

**SCHLUMBERGER SOUNDINGS NEAR LASSEN VOLCANIC
NATIONAL PARK, CALIFORNIA**

By

Adel A.R. Zohdy and Robert J. Bisdorf

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Introduction

In 1983 the U.S. Geological Survey made 21 Schlumberger soundings in an area south of Lassen Volcanic National Park and north-northwest of the town of Chester, California. Most soundings were expanded to maximum electrode spacings ($AB/2$) that ranged from about 2 to 5 kilometers. The survey was made as part of the geothermal research program to study the subsurface distribution of electrical resistivity near Lassen Volcanic National Park. The purpose of this report is to release the obtained sounding data and to provide an interpretation of the sounding curves.

Field Conditions

The surveyed area is characterized by high contact resistance and moderately winding roads, both of which are common in many geothermal areas (Zohdy and Bisdorf, 1982). To make better electrical contact with the highly resistive near-surface soil materials, the field crew connected the current cables to metal culverts when one was sighted in the general vicinity of one of the required current electrode spacing distances. The crew radioed the exact distance of the metal culvert to the operator. Metal culverts provide a much

larger surface of contact with the earth than any standard size electrode and therefore they provide excellent electrical contact. This enables the operator to inject a large amount of current into the ground and hence generate easily measurable potential differences between the potential electrodes.

Electrode spacings greater than 100 feet were measured using truck mounted precision odometers. As usual, three trucks were used for making the resistivity survey. Communication between operator and crew was maintained using 90 watt FM radios. The sounding data were plotted in the field as if the roads were straight and were later corrected for winding road geometry (Zohdy and Bisdorf, 1982). As it turned out, the corrections for the Lassen data were mostly very minor.

Schlumberger Sounding Data

Figure 1 shows the locations of the 21 sounding stations. The field sounding curves and their interpretations are given in the appendix. The soundings are numbered consecutively from Lassen 1 to Lassen 21. All sounding data were processed and interpreted using an automatic method (Zohdy, 1989; Zohdy and Bisdorf, 1989).

For each sounding curve, the data in the appendix includes:

- 1) A sounding title which is designated by the name of the survey area followed by the sounding number. Several sounding titles have the suffix C following the

sounding number (for example: Lassen 3C, Lassen 4C, etc). The suffix C indicates that the sounding data were corrected for winding road geometry (Zohdy and Bisdorf, 1982). A few sounding titles have the suffix S following the sounding number (see for example: Lassen 9CS). The suffix S indicates that the observed curve or the digitized curve was smoothed.

2) A tabulation of $AB/2$ electrode spacings (in feet and in meters) and corresponding apparent resistivities (in ohm-m).

3) A log-log plot of the field and corrected data points. Each set of data points (represented by circles) that was made with the same potential electrode spacing (MN) is connected with a solid line to form a segment. Measurements were made at the fixed electrode spacings of $MN/2 = 2, 6, 20, 60, 200$, and 600 feet, respectively.

4) A tabulation of the automatically interpreted layering, with depths (in feet and meters) and corresponding resistivities (in ohm-m).

5) A log-log plot of the output of the automatic interpretation program. The circles represent the shifted-digitized field sounding curve, the continuous curve represents the calculated sounding curve, and the step-function curve represents the interpreted layering model.

It should be noted that some of the field data and some of the interpretation data may not be completely represented on the log-log plots because the

resistivity values have a range that exceeds three decades (see for example: Lassen 7). For such sounding curves the reader should consult the tabulated data.

Goelectric Cross Section

Figure 2 shows a color goelectric cross section with contours of interpreted true resistivities. The cross section extends from sounding number 9 in the northwest to sounding number 15 in the southeast (see figure 1 for station locations). A major low resistivity layer with resistivities ranging from 15 to 100 ohm-meters is present throughout the section. It reaches a thickness of more than one kilometer beneath sounding 6. This layer is present at relatively shallow depths (100 to 200 meters) beneath soundings 16, 5, and 2, but deepens to about 1100 meters beneath sounding 6. It is interesting to note that Domingo Spring is located near the edge of the abrupt deepening of this low resistivity layer. This may indicate the presence of a low-angle fault at that location. It may also represent the inner edge of a caldera. The low resistivity layer most likely represents water-saturated and altered volcanic material.

References

Zohdy, A.A.R., 1989, A new method for the automatic interpretation of Schlumberger and Wenner sounding curves: *Geophysics*, v. 54, p. 245-253.

Zohdy, A.A.R., and Bisdorf, R.J., 1982, Schlumberger soundings in the Medicine Lake area, California: U.S. Geol. Survey Open-File Report 82-887, 162 p.

_____, 1989, Programs for the automatic processing and interpretation of Schlumberger sounding curves in QuickBASIC 4.0: U.S. Geol. Survey Open-File Report 89-137 A & B, 64 + disk.

