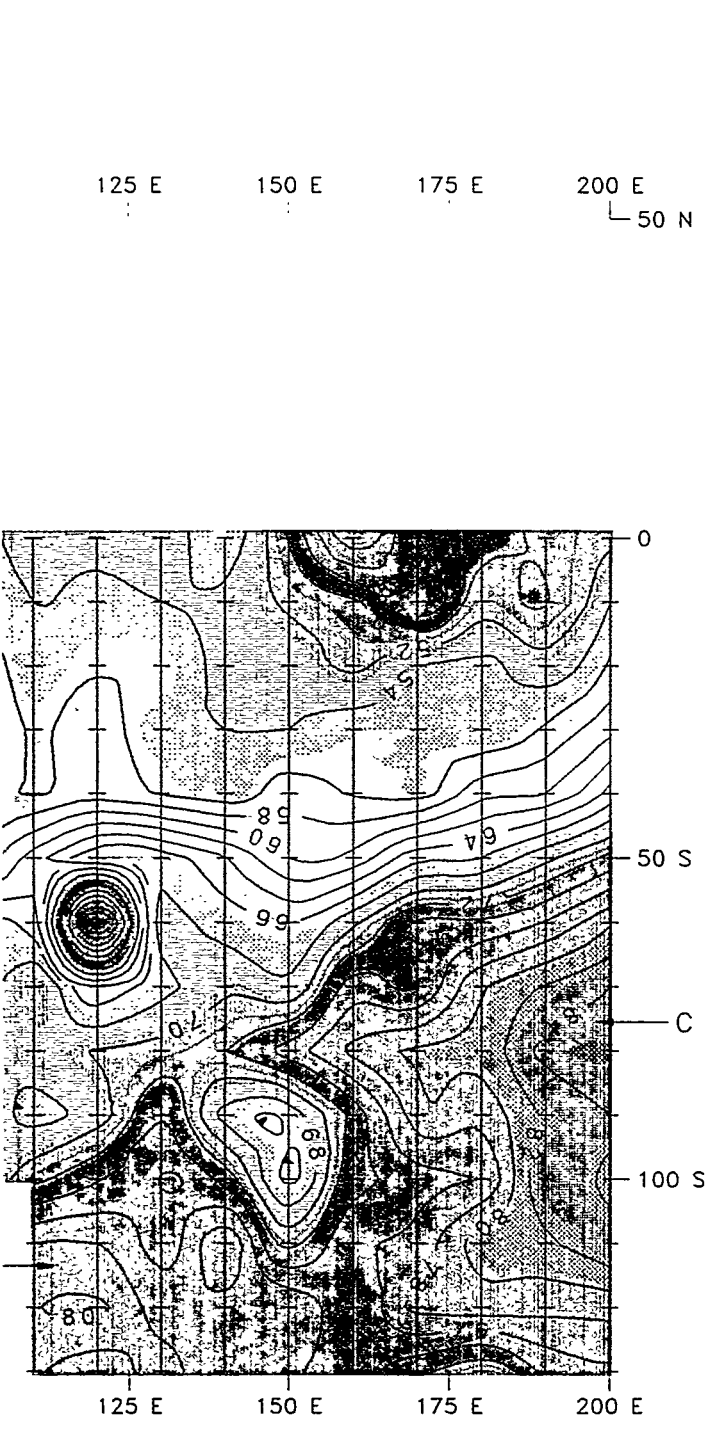


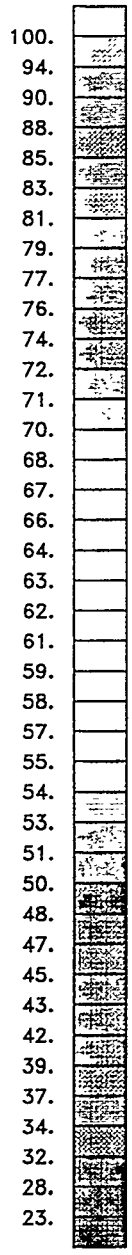
CONTOUR INTERVAL = 2 MIL

SCALE

0 30 60 Feet

0 10 20 Meters





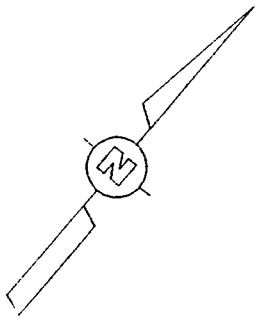
.LISIEMENS PER METER

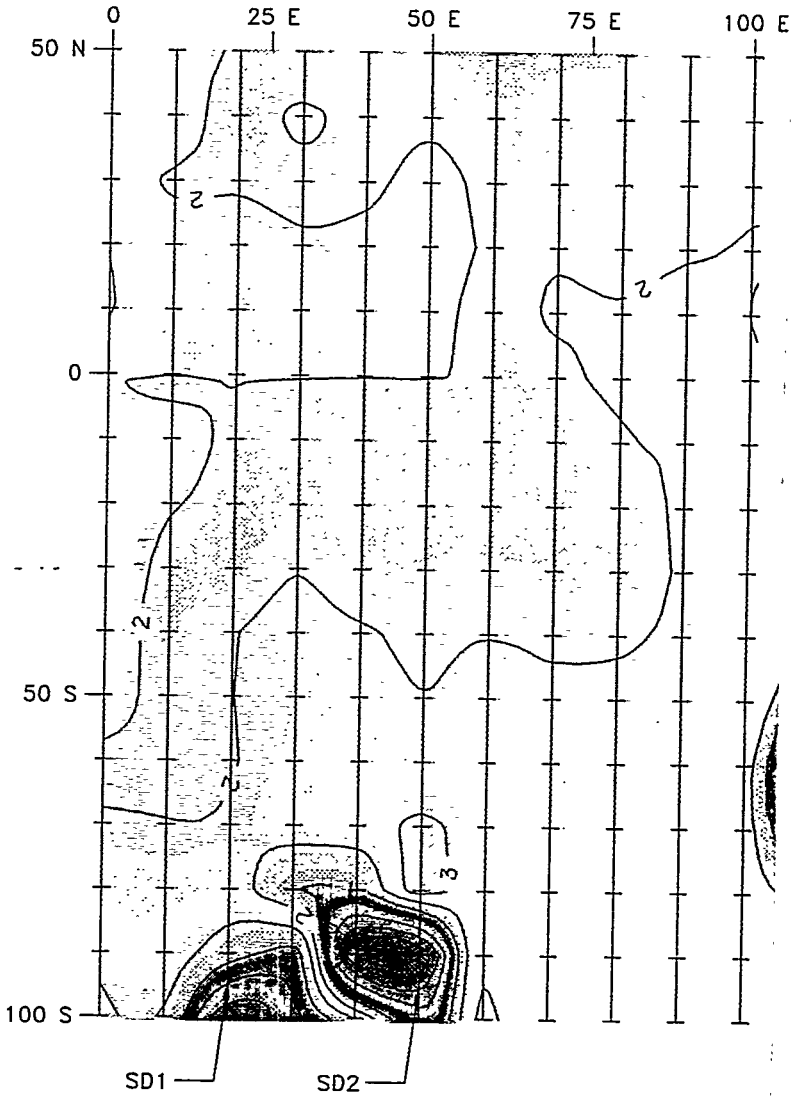
LEGEND

C – AREAS OF ELEVATED CONDUCTIVITY

FIGURE B-11.2
SOURCE AREA 2
GAS PUMP AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

CHECKED BY	SAH	9-20-94	DRAWING NUMBER 301965-B44
APPROVED BY	BJ Zoll	9/26/94	



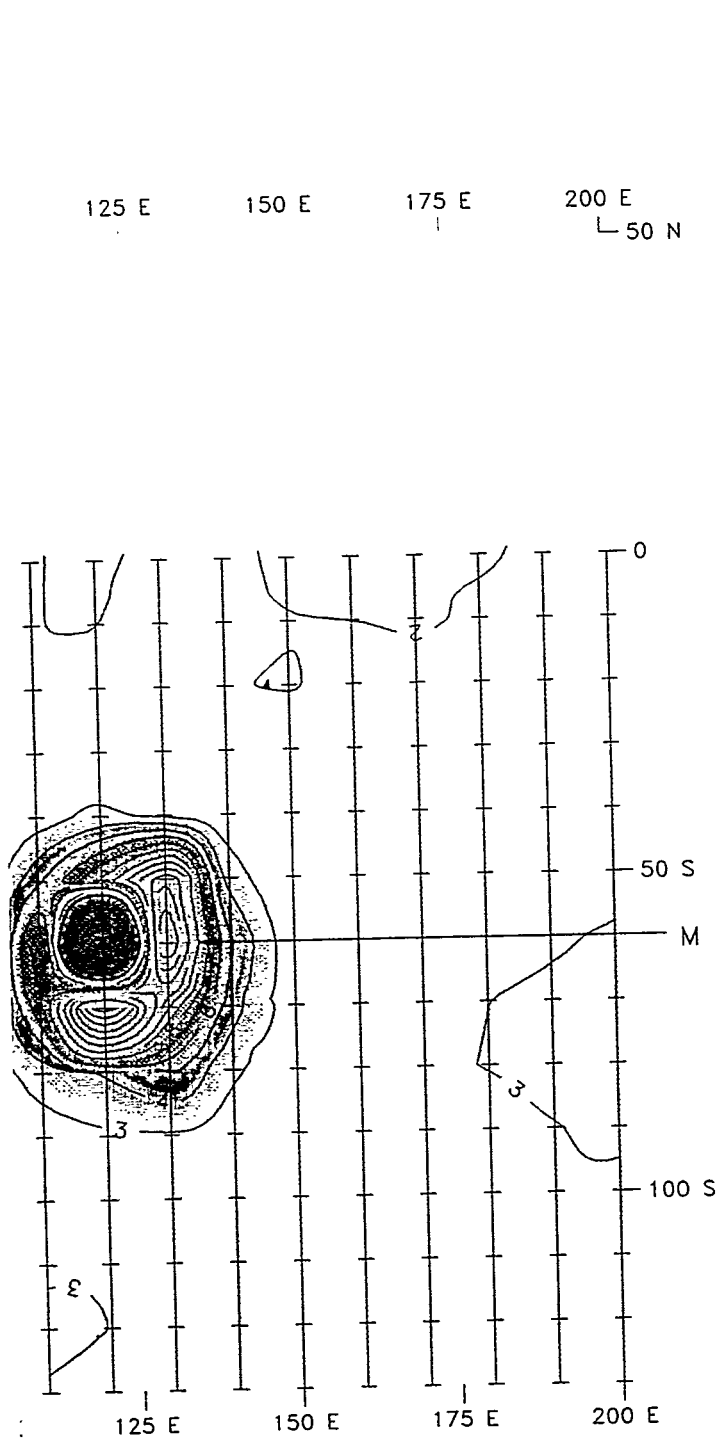


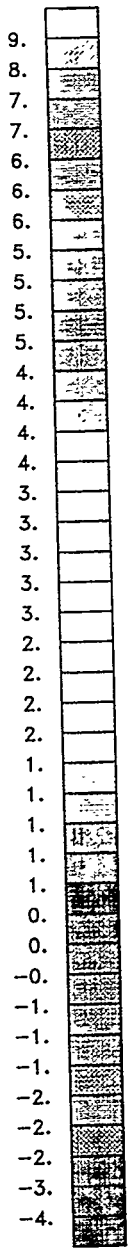
CONTOUR INTERVAL = 1 F

SCALE

0 30 60 Feet

0 10 20 Meters





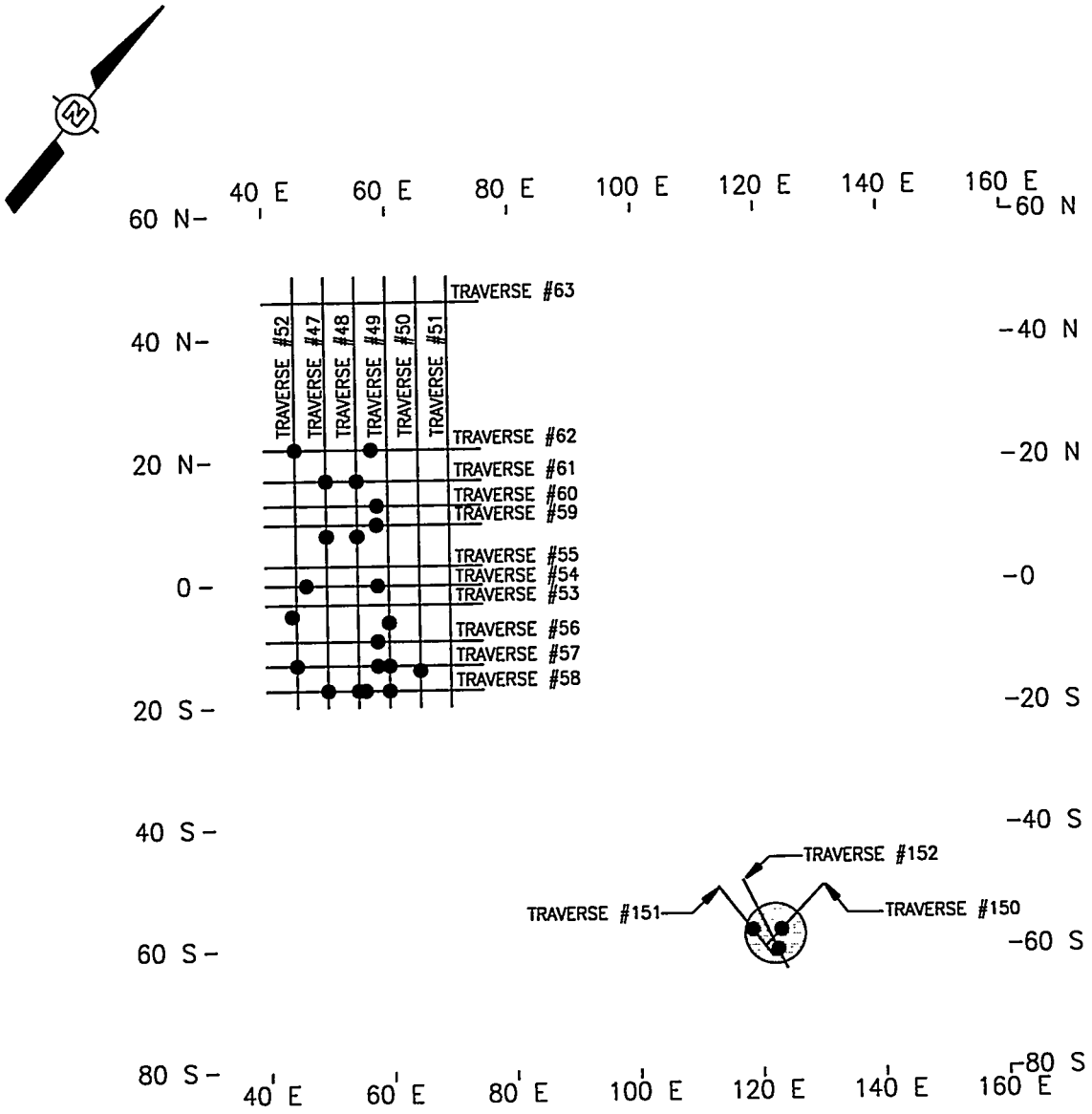
PART PER THOUSAND

FIGURE B-11.3
SOURCE AREA 2
GAS PUMP AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

M – IN-PHASE COMPONENT AND MAGNETIC ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

SD1 – ANOMALIES ATTRIBUTED TO FERROMETALLIC DEBRIS ON THE SURFACE WITH SEQUENTIAL NUMBERING



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 30 60 Feet

0 10 20 Meters

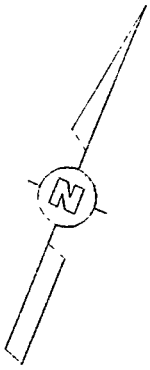
FIGURE B-11.4
SOURCE AREA 2
GAS PUMP AREA
GPR TRAVERSES OVER MAGNETIC ANOMALY M
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

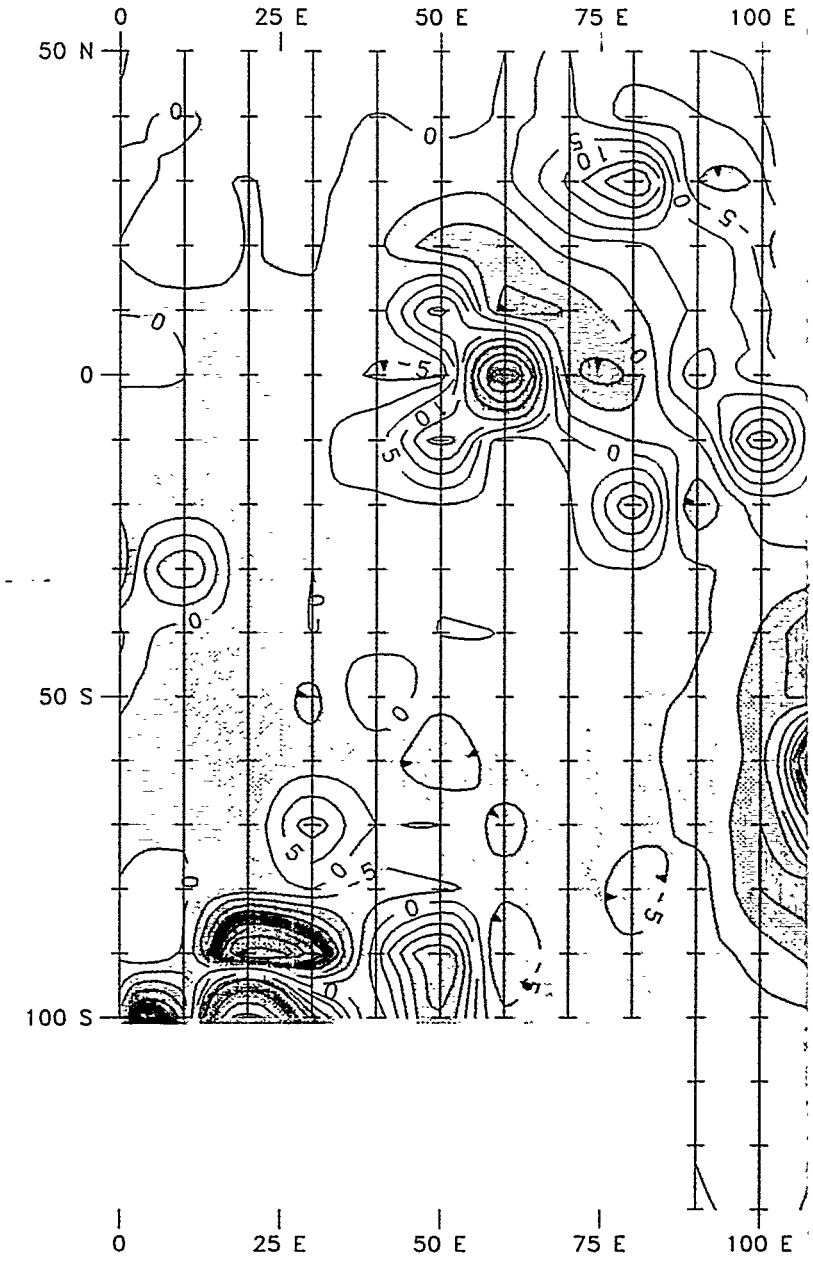
DRAWING NUMBER 301965.4.3.02.002
CHECKED BY: 9/28/94
APPROVED BY: 9/29/94

1965A53 08/22/94

CHECKED BY	SAH	9-30-94
APPROVED BY	RAD	9/30/94

DRAWING NUMBER 301965-B93



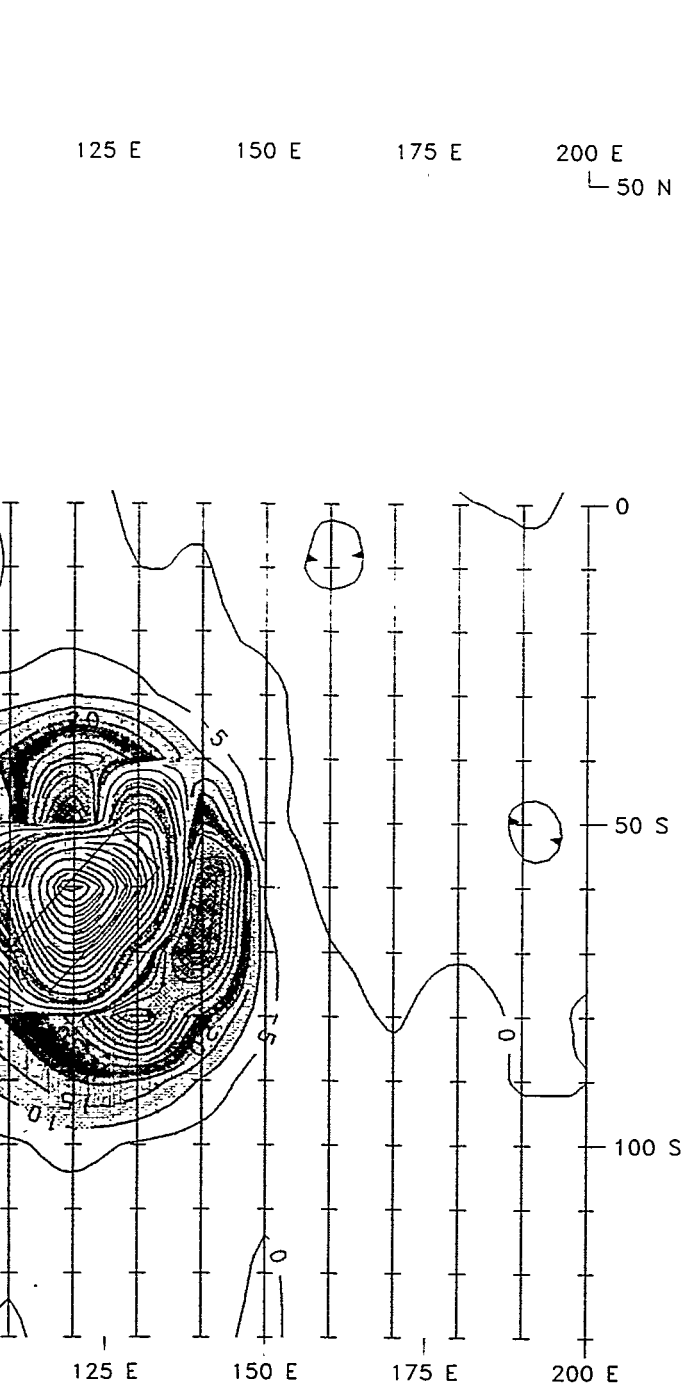


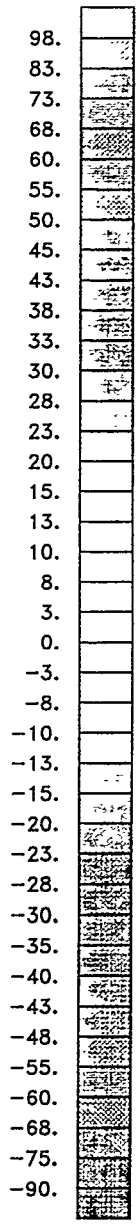
CONTOUR INTERVAL = 5 G

SCALE

0 30 60 Feet

0 10 20 Meters





AMMAS PER METER

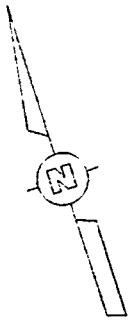
FIGURE B-11.5
SOURCE AREA 2
GAS PUMP AREA
RECOMMENDED TEST
PIT LOCATION
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

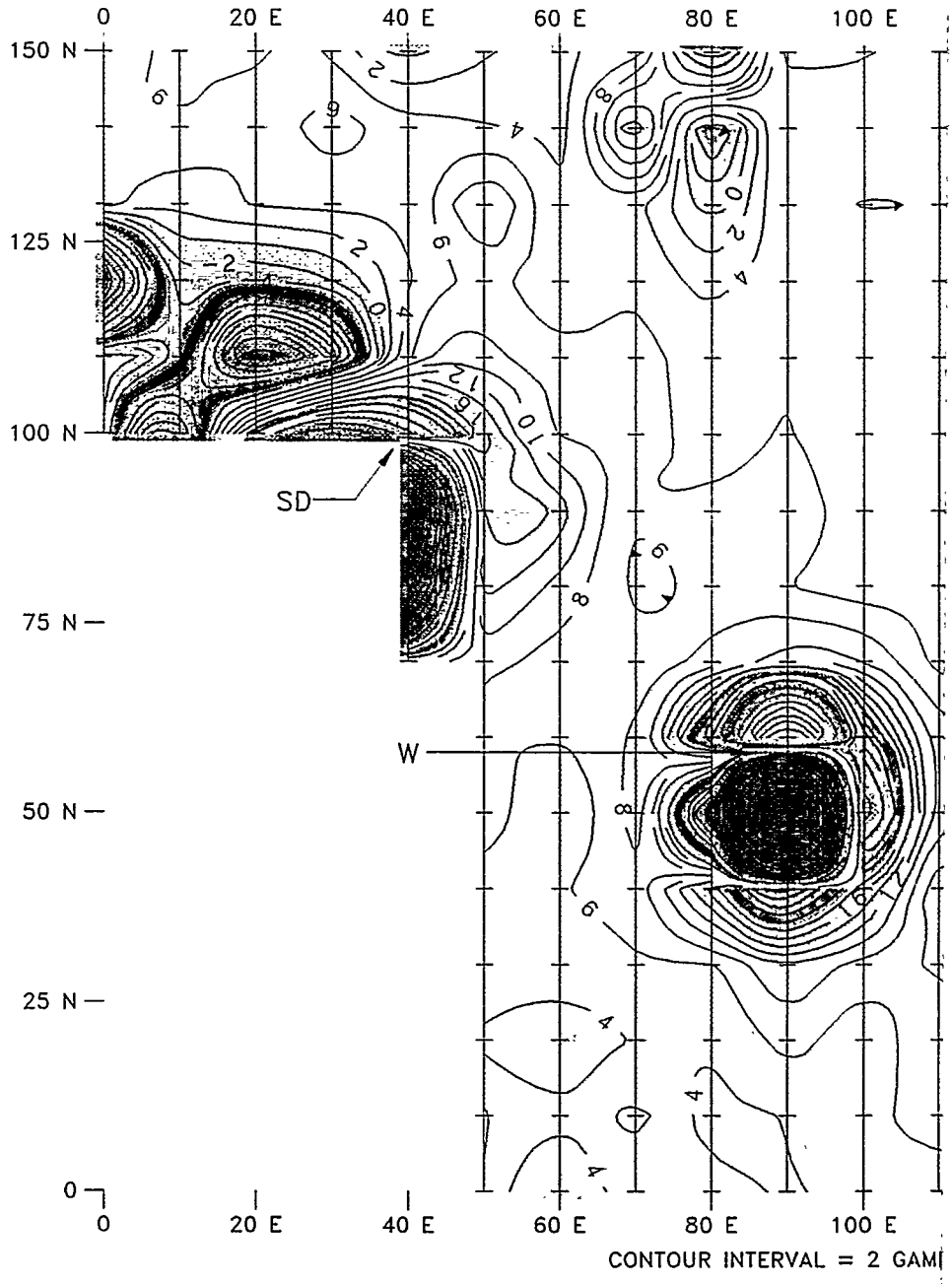
LEGEND

▭ – RECOMMENDED TEST PIT LOCATION

CHECKED BY	SMH	9-30-94
APPROVED BY	BJH	9/26/94

DRAWING NUMBER 301965-B45

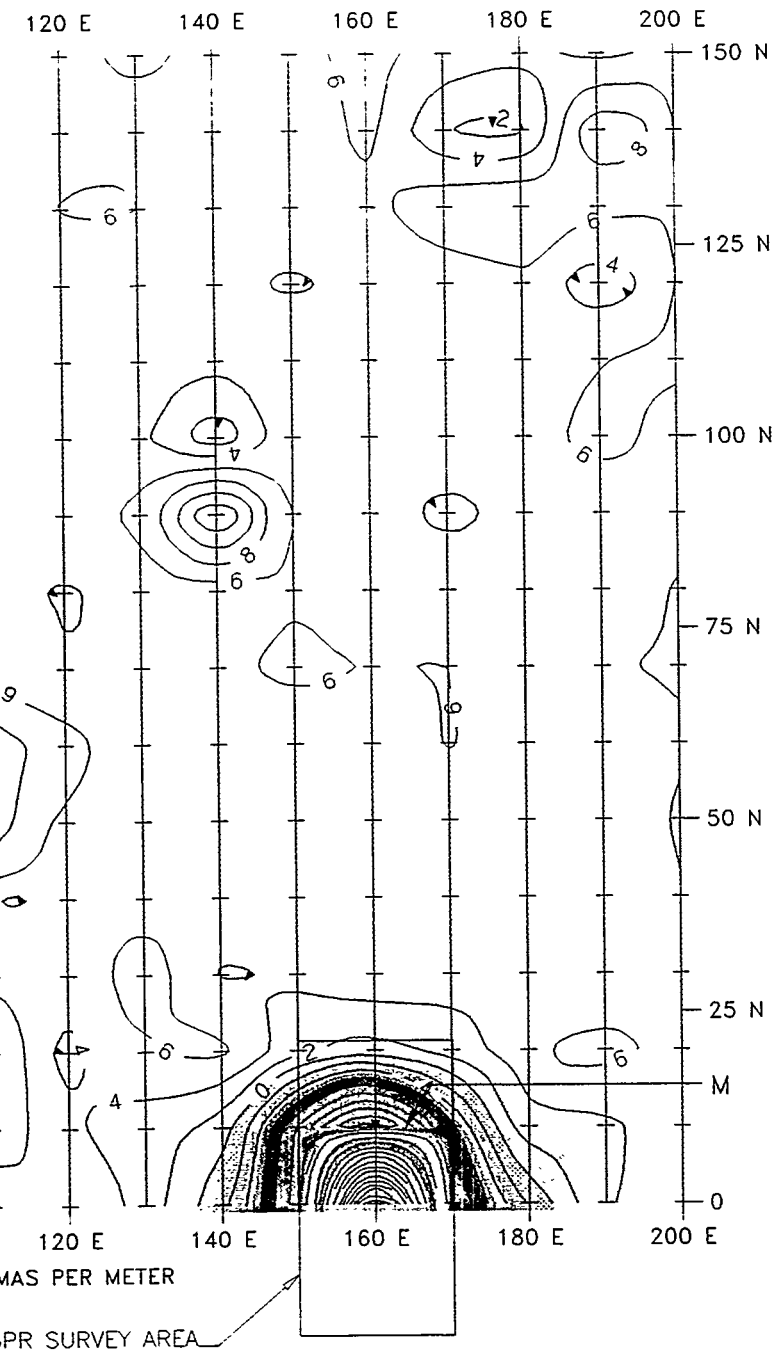




SCALE

0 25 50 Feet

0 8 16 Meters



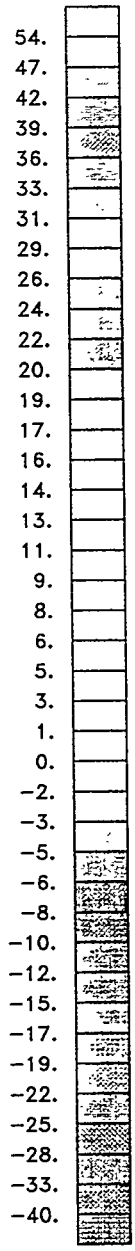


FIGURE B-12.1
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 1
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

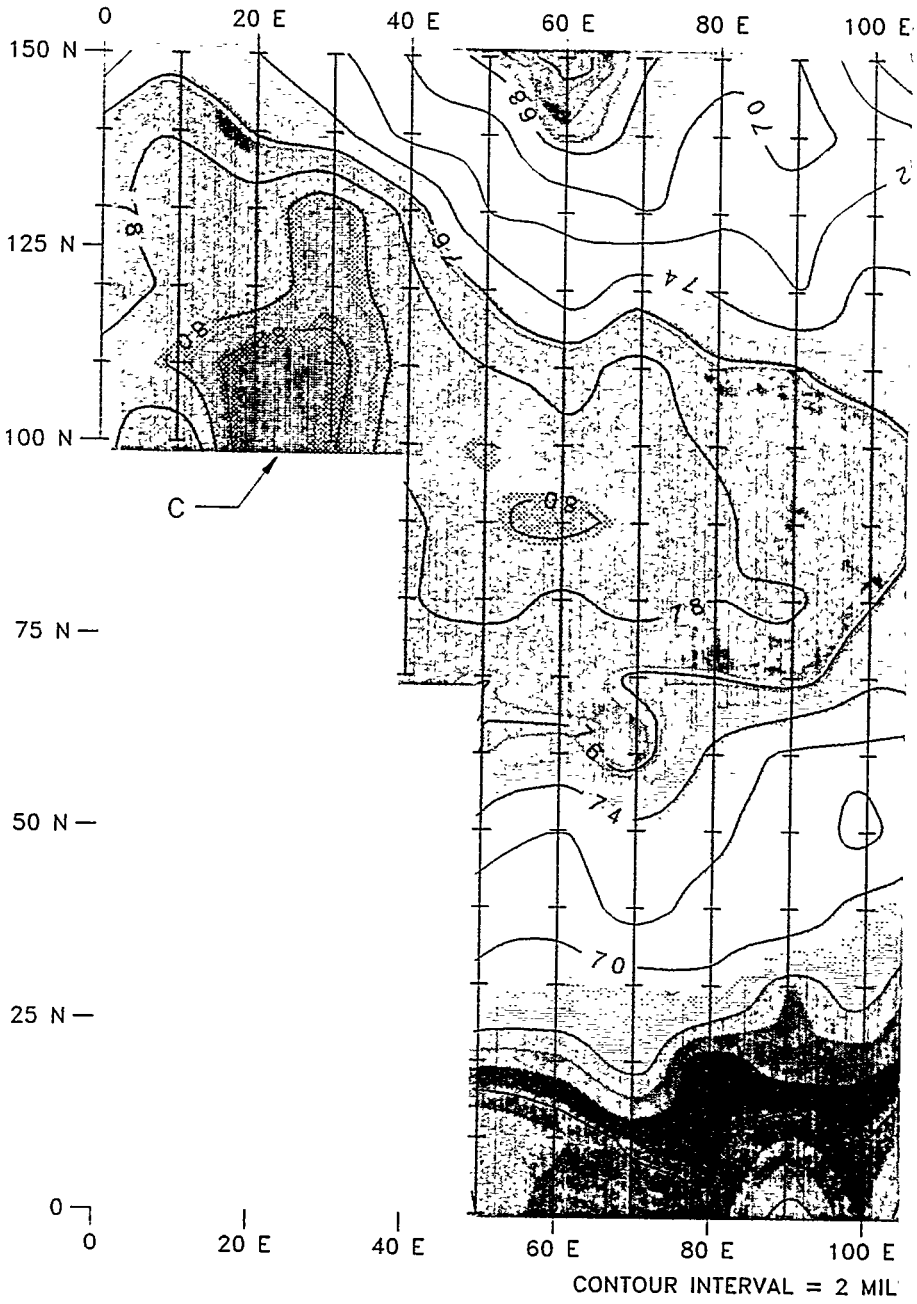
M – ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL

W – ANOMALY ATTRIBUTED TO STEEL WELL CASING

SD – ANOMALY ATTRIBUTED TO FERROMETALLIC DEBRIS ON THE SURFACE

CHECKED BY	SJH	9-20-94
APPROVED BY	BJC	9/20/94

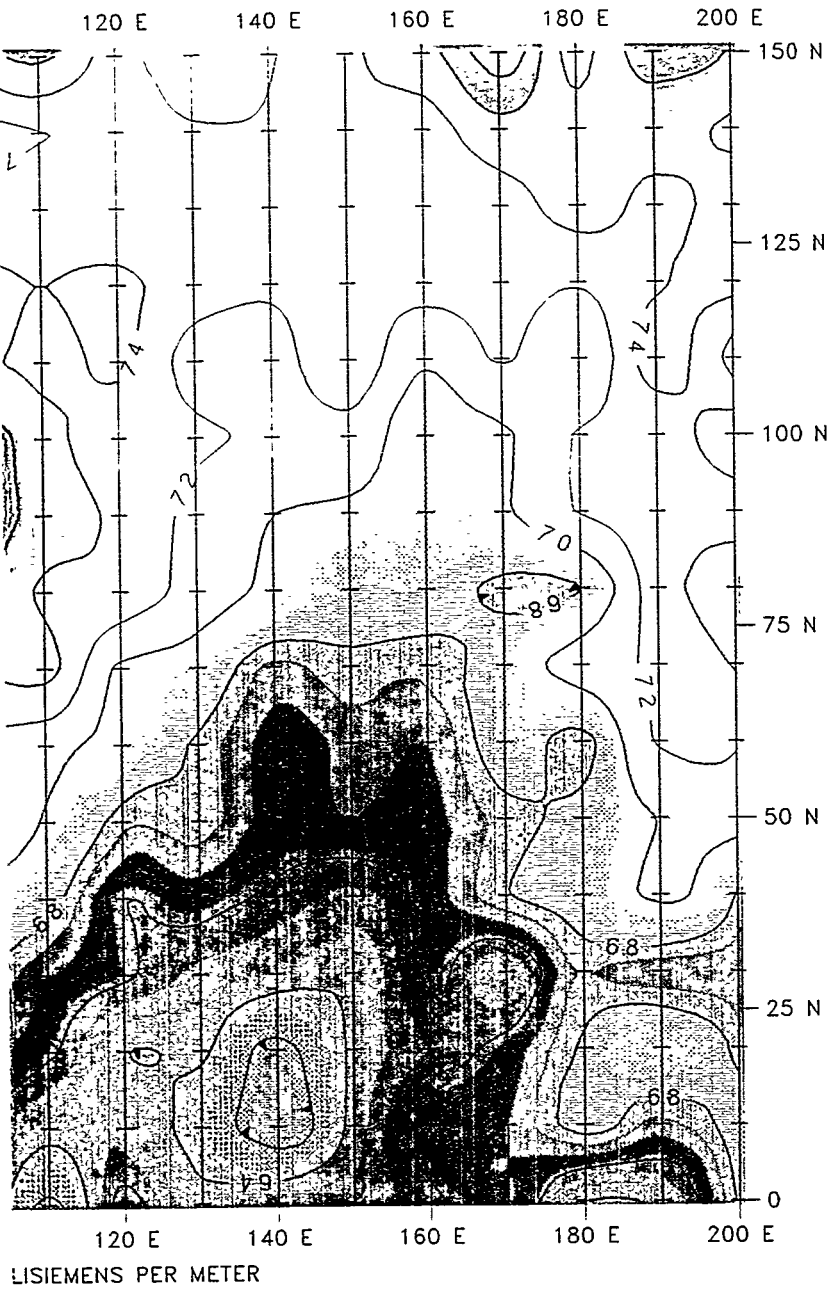
DRAWING NUMBER 301965-B46



SCALE

0 25 50 Feet

0 8 16 Meters



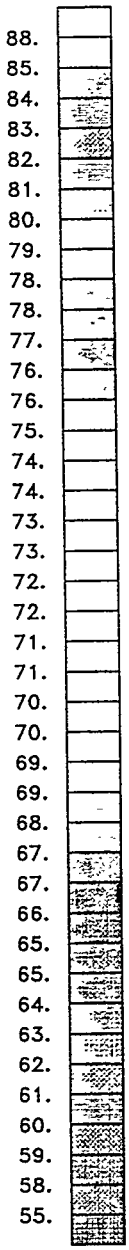


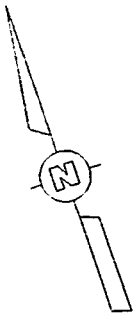
FIGURE B-12.2
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 1
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

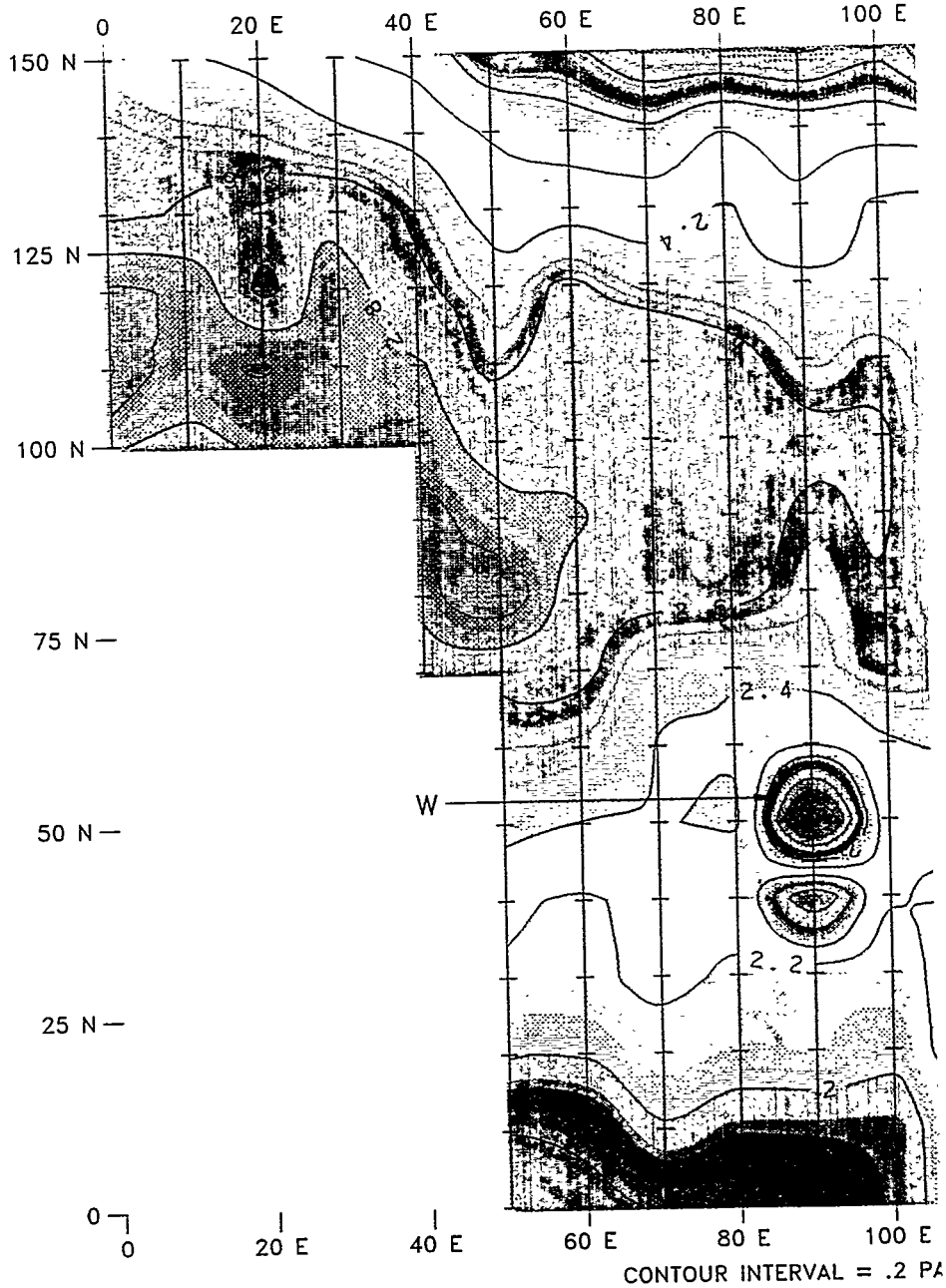
LEGEND

C – AREA OF ELEVATED CONDUCTIVITY

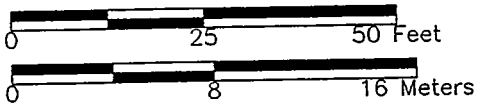
CHECKED BY	SAH	9-Dec-94
APPROVED BY	[illegible]	9/20/94

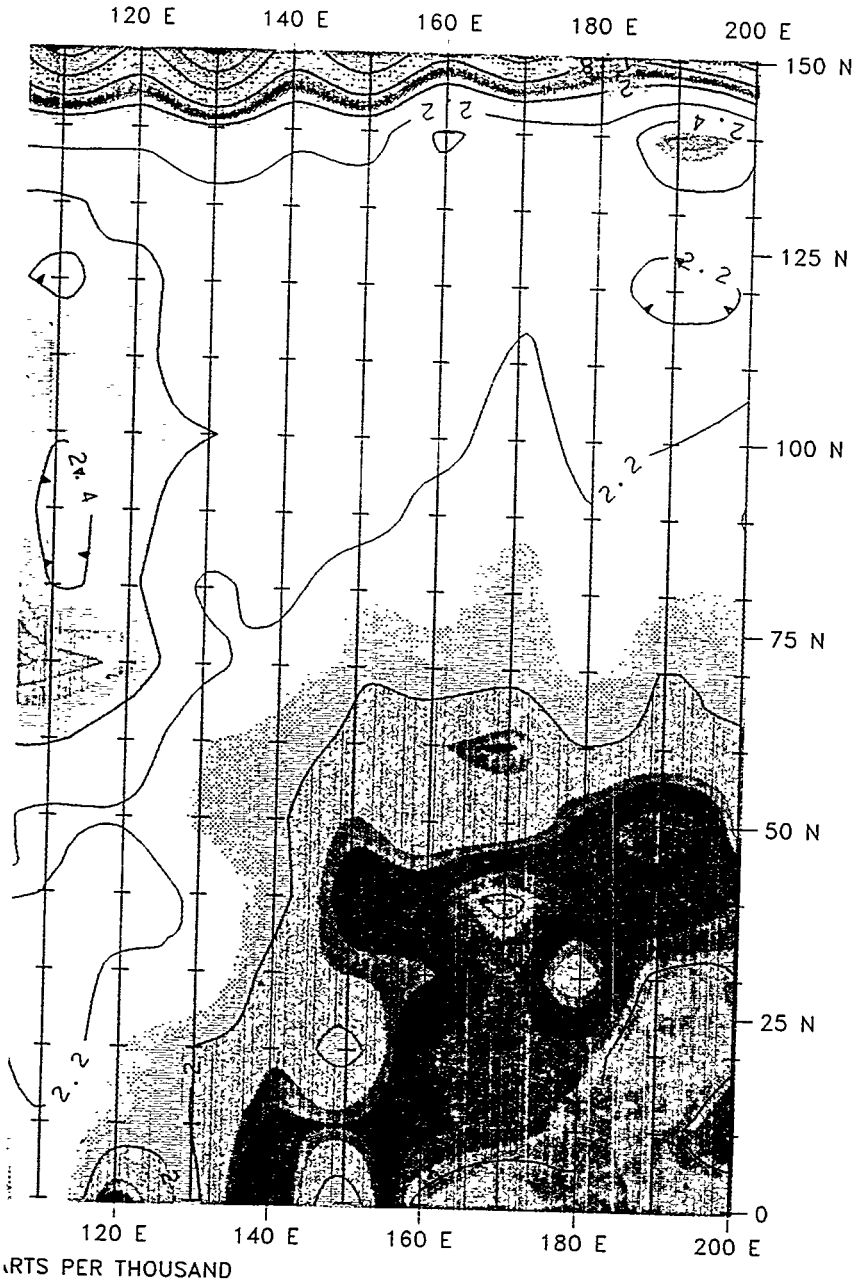
DRAWING NUMBER 301965-B4?





SCALE





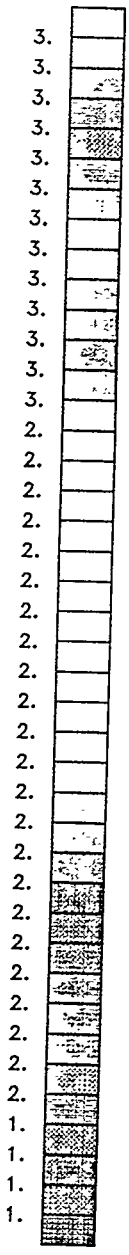
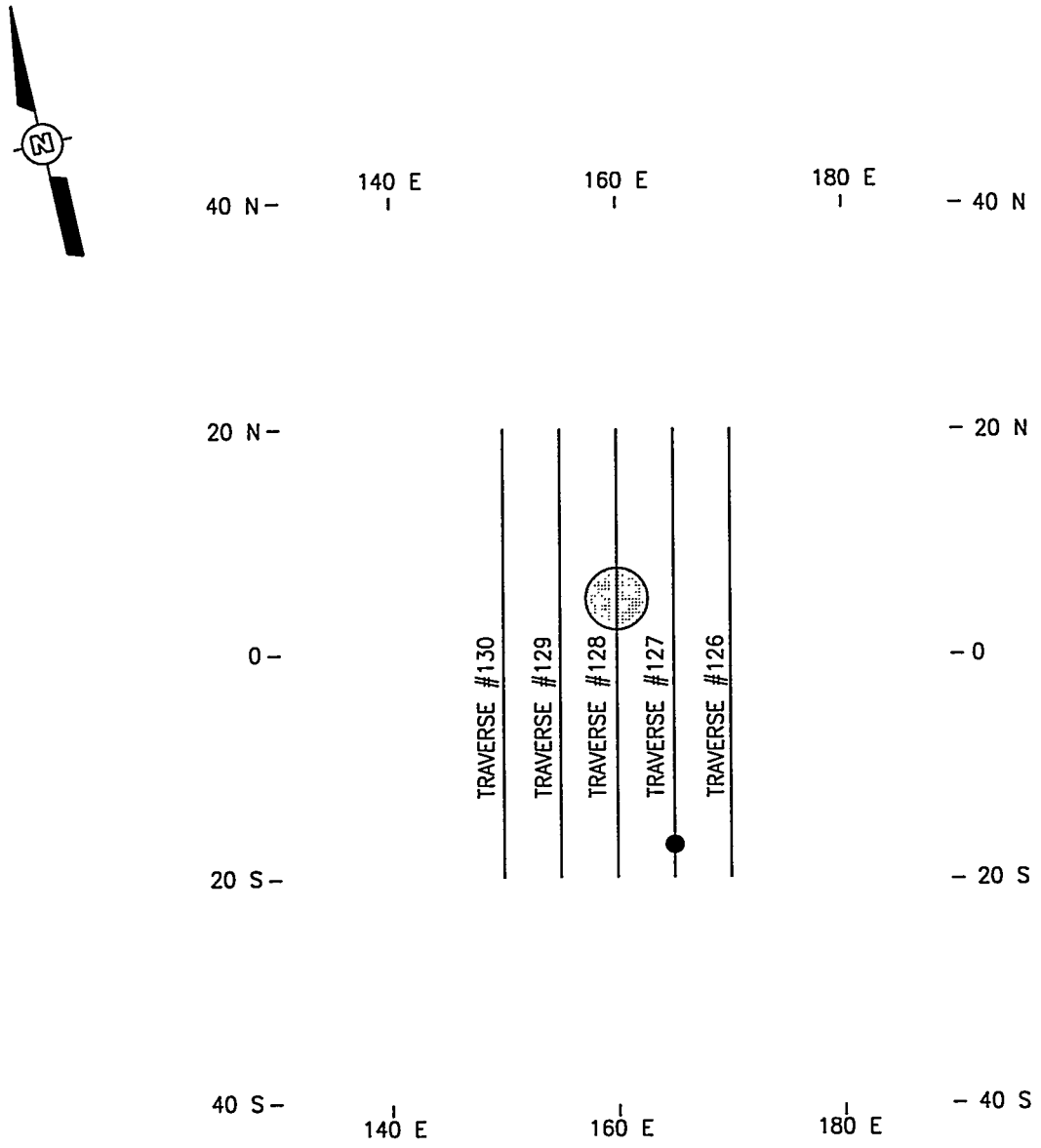


FIGURE B-12.3
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 1
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W – ANOMALY CAUSED BY STEEL WELL CASING



LEGEND

- SIGNIFICANT GPR ANOMALIES
- GPR TRAVERSES
- APPROXIMATE LOCATION OF MAGNETIC ANOMALY

SCALE

0 20 40 Feet

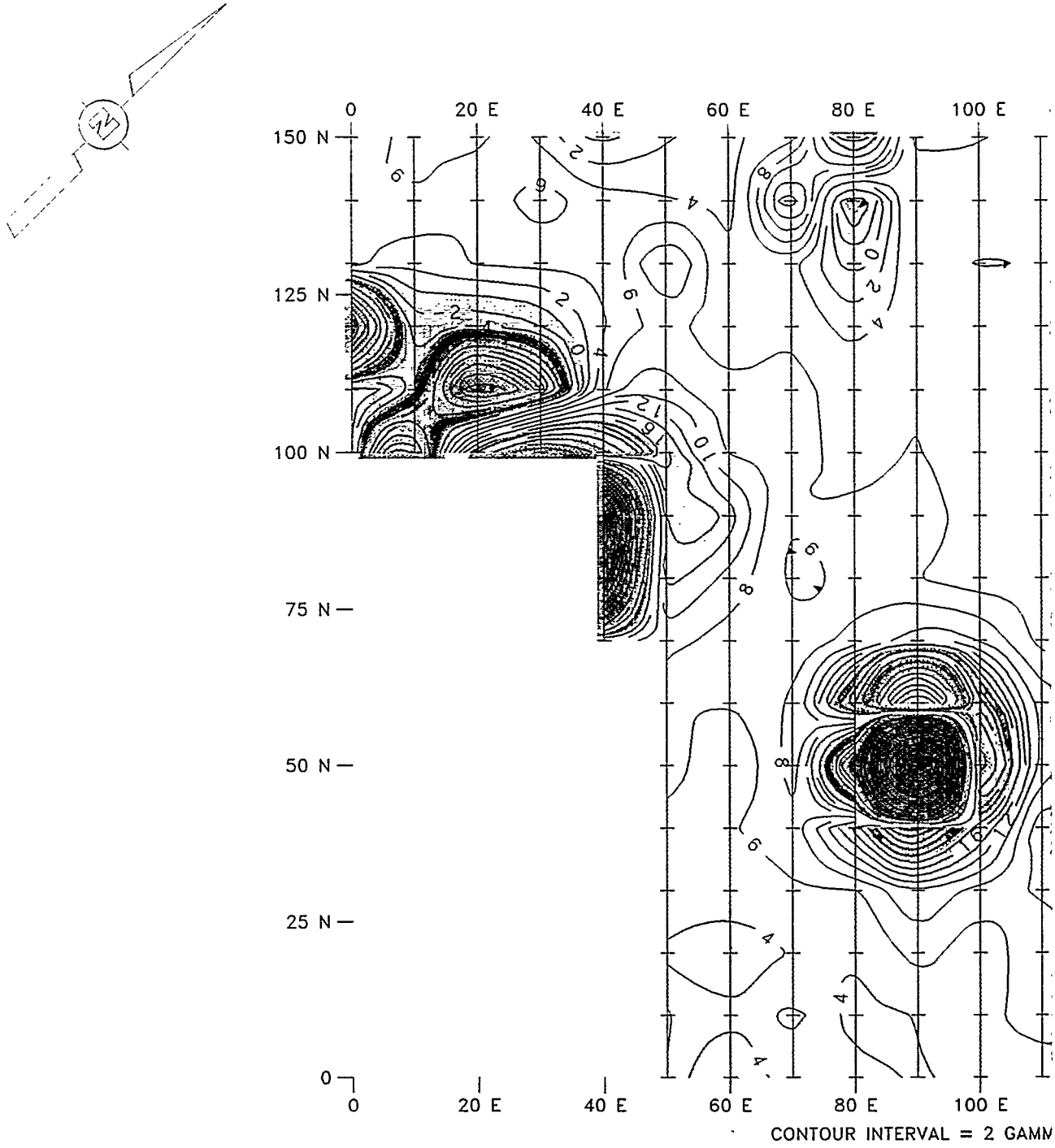
0 6 12 Meters

FIGURE B-12.4
SOURCE AREA 3
GOVERNMENT STORAGE AREA NO. 1
GPR TRAVERSES OVER MAGNETIC ANOMALY M
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

CHECKED BY: SAIC 9/28/94
APPROVED BY: [illegible] 9/28/94
DRAWING NUMBER 301965.403.02.002

1965A55 09/28/94

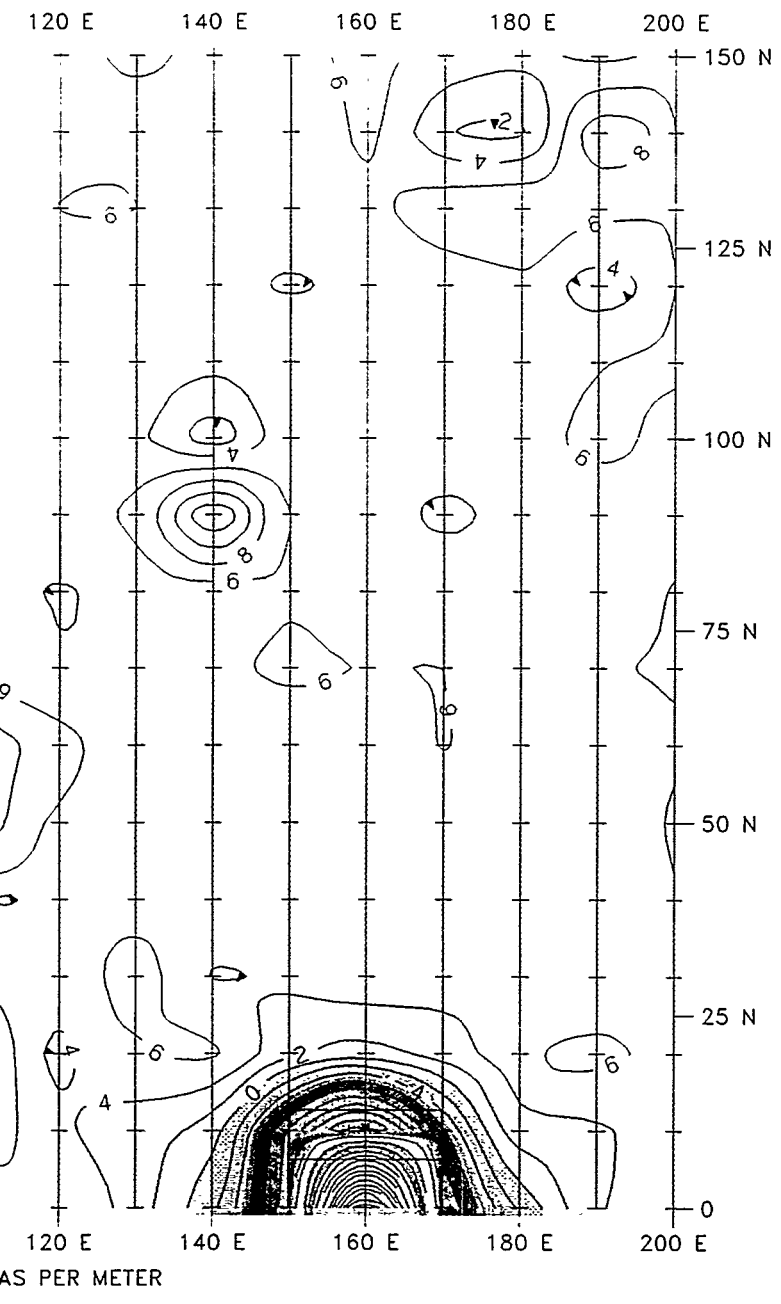
DRAWING NUMBER	301965-B04
	9-20-94
	9/20/94
CHECKED BY	SAH
APPROVED BY	RJG



SCALE

0 25 50 Feet

0 8 16 Meters



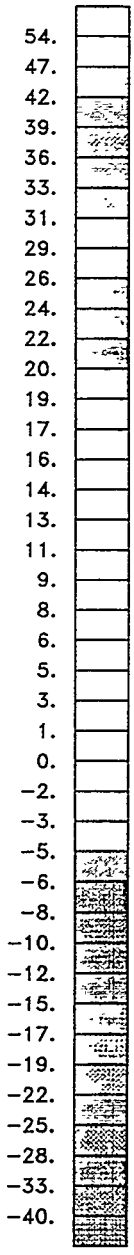


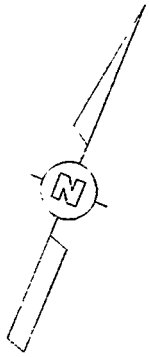
FIGURE B-12.5
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 1
RECOMMENDED TEST
PIT LOCATION
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

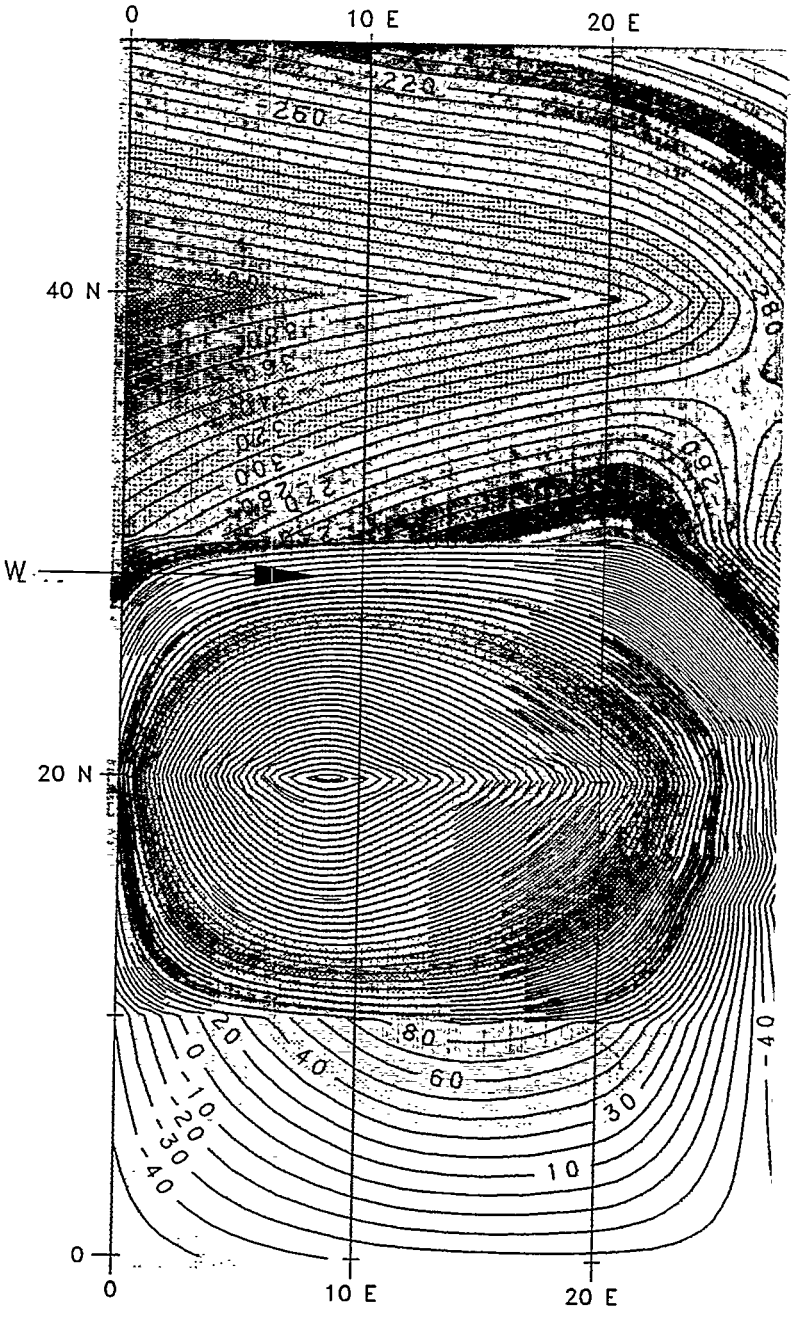
LEGEND

▭ - RECOMMENDED TEST PIT LOCATION

CHECKED BY	SAH	6 Dec 94
APPROVED BY	[signature]	9/20/94

DRAWING NUMBER 301965-B48



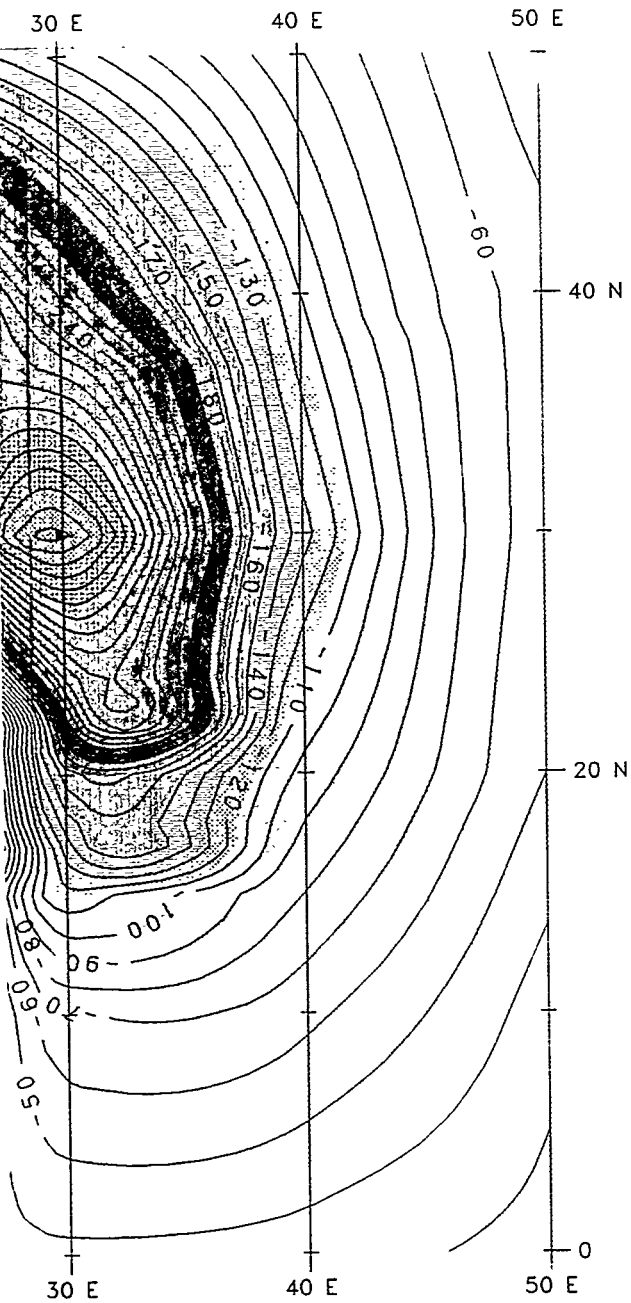


CONTOUR INTERVAL = 10 G

SCALE

0 8 16 Feet

0 3 6 Meters



AMMAS PER METER

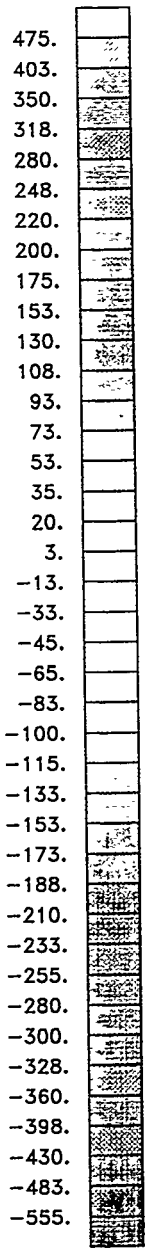
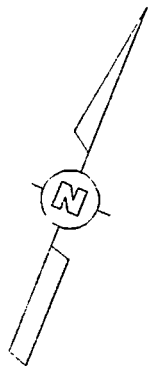


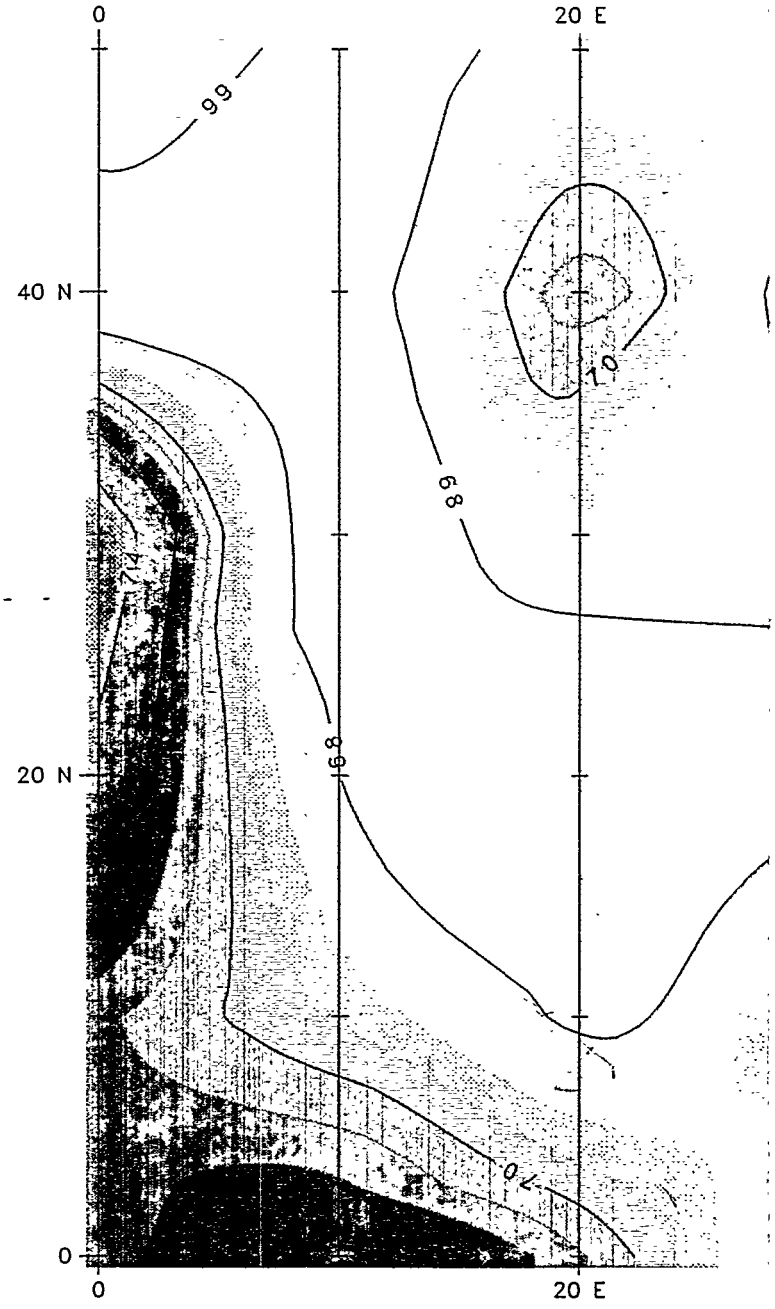
FIGURE B-13.1
SOURCE AREA 3
E-2 AND E-7 AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W - ANOMALY ATTRIBUTED TO ABANDONED WELL CASING

CHECKED BY	SAH	9-20-94	DRAWING NUMBER 301965-B49
APPROVED BY	BJC	9/21/94	



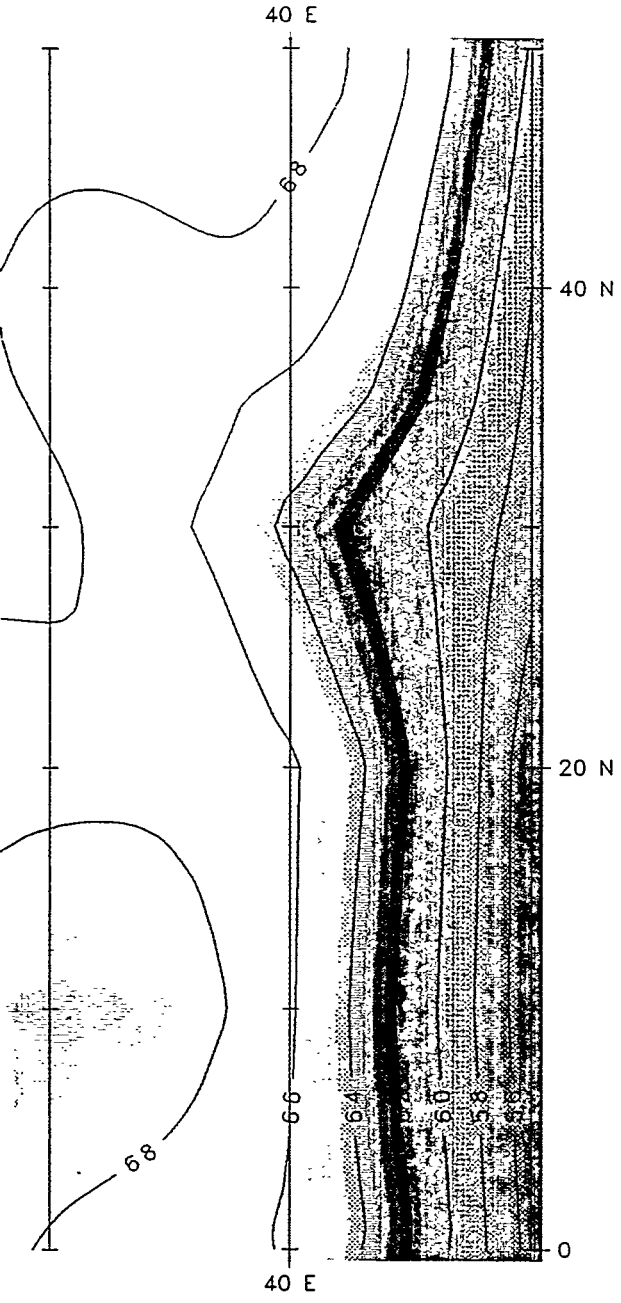


CONTOUR INTERVAL = 2 MILLIS

SCALE

0 8 16 Feet

0 3 6 Meters



IEMENS PER METER

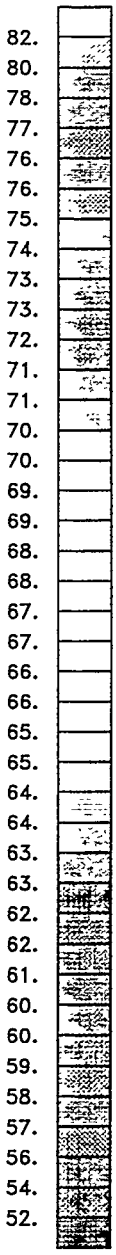
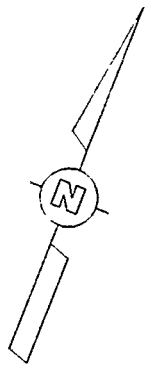


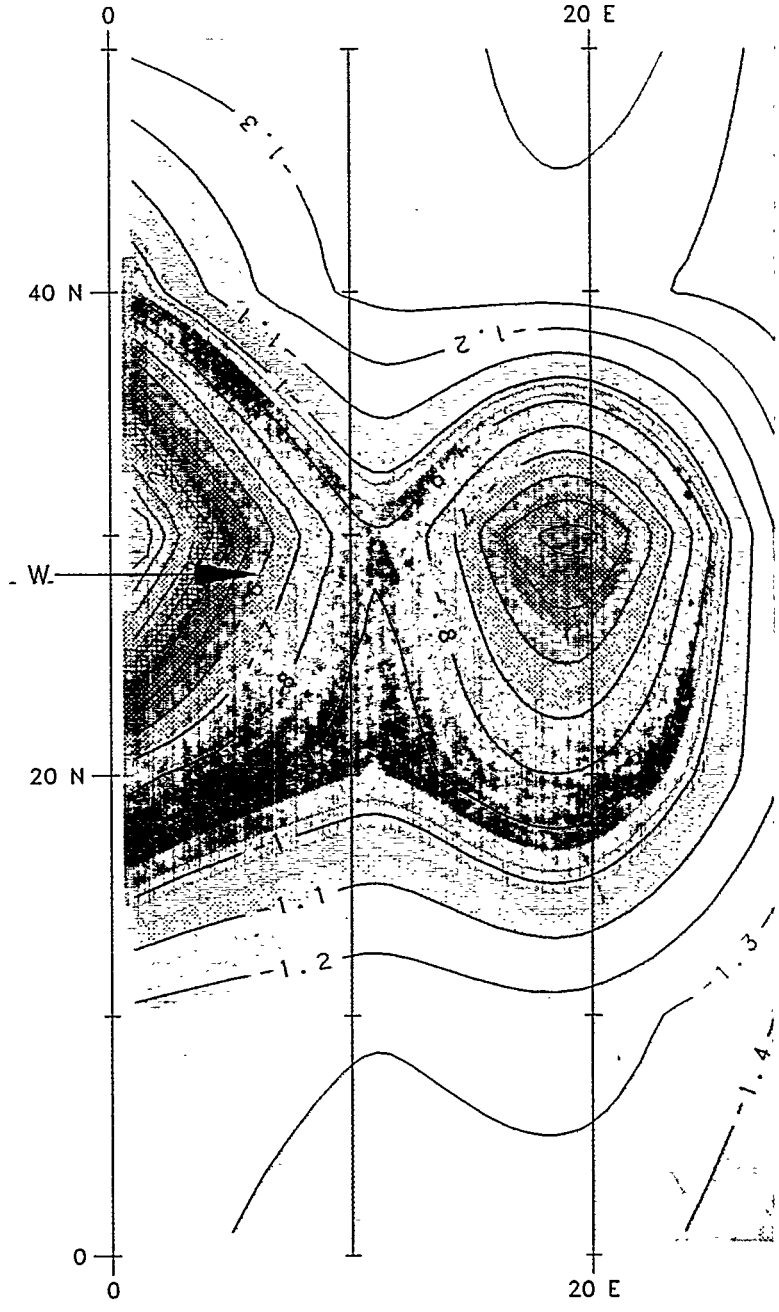
FIGURE B-13.2
SOURCE AREA 3
E-2 AND E-7 AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

NO SIGNIFICANT ANOMALIES OBSERVED

CHECKED BY	SJH	9-20-94	DRAWING NUMBER 301965-B50
APPROVED BY	BEG	9/20/94	



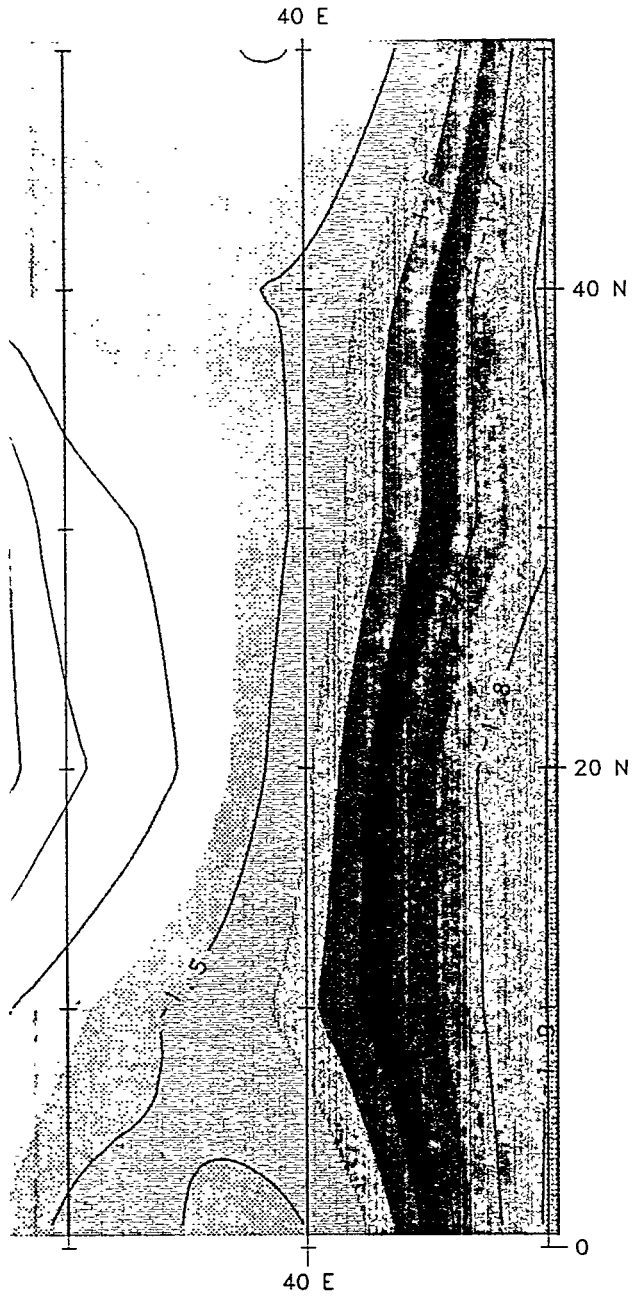


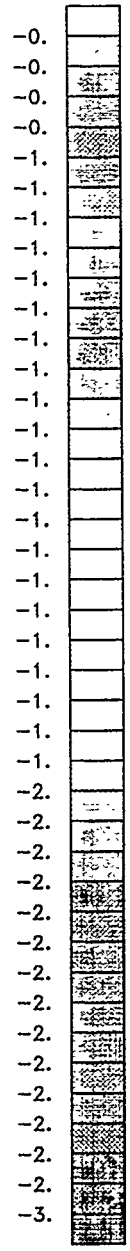
CONTOUR INTERVAL = .1 PAR

SCALE

0 8 16 Feet

0 3 6 Meters





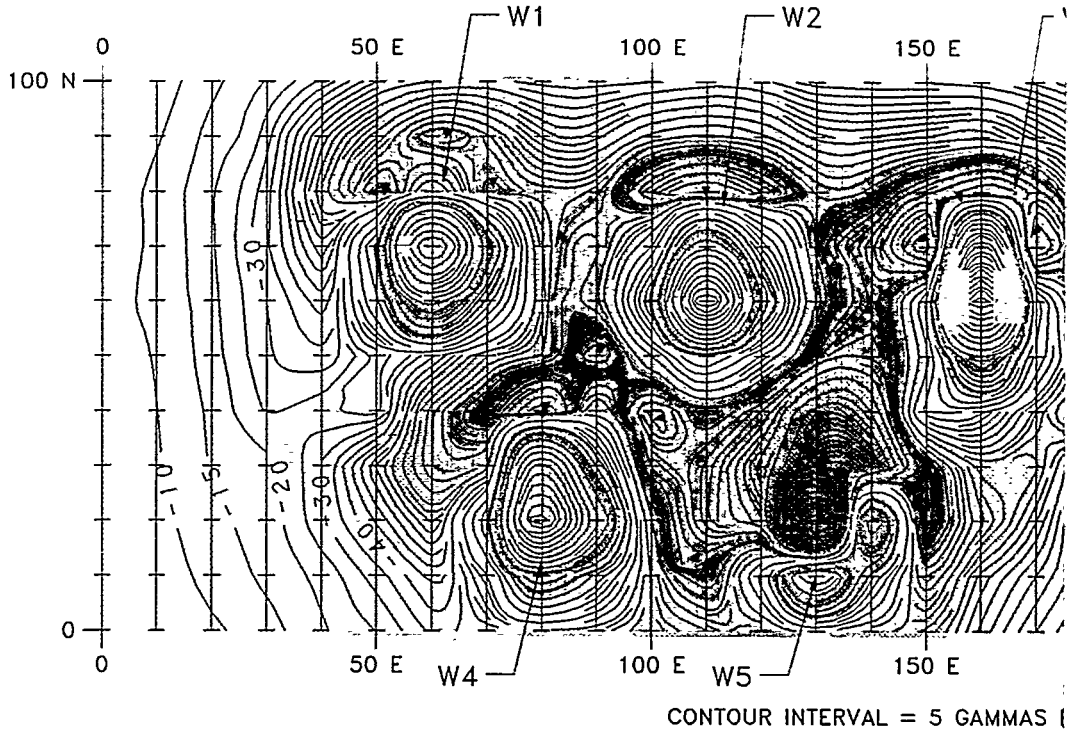
:TS PER THOUSAND

FIGURE B-13.3
SOURCE AREA 3
E-2 AND E-7 AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W - MAGNETIC AND IN-PHASE COMPONENT ANOMALY ATTRIBUTED TO ABANDONED WELL CASING