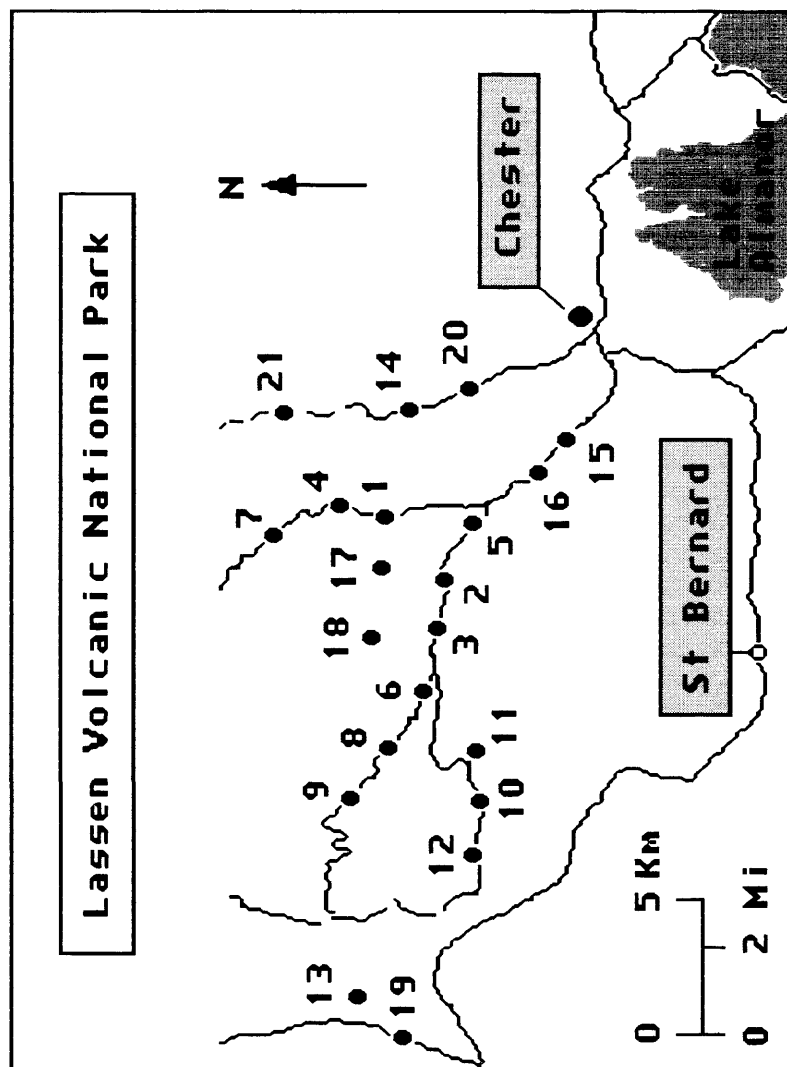


Figure 1. Schlumberger Station Location Map

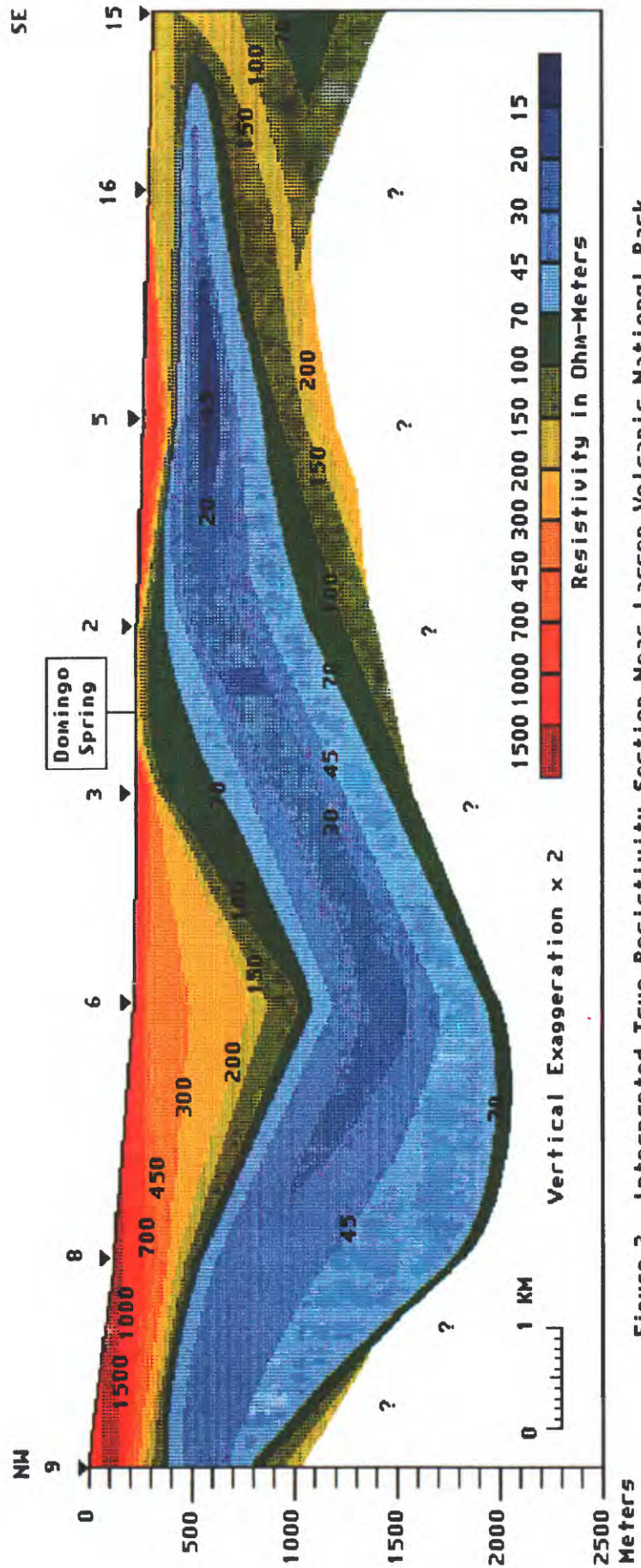
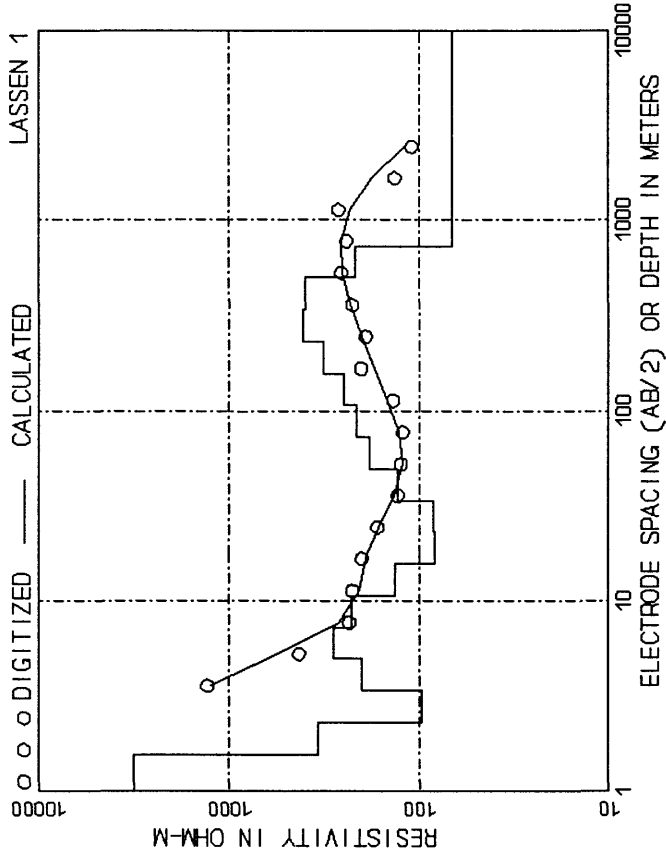