CHECKED BY	SAH	DRAWING NUMBER 301965-B51
APPROVED BY	By ADG	9/30/94 9/30/94

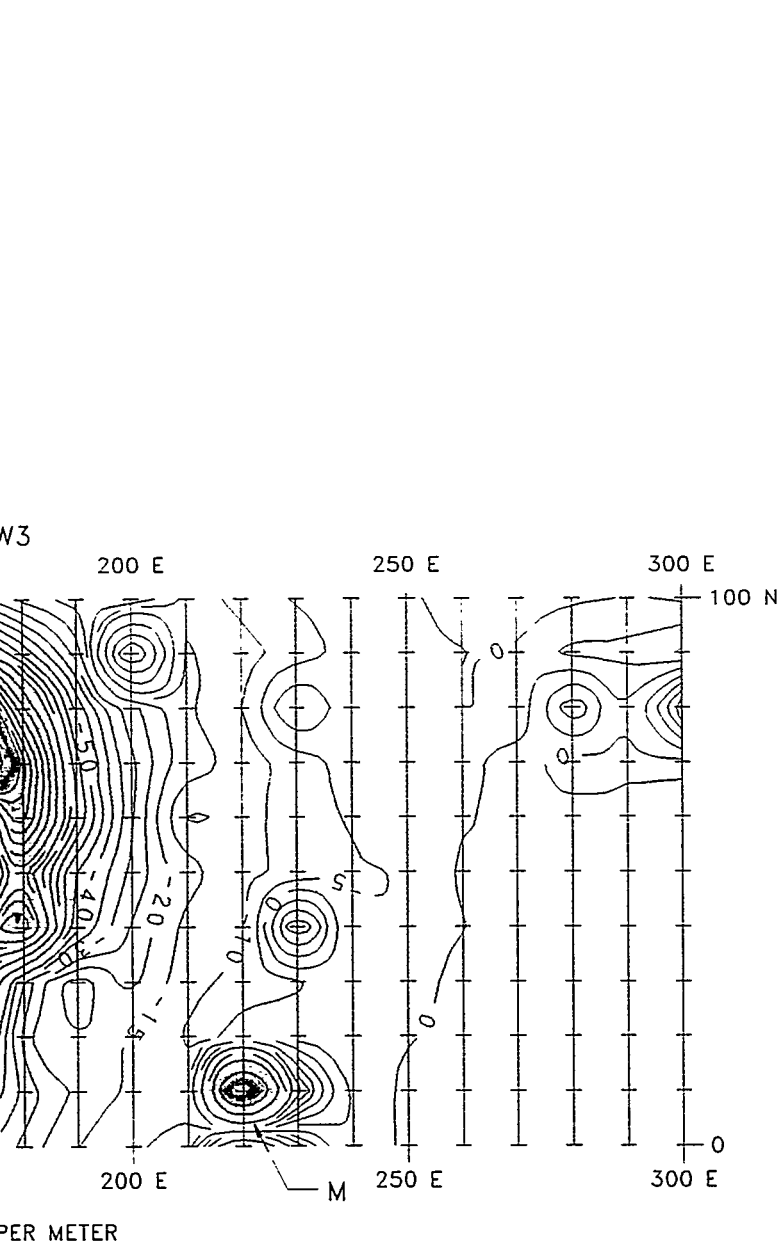


CONTOUR INTERVAL = 5 GAMMAS

SCALE

0 35 70 Feet

0 11 22 Meters



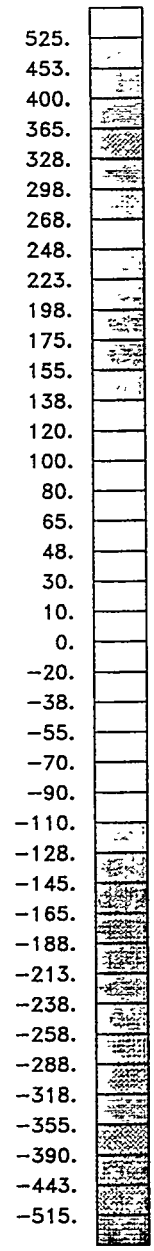


FIGURE B-14.1
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 2
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

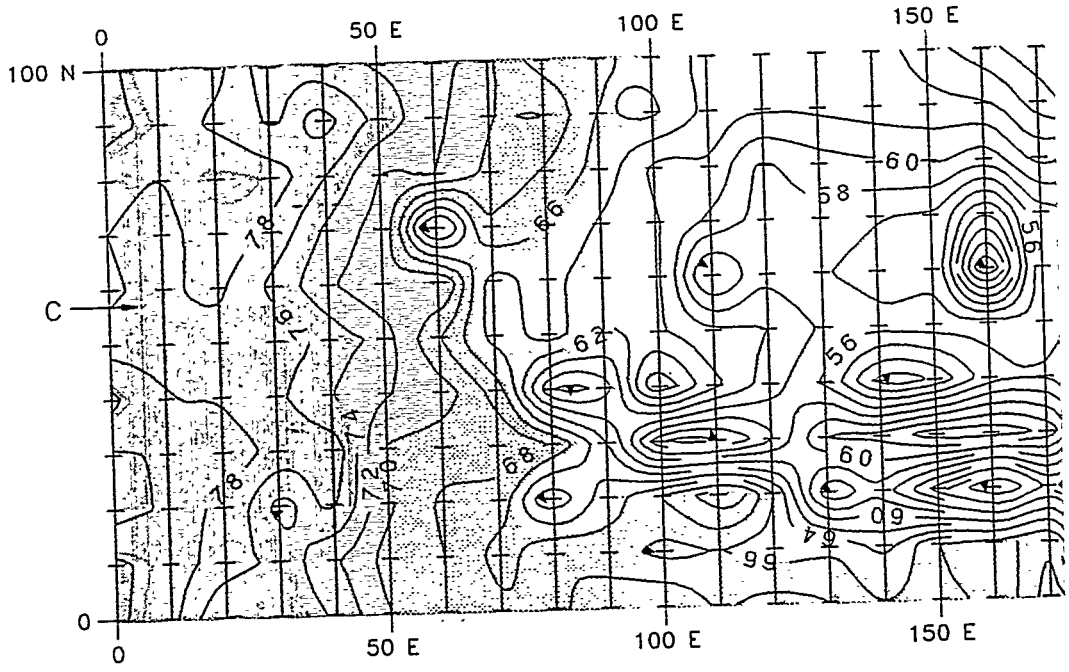
LEGEND

W1 - ANOMALIES ATTRIBUTED TO STEEL WELL CASINGS WITH SEQUENTIAL NUMBERING

M - ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC DEBRIS

CHECKED BY	SAH	9-25-94
APPROVED BY	Brad	9/20/94

DRAWING NUMBER 301965-B52

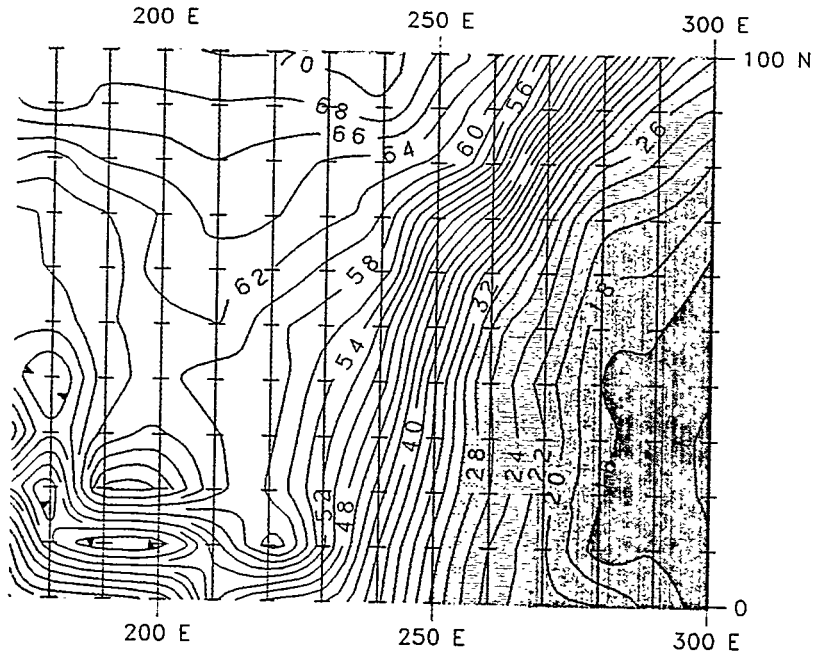


CONTOUR INTERVAL = 2 MILLISIEME

SCALE

0 35 70 Feet

0 11 22 Meters



NS PER METER

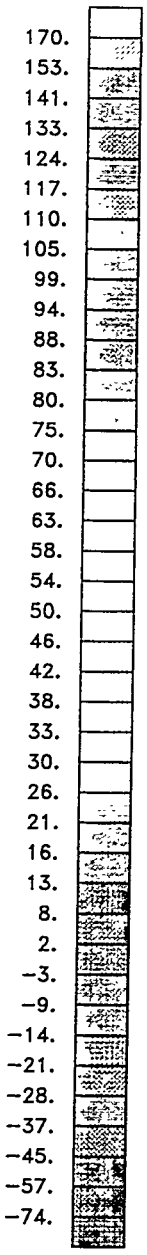


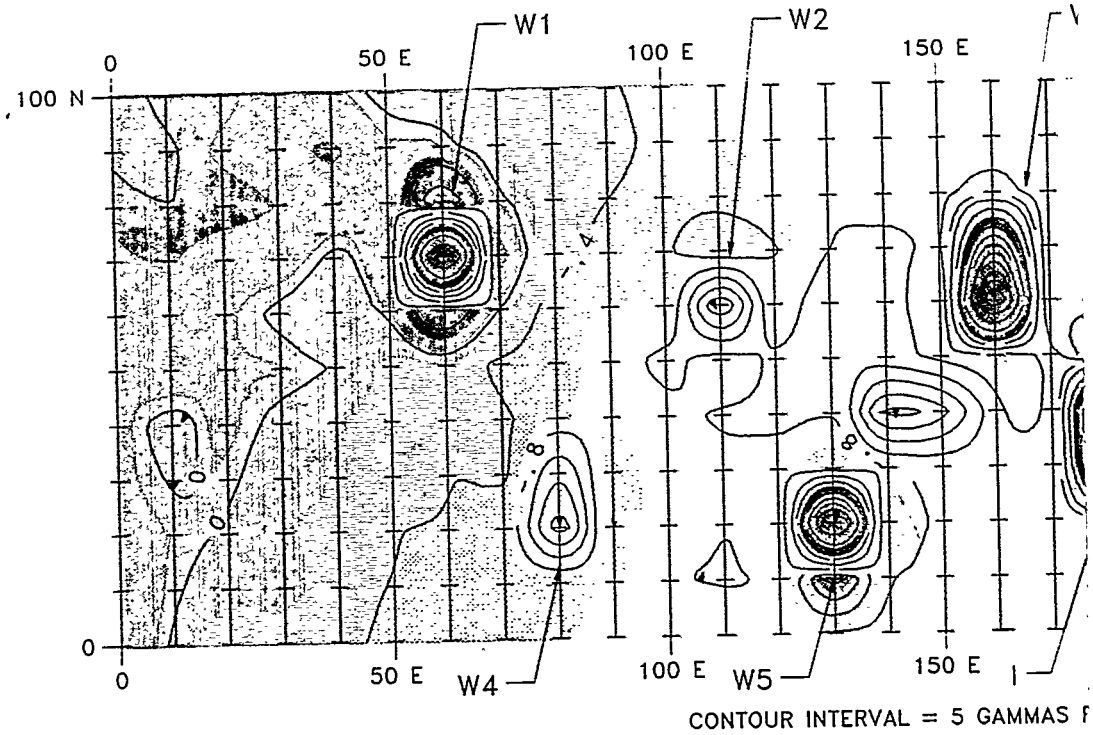
FIGURE B-14.2
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 2
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C - AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	SAH	4/20-94
APPROVED BY	RJCQ	9/24/94

DRAWING NUMBER 301965-B53



CONTOUR INTERVAL = 5 GAMMAS F

SCALE

0 35 70 Feet

0 11 22 Meters

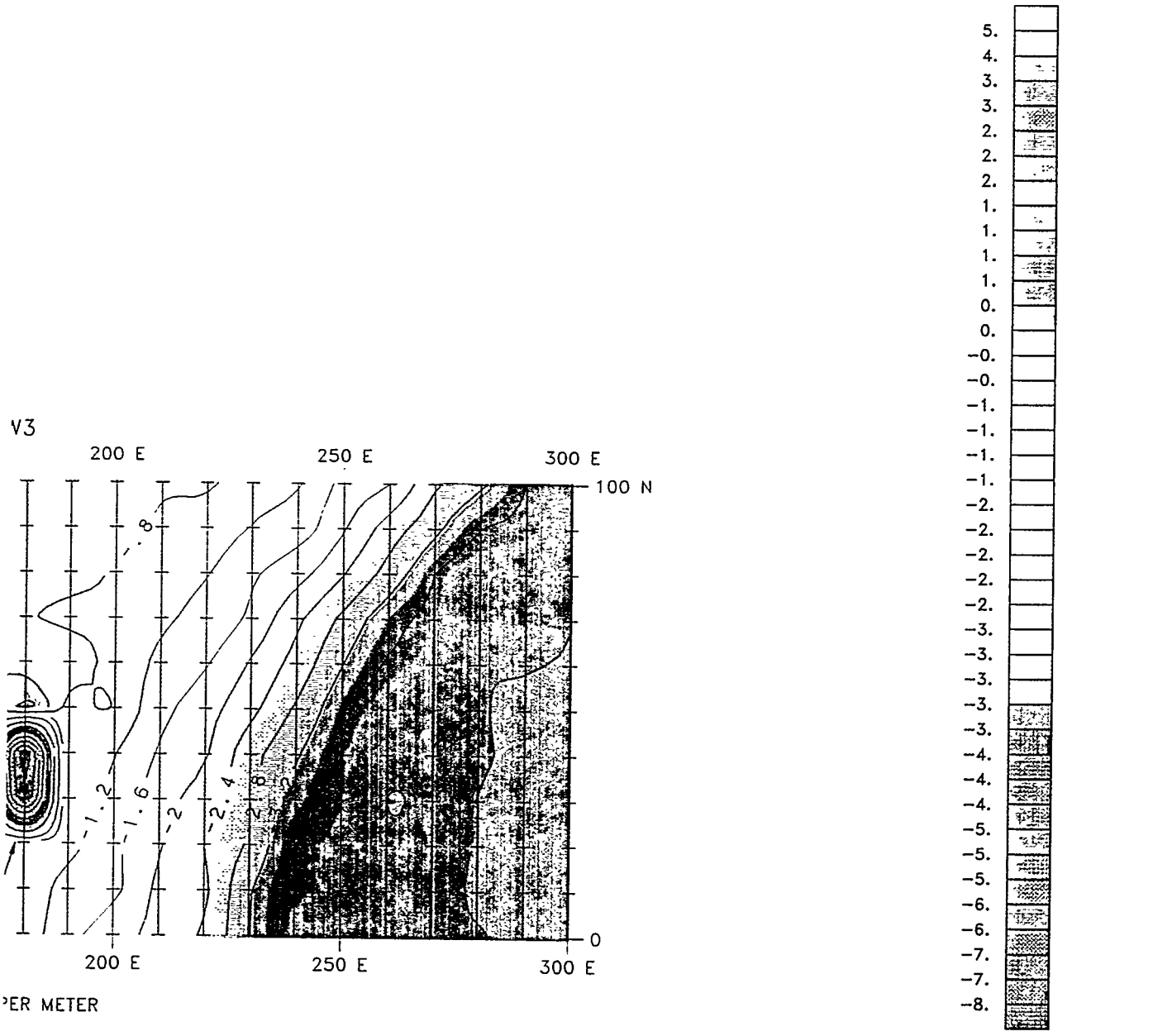


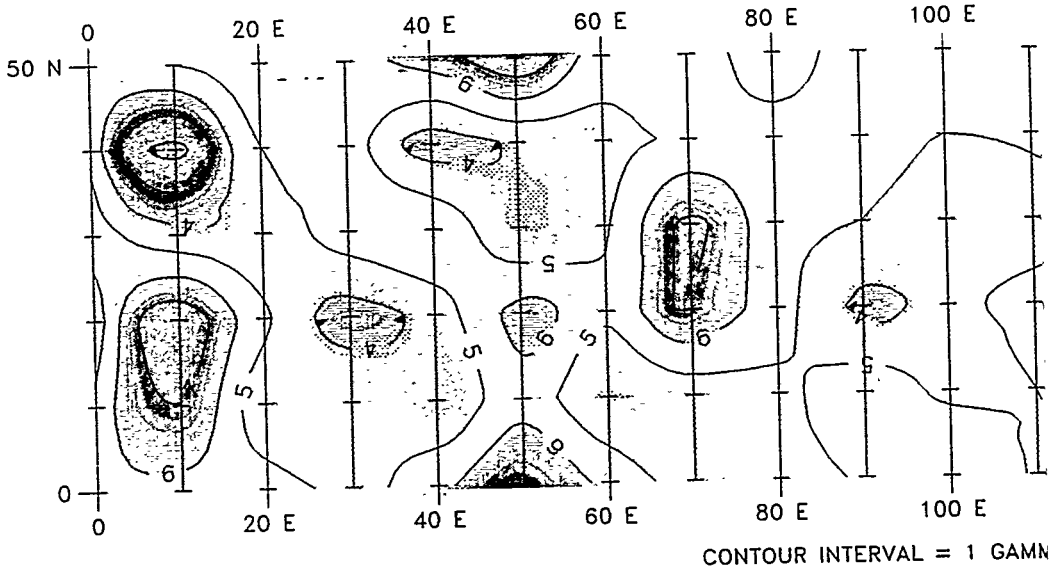
FIGURE B-14.3
SOURCE AREA 3
GOVERNMENT STORAGE
AREA NO. 2
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W1 - ANOMALIES ATTRIBUTED TO STEEL WELL CASINGS WITH SEQUENTIAL NUMBERING

I - ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC DEBRIS

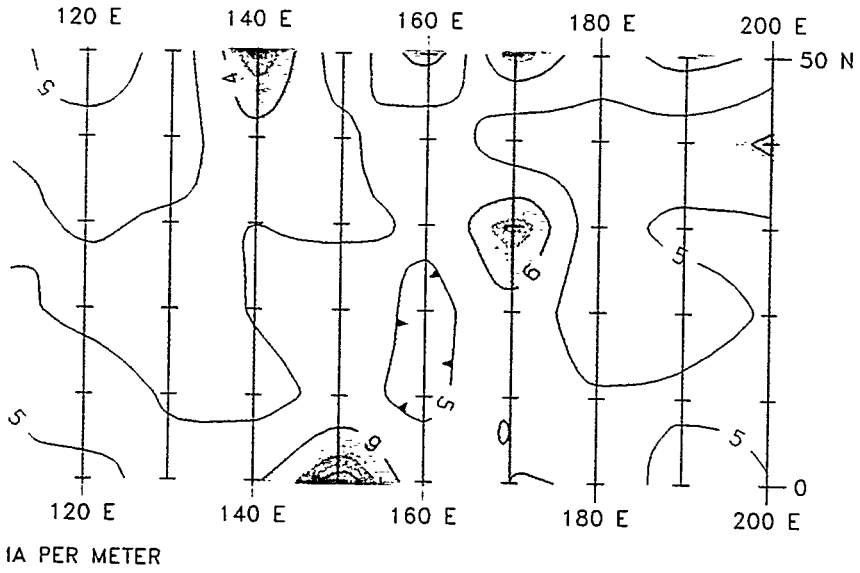
CHECKED BY	SAH	9-20-94	DRAWING NUMBER 3019965-B14
APPROVED BY	RPD	9/20/94	



SCALE

0 23 45 Feet

0 7 14 Meters



IA PER METER

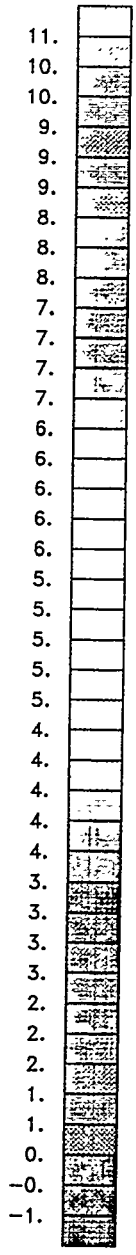
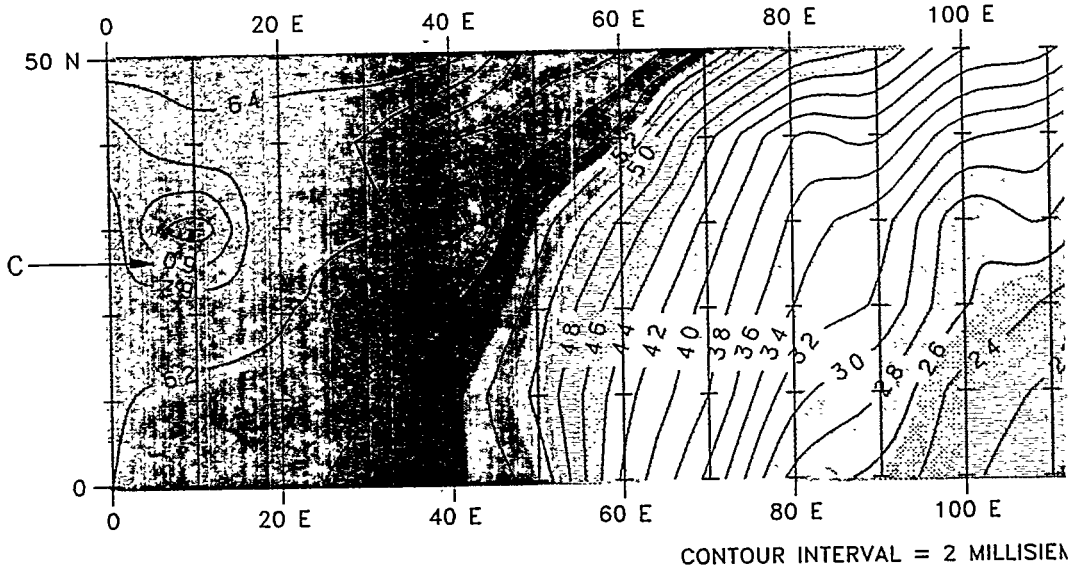


FIGURE B-15.1
SOURCE AREA 3
BIG CHIEF DRILLING
STORAGE AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

NO SIGNIFICANT ANOMALIES OBSERVED.

CHECKED BY	SAH	9-22-94
APPROVED BY	BAD	9/24/94
DRAWING NUMBER	301965-B55	

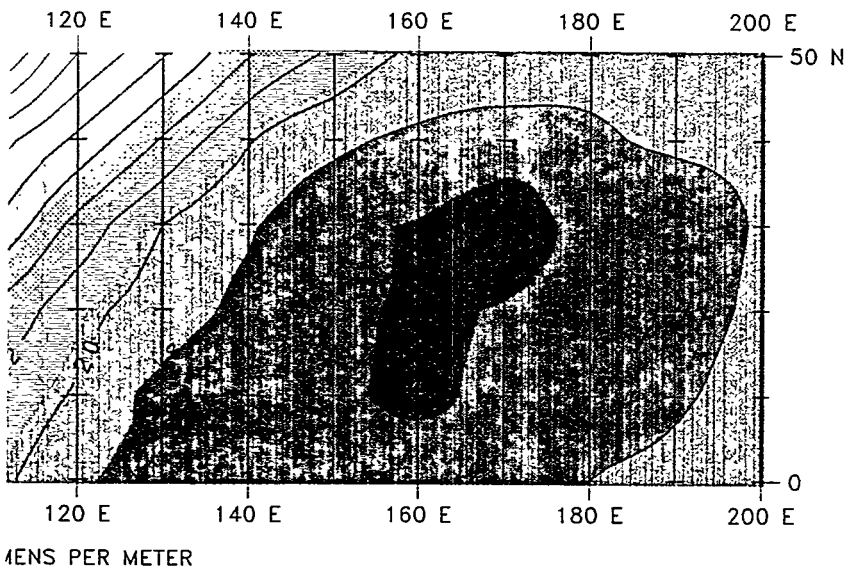


CONTOUR INTERVAL = 2 MILLISIEA

SCALE

0 23 45 Feet

0 7 14 Meters



MENS PER METER

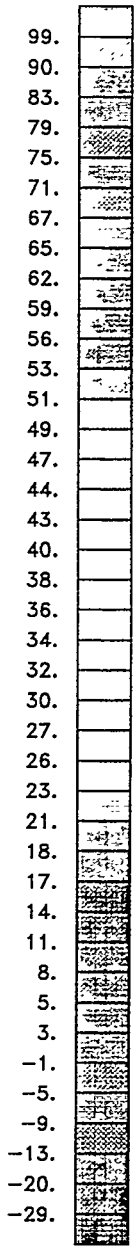


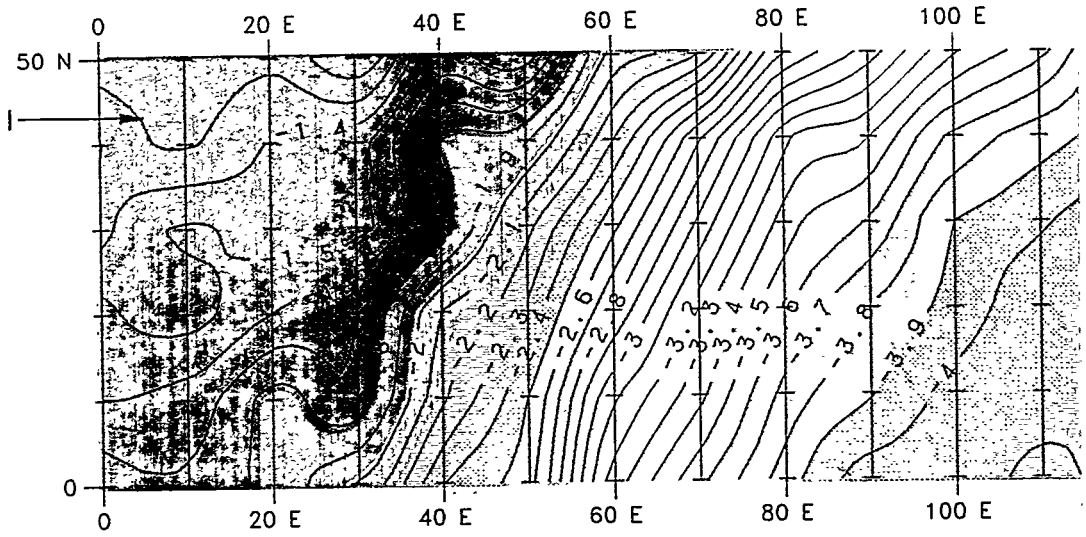
FIGURE B-15.2
SOURCE AREA 3
BIG CHIEF DRILLING
STORAGE AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C - AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	SAH	9-20-94
APPROVED BY	[signature]	9/20/94

DRAWING NUMBER 301965--B5.0

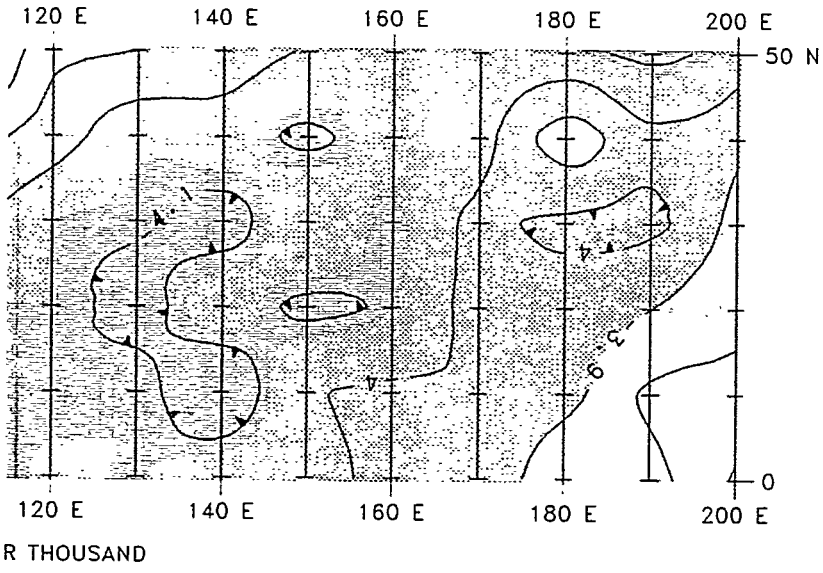


CONTOUR INTERVAL = .1 PART PE

SCALE

0 23 45 Feet

0 7 14 Meters



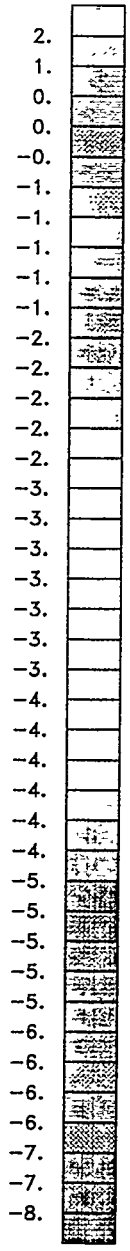
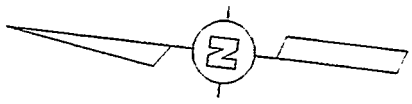


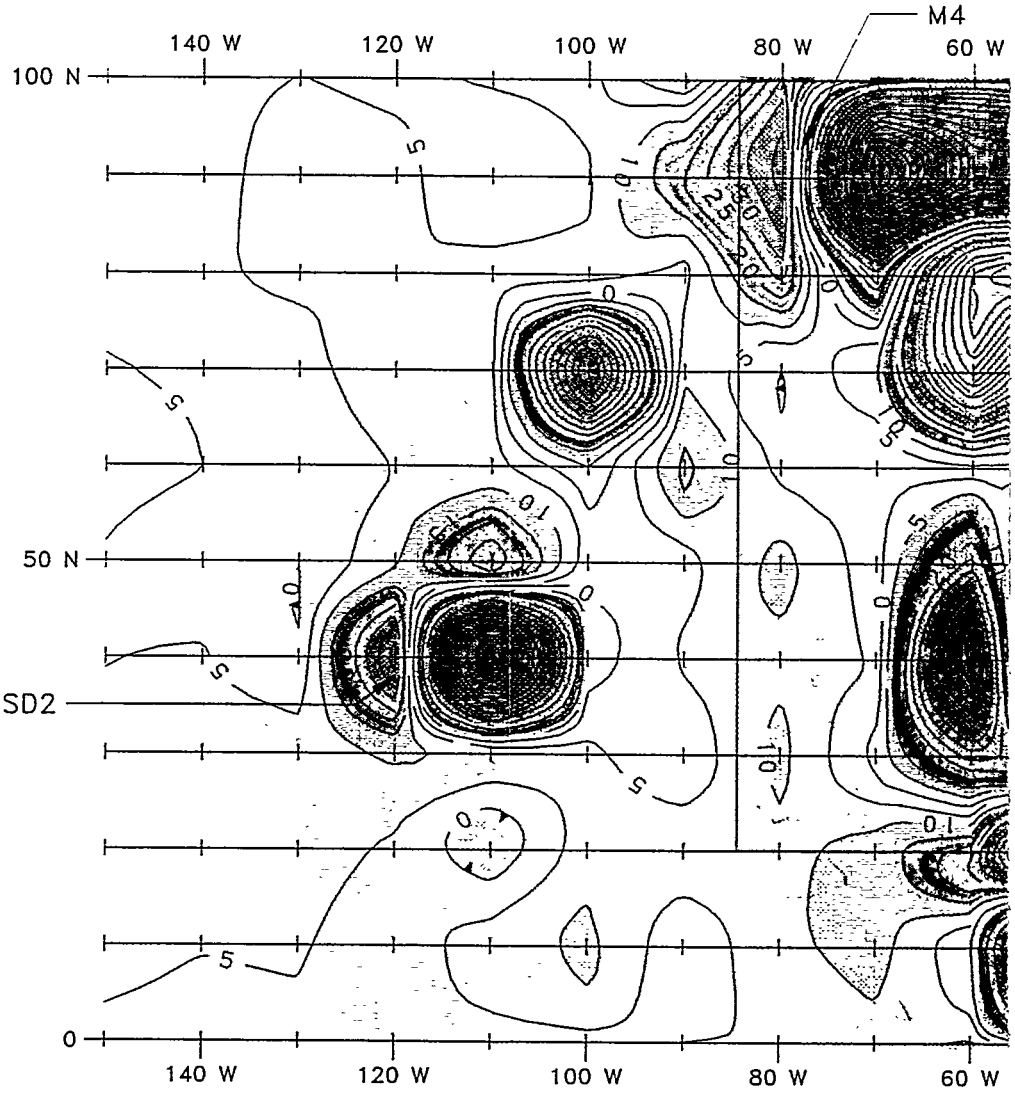
FIGURE B-15.3
SOURCE AREA 3
BIG CHIEF DRILLING
STORAGE AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

- IN-PHASE COMPONENT ANOMALY ASSOCIATED WITH AREA OF ELEVATED CONDUCTIVITY

CHECKED BY	SAH	9-30-94
APPROVED BY	[signature]	9/30/94
DRAWING NUMBER	301965-B57	



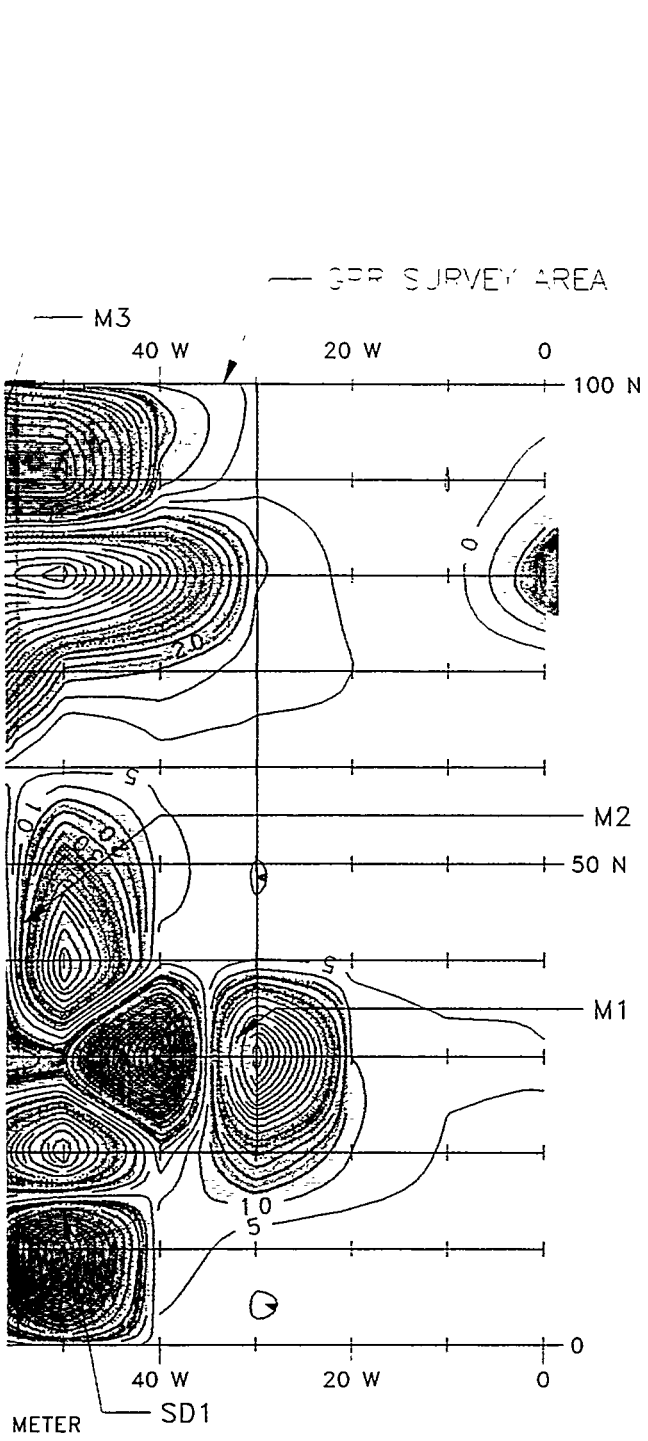


CONTOUR INTERVAL = 5 GAMMAS PER

SCALE

0 20 40 Feet

0 7 14 Meters



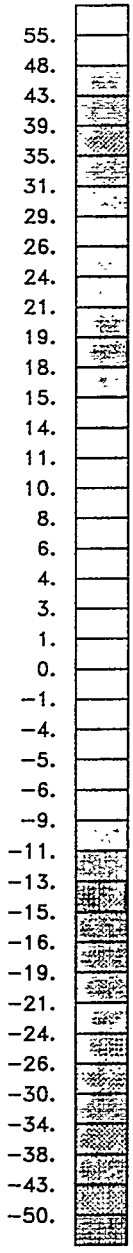


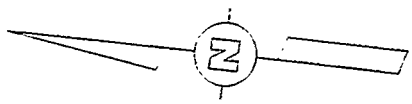
FIGURE B-16.1
SOURCE AREA 3
MUD STORAGE PIT AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