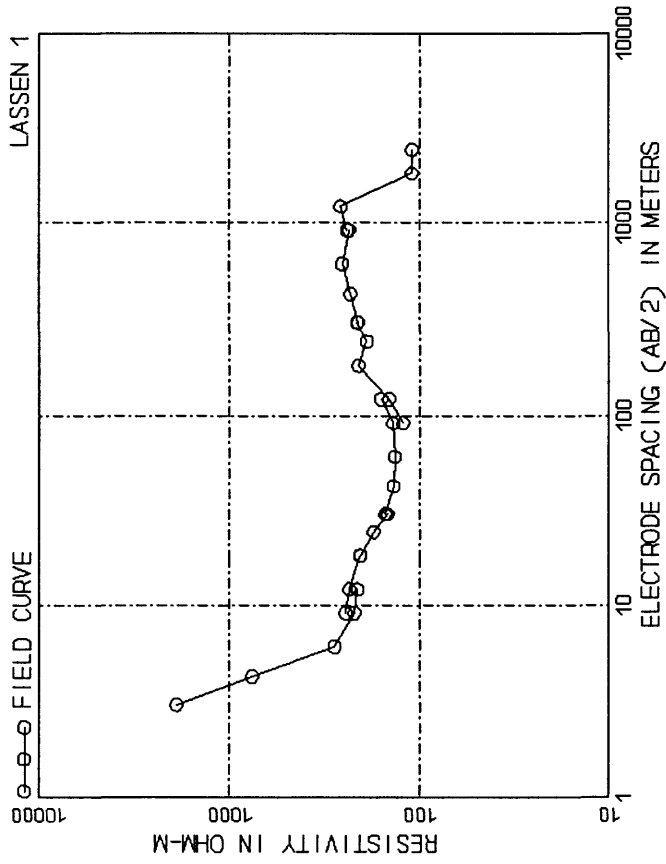


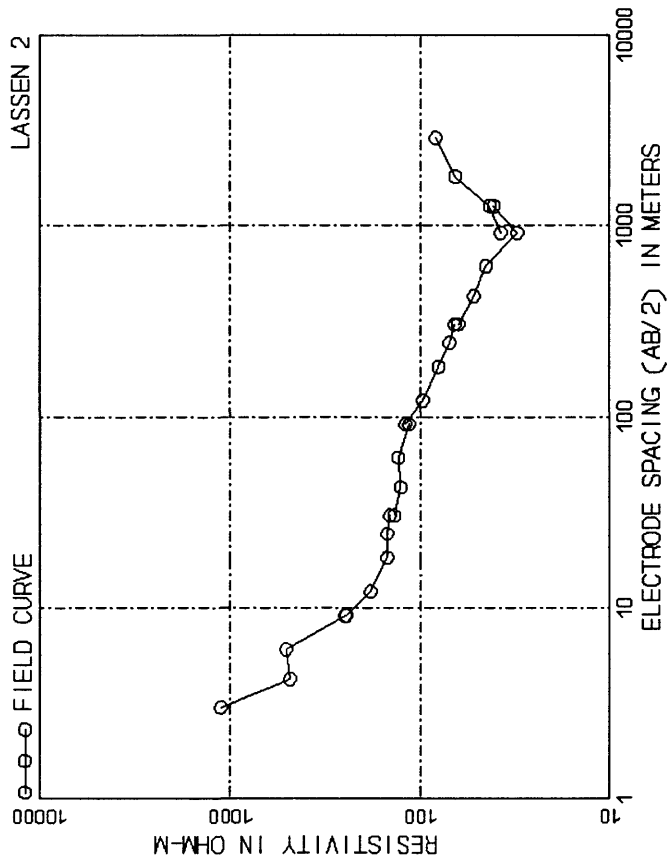
Figure 2. Interpreted True Resistivity Section Near Lassen Volcanic National Park.

Appendix

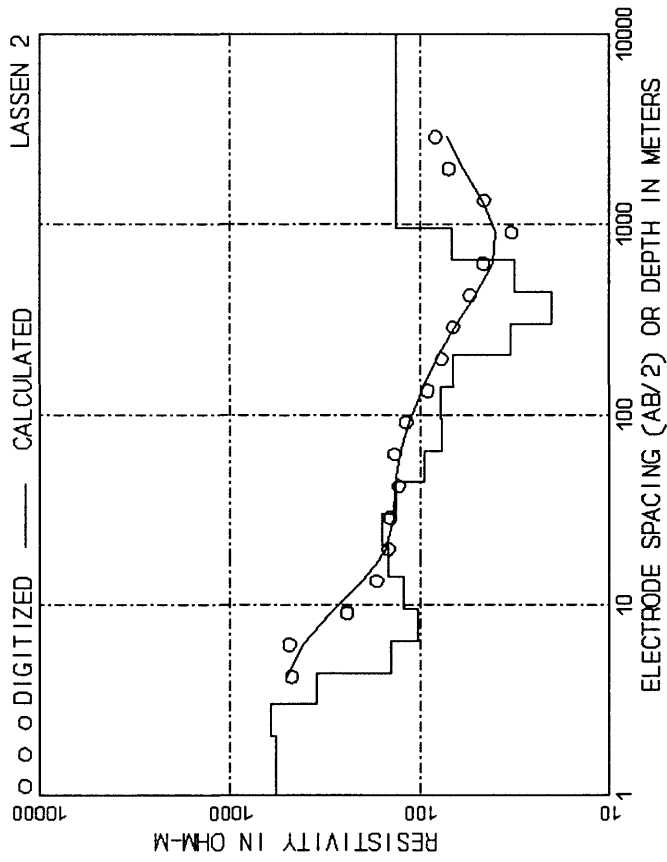


| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 1900.00 | 121.92 (| 400.00) | 160.00 |
| 4.27 (| 14.00) | 760.00 | 91.44 (| 300.00) | 122.00 |
| 6.10 (| 20.00) | 280.00 | 121.92 (| 400.00) | 145.00 |
| 9.14 (| 30.00) | 220.00 | 182.88 (| 600.00) | 210.00 |
| 12.19 (| 40.00) | 212.00 | 243.84 (| 800.00) | 190.00 |
| 9.14 (| 30.00) | 245.00 | 304.80 (| 1000.00) | 212.00 |
| 12.19 (| 40.00) | 234.00 | 304.80 (| 1000.00) | 210.00 |
| 18.29 (| 60.00) | 205.00 | 426.72 (| 1400.00) | 230.00 |
| 24.38 (| 80.00) | 175.00 | 609.60 (| 2000.00) | 255.00 |
| 30.48 (| 100.00) | 147.00 | 914.40 (| 3000.00) | 235.00 |
| 30.48 (| 100.00) | 152.00 | 914.40 (| 3000.00) | 240.00 |
| 42.67 (| 140.00) | 137.00 | 1219.20 (| 4000.00) | 260.00 |
| 60.96 (| 200.00) | 135.00 | 1828.80 (| 6000.00) | 110.00 |
| 91.44 (| 300.00) | 138.00 | 2438.40 (| 8000.00) | 110.00 |

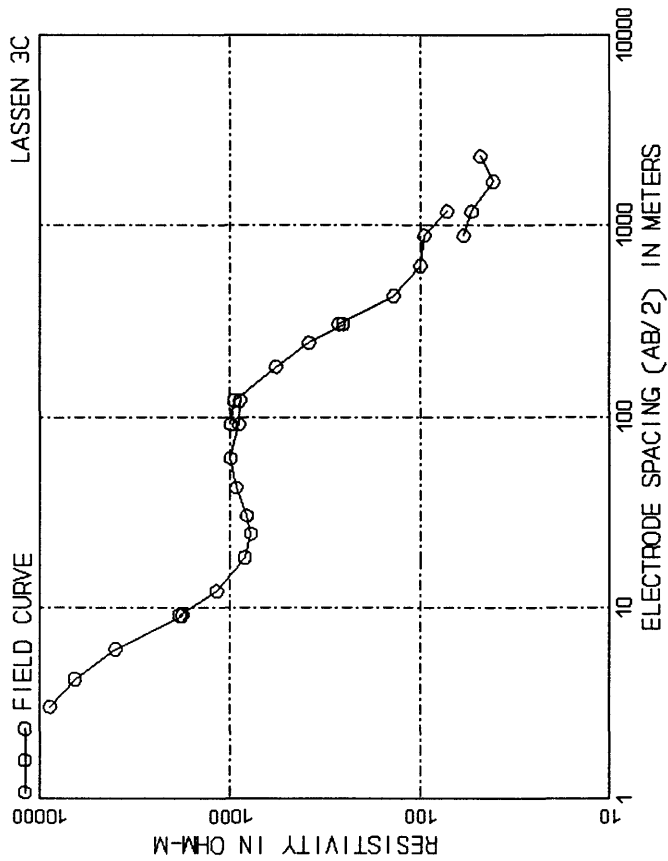
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|---------|------------|-----------|--------|
| 1.57 (| 5.14) | 3149.65 | 49.51 (| 162.42) | 129.32 |
| 2.30 (| 7.54) | 339.62 | 72.66 (| 238.40) | 182.20 |
| 3.37 (| 11.07) | 96.76 | 106.66 (| 349.92) | 214.08 |
| 4.95 (| 16.24) | 199.57 | 156.55 (| 513.61) | 250.94 |
| 7.27 (| 23.84) | 283.67 | 229.78 (| 753.88) | 319.30 |
| 10.67 (| 34.99) | 227.19 | 337.27 (| 1106.54) | 406.25 |
| 15.65 (| 51.36) | 134.98 | 495.05 (| 1624.19) | 394.38 |
| 22.98 (| 75.39) | 83.25 | 726.64 (| 2383.98) | 216.08 |
| 33.73 (| 110.65) | 83.78 | 99999.00 (| 99999.00) | 66.83 |