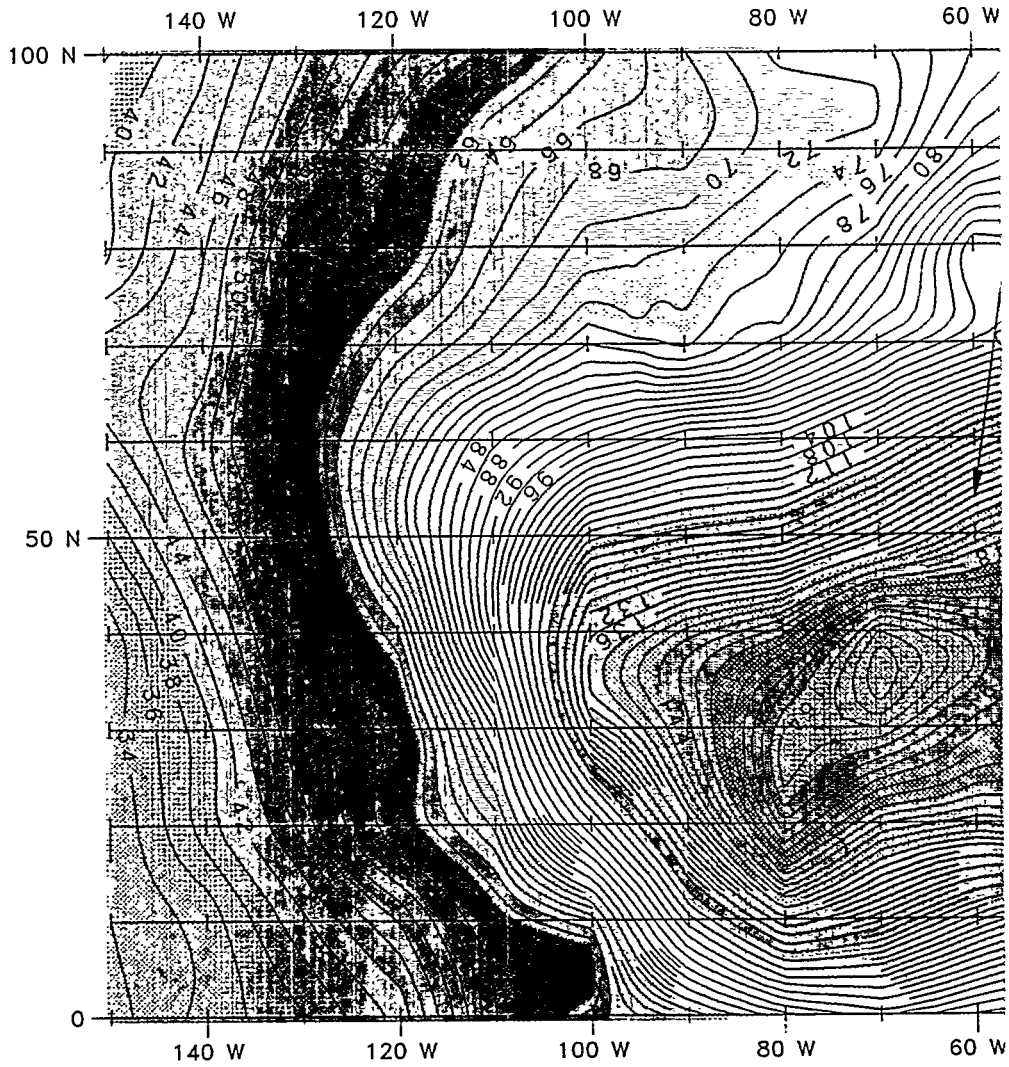
LEGEND

SD1 - ANOMALY ATTRIBUTED TO FERROMETALLIC MATERIAL ON THE SURFACE WITH SEQUENTIAL NUMBERING

M1 - ANOMALIES ATTRIBUTED TO BURIED FERROMETALLIC MATERIAL WITH SEQUENTIAL NUMBERING

CHECKED BY	SJH	9-22-94	DRAWING NUMBER
APPROVED BY	Brad	9/22/94	301965-B58



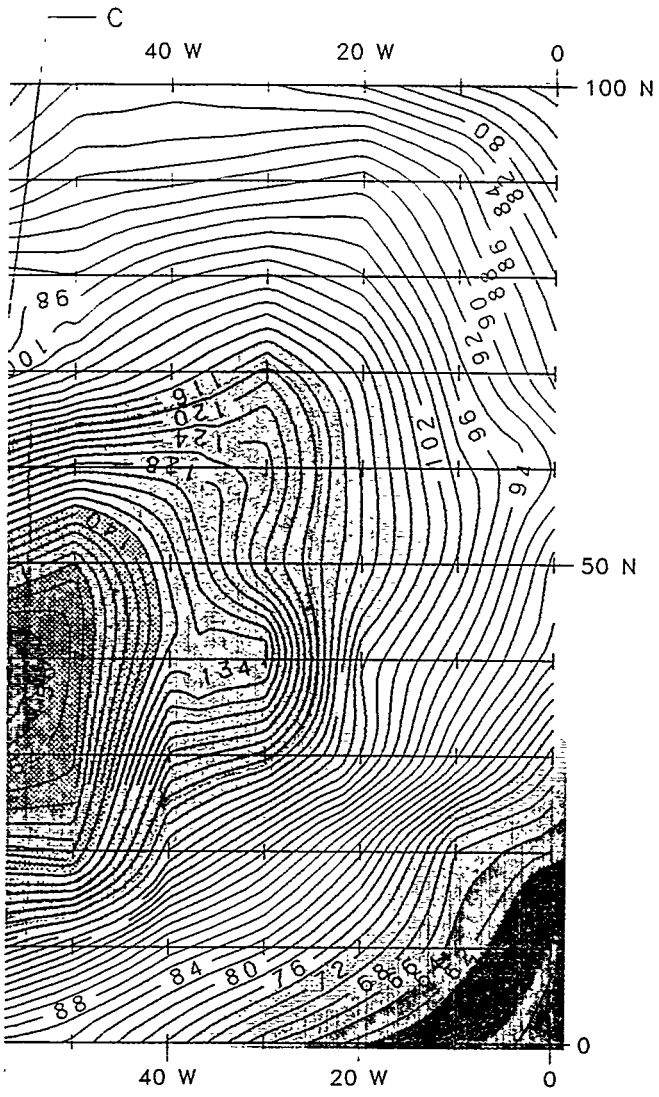


CONTOUR INTERVAL = 2 MILLISIEMENS F

SCALE

0 20 40 Feet

0 7 14 Meters



'ER METER

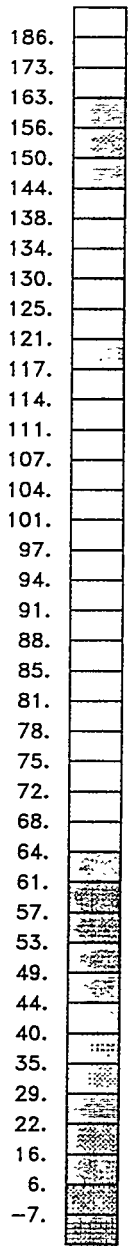
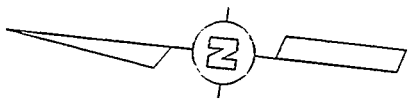


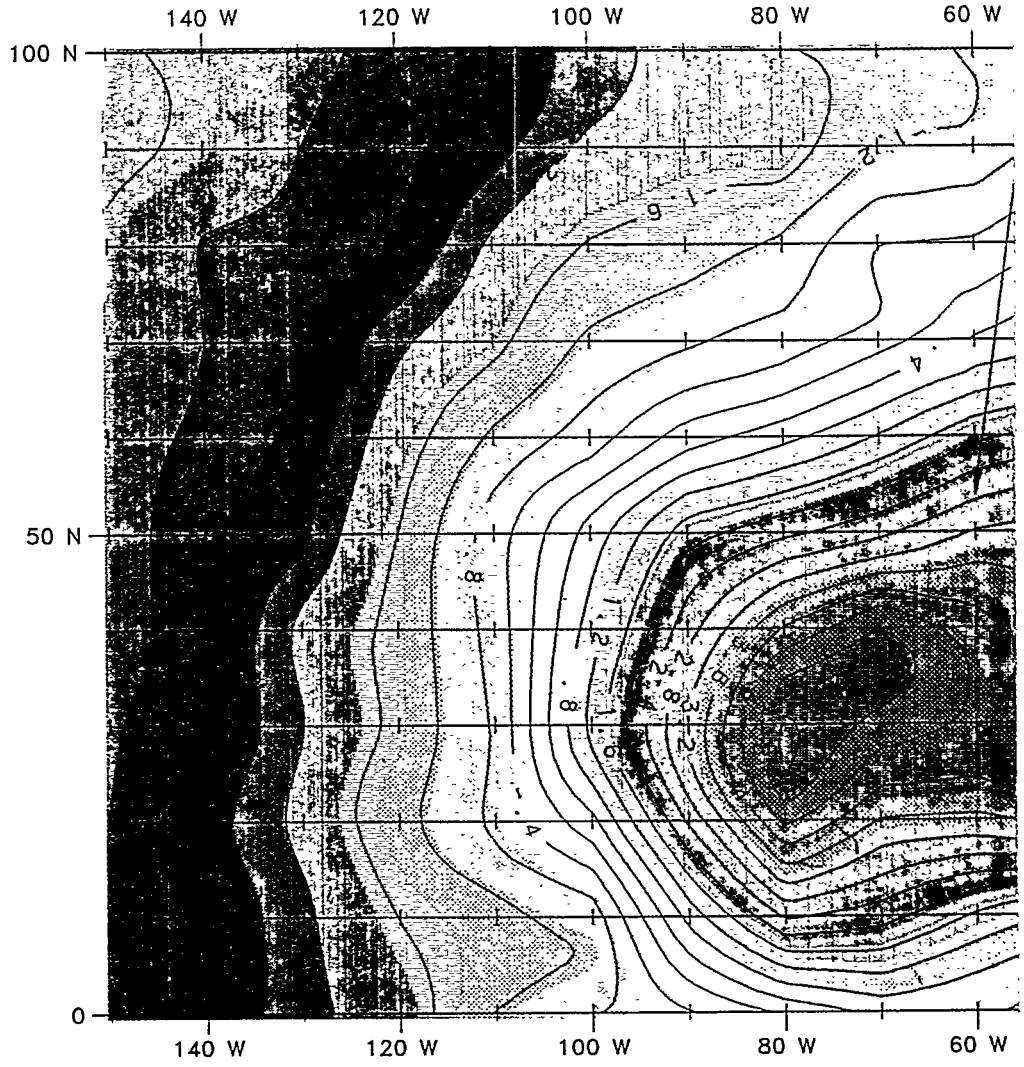
FIGURE B-16.2
SOURCE AREA 3
MUD STORAGE PIT AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C - AREA OF ELEVATED CONDUCTIVITY

DRAWING NUMBER	301965-B59	
CHECKED BY	SJH	9-PC-94
APPROVED BY	RJD	9/26/94



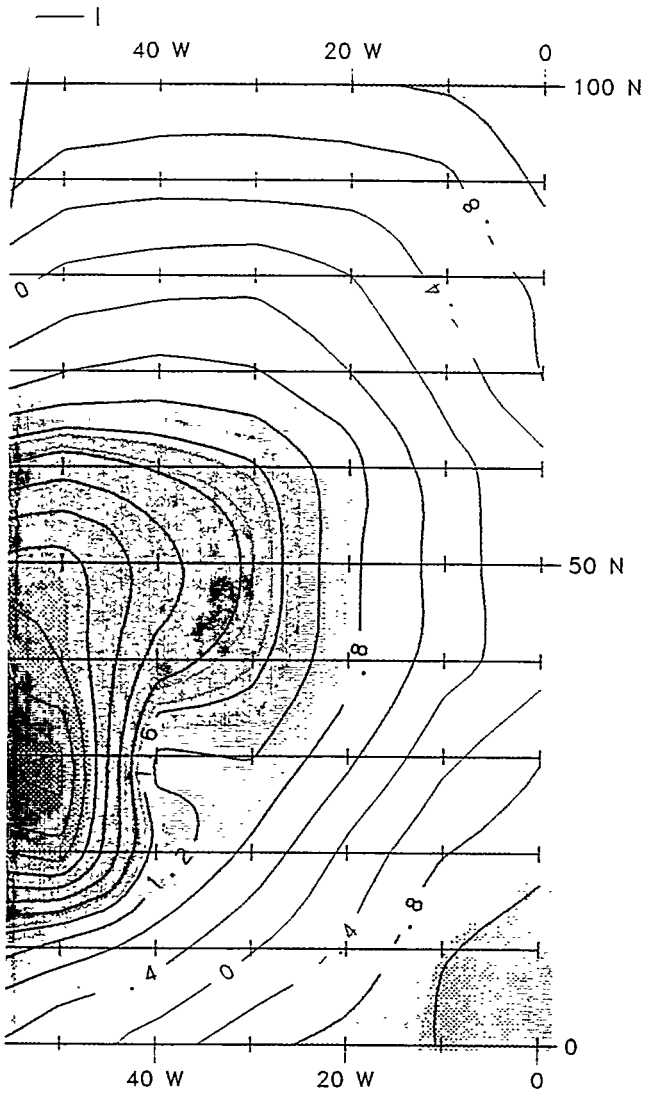


CONTOUR INTERVAL = .4 PARTS PER TH

SCALE

0 20 40 Feet

0 7 14 Meters



OUSAND

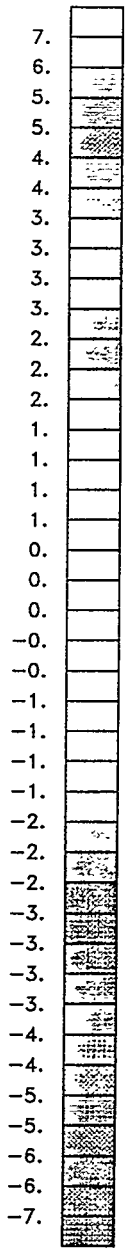
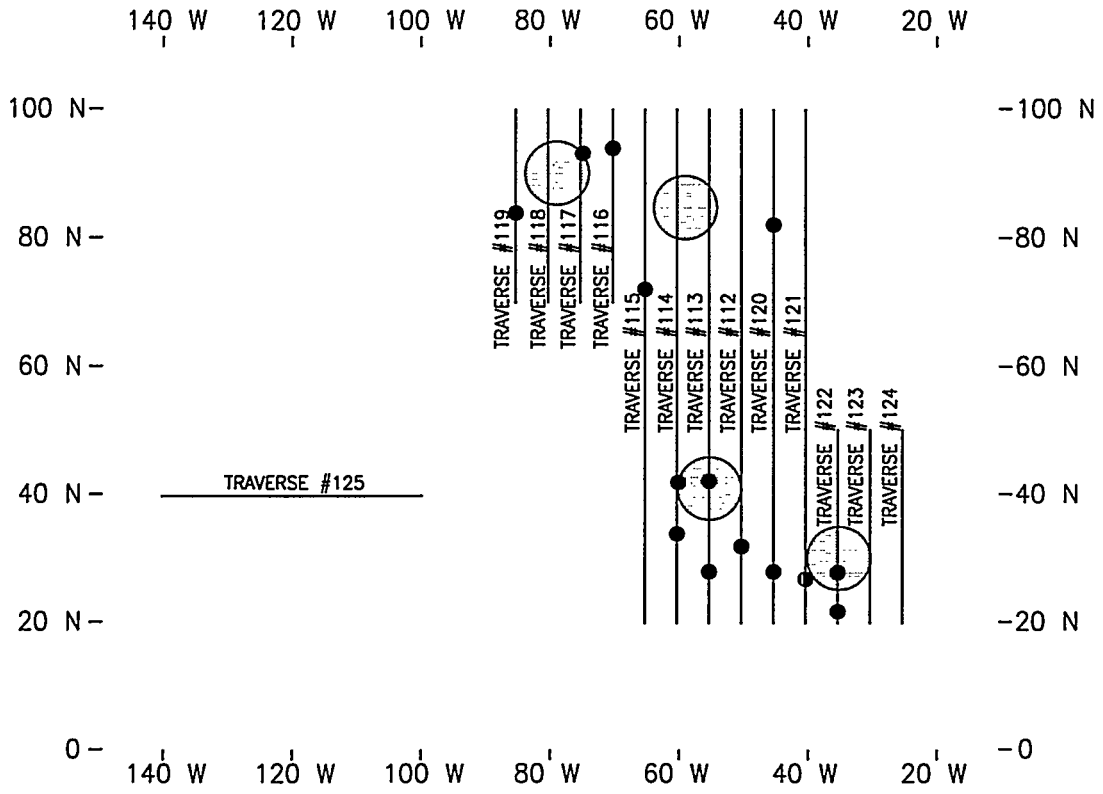


FIGURE B-16.3
SOURCE AREA 3
MUD STORAGE PIT AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

I - IN-PHASE COMPONENT ANOMALY ASSOCIATED WITH AREA OF ELEVATED CONDUCTIVITY

CHECKED BY:	SAH	9/05/94	DRAWING NUMBER 301965.403.02.002
APPROVED BY:	JAC	9/23/94	



LEGEND

- ● SIGNIFICANT GPR ANOMALIES
- —— GPR TRAVERSES
- ⊕ APPROXIMATE LOCATION OF MAGNETIC ANOMALY

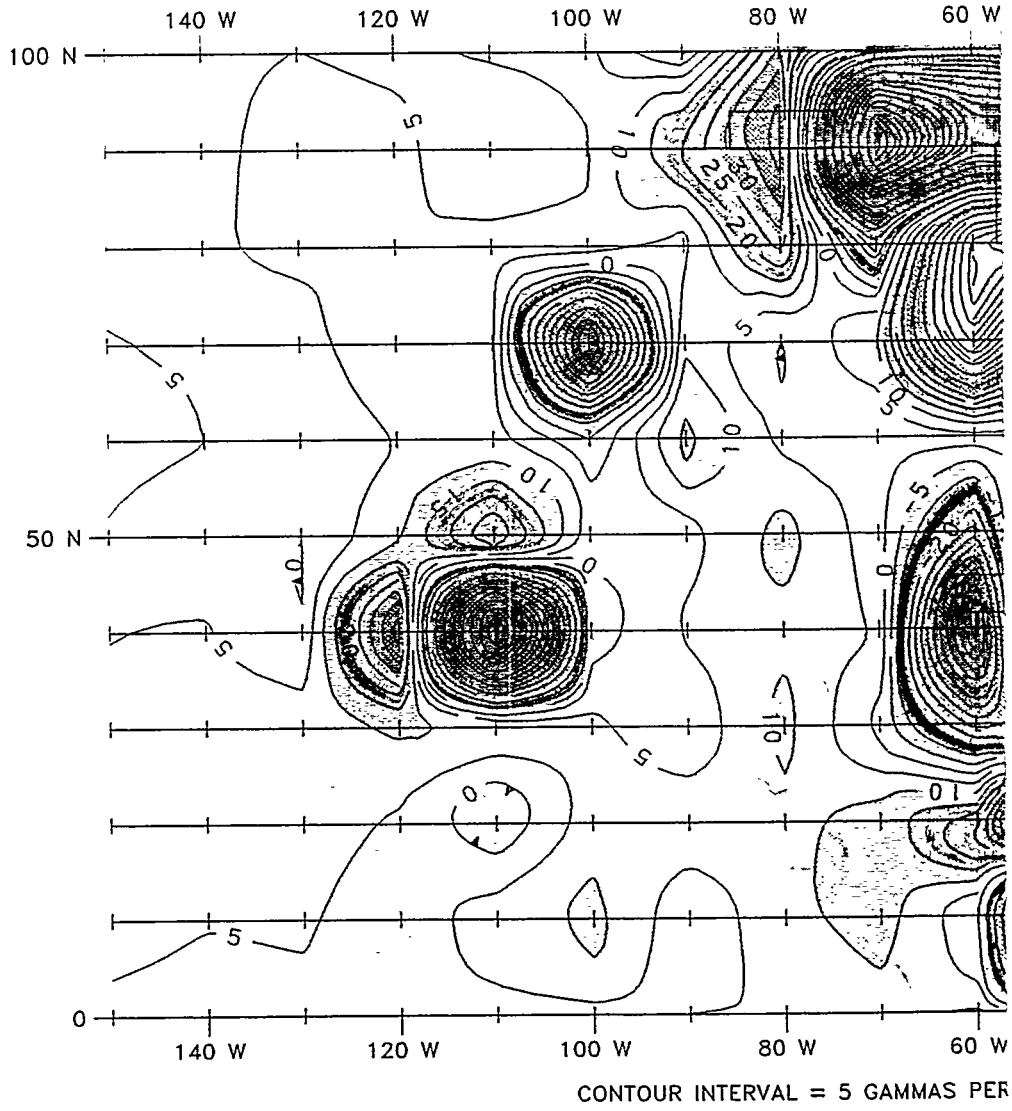
SCALE

0 30 60 Feet

0 10 20 Meters

FIGURE B-16.4
SOURCE AREA 3
MUD STORAGE PIT AREA
GPR TRAVERSES OVER
MAGNETIC ANOMALIES M1, M2, M3 AND M4
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

1965A39 08/15/94

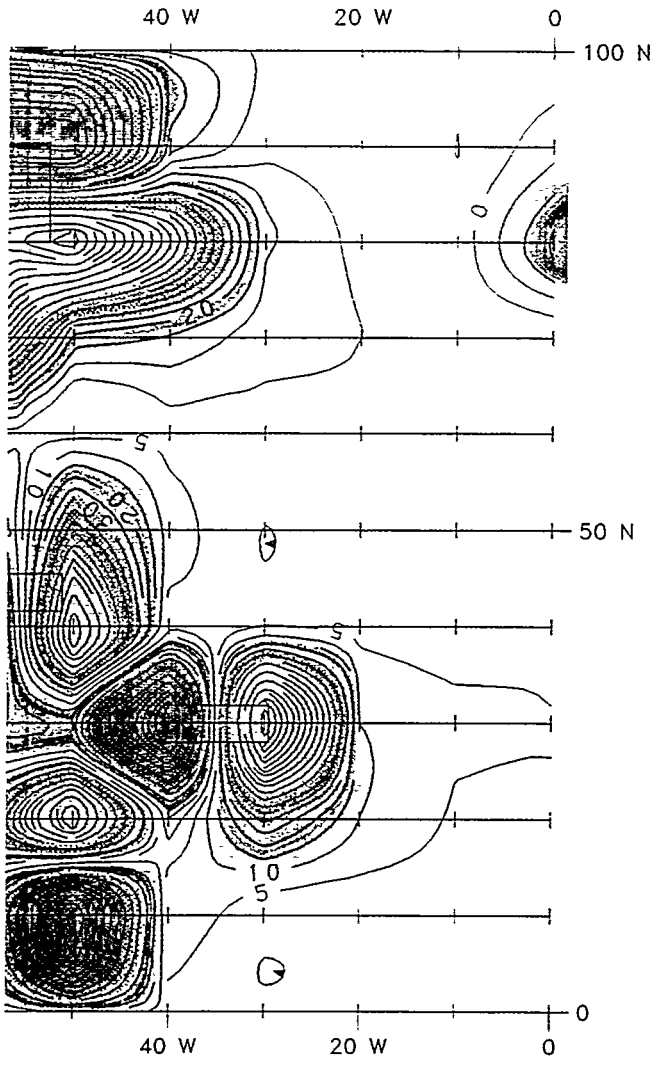


SCALE

0 20 40 Feet

0 7 14 Meters

CHECKED BY	
APPROVED BY	
DRAWING NUMBER	



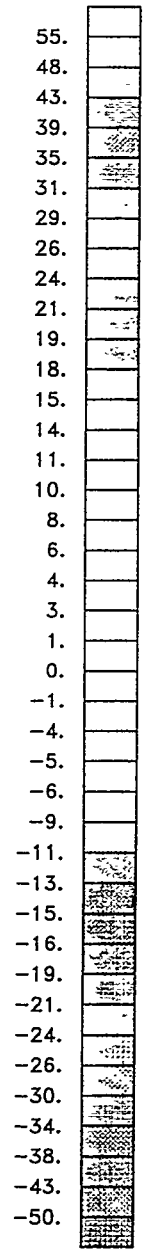


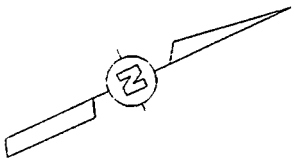
FIGURE B-16.5
SOURCE AREA 3
MUD STORAGE PIT AREA
RECOMMENDED TEST
PIT LOCATIONS
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

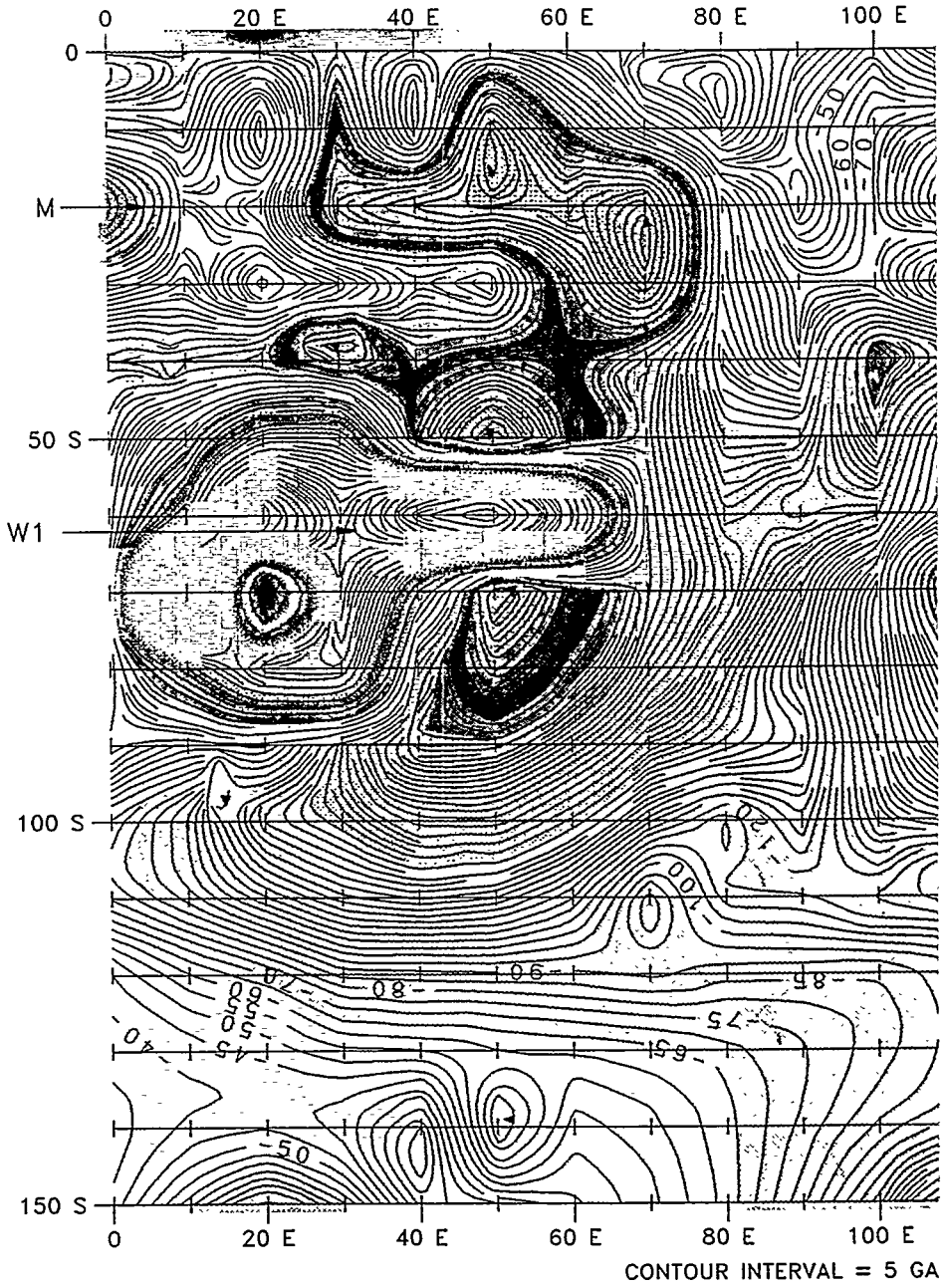
! METER

LEGEND

▭ - RECOMMENDED TEST PIT LOCATIONS

DRAWING NUMBER	301965-B60
	9-30-94
CHECKED BY	SAH
APPROVED BY	9/20/94



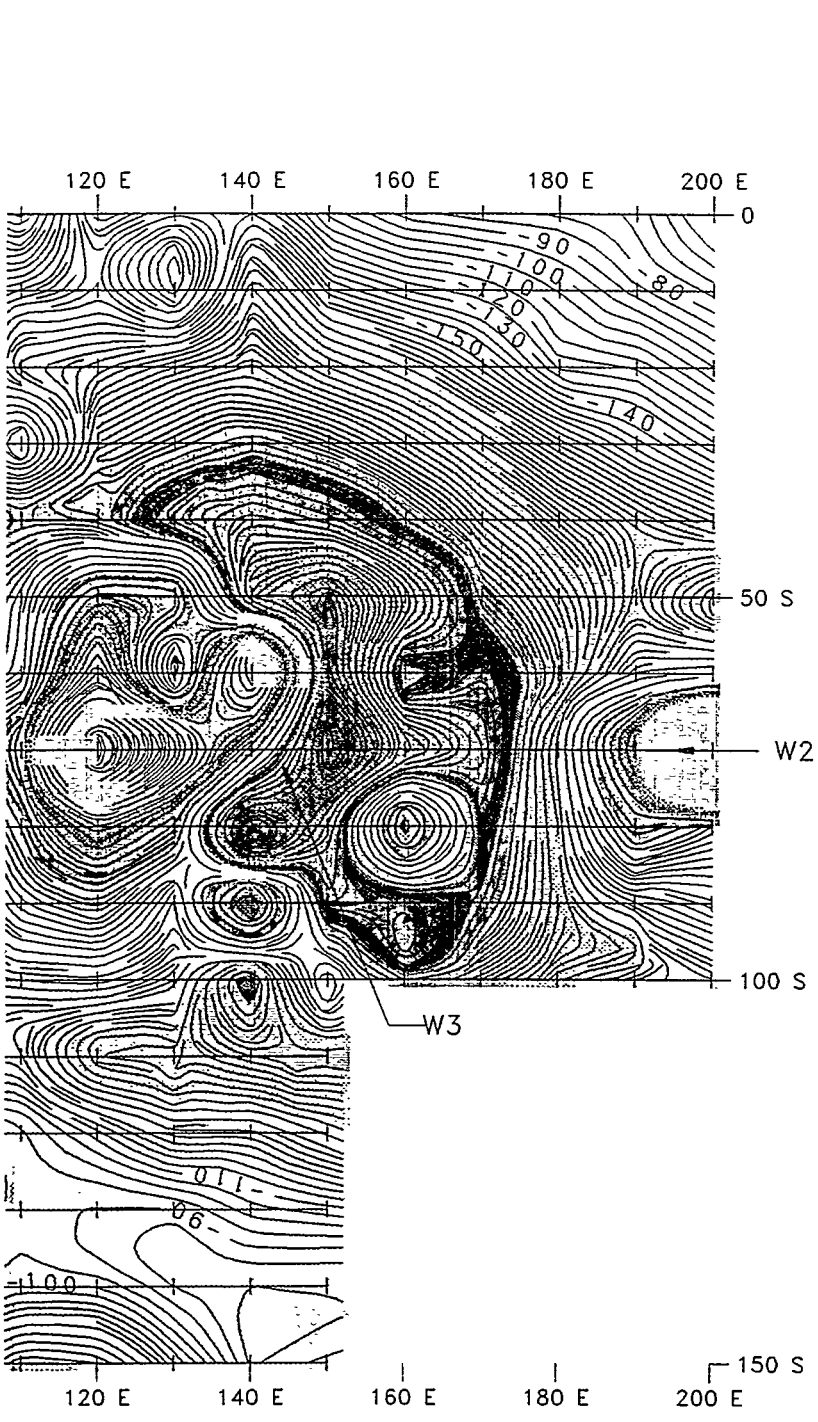


CONTOUR INTERVAL = 5 GA

SCALE

0 25 50 Feet

0 8 16 Meters



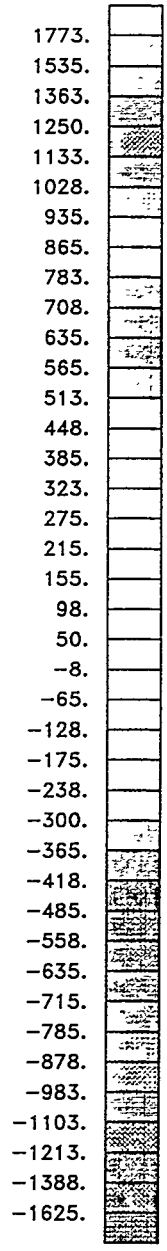


FIGURE B-17.1
SOURCE AREA 4
RESERVE MUD PIT AND
DEBRIS BURIAL PIT AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

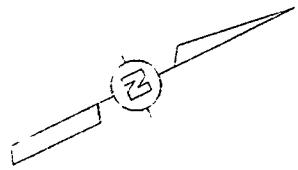
LEGEND

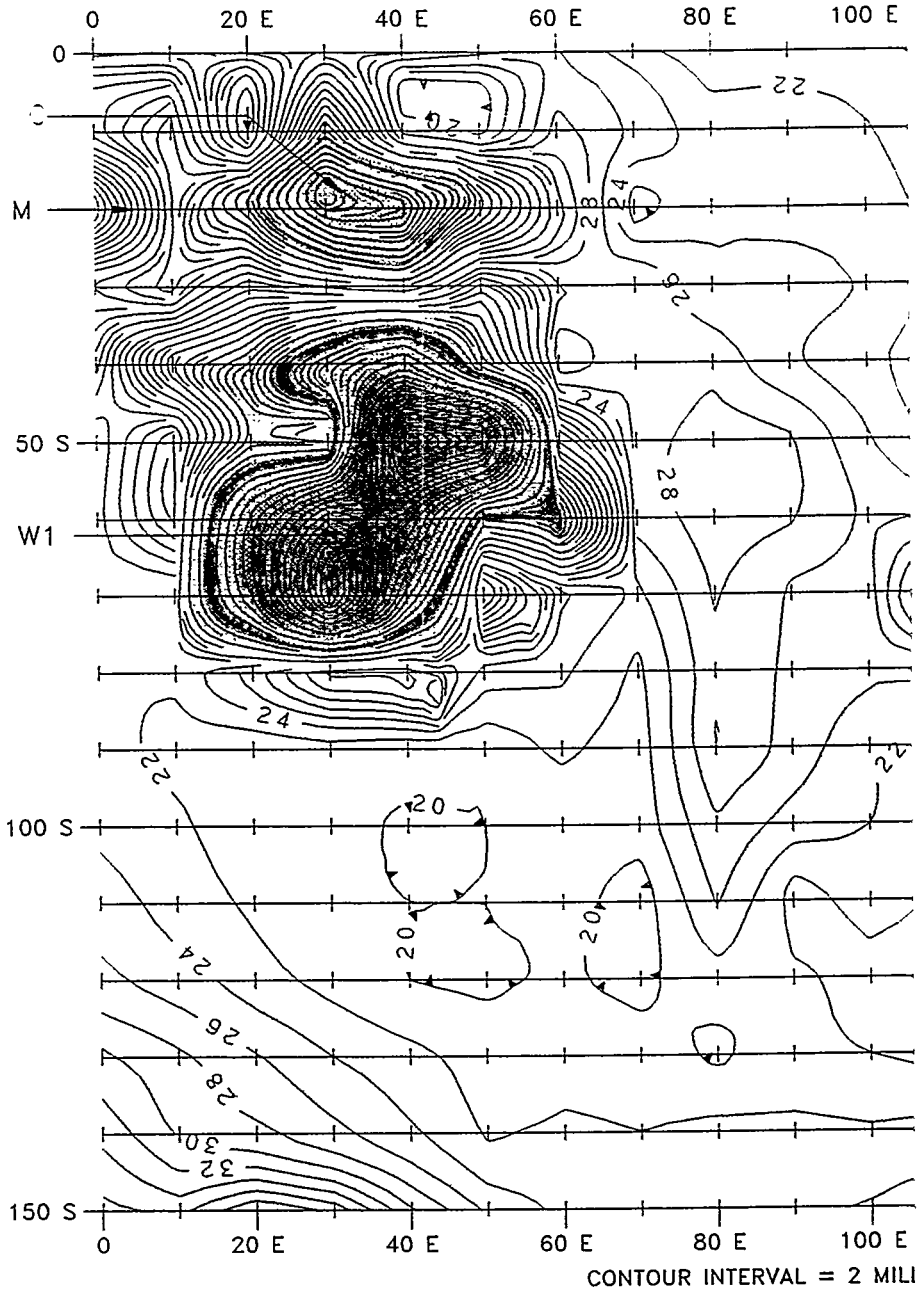
W1 - ANOMALIES ATTRIBUTED TO PLUGGED WELLS SURROUNDED BY CONCRETE PADS WITH SEQUENTIAL NUMBERING

M - ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC DEBRIS

CHECKED BY	RSAH	6.22.94
APPROVED BY	RBG	9/20/94

DRAWING NUMBER 301965-B01

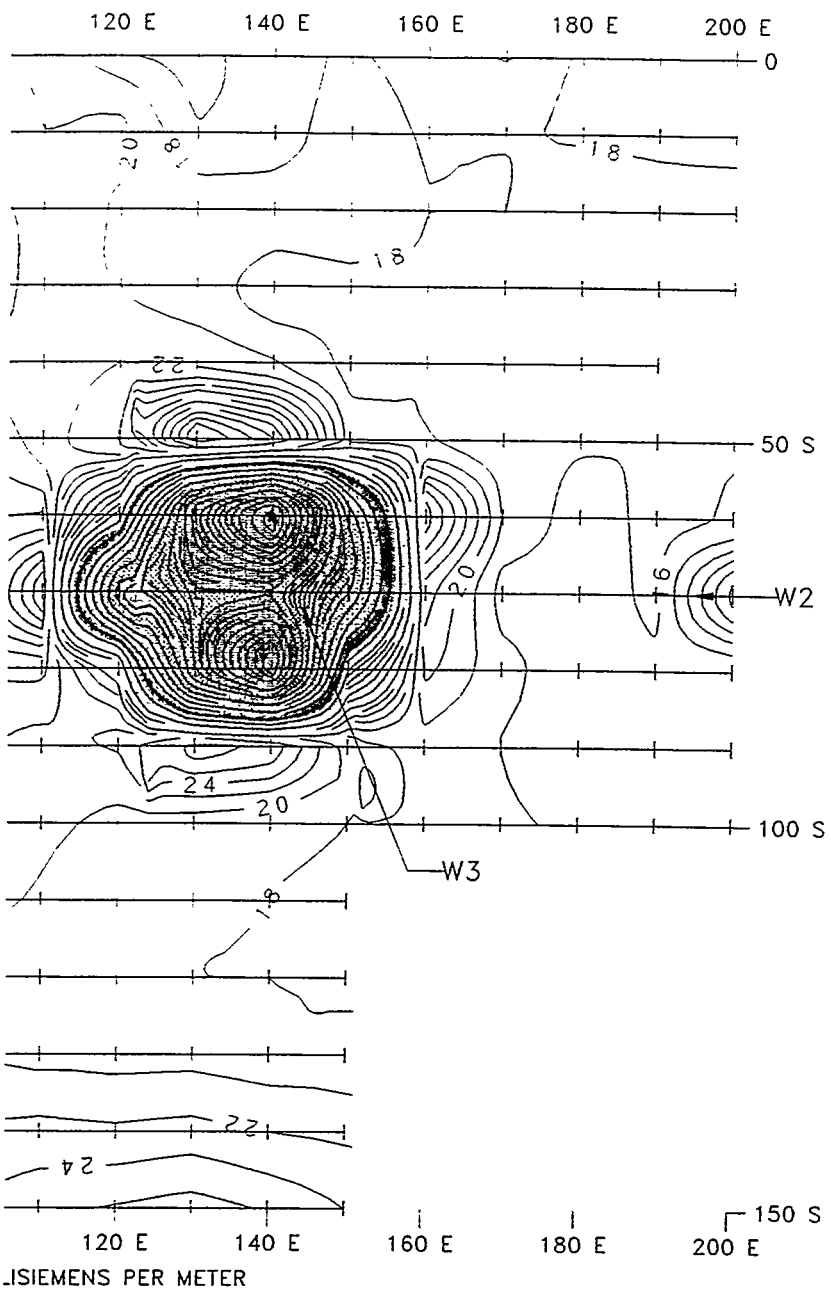




SCALE

0 25 50 Feet

0 8 16 Meters



MILLISIEMENS PER METER

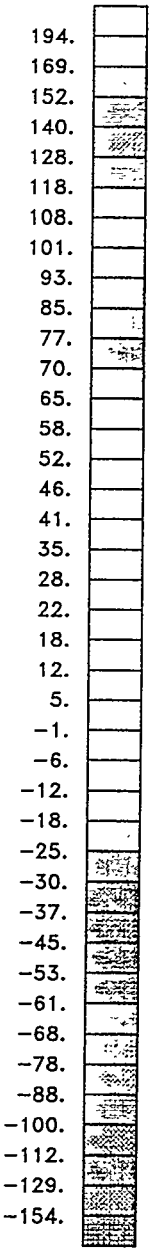


FIGURE B-17.2
SOURCE AREA 4
RESERVE MUD PIT AND
DEBRIS BURIAL PIT AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

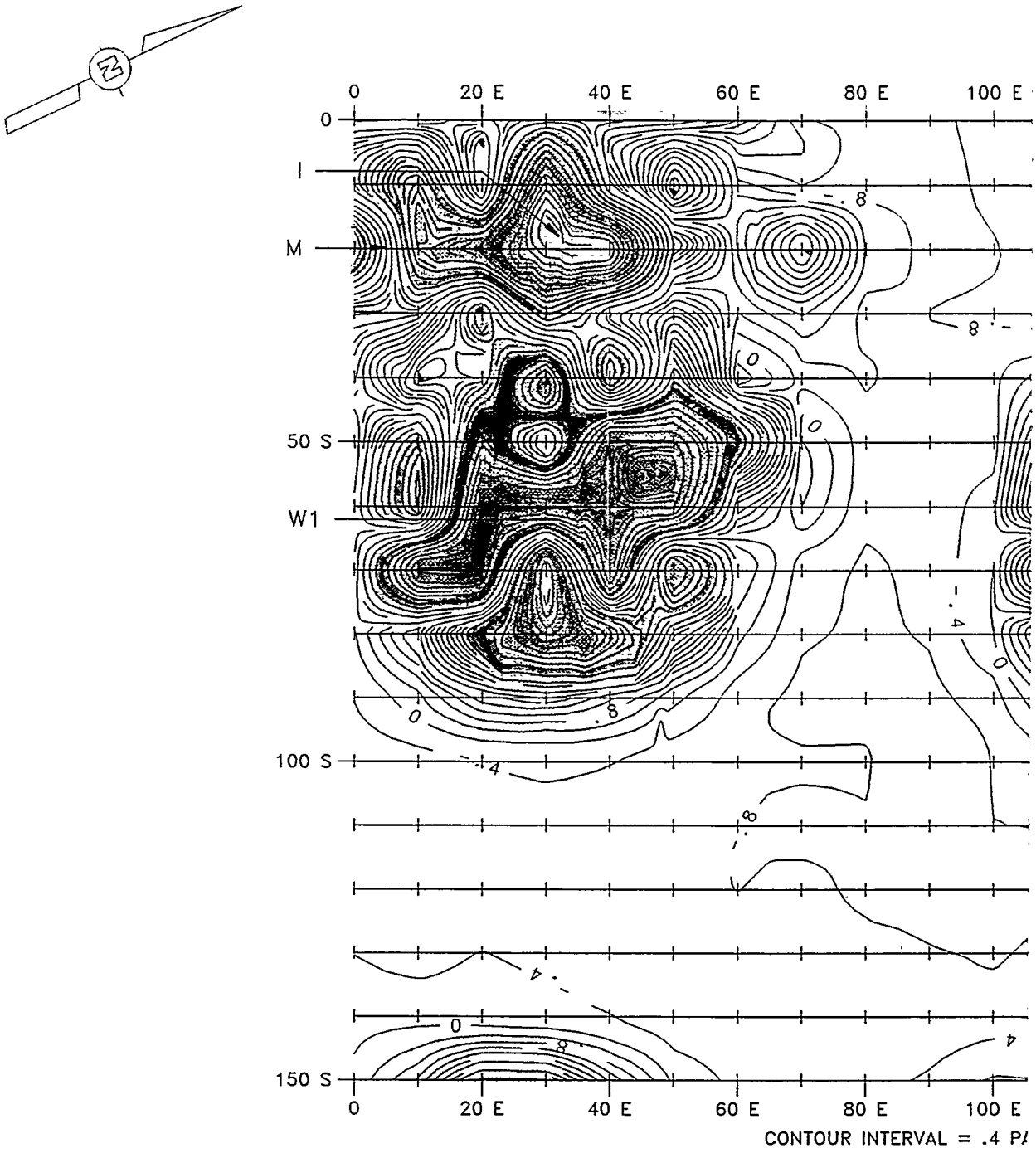
W1 - ANOMALIES ATTRIBUTED TO PLUGGED WELLS SURROUNDED BY CONCRETE PADS WITH SEQUENTIAL NUMBERING