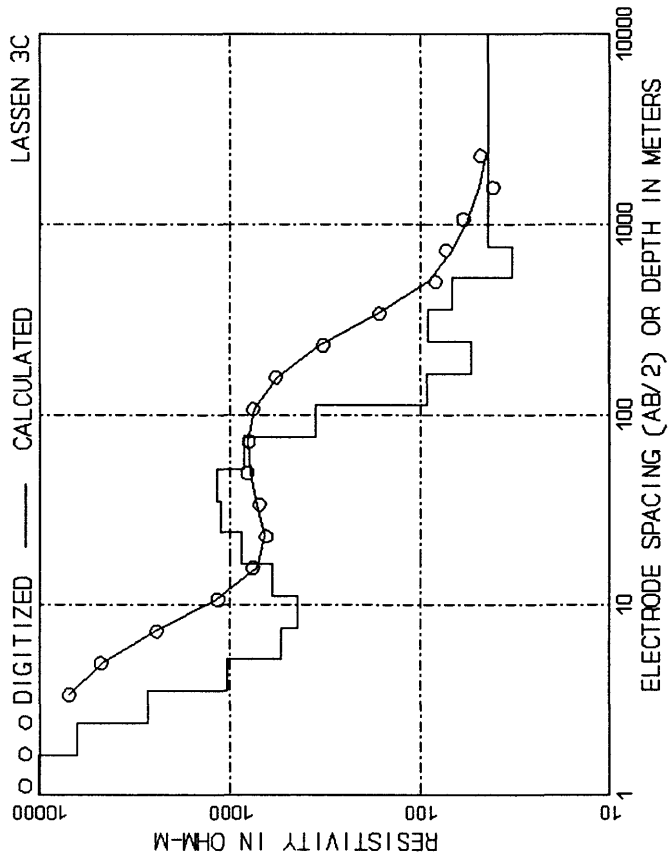
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 1120.00 | 91.44 (| 300.00) | 120.00 |
| 4.27 (| 14.00) | 485.00 | 121.92 (| 400.00) | 97.00 |
| 6.10 (| 20.00) | 510.00 | 182.88 (| 600.00) | 80.00 |
| 9.14 (| 30.00) | 250.00 | 243.84 (| 800.00) | 70.00 |
| 9.14 (| 30.00) | 245.00 | 304.80 (| 1000.00) | 66.00 |
| 12.19 (| 40.00) | 183.00 | 304.80 (| 1000.00) | 63.00 |
| 18.29 (| 60.00) | 150.00 | 426.72 (| 1400.00) | 52.00 |
| 24.38 (| 80.00) | 150.00 | 609.60 (| 2000.00) | 45.00 |
| 30.48 (| 100.00) | 145.00 | 914.40 (| 3000.00) | 30.90 |
| 30.48 (| 100.00) | 137.00 | 1264.92 (| 4150.00) | 41.00 |
| 42.67 (| 140.00) | 127.00 | 914.40 (| 3000.00) | 37.60 |
| 60.96 (| 200.00) | 131.00 | 1264.92 (| 4150.00) | 43.00 |
| 91.44 (| 300.00) | 115.00 | 1812.04 (| 5945.00) | 65.30 |
| | | | 2877.31 (| 9440.00) | 83.20 |



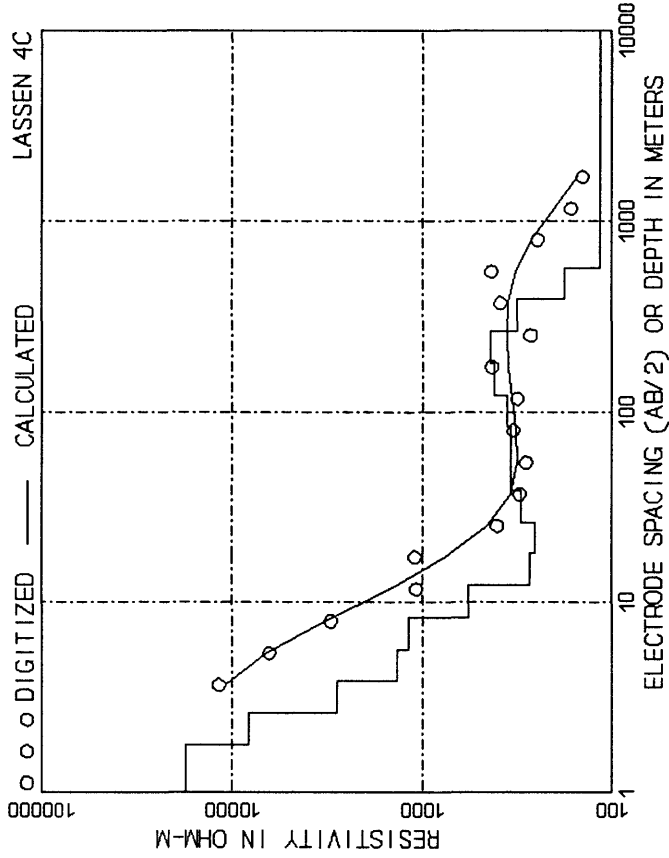
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|--------|------------|----------|--------|
| 2.05 (| 6.73) | 574.14 | 64.91 (| 212.95) | 94.77 |
| 3.01 (| 9.88) | 616.46 | 95.27 (| 312.57) | 76.44 |
| 4.42 (| 14.51) | 348.46 | 139.84 (| 458.78) | 77.57 |
| 6.49 (| 21.29) | 142.44 | 205.25 (| 673.40) | 66.71 |
| 9.53 (| 31.26) | 102.20 | 301.27 (| 988.42) | 33.23 |
| 13.98 (| 45.88) | 121.74 | 442.20 (| 1450.80) | 20.12 |
| 20.53 (| 67.34) | 147.36 | 649.07 (| 2129.49) | 31.66 |
| 30.13 (| 98.84) | 159.81 | 952.70 (| 3125.66) | 67.64 |
| 44.22 (| 145.08) | 134.42 | 9999.00 (| 9999.00) | 134.21 |



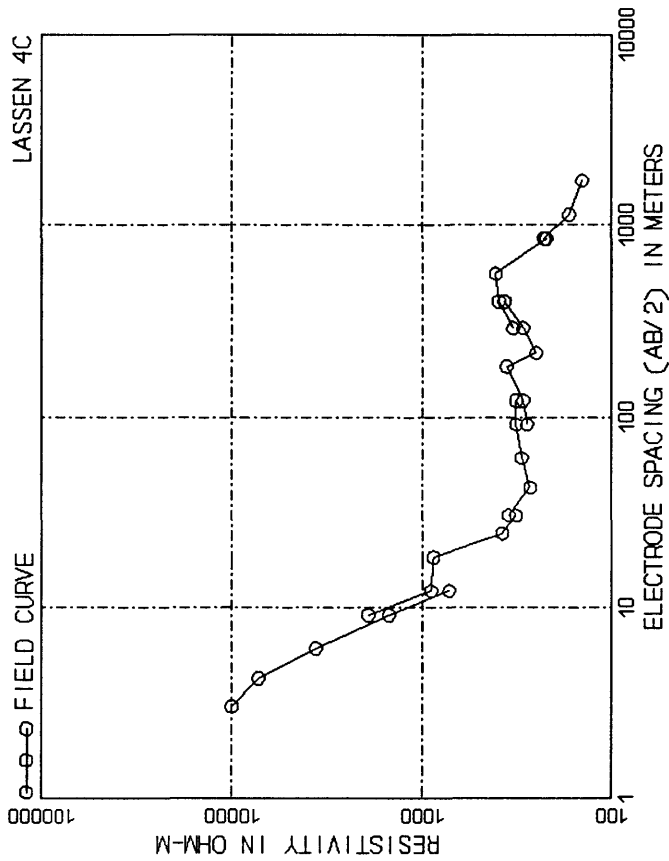
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|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 8800.00 | 91.44 (| 300.00) | 1000.00 |
| 4.27 (| 14.00) | 6500.00 | 121.92 (| 400.00) | 950.00 |
| 6.10 (| 20.00) | 4000.00 | 182.88 (| 600.00) | 575.00 |
| 9.14 (| 30.00) | 1780.00 | 243.84 (| 800.00) | 384.00 |
| 12.19 (| 40.00) | 1180.00 | 304.80 (| 1000.00) | 255.00 |
| 18.29 (| 60.00) | 840.00 | 426.72 (| 1400.00) | 138.50 |
| 24.38 (| 80.00) | 780.00 | 609.60 (| 2000.00) | 100.00 |
| 30.48 (| 100.00) | 820.00 | 882.40 (| 2895.00) | 95.50 |
| 42.67 (| 140.00) | 930.00 | 1181.40 (| 3876.00) | 72.20 |
| 60.96 (| 200.00) | 1000.00 | 1696.52 (| 5566.00) | 53.60 |
| 91.44 (| 300.00) | 890.00 | 2300.33 (| 7547.00) | 41.40 |
| 121.92 (| 400.00) | | | | 48.30 |