C - AREA OF ELEVATED CONDUCTIVITY

M - ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC DEBRIS

CHECKED BY	SAH	9/20/94
APPROVED BY	[illegible]	9/20/94

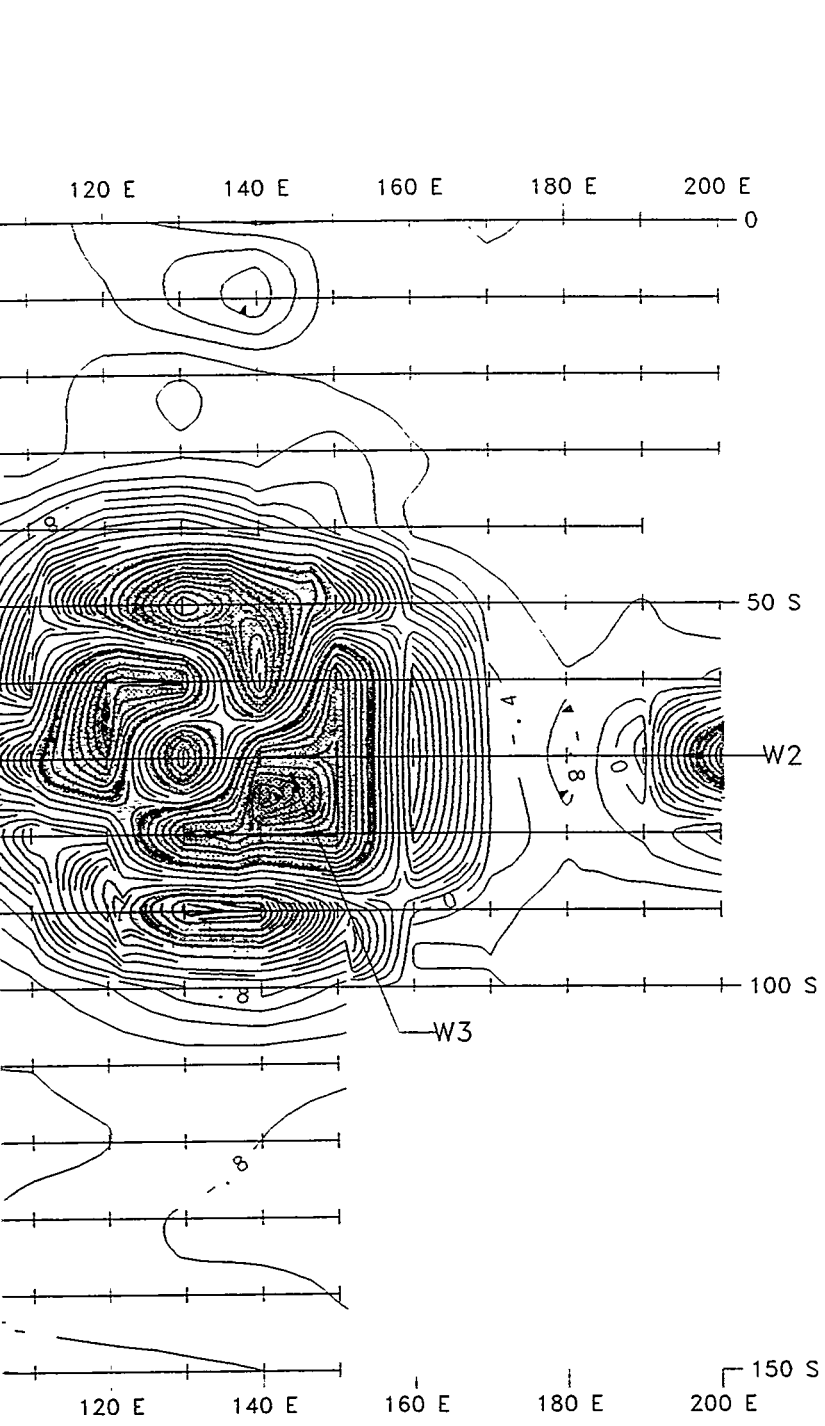
DRAWING NUMBER 301965-B62

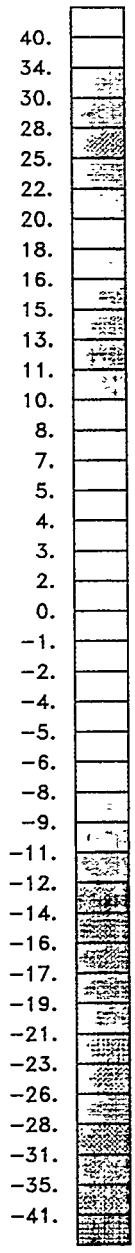


SCALE

0 25 50 Feet

0 8 16 Meters





ARTS PER THOUSAND

LEGEND

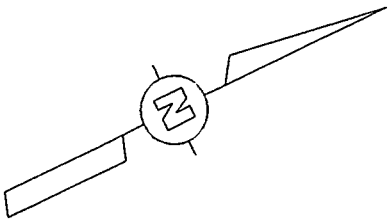
W1 – ANOMALIES ATTRIBUTED TO PLUGGED WELLS SURROUNDED BY CONCRETE PADS WITH SEQUENTIAL NUMBERING

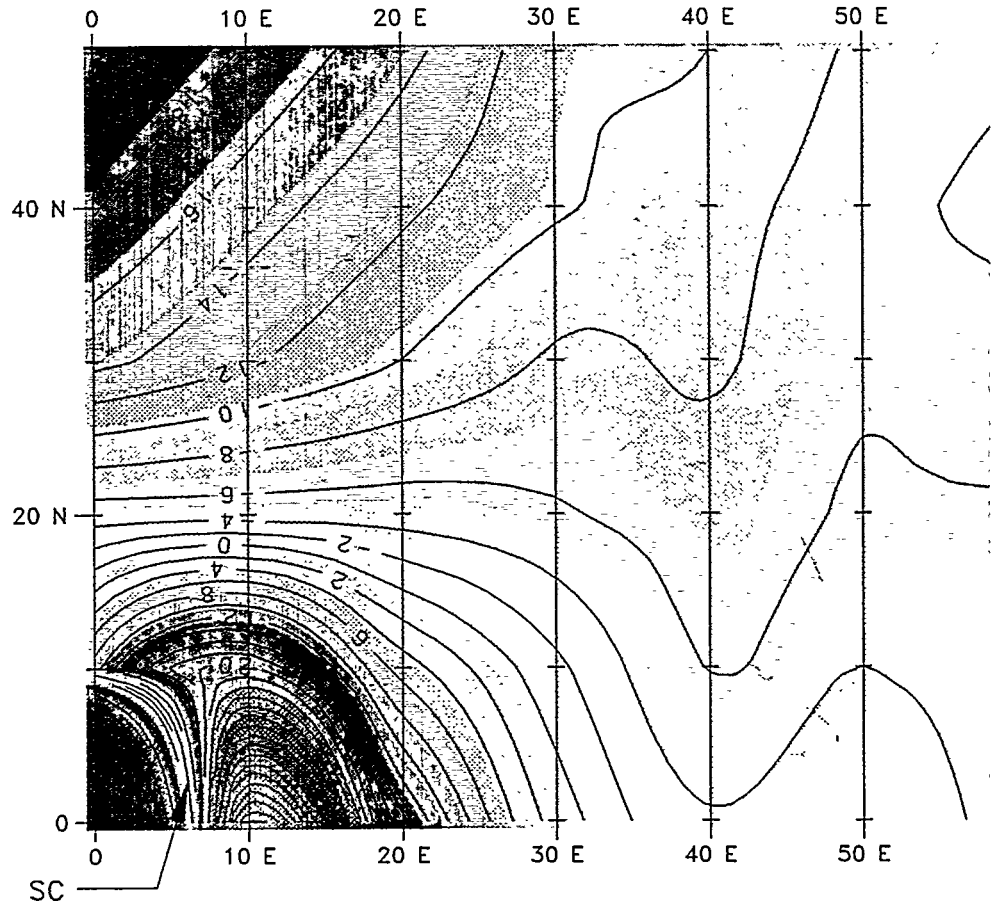
I – IN-PHASE COMPONENT ANOMALY ASSOCIATED WITH AREA OF ELEVATED CONDUCTIVITY

M – ANOMALY ATTRIBUTED TO BURIED FERROMETALLIC DEBRIS

FIGURE B-17.3
SOURCE AREA 4
RESERVE MUD PIT AND
DEBRIS BURIAL PIT AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWING NUMBER	301965-B63	
CHECKED BY	SAH	9-30-94
APPROVED BY	BJ Cox	9/30/94



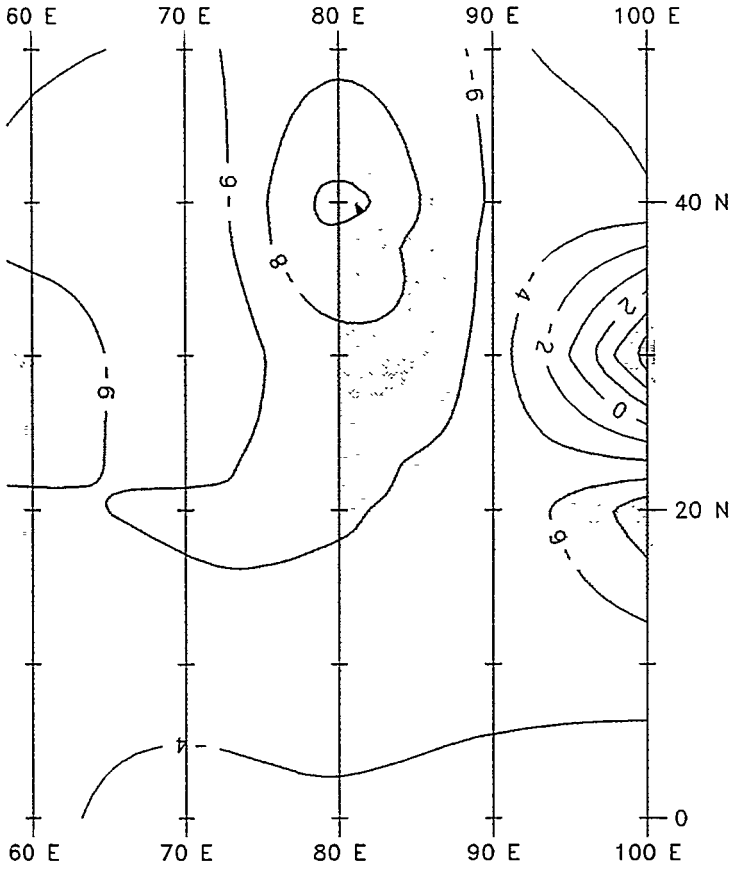


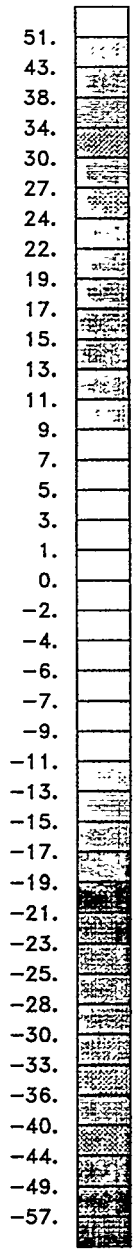
CONTOUR INTERVAL = 2 GAMMAS

SCALE

0 13 25 Feet

0 4 8 Meters





PER METER

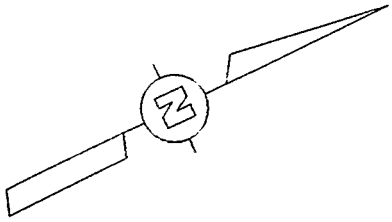
FIGURE B-18.1
SOURCE AREA 4
CH FUEL STORAGE AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

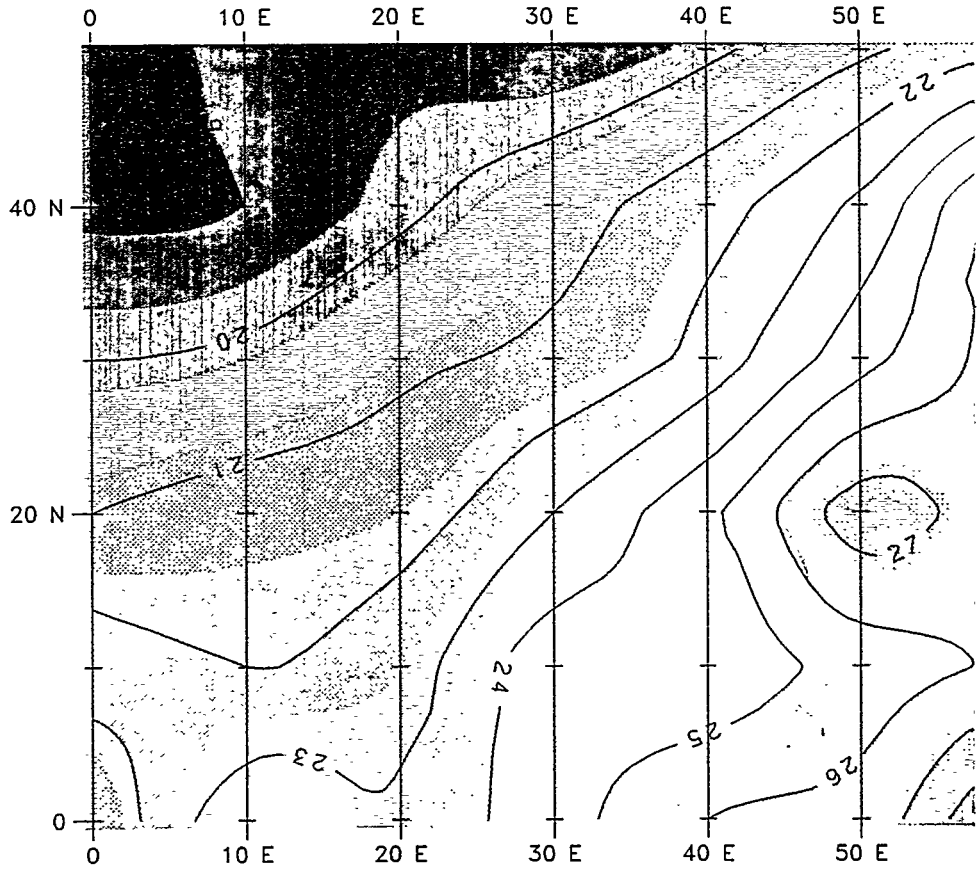
LEGEND

SC - ANOMALY ATTRIBUTED TO BURIED STEEL CULVERT

CHECKED BY	SAH	9-26-94
APPROVED BY	RJOC	9/29/94

DRAWING NUMBER 301965-B64



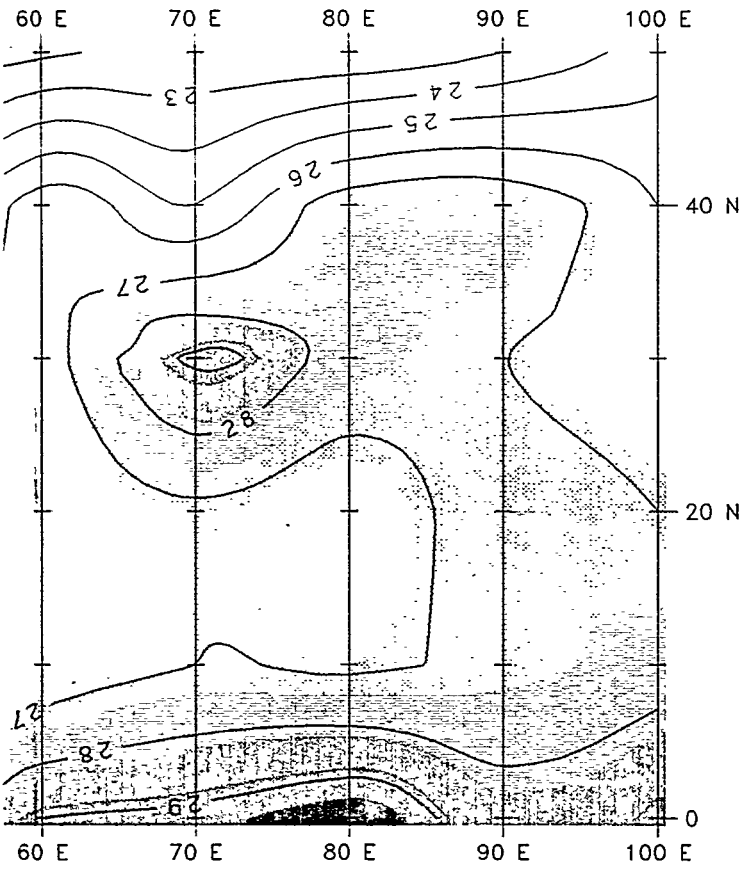


CONTOUR INTERVAL = 1 MILLISIEM

SCALE

0 13 25 Feet

0 4 8 Meters



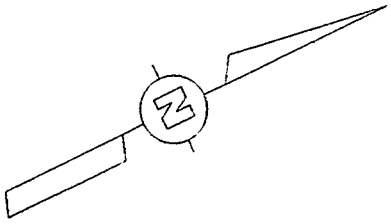
EN PER METER

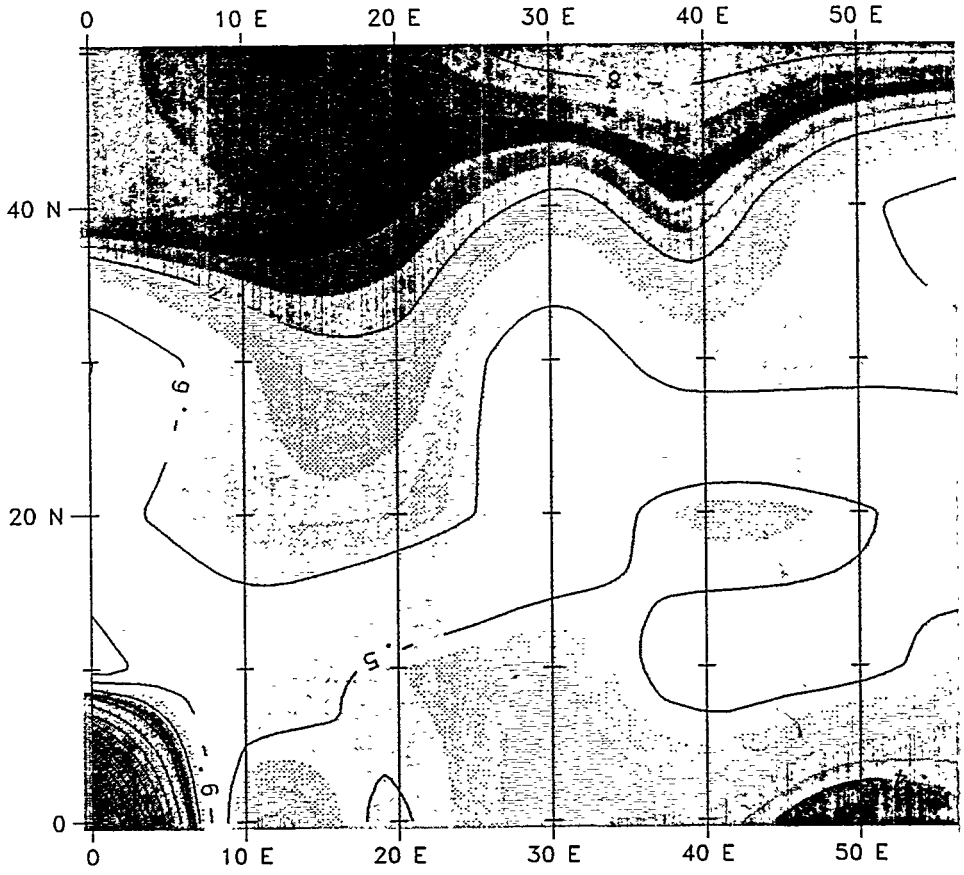
FIGURE B-18.2
SOURCE AREA 4
CH FUEL STORAGE AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

NO SIGNIFICANT ANOMALIES OBSERVED

DRAWING NUMBER	301965-B65	
	9-DEC-94	
CHECKED BY	SAH	
APPROVED BY	9/Dec/94	



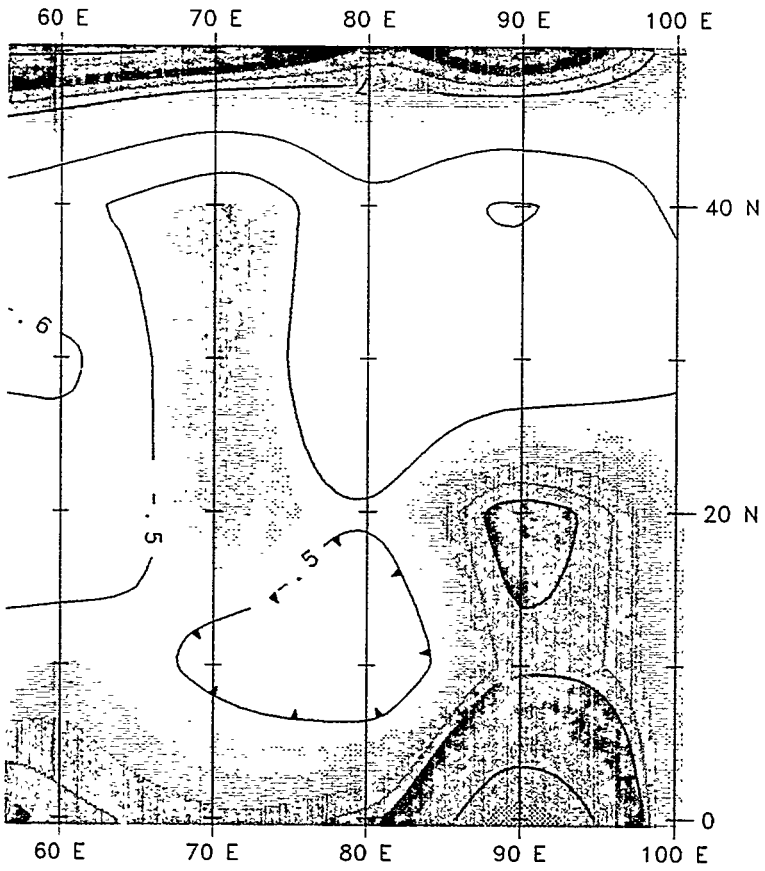


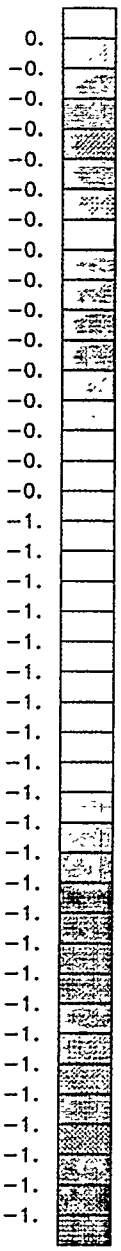
CONTOUR INTERVAL = .1 PART

SCALE

0 13 25 Feet

0 4 8 Meters





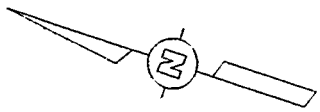
PER THOUSAND

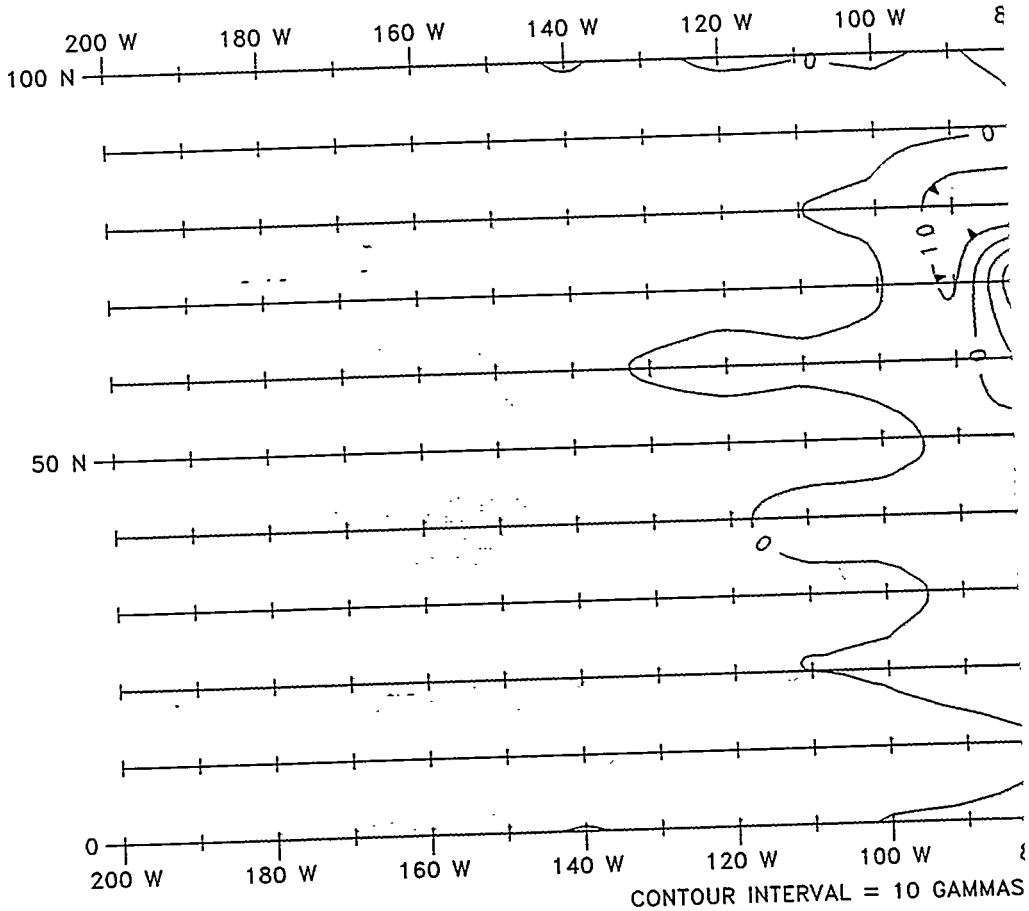
FIGURE B-18.3
SOURCE AREA 4
CH FUEL STORAGE AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

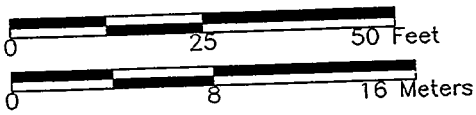
NO SIGNIFICANT ANOMALIES OBSERVED

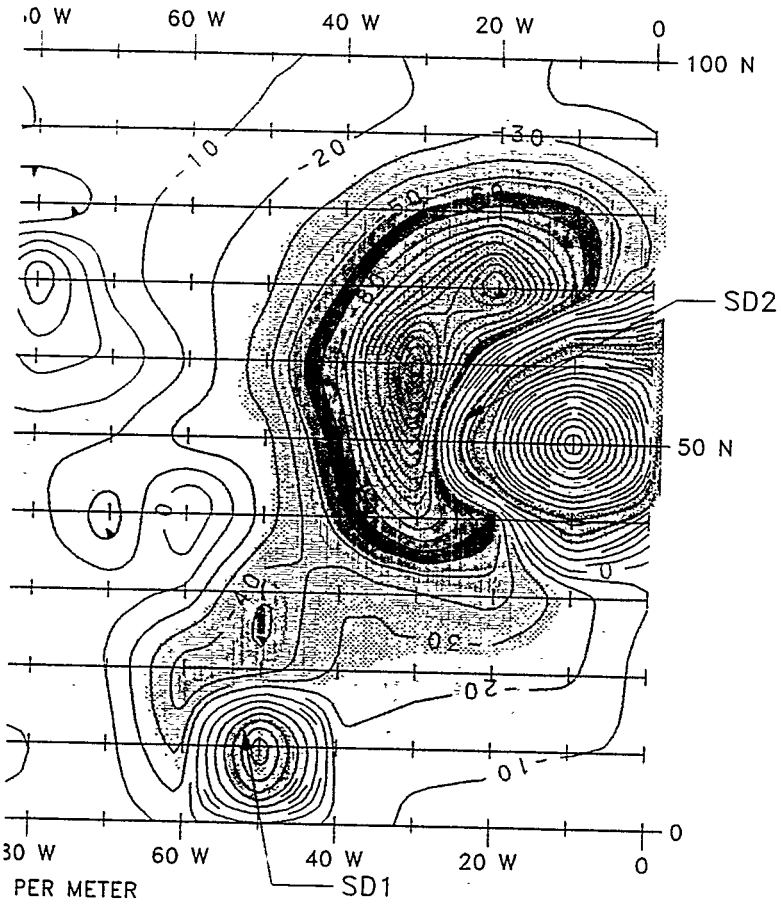
DRAWING NUMBER	301965-B66	
	9-20-94	
CHECKED BY	SAH	
APPROVED BY	9/24/94	





SCALE





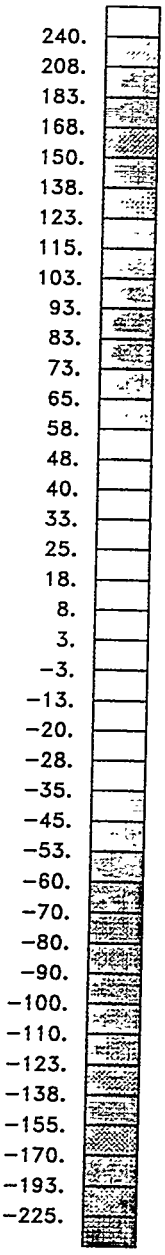
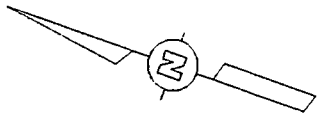


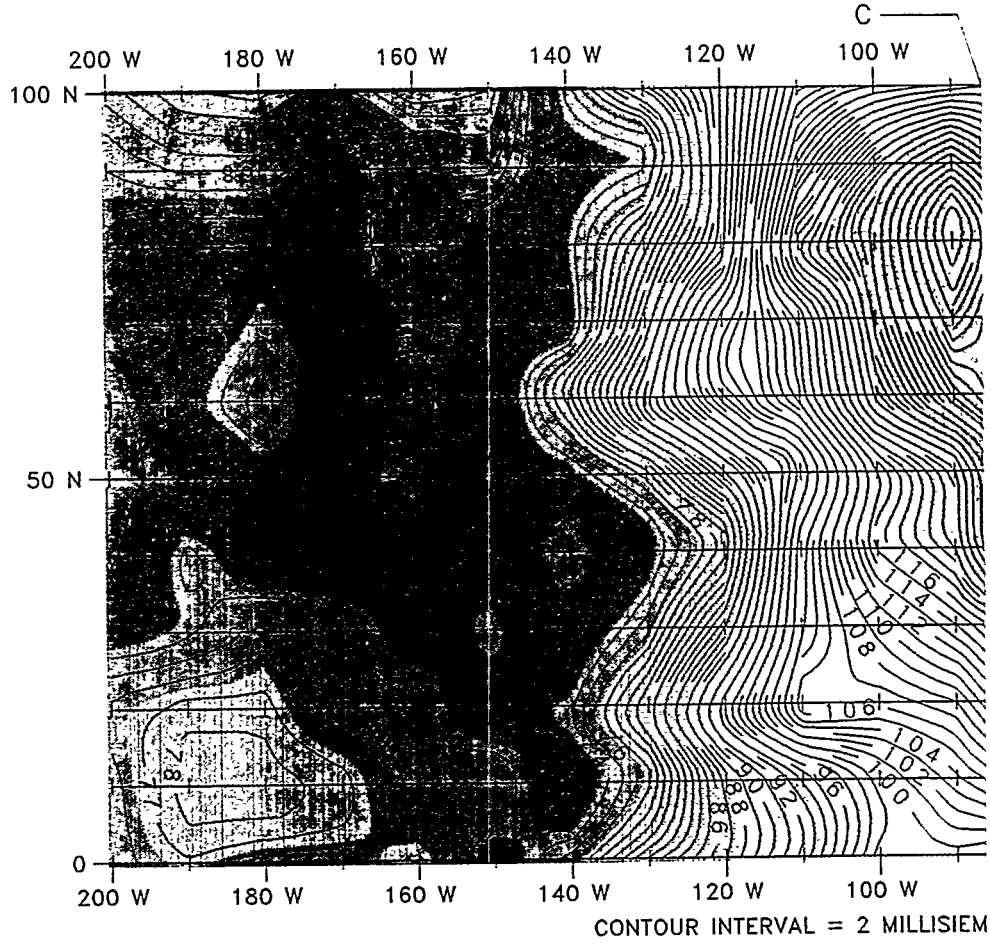
FIGURE B-19.1
SOURCE AREA 4
CABLE STORAGE AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

SD1 - ANOMALIES ATTRIBUTED TO SURFACE DEBRIS WITH SEQUENTIAL NUMBERING

DRAWING NUMBER	301965-B67	
	9/26/94	
	9/26/94	
CHECKED BY	SAH	
APPROVED BY	RSD	

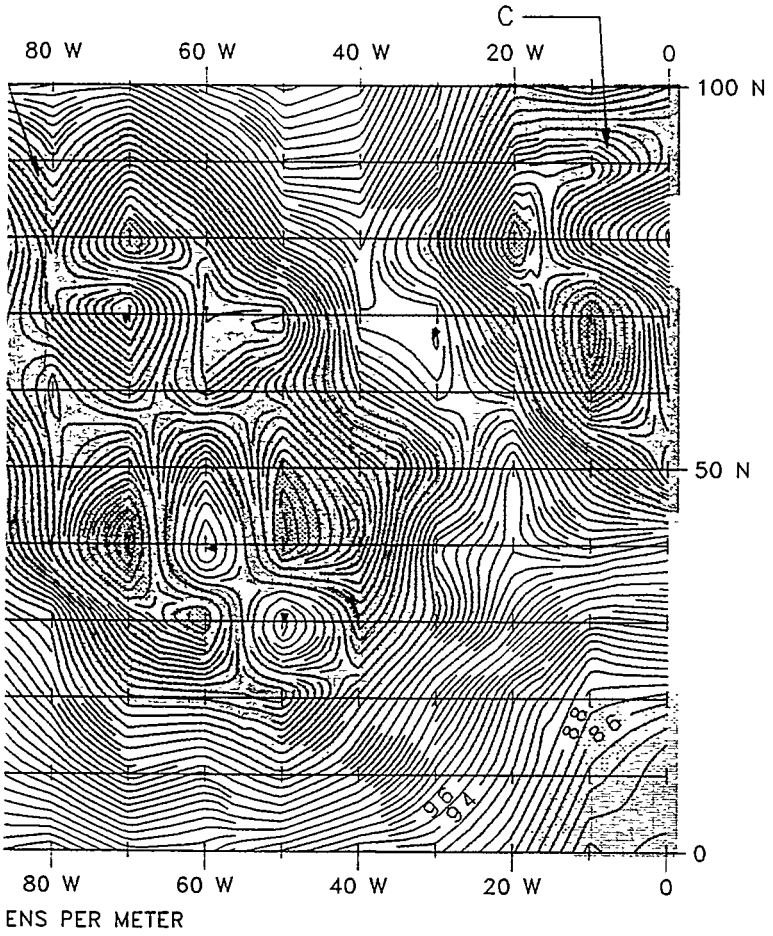




SCALE

0 25 50 Feet

0 8 16 Meters



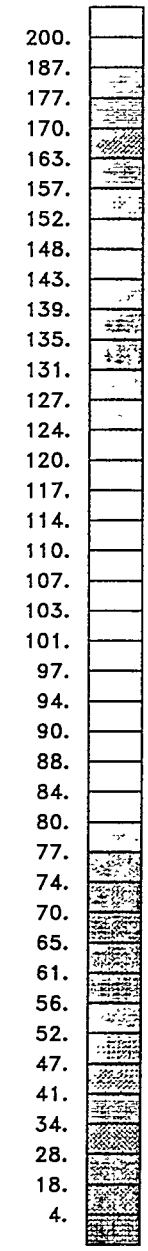
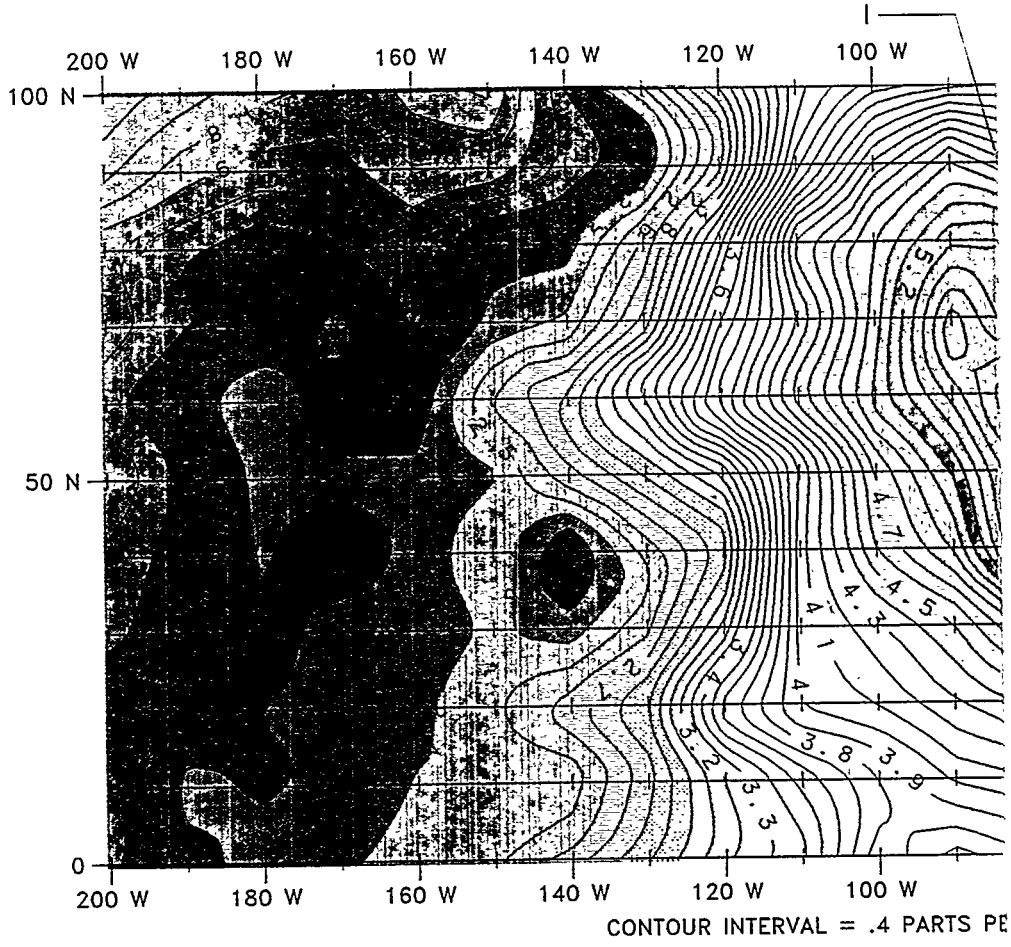