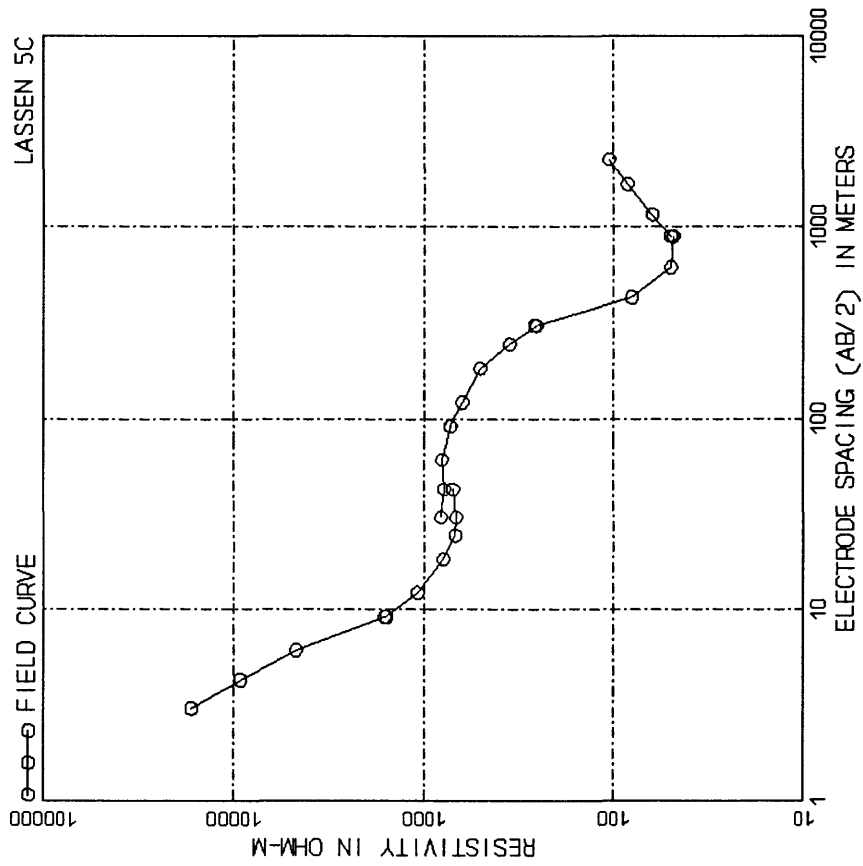
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|----------|------------|----------|---------|
| 1.64 (| 5.38) | 10157.65 | 51.89 (| 170.25) | 1180.14 |
| 2.41 (| 7.90) | 6357.87 | 76.17 (| 249.89) | 850.73 |
| 3.54 (| 11.60) | 2701.56 | 111.80 (| 366.78) | 353.38 |
| 5.19 (| 17.02) | 1039.20 | 164.09 (| 538.37) | 92.95 |
| 7.62 (| 24.99) | 544.19 | 240.86 (| 790.21) | 53.42 |
| 11.18 (| 36.68) | 444.79 | 353.53 (| 1159.87) | 90.97 |
| 16.41 (| 53.84) | 603.16 | 518.91 (| 1702.46) | 67.72 |
| 24.09 (| 79.02) | 873.75 | 761.66 (| 2498.87) | 32.60 |
| 35.35 (| 115.99) | 1124.87 | 9999.00 (| 9999.00) | 44.01 |



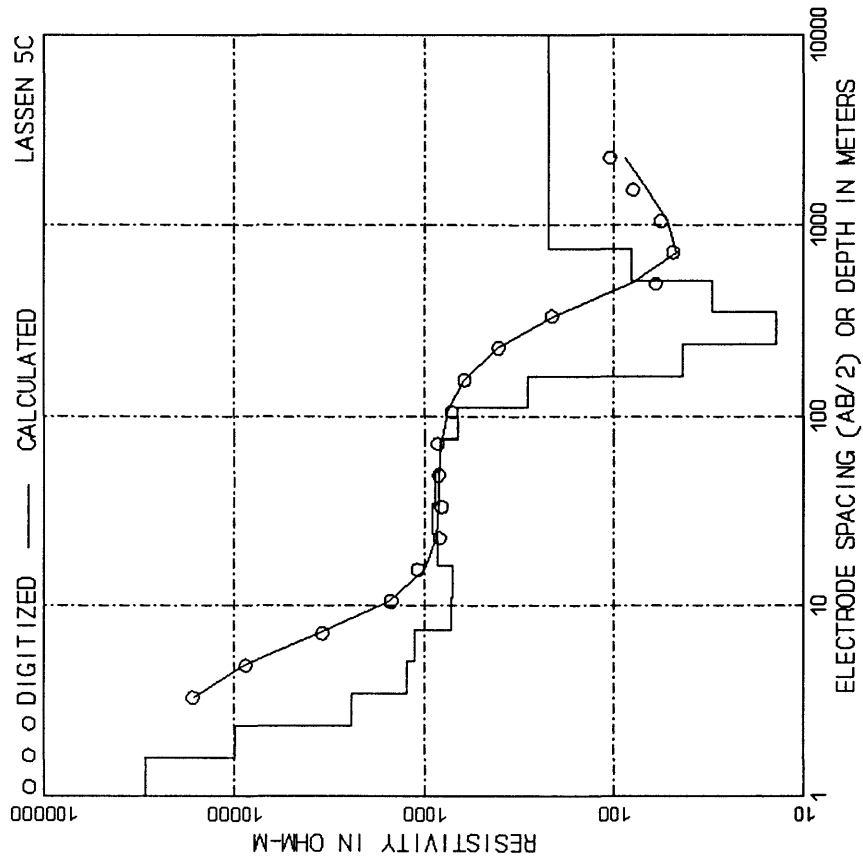
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|--------|----------|------------|-----------|--------|
| 1.79 (| 5.88) | 17585.79 | 38.63 (| 126.73) | 301.42 |
| 2.63 (| 8.63) | 8169.59 | 56.70 (| 186.02) | 340.40 |
| 3.86 (| 12.67) | 2832.41 | 83.22 (| 273.03) | 344.93 |
| 5.67 (| 18.60) | 1366.72 | 122.15 (| 400.76) | 360.26 |
| 8.32 (| 27.30) | 1191.96 | 179.29 (| 588.24) | 421.34 |
| 12.22 (| 40.08) | 574.01 | 263.17 (| 863.41) | 436.55 |
| 17.93 (| 58.82) | 272.43 | 386.28 (| 1267.32) | 318.52 |
| 26.32 (| 86.34) | 254.35 | 566.98 (| 1860.17) | 179.78 |
| | | | 99999.00 (| 99999.00) | 115.76 |