FIGURE B-19.2
SOURCE AREA 4
CABLE STORAGE AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

C - AREAS OF ELEVATED CONDUCTIVITY

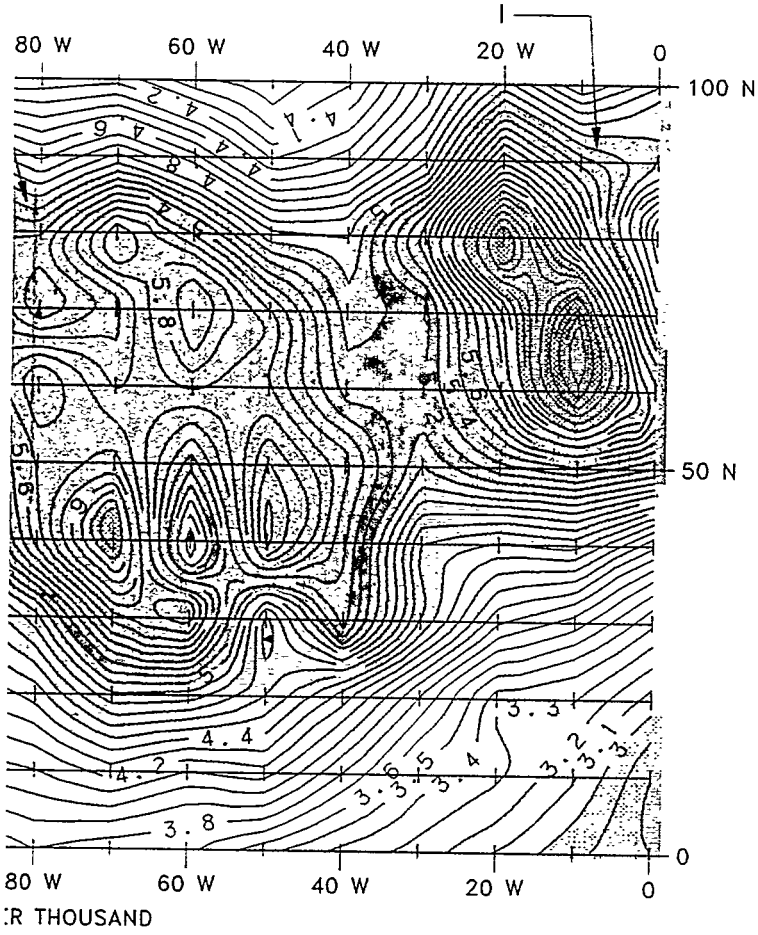
DRAWING NUMBER	301965-B68
	9-JC 44
CHECKED BY	SAH
APPROVED BY	9/20/94



SCALE

0 25 50 Feet

0 8 16 Meters



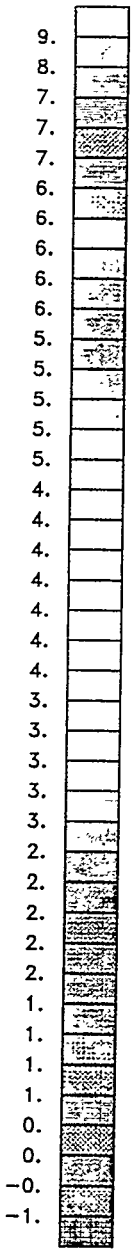
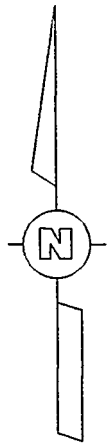


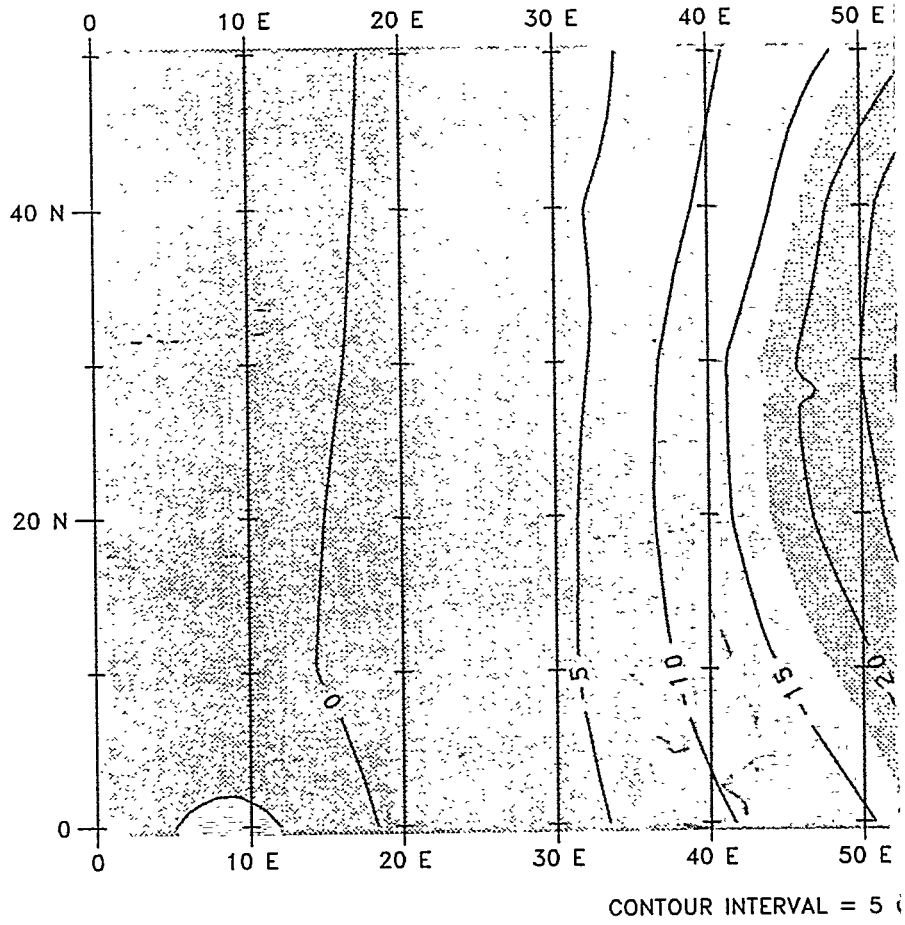
FIGURE B-19.3
SOURCE AREA 4
CABLE STORAGE AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

I – IN-PHASE COMPONENT ANOMALIES ASSOCIATED WITH AREAS OF ELEVATED CONDUCTIVITY

DRAWING NUMBER	301965-B69
	9-30-94
CHECKED BY	SAH
APPROVED BY	9/29/94



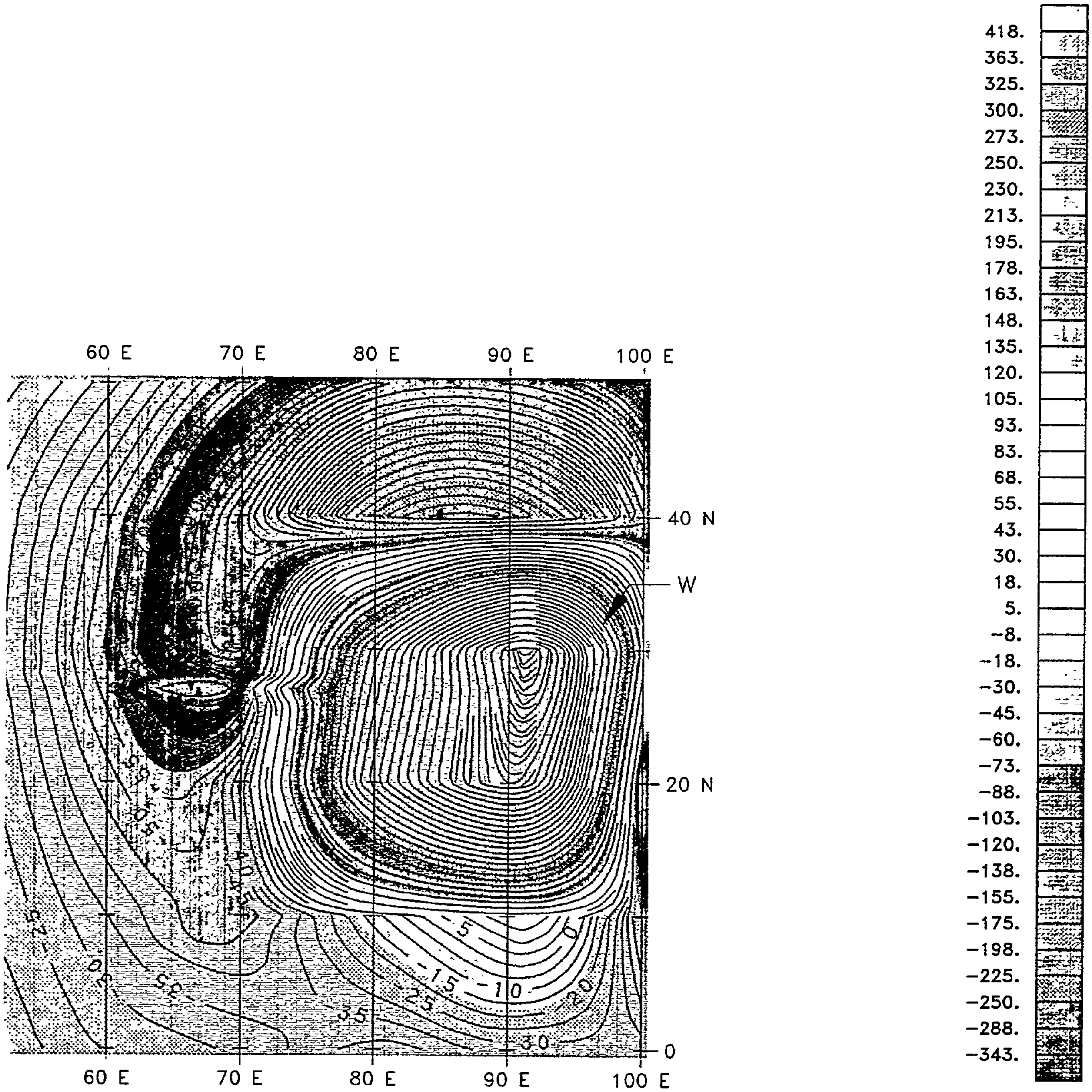


CONTOUR INTERVAL = 5

SCALE

0 13 25 Feet

0 4 8 Meters



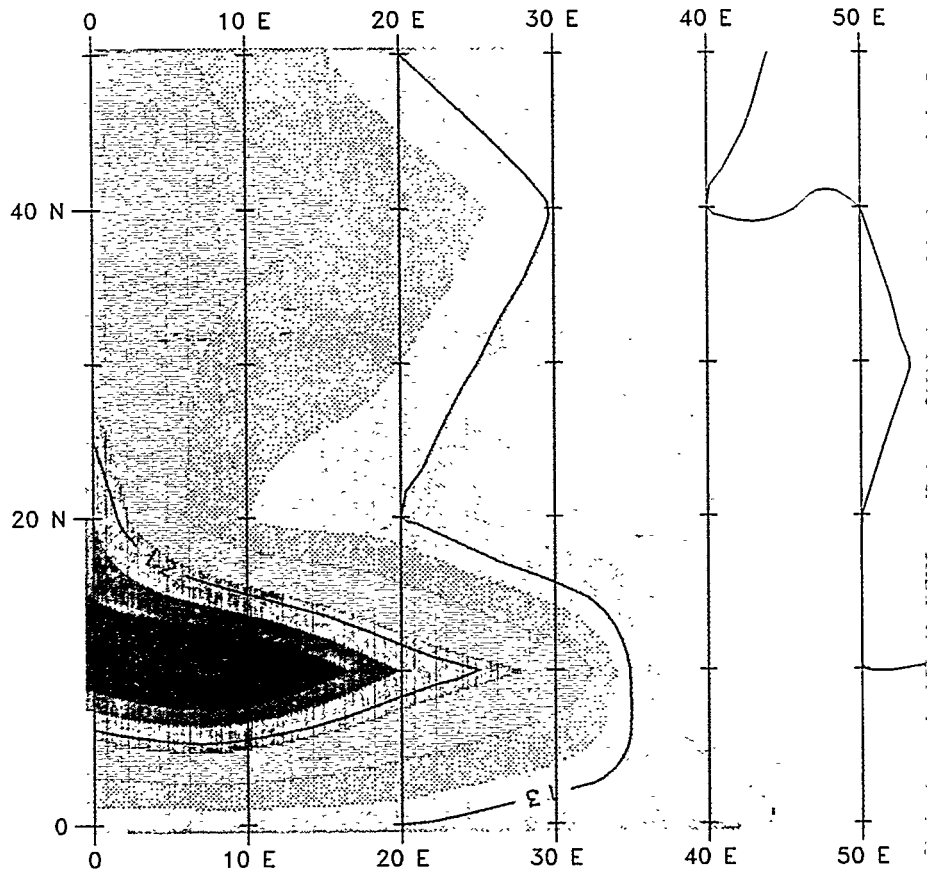
GAMMAS PER METER

FIGURE B-20.1
SOURCE AREA 5
HT-2M WELL AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W – ANOMALY CAUSED BY WELL NO. HT-2M

CHECKED BY	S.A.H.	9-20-94	DRAWING NUMBER 301965-B70
APPROVED BY	B.E.G.	9/23/94	

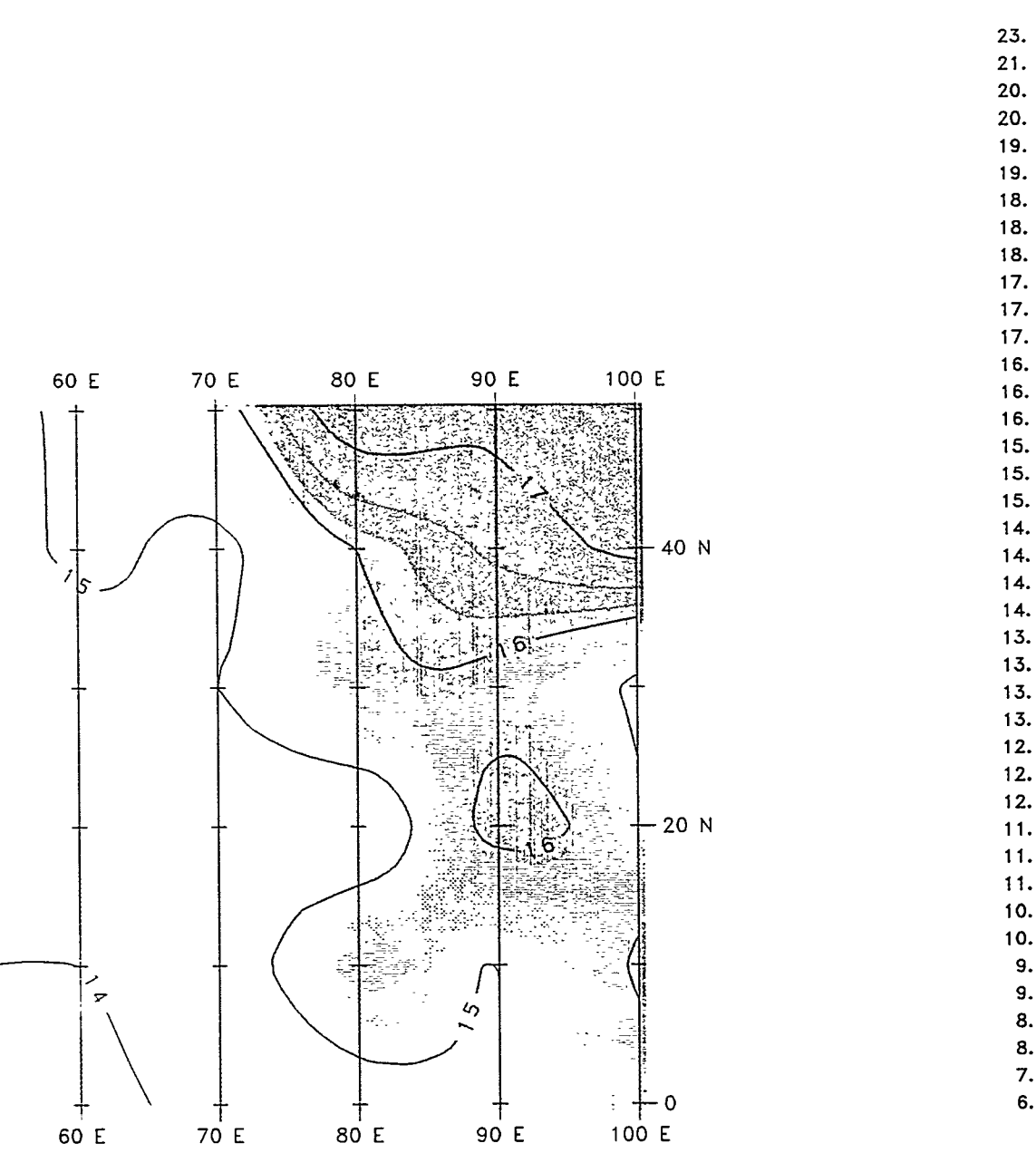


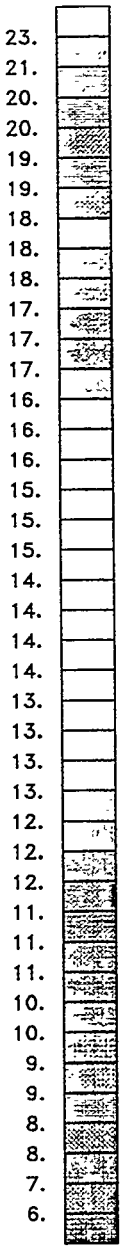
CONTOUR INTERVAL = 1 MILLI

SCALE

0 13 25 Feet

0 4 8 Meters





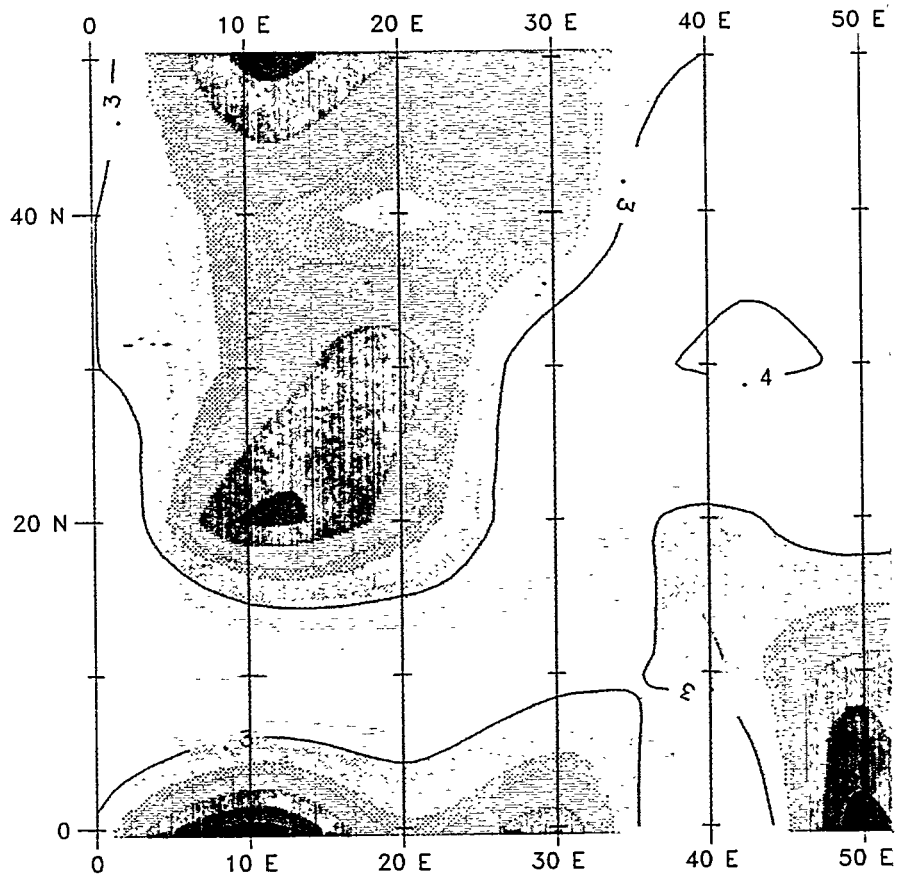
SIEMEN PER METER

FIGURE B-20.2
SOURCE AREA 5
HT-2M WELL AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

NO SIGNIFICANT ANOMALIES OBSERVED

DRAWING NUMBER	301965-B71
	9-30-94
CHECKED BY	DSAH
APPROVED BY	RGG 11/29/94



CONTOUR INTERVAL = .1

SCALE

0 13 25 Feet

0 4 8 Meters

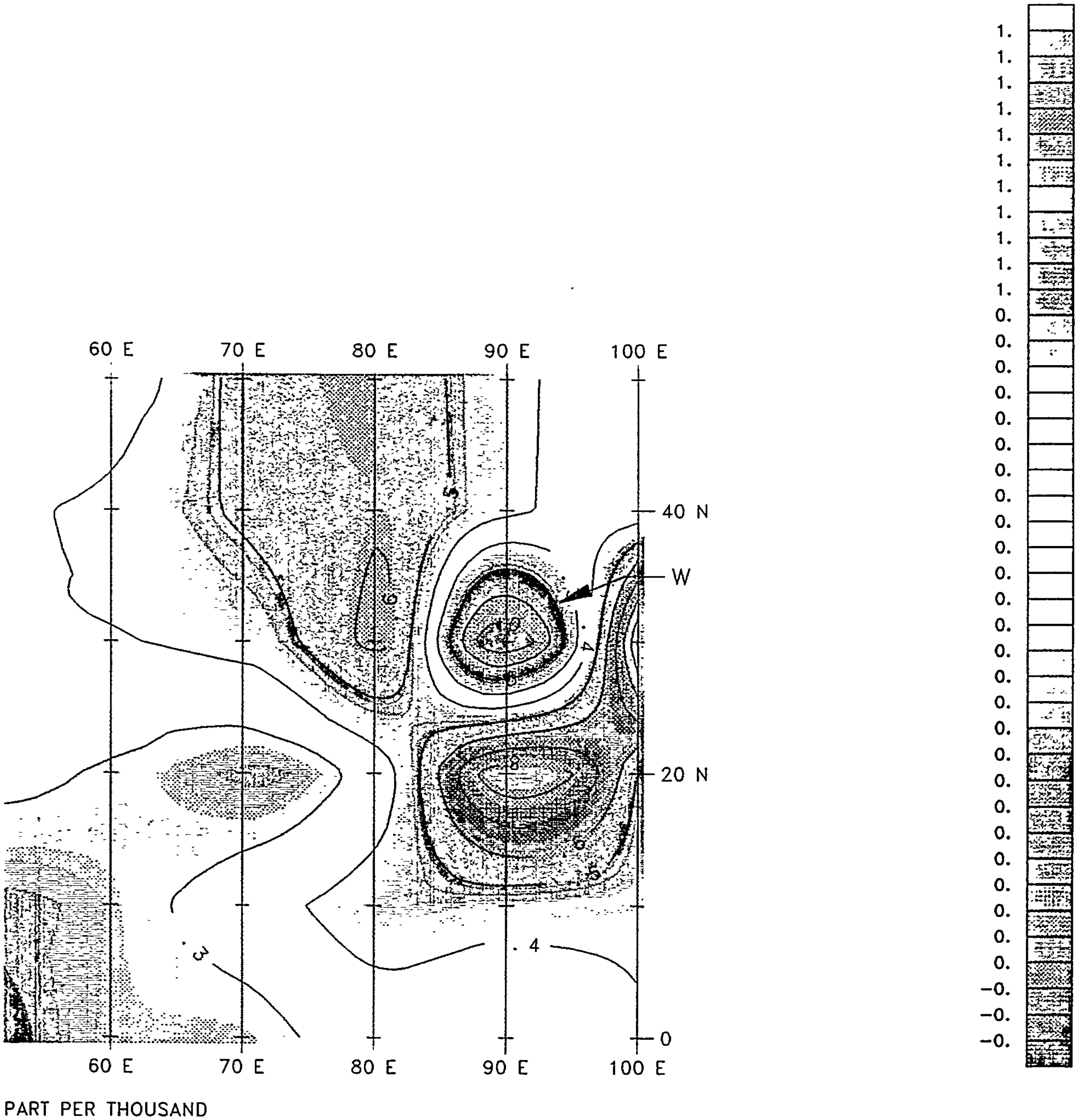
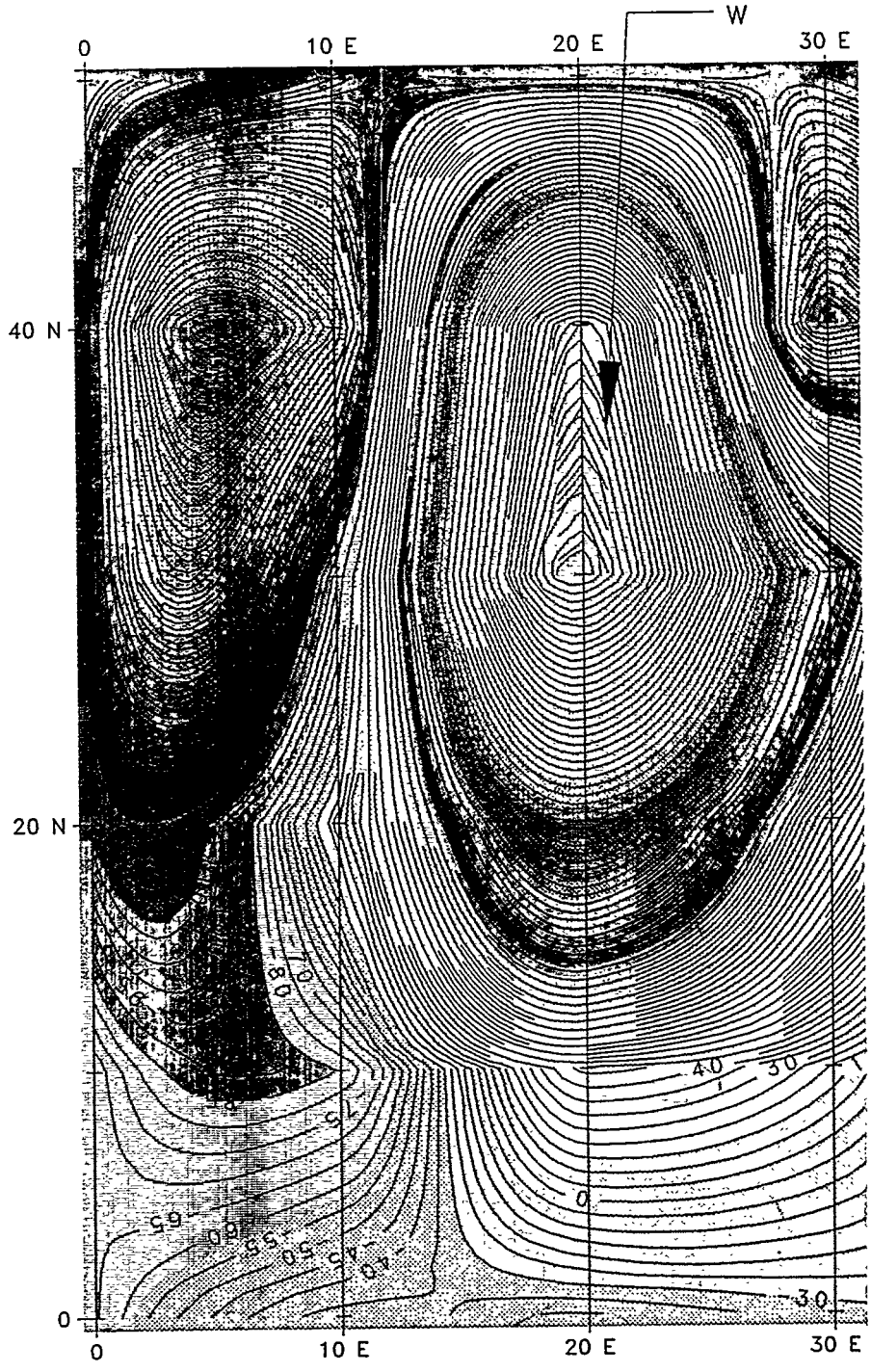


FIGURE B-20.3
SOURCE AREA 5
HT-2M WELL AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W - ANOMALY CAUSED BY WELL NO. HT-2M

DRAWING NUMBER	301965-B72	
	9-30-94	
CHECKED BY	SAH	
APPROVED BY	7/20/94	

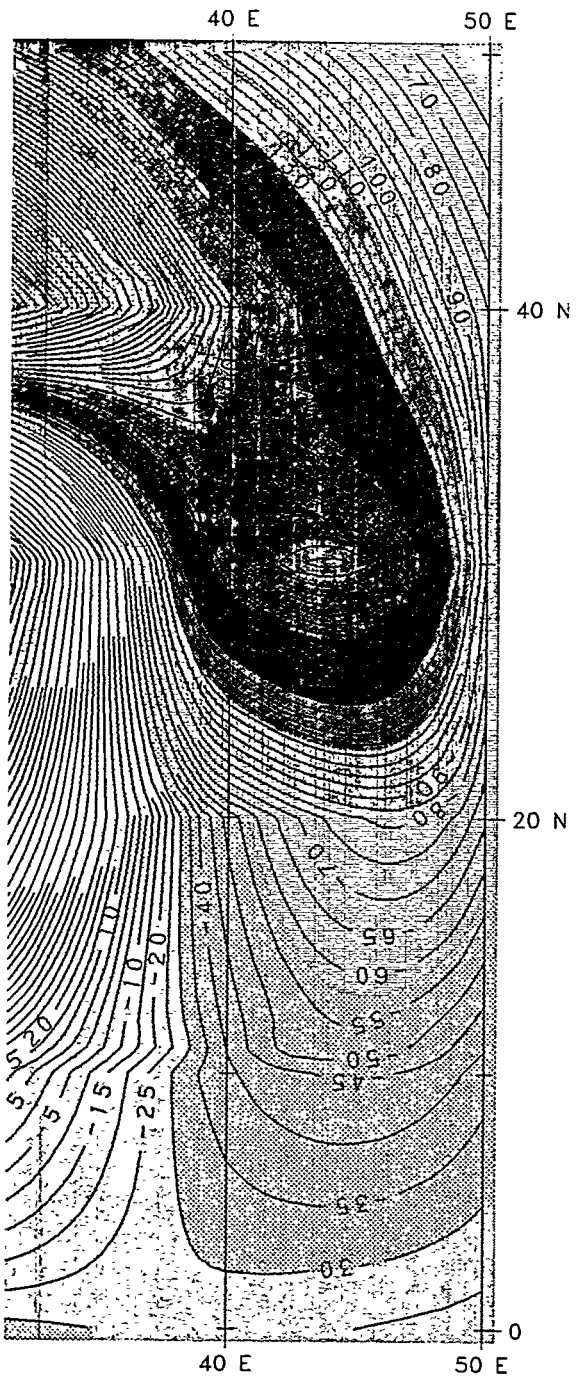


CONTOUR INTERVAL = 5 GAMMAS PE

SCALE

0 8 15 Feet

0 3 6 Meters



R METER

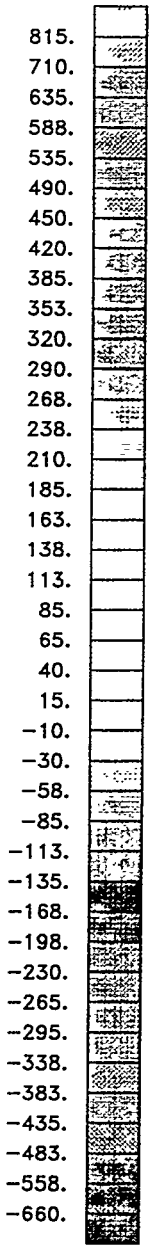
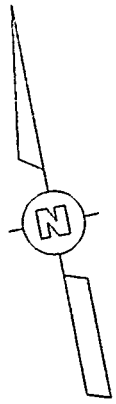


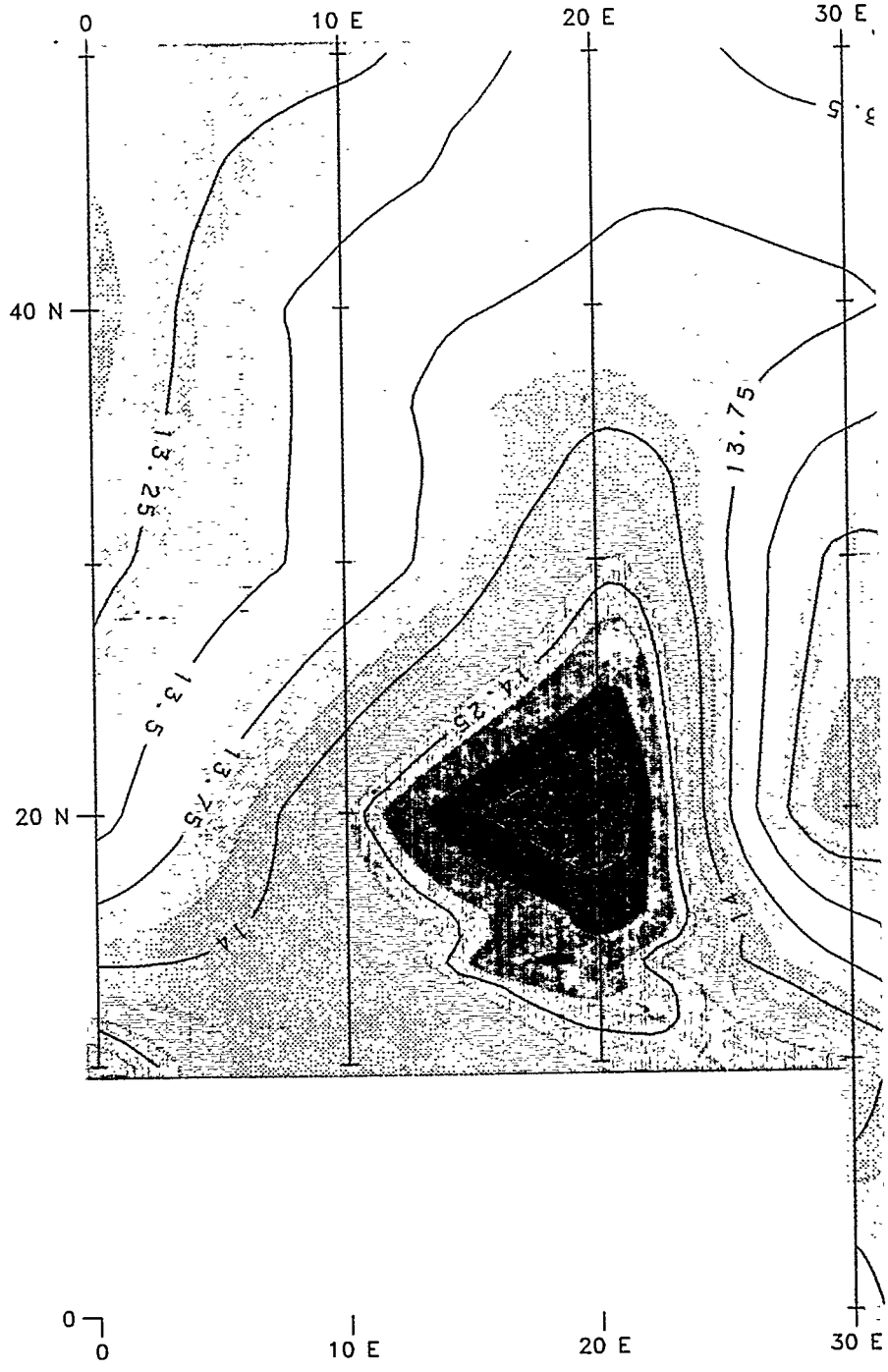
FIGURE B-21.1
SOURCE AREA 5
HT-2 WELL AREA
VERTICAL MAGNETIC GRADIENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W - ANOMALY ATTRIBUTED TO WELL NO. HT-2

CHECKED BY	SAH	4-20-94
APPROVED BY	RAD	9/29/94
DRAWING NUMBER	301965-B73	



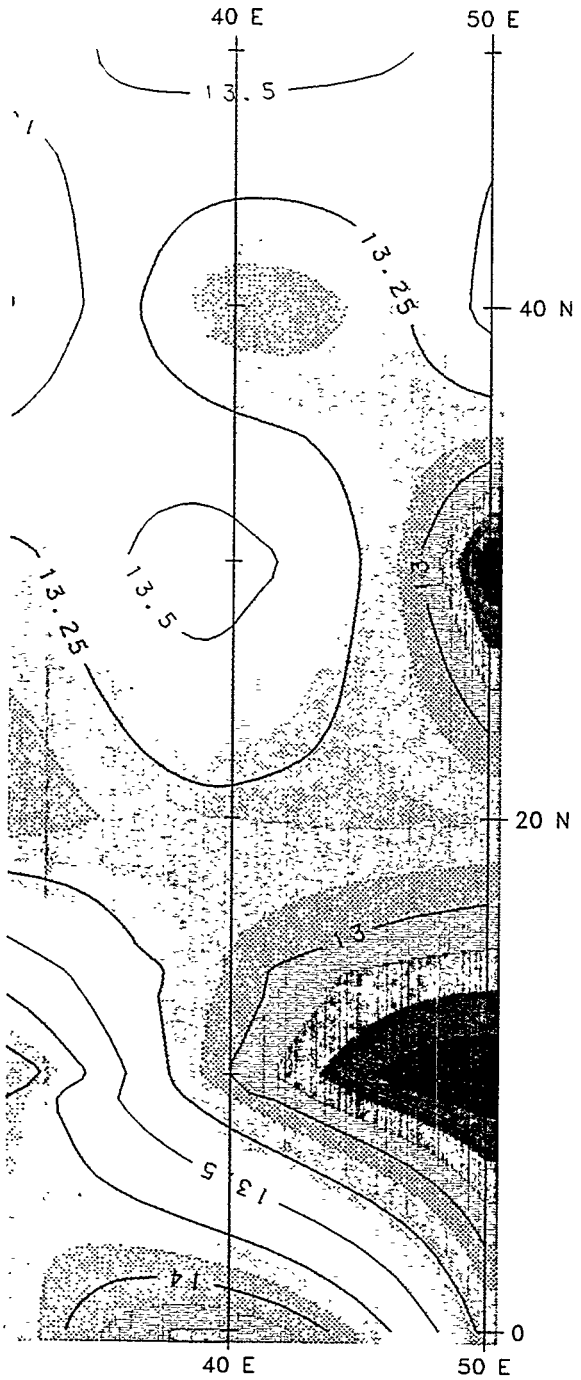


CONTOUR INTERVAL = .25 MILLISIEMEN

SCALE

0 8 15 Feet

0 3 6 Meters



PER METER

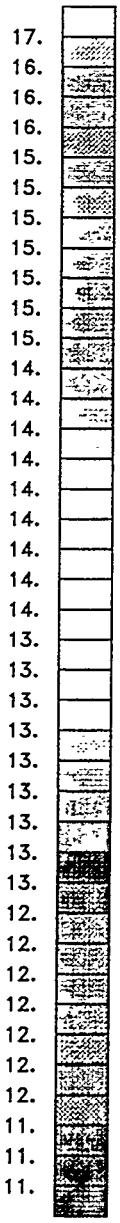
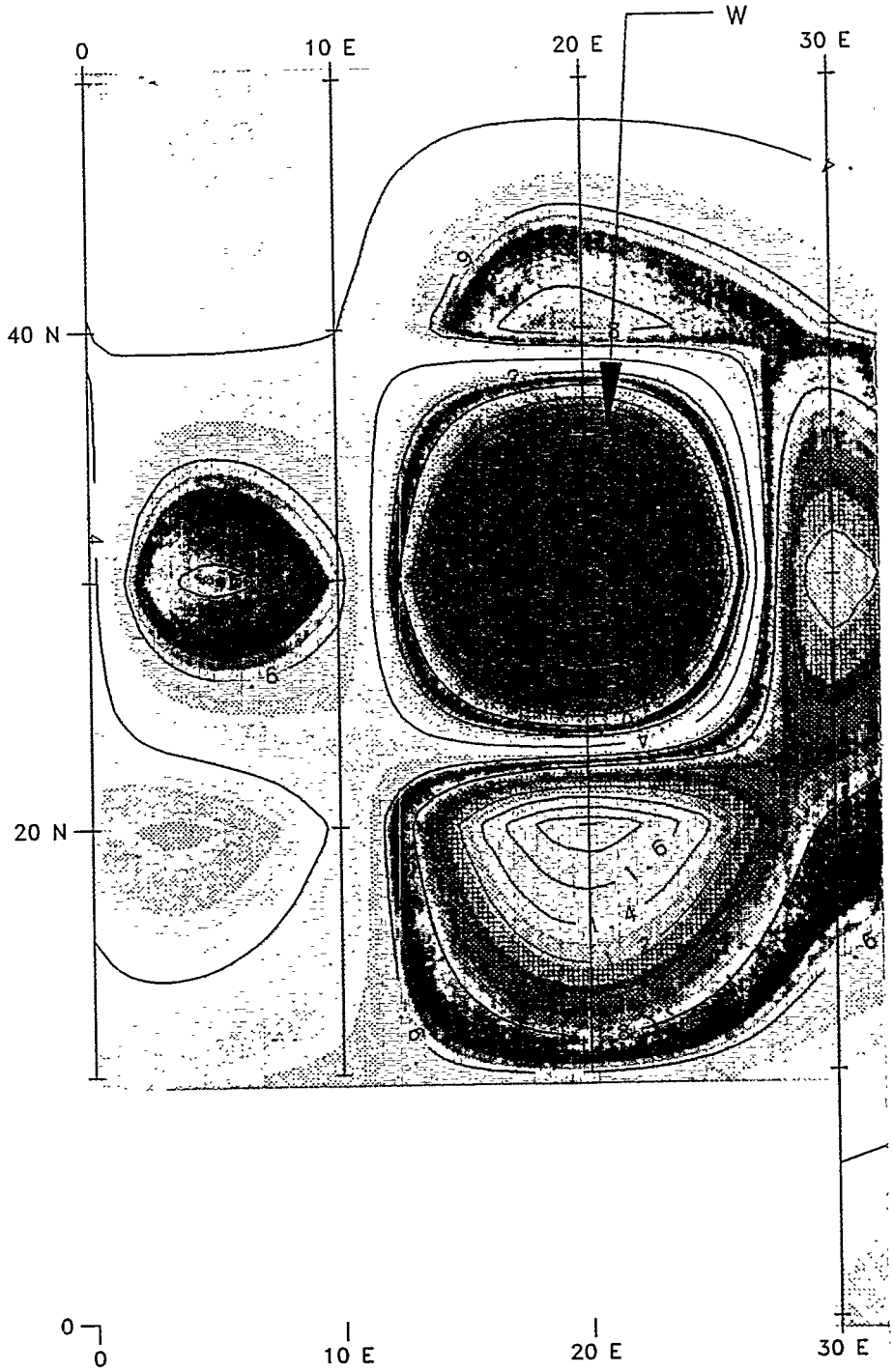


FIGURE B-21.2
SOURCE AREA 5
HT-2 WELL AREA
EM CONDUCTIVITY
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

NO SIGNIFICANT ANOMALIES OBSERVED

CHECKED BY	SAH	9-20-94
APPROVED BY	RAG	9/22/94
DRAWING NUMBER	301965-B74	



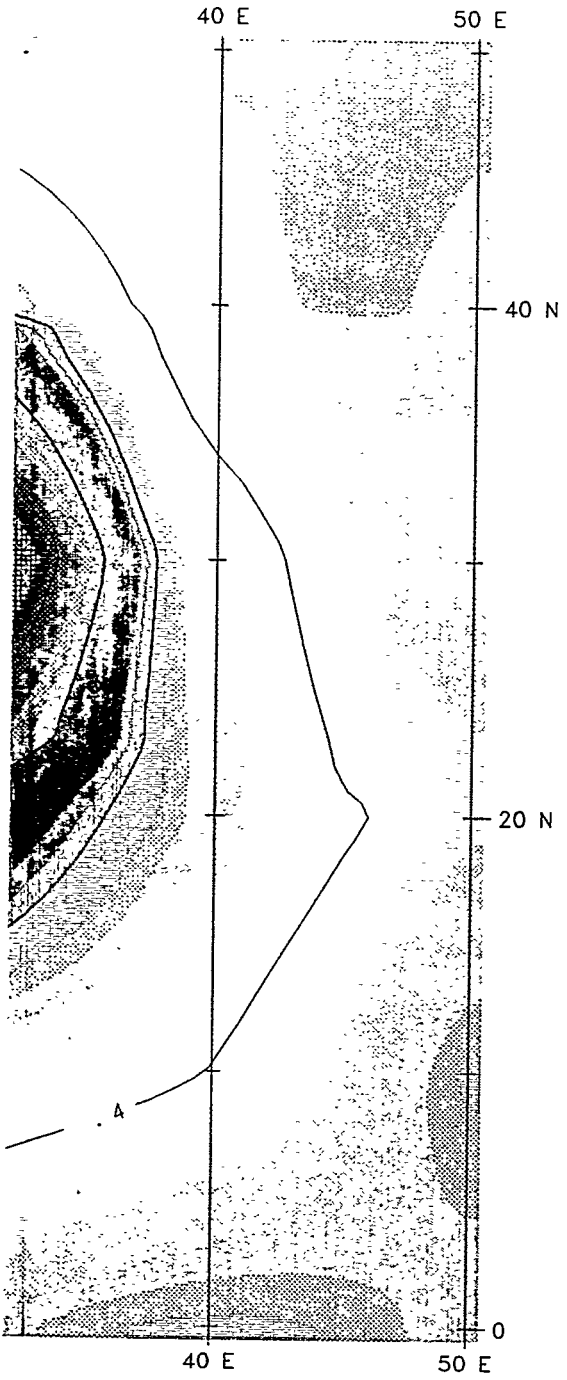
0 0 10 E 20 E 30 E

CONTOUR INTERVAL = .2 PARTS PER TH

SCALE

0 8 15 Feet

0 3 6 Meters



HOUSAND

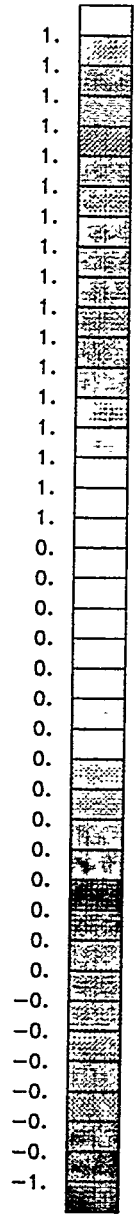
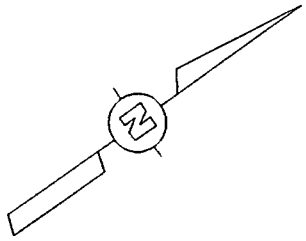


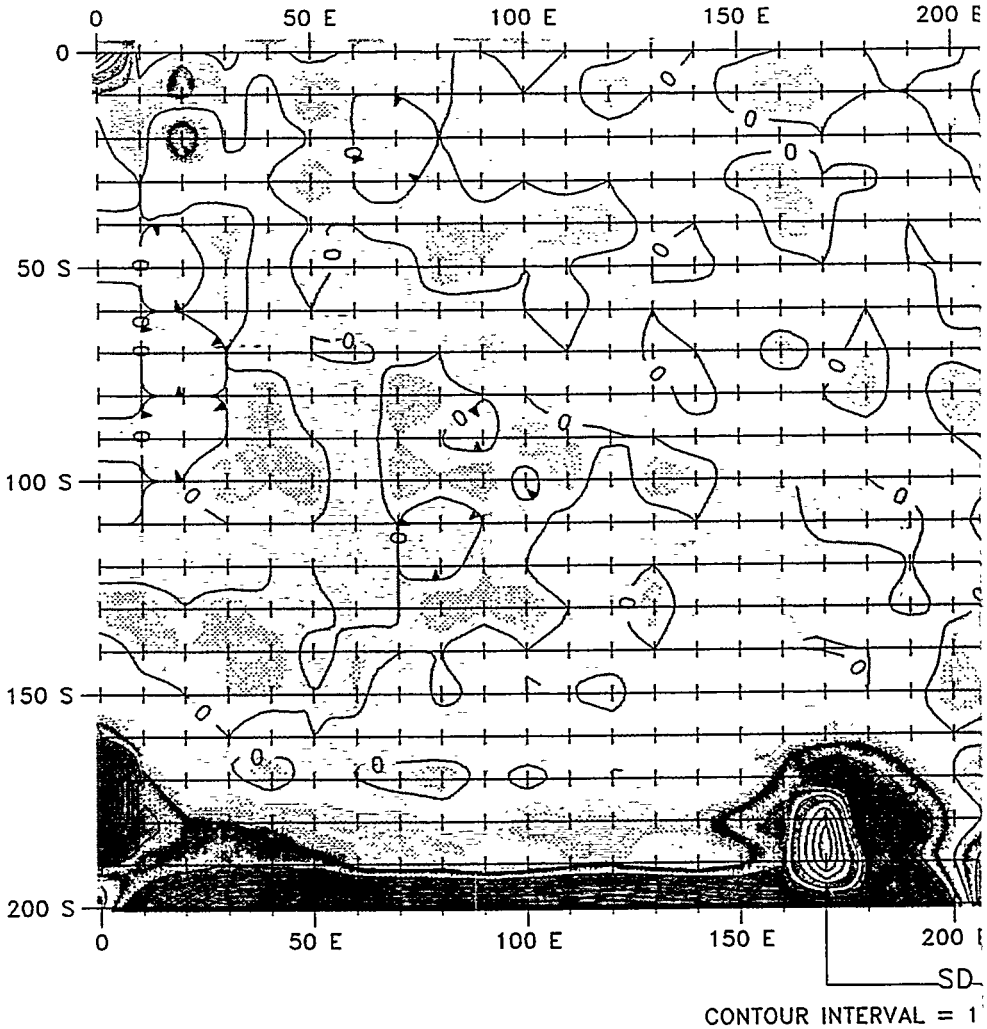
FIGURE B-21.3
SOURCE AREA 5
HT-2 WELL AREA
EM IN-PHASE COMPONENT
NOVEMBER 1992
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

W - ANOMALY CAUSED BY WELL NO. HT-2

DRAWING NUMBER	301965-B75	
CHECKED BY	SAH	9-30-94
APPROVED BY	Rad	9/30/94

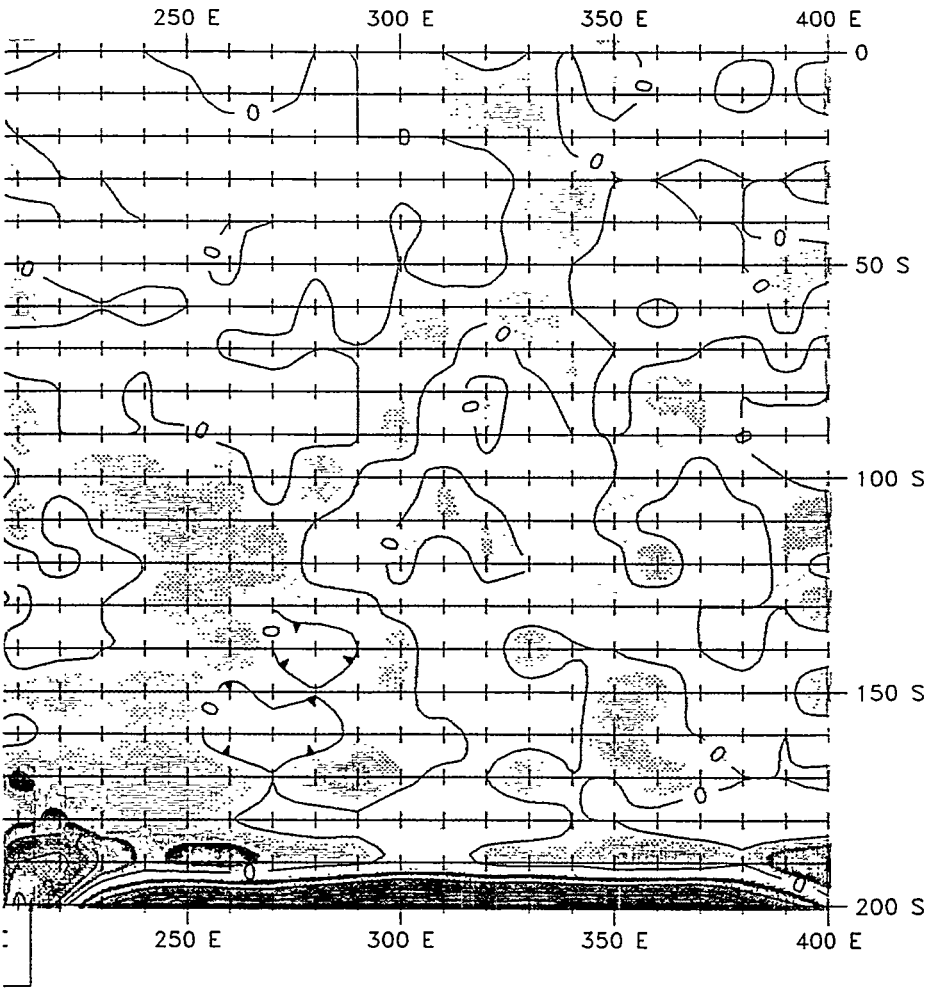


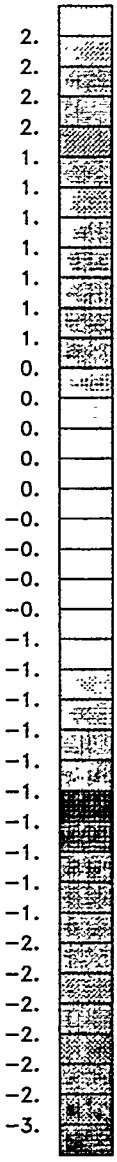


SCALE

0 45 90 Feet

0 14 28 Meters





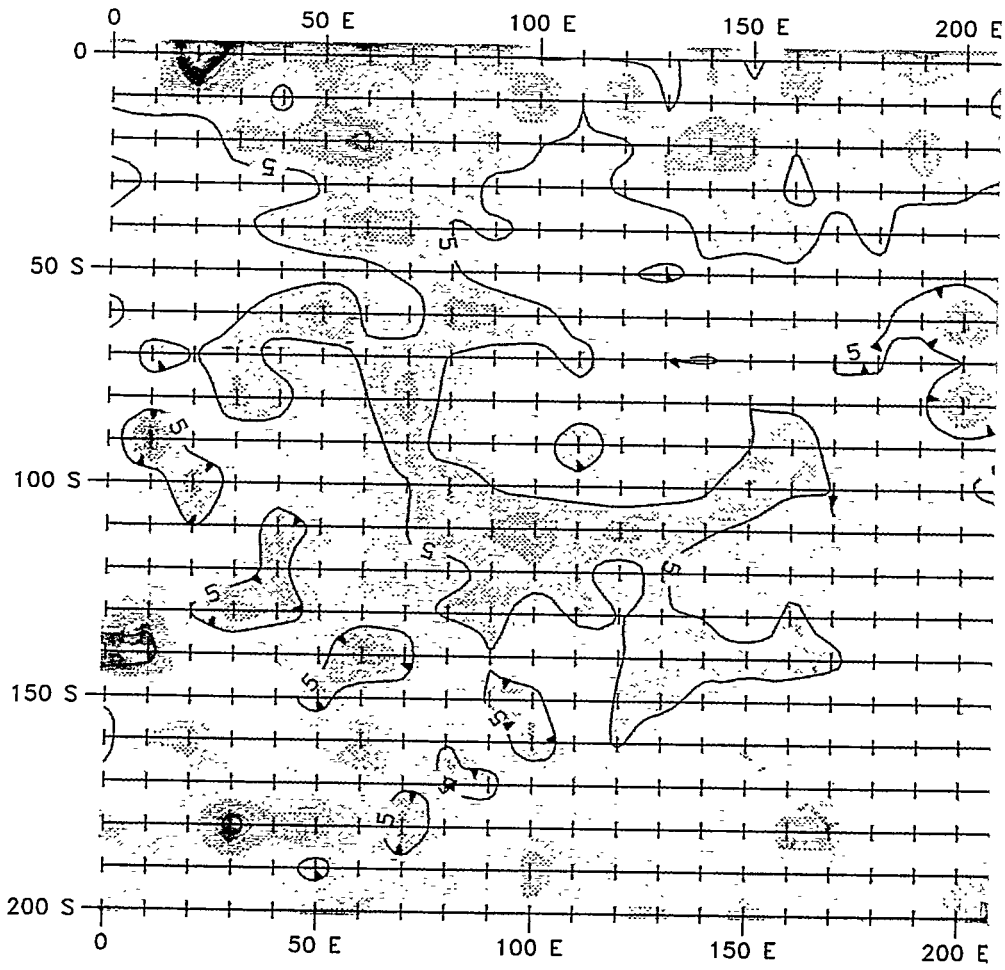
GAMMA PER METER

FIGURE B-22.1
SOURCE AREA 6
HELICOPTER LANDING PAD AREA
VERTICAL MAGNETIC GRADIENT
OCTOBER 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

LEGEND

SD - ANOMALY ATTRIBUTED TO WIRE FENCE

DRAWING NUMBER	301965-B76	
	9-30-94	
CHECKED BY	SAH	9/29/94
APPROVED BY		

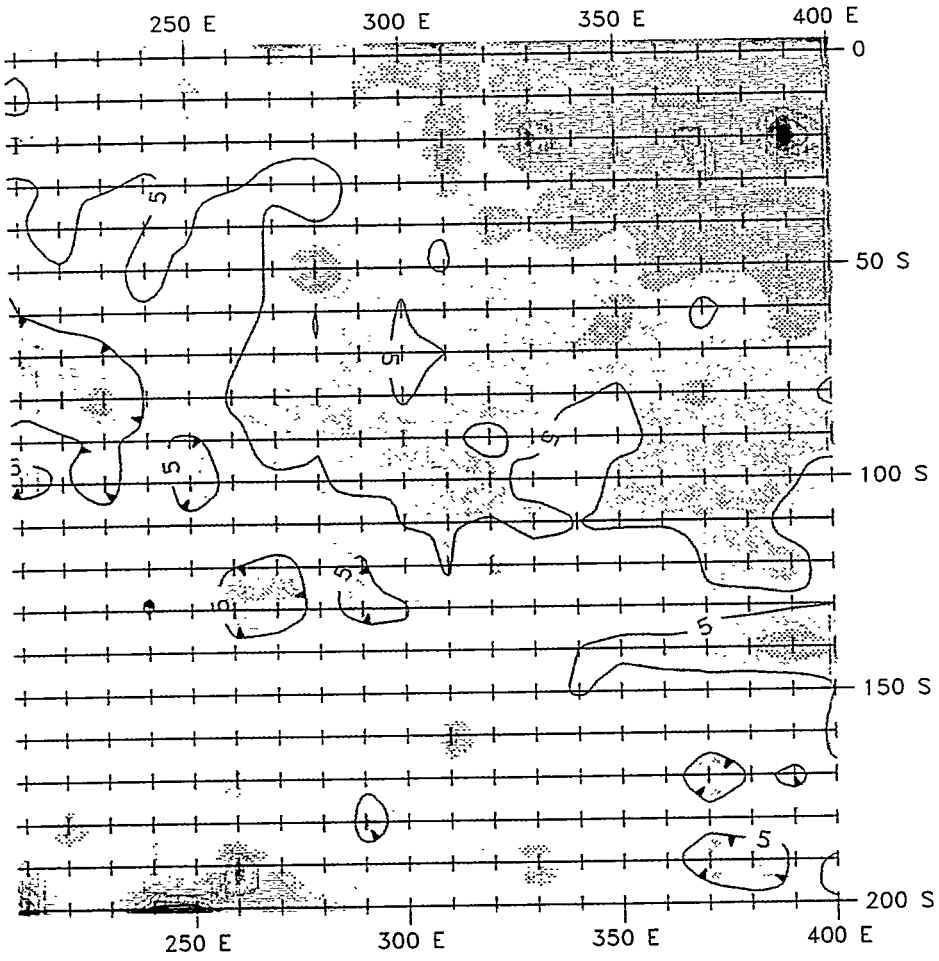


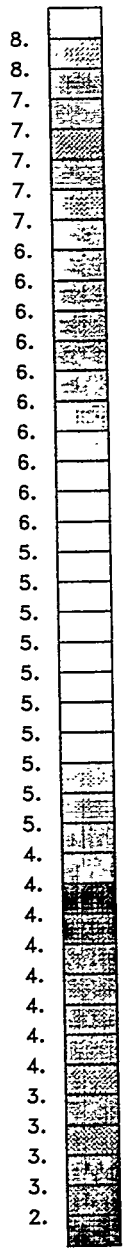
CONTOUR INTERVAL = 1 MIL

SCALE

0 45 90 Feet

0 14 28 Meters





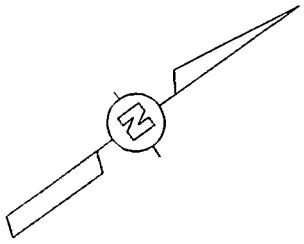
.LISIEMENS PER METER

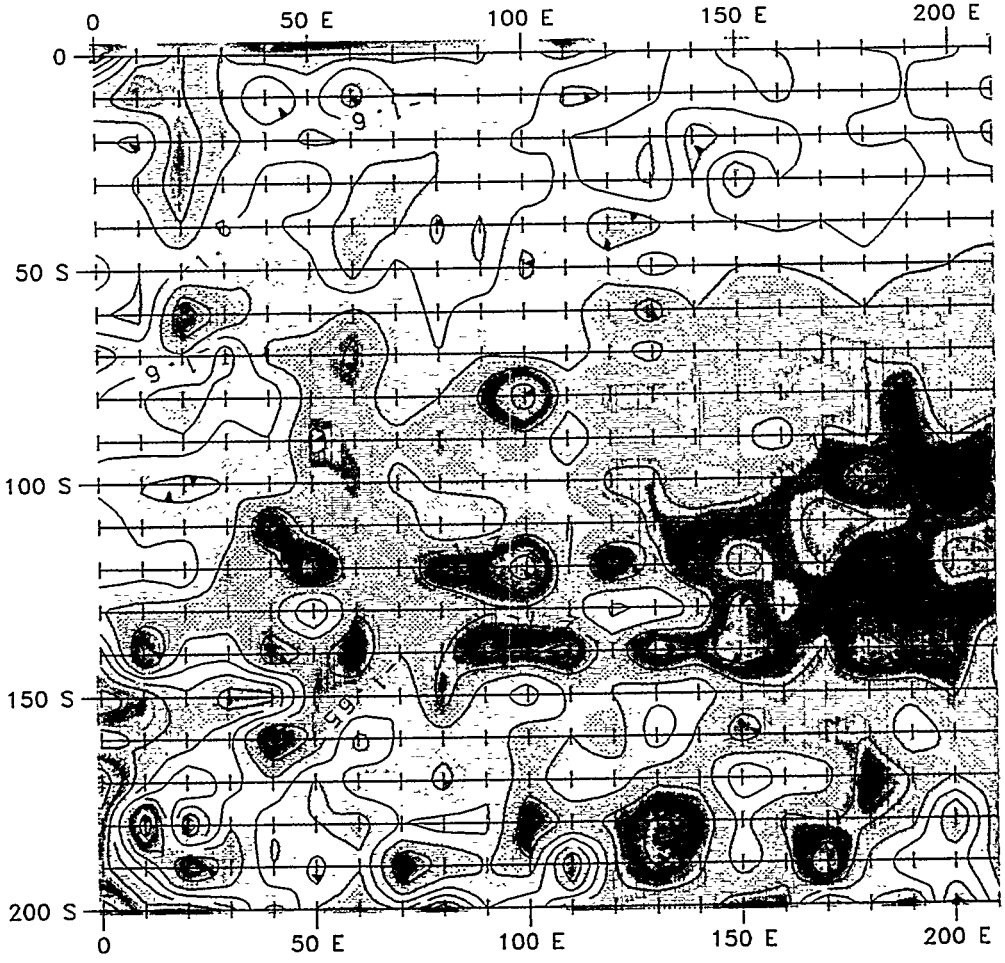
FIGURE B-22.2
SOURCE AREA 6
HELICOPTER LANDING PAD AREA
EM CONDUCTIVITY
OCTOBER 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

NO SIGNIFICANT ANOMALIES OBSERVED

DRAWING NUMBER	301965-B77	
CHECKED BY	SAH	9-20-94
APPROVED BY	[illegible]	9/20/94



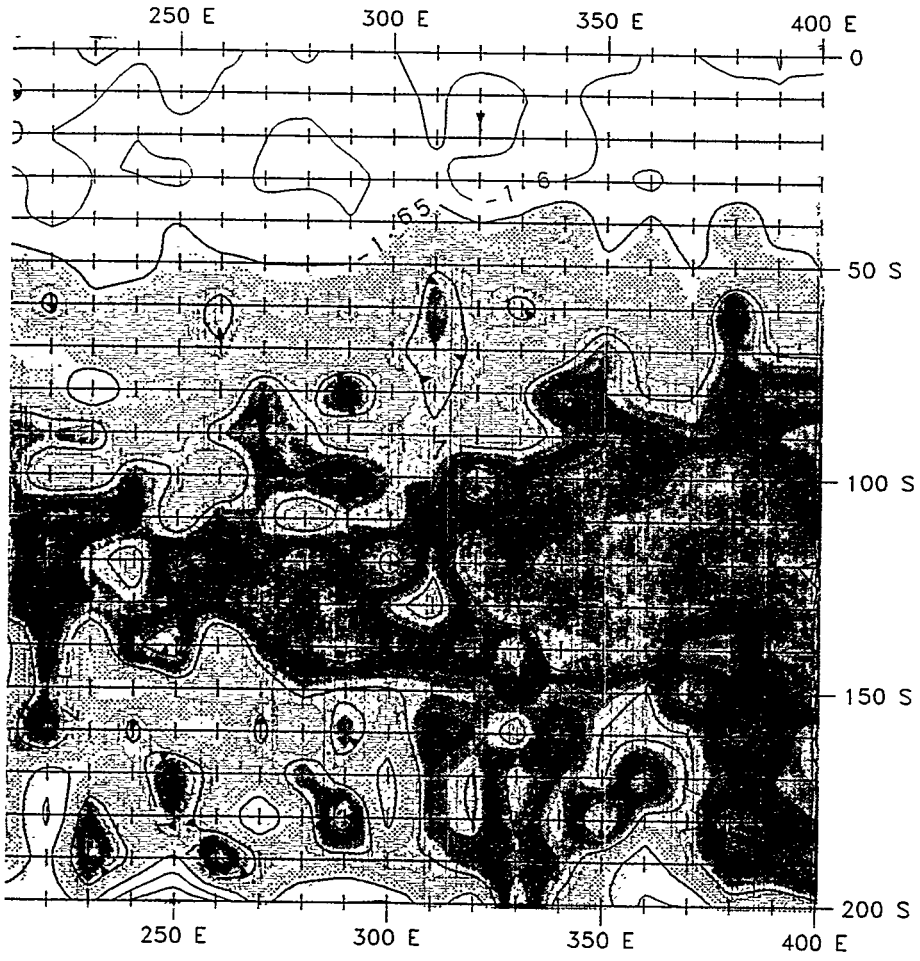


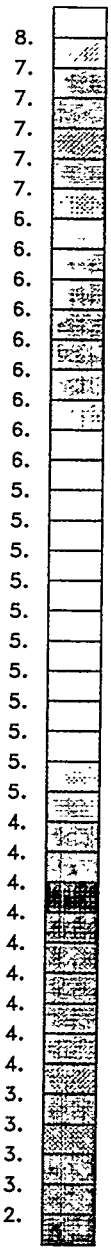
CONTOUR INTERVAL = .1 PA

SCALE

0 45 90 Feet

0 14 28 Meters





RTS-PER-THOUSAND

FIGURE B-22.3
SOURCE AREA 6
HELICOPTER LANDING PAD AREA
EM IN-PHASE COMPONENT
OCTOBER 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

NOTE:

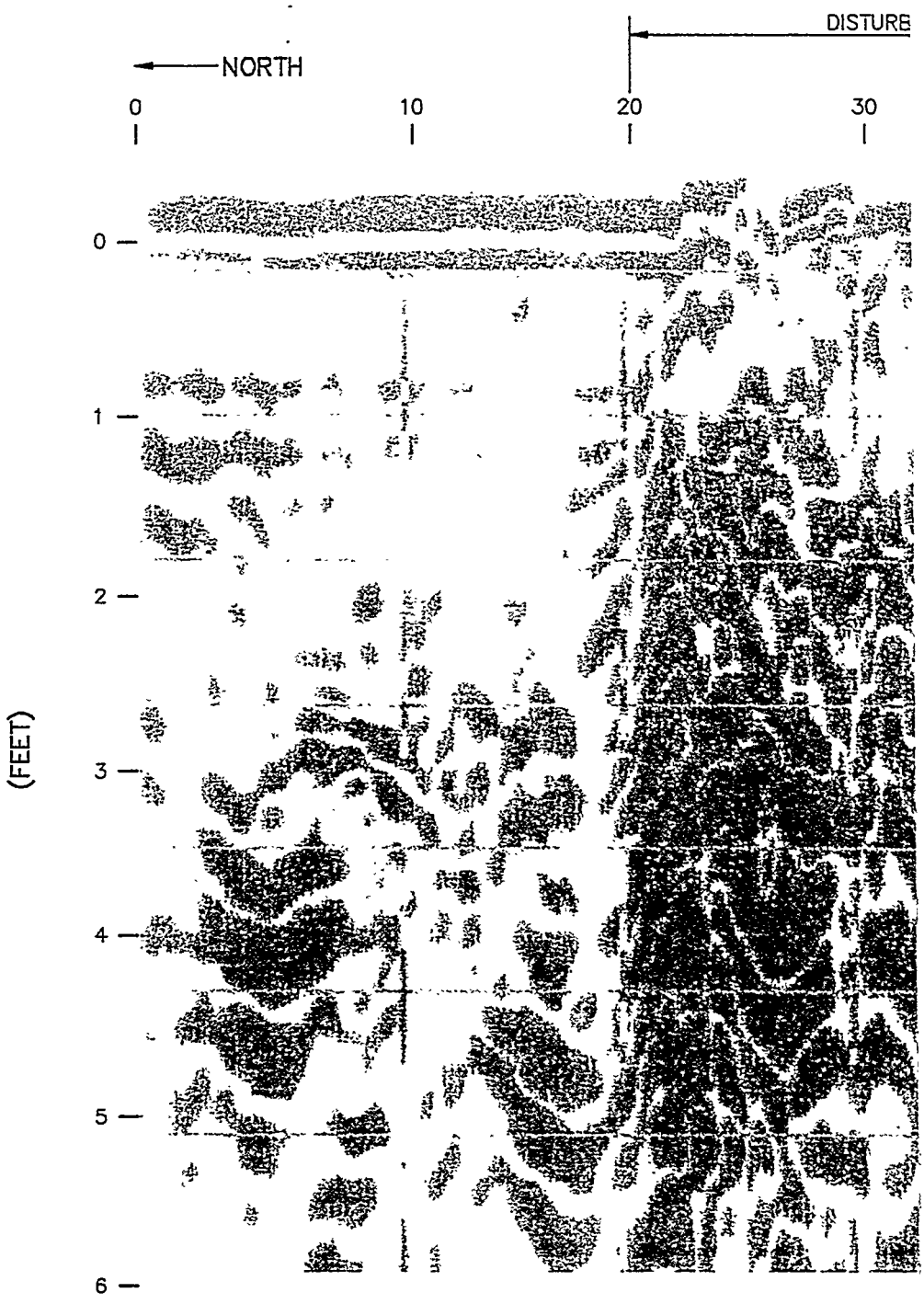
NO SIGNIFICANT ANOMALIES OBSERVED

Appendix C

Selected Ground Penetrating Radar Traverses

List of Figures

DRAWN BY	R. WEIBLE 11-19-93	CHECKED BY		DRAWING NUMBER	301965-B78
		APPROVED BY			



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 300 MHZ. ANTENNA.
3. 60 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

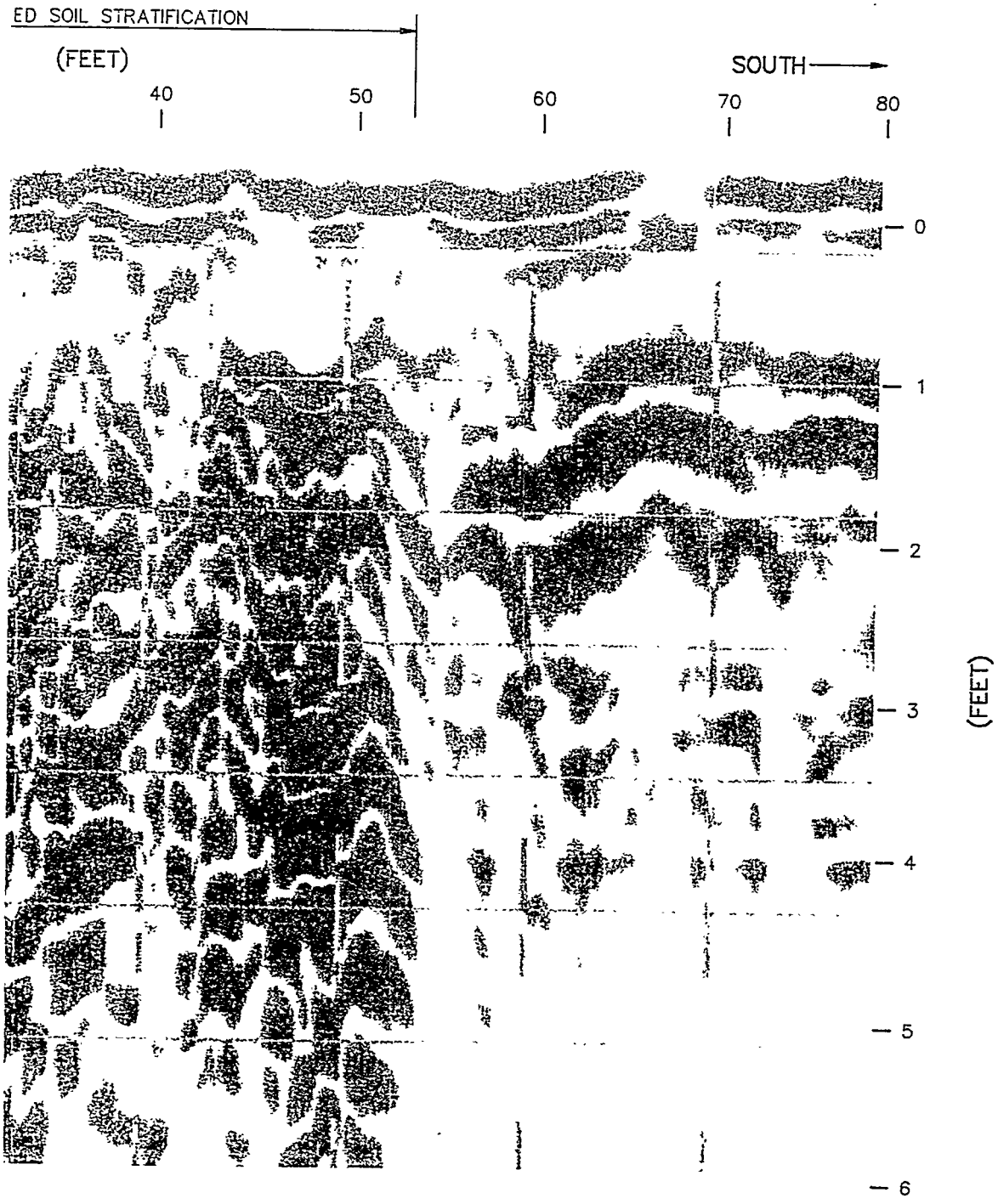
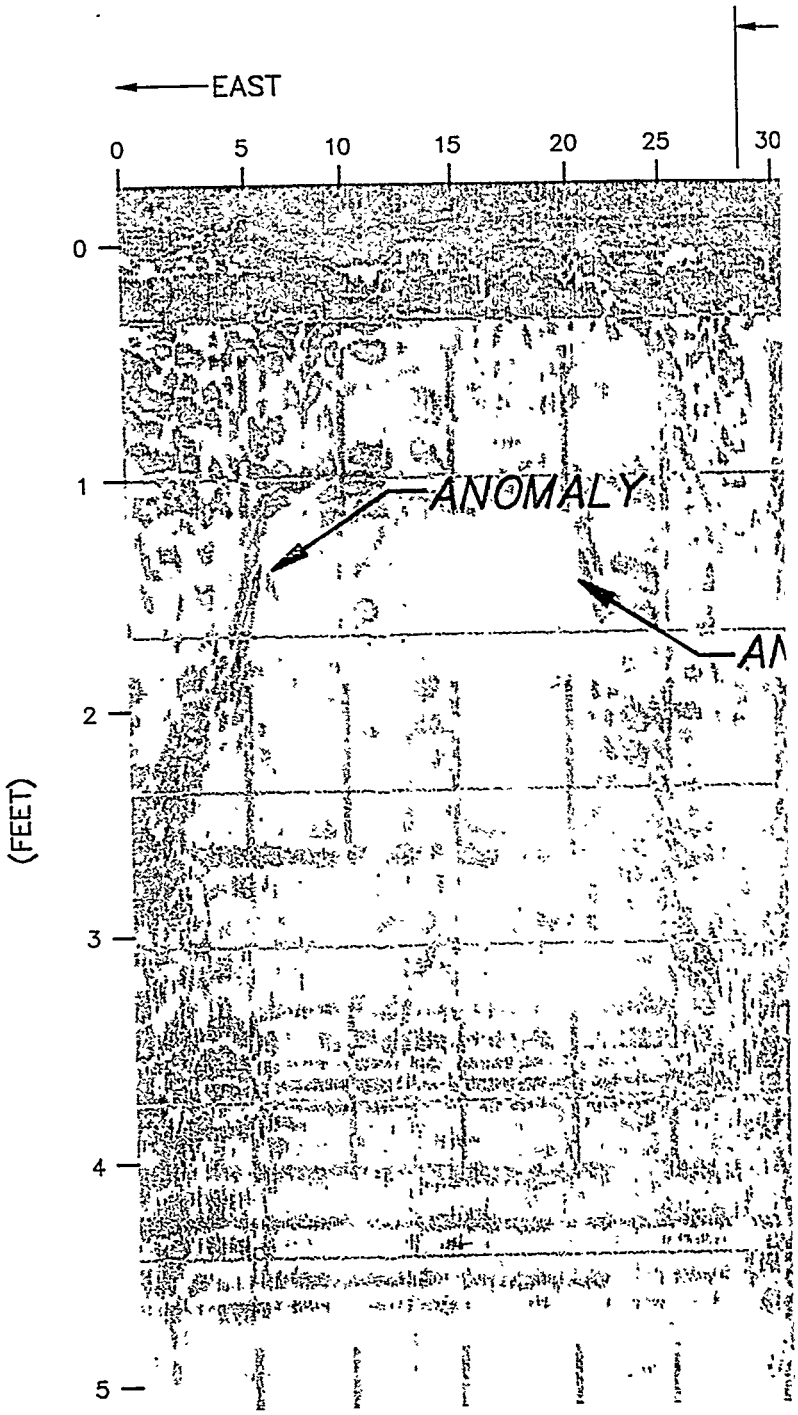


FIGURE C-1

SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, & 7
GPR TRAVERSE NO. 131
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWN BY	R. WEIBLE 11-19-93	CHECKED BY			DRAWING NUMBER 301965-B79
		APPROVED BY			



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 500 MHZ. ANTENNA.
3. 40 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

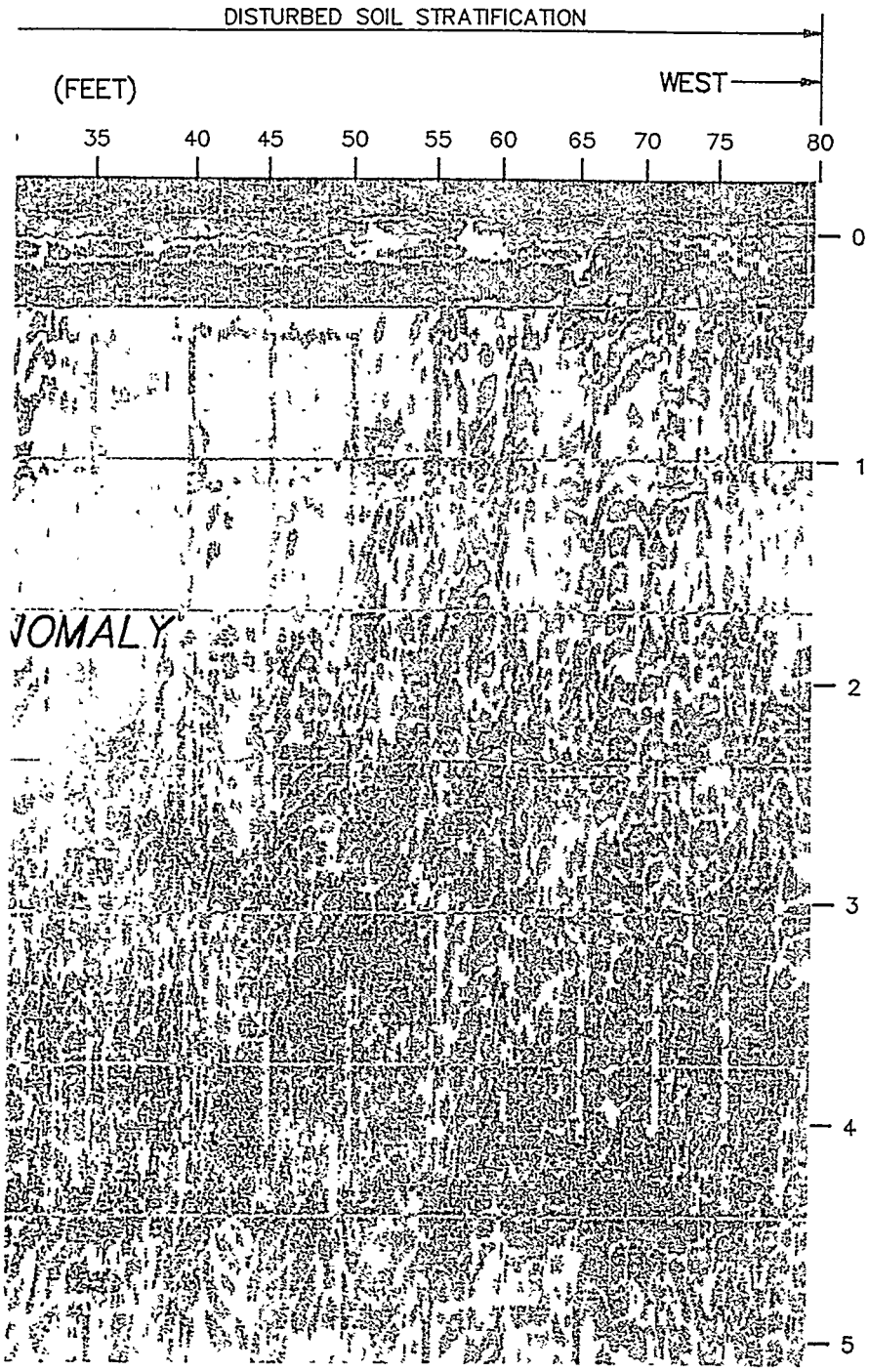
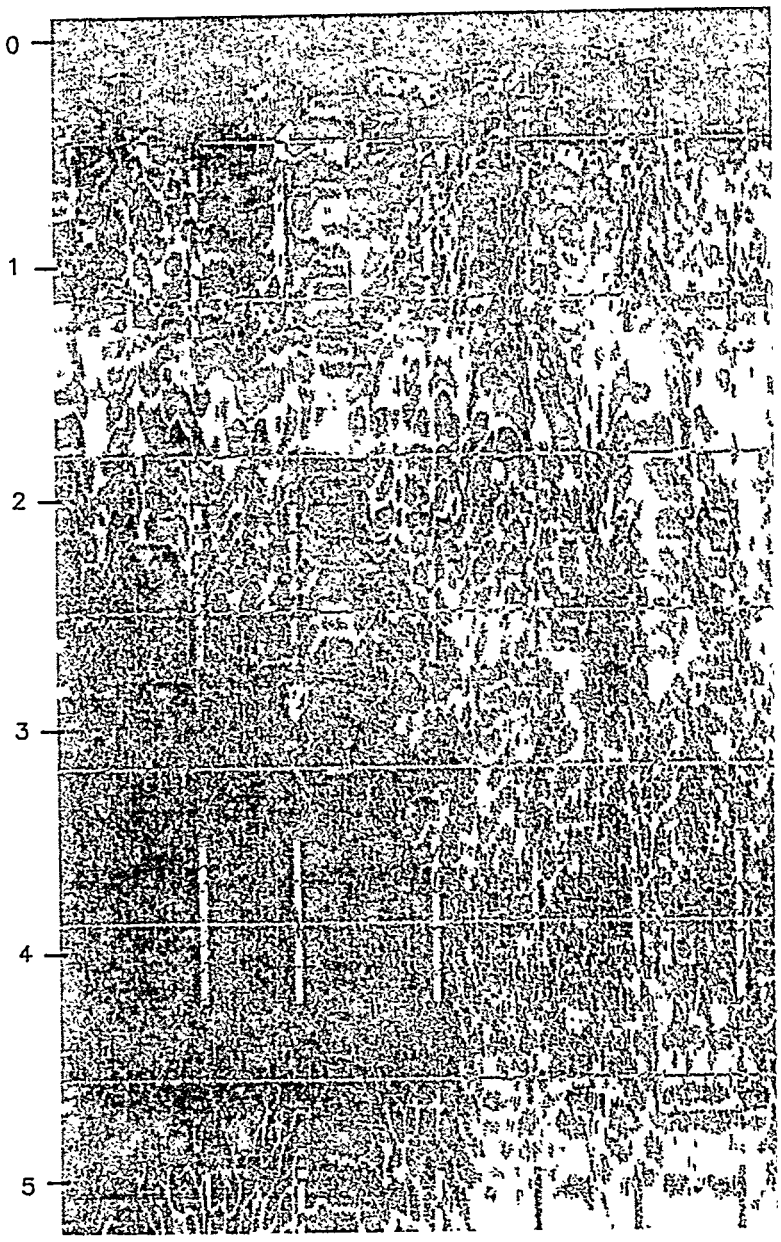


FIGURE C-2

SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, & 7
GPR TRAVERSE NO. 22B
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWN BY	R. WEIBLE 11-19-93	CHECKED BY		DRAWING NUMBER 301965-B80
		APPROVED BY		

DISTURBED SOIL STRATIFICATION



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 500 MHZ. ANTENNA.
3. 40 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

8:27 AM

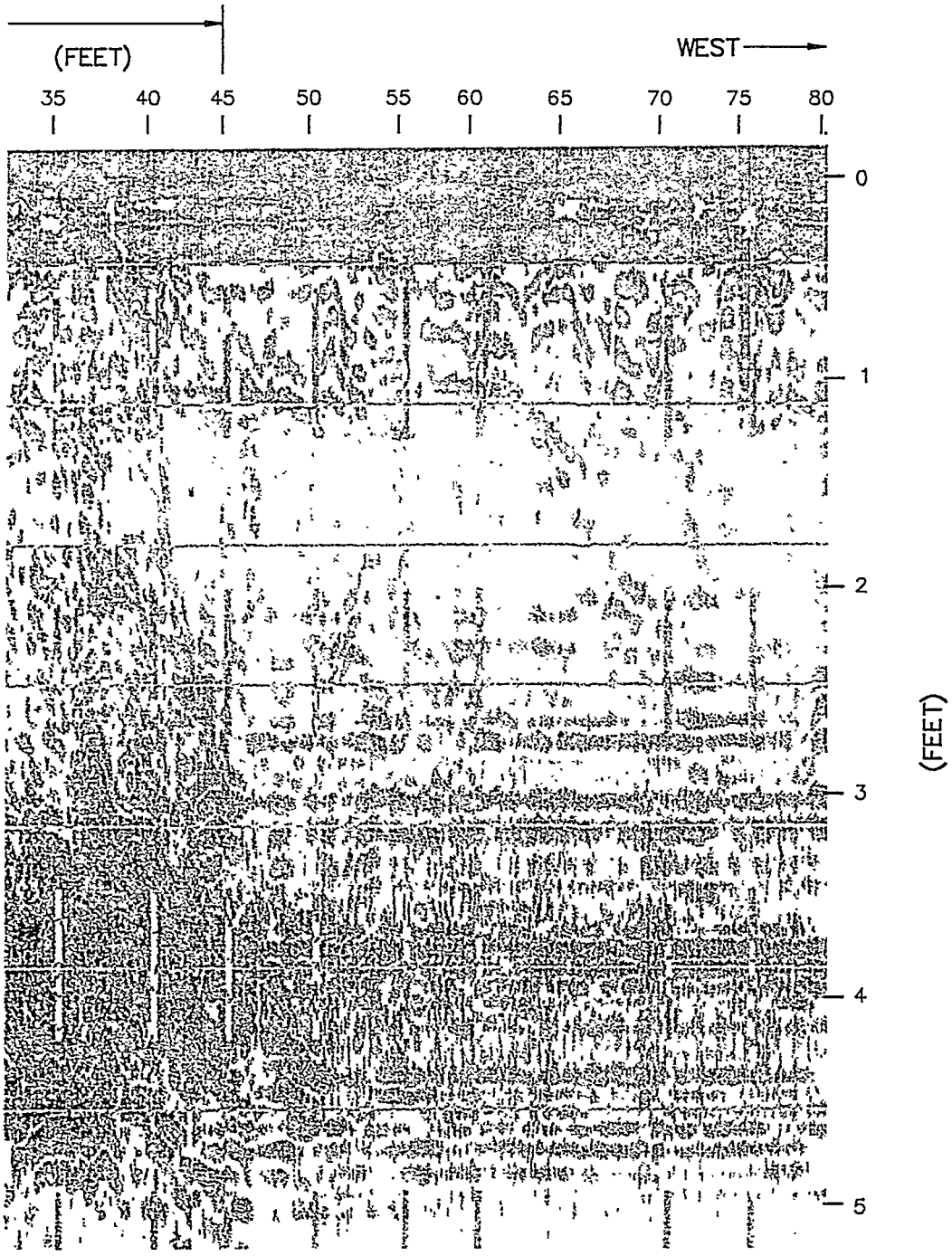
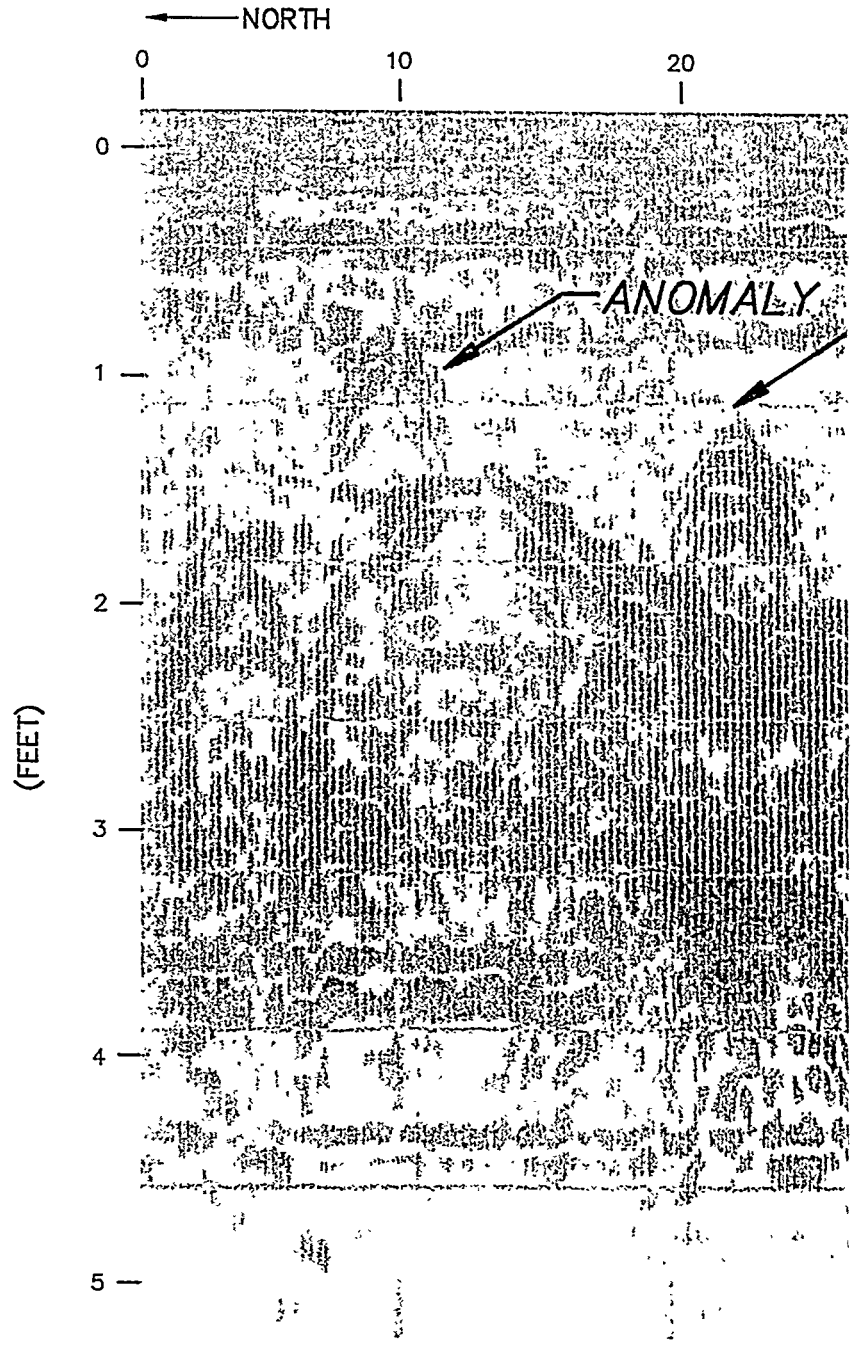


FIGURE C-3

SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, & 7
GPR TRAVERSE NO. 27
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWN BY	R. WEIBLE	CHECKED BY		DRAWING NUMBER 301965-B82
	11-19-93	APPROVED BY	1/7/94	



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 500 MHZ. ANTENNA.
3. 40 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

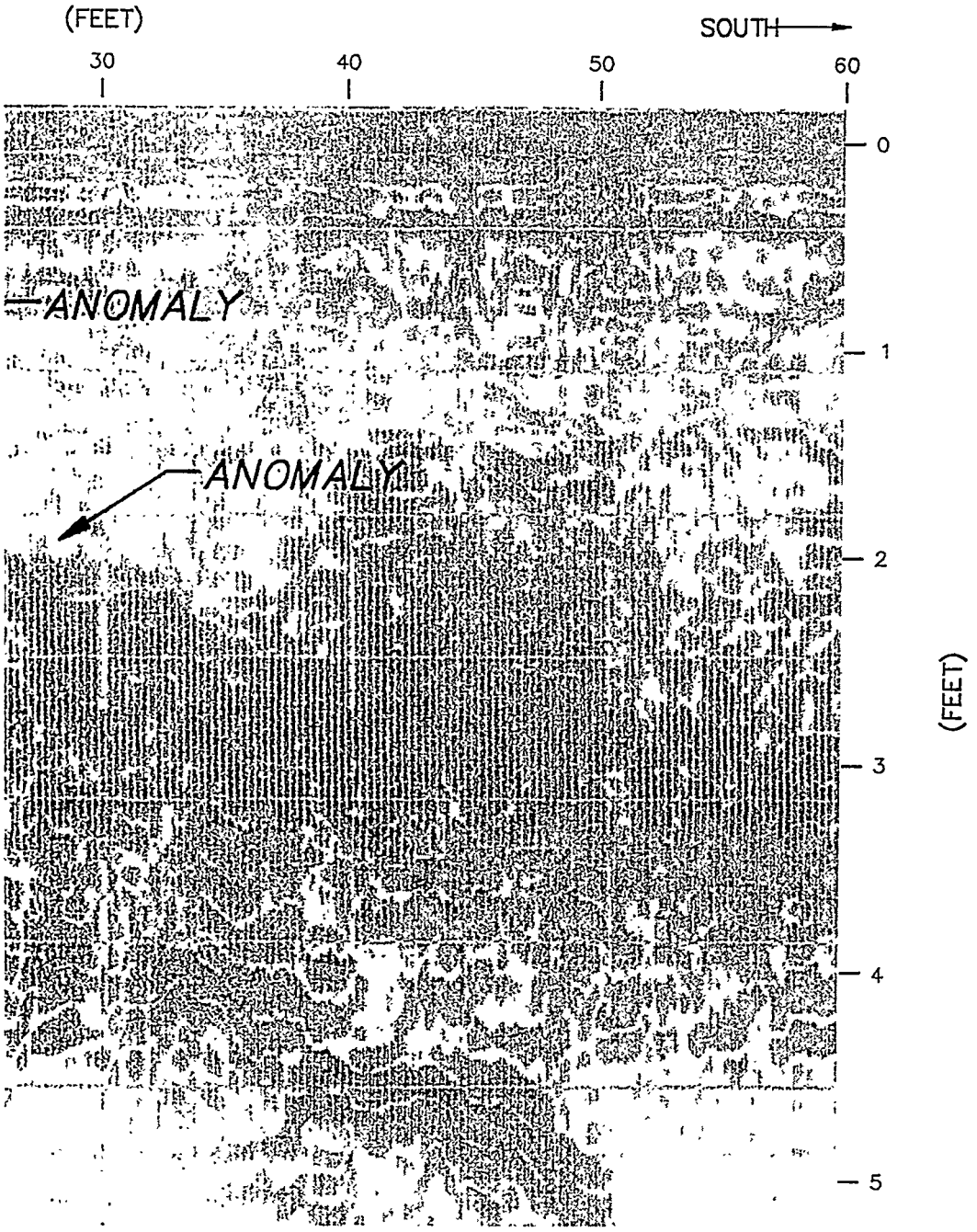
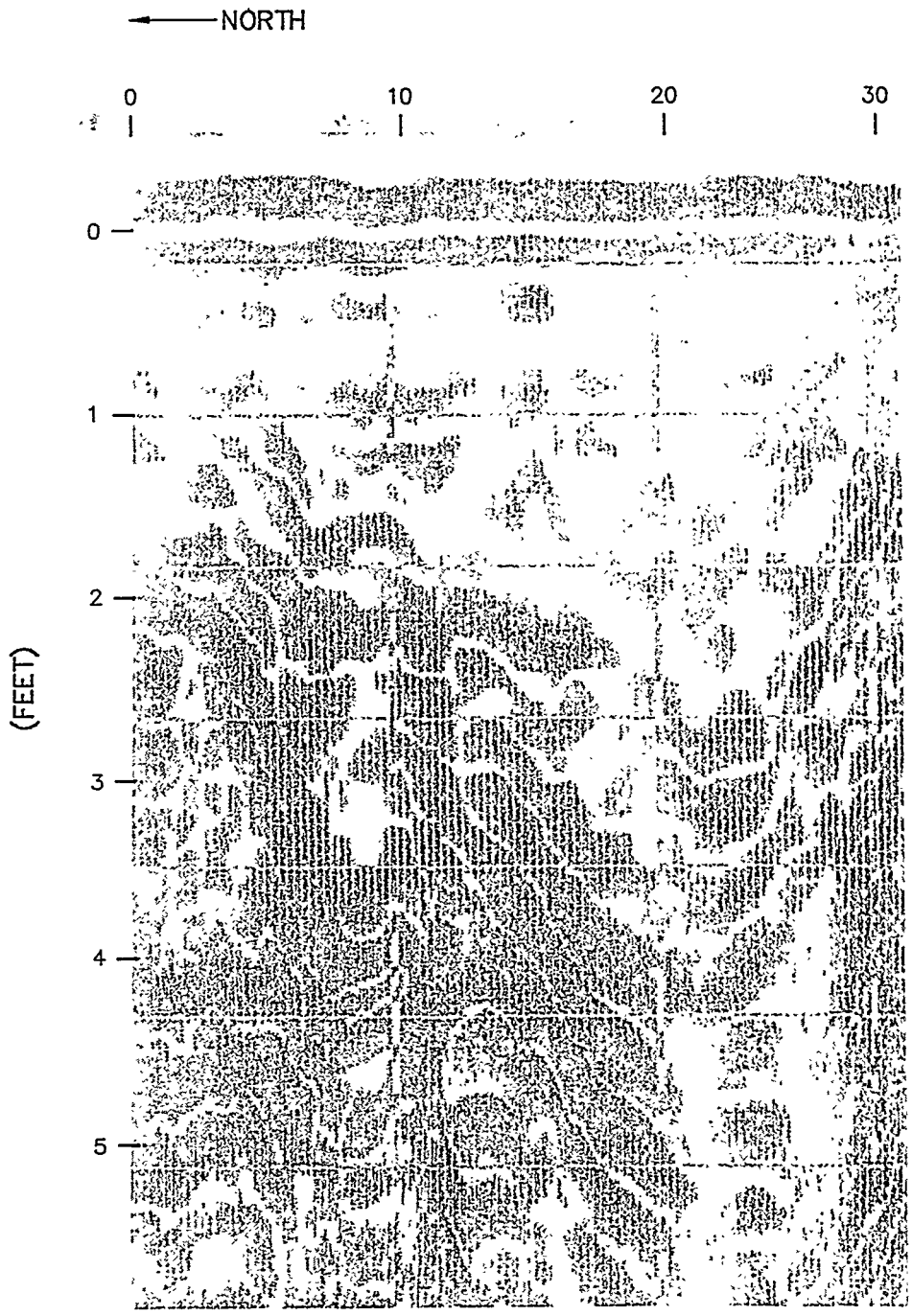


FIGURE C-4

SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, & 7
GPR TRAVERSE NO. 147
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWN BY	R. WEIBLE 11-19-93	CHECKED BY		DRAWING NUMBER 301965-B83
		APPROVED BY	12/7/94	



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 300 MHZ. ANTENNA.
3. 60 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

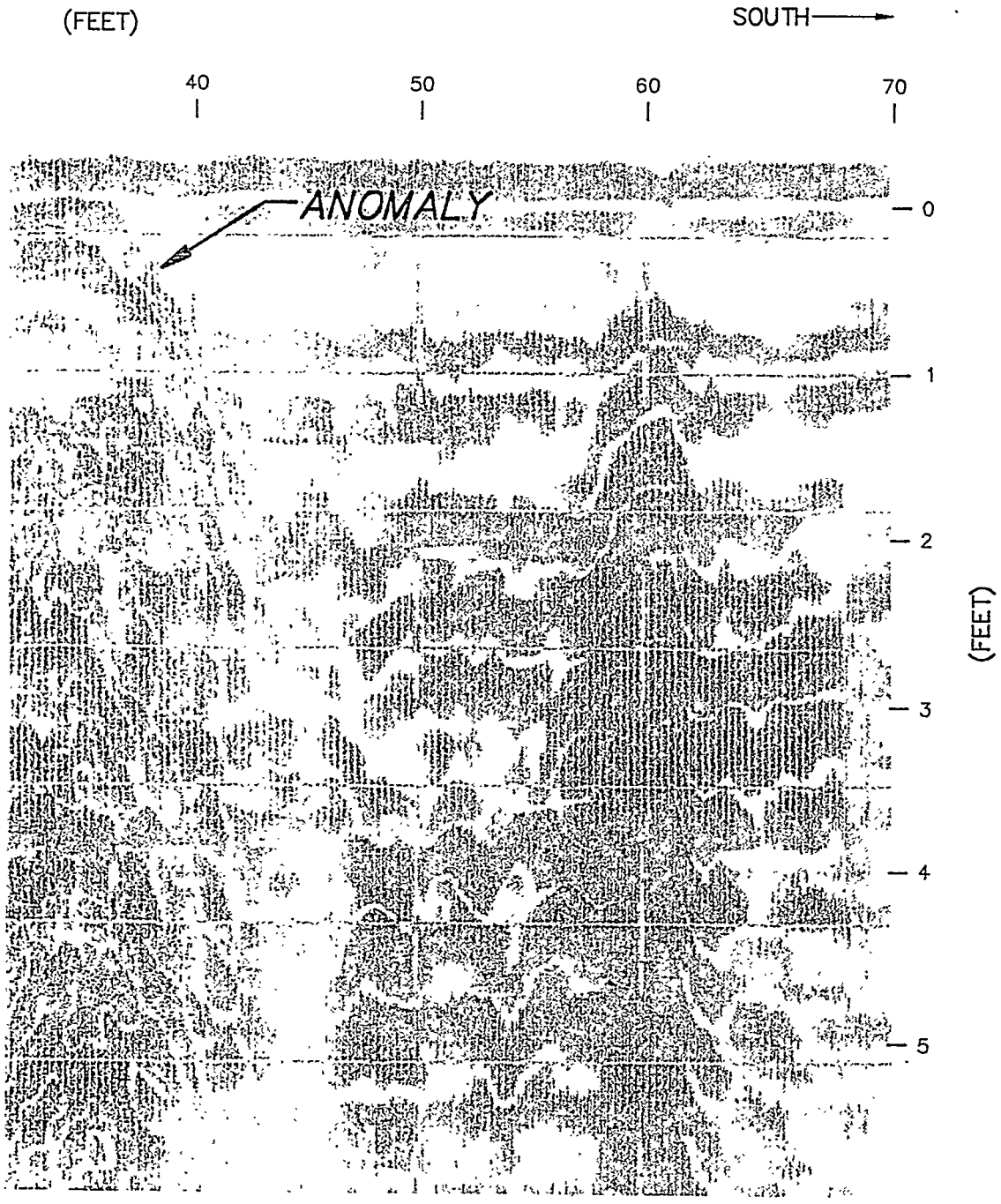
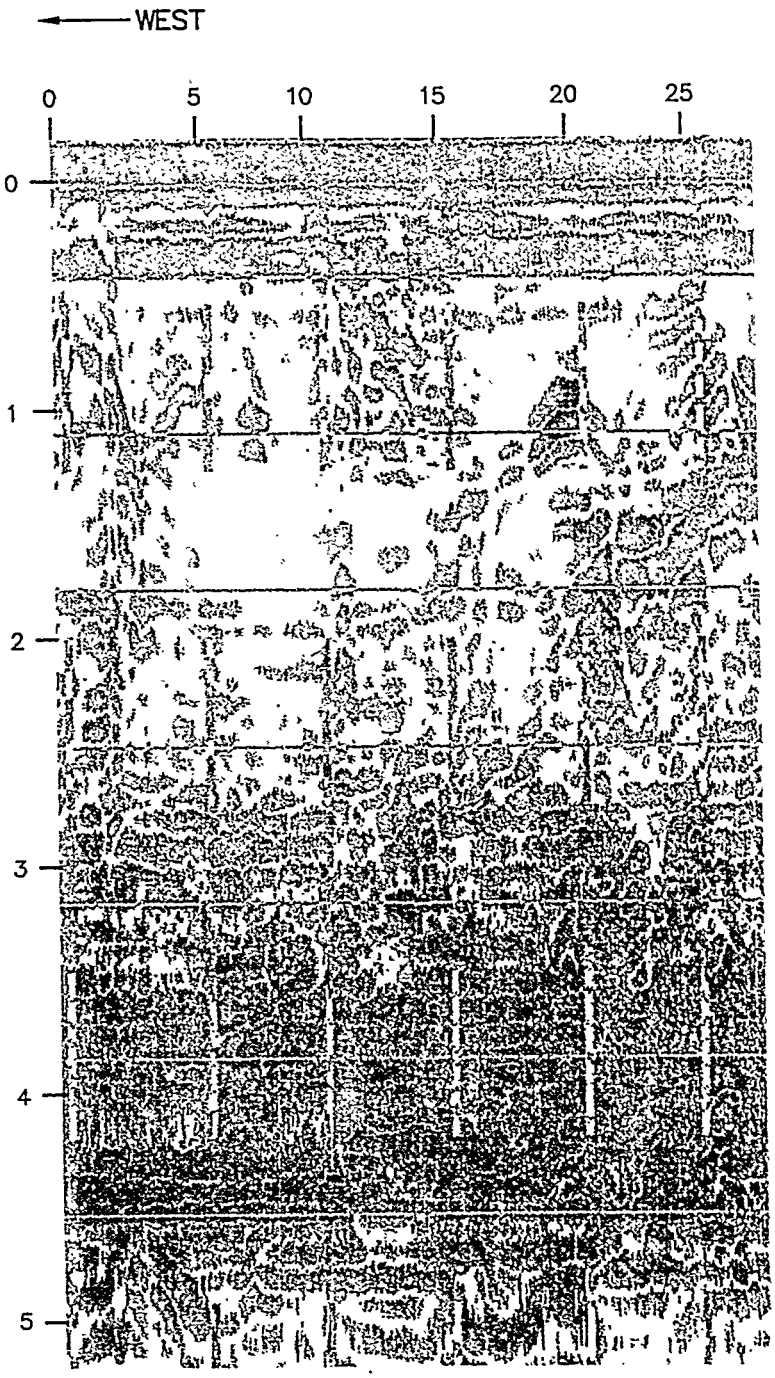


FIGURE C-5

SOURCE AREA 2
DISPOSAL AREAS 1, 2, 3, 4, 6, & 7
GPR TRAVERSE NO. 149
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWN BY	R. WEIBLE 11-19-93	CHECKED BY			DRAWING NUMBER 301965-B81
		APPROVED BY			



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 500 MHZ. ANTENNA.
3. 40 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

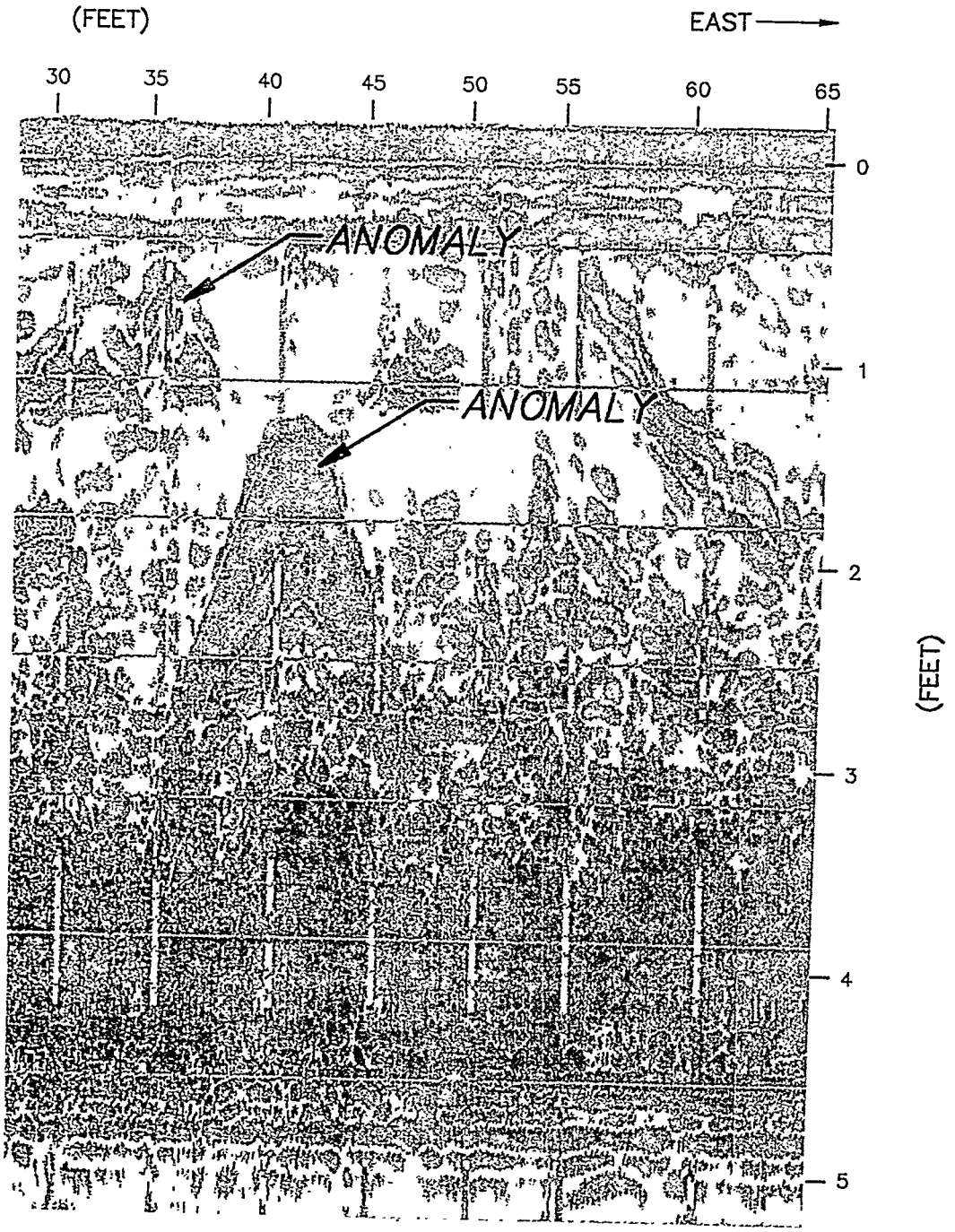
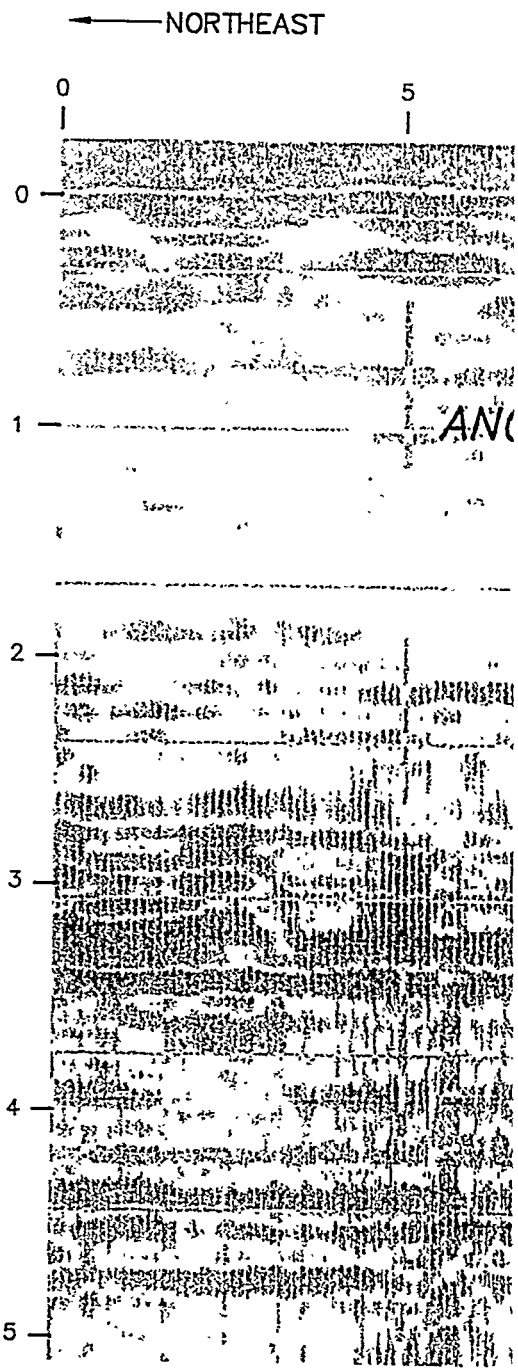


FIGURE C-6

SOURCE AREA 1
BLEED-DOWN PLANT AREA
GPR TRAVERSE NO. 73
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

DRAWN BY	R. WEIBLE 11-19-93	CHECKED BY		DRAWING NUMBER 301965-B84
		APPROVED BY	12/7/93	



NOTES:

1. DEPTH ANNOTATIONS ARE APPROXIMATE.
2. 500 MHZ. ANTENNA.
3. 40 NANOSECOND (NS.) RANGE.
4. 16 SCANS/SECOND.
5. 100 LINES/INCH.

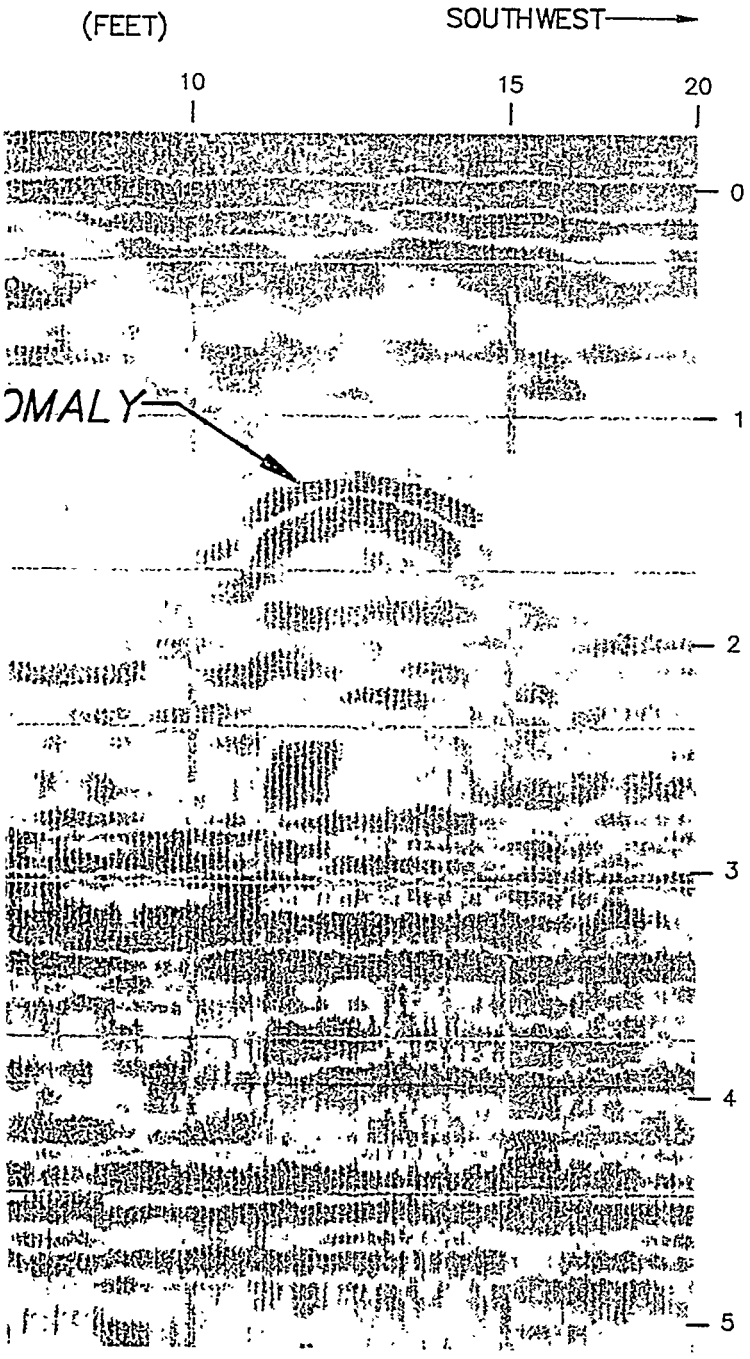


FIGURE C-7

SOURCE AREA 2
GAS PUMP AREA
GPR TRAVERSE NO. 150
MAY 1993
SALMON SITE
LAMAR COUNTY, MISSISSIPPI

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