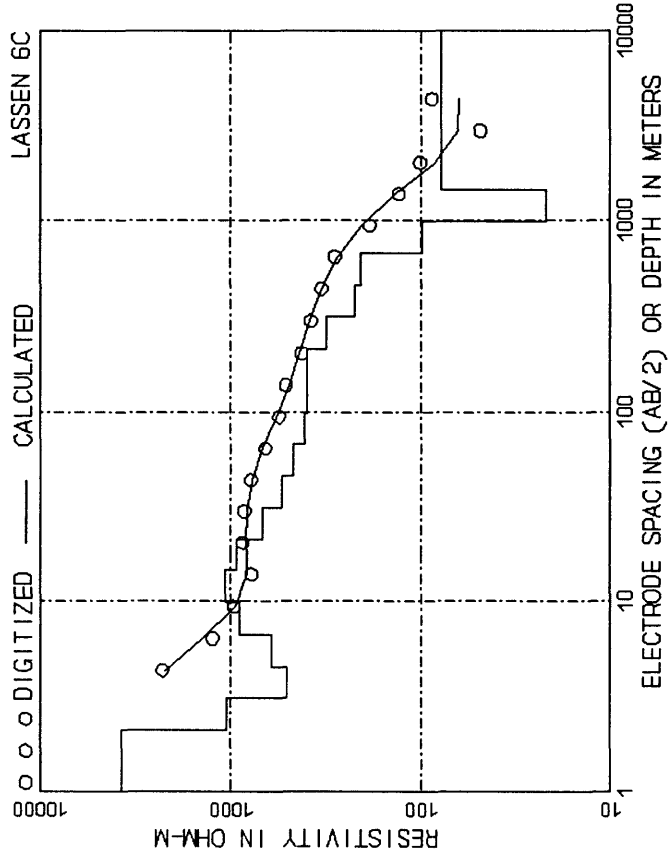
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| 3.05 (| 10.00) | 10000.00 | 121.92 (| 400.00) | 320.00 |
| 4.27 (| 14.00) | 7250.00 | 91.44 (| 300.00) | 280.00 |
| 6.10 (| 20.00) | 3625.00 | 121.92 (| 400.00) | 295.00 |
| 9.14 (| 30.00) | 1500.00 | 182.88 (| 600.00) | 360.00 |
| 12.19 (| 40.00) | 720.00 | 214.27 (| 703.00) | 251.00 |
| 9.14 (| 30.00) | 1925.00 | 288.34 (| 946.00) | 293.00 |
| 12.19 (| 40.00) | 900.00 | 395.63 (| 1298.00) | 369.00 |
| 18.29 (| 60.00) | 875.00 | 288.34 (| 946.00) | 333.00 |
| 24.38 (| 80.00) | 380.00 | 395.63 (| 1298.00) | 396.00 |
| 30.48 (| 100.00) | 320.00 | 551.69 (| 1810.00) | 410.00 |
| 30.48 (| 100.00) | 350.00 | 846.73 (| 2778.00) | 222.00 |
| 42.67 (| 140.00) | 270.00 | 846.73 (| 2778.00) | 228.00 |
| 60.96 (| 200.00) | 300.00 | 1134.16 (| 3721.00) | 168.00 |
| 91.44 (| 300.00) | 320.00 | 1712.37 (| 5618.00) | 143.70 |



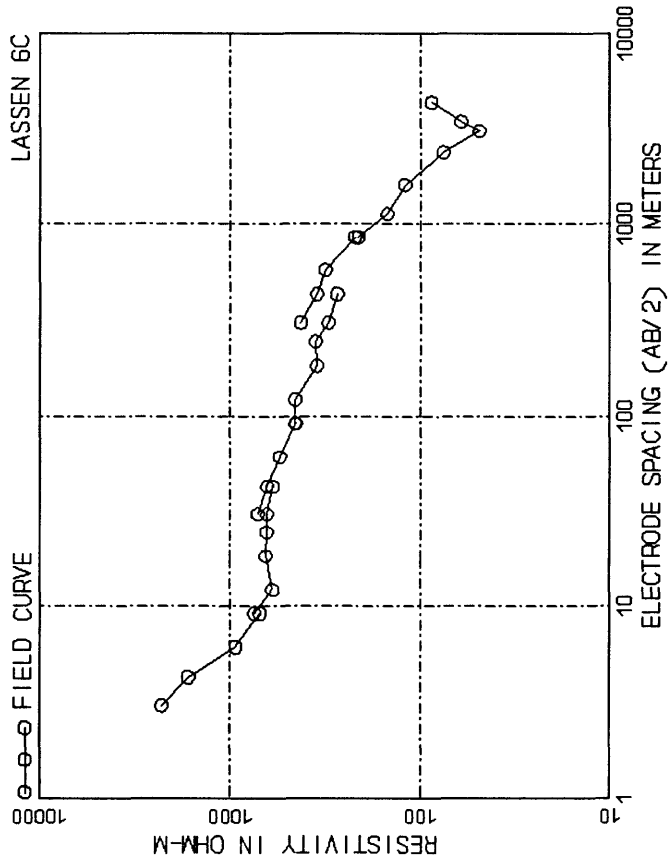
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|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 16600.00 | 91.44 (| 300.00) | 720.00 |
| 4.27 (| 14.00) | 9200.00 | 91.44 (| 300.00) | 725.00 |
| 6.10 (| 20.00) | 4700.00 | 121.92 (| 400.00) | 625.00 |
| 9.14 (| 30.00) | 1610.00 | 182.88 (| 600.00) | 505.00 |
| 9.14 (| 30.00) | 1570.00 | 243.84 (| 800.00) | 352.00 |
| 12.19 (| 40.00) | 1080.00 | 304.80 (| 1000.00) | 255.00 |
| 18.29 (| 60.00) | 790.00 | 304.80 (| 1000.00) | 260.00 |
| 24.38 (| 80.00) | 680.00 | 426.72 (| 1400.00) | 80.00 |
| 30.48 (| 100.00) | 675.00 | 609.60 (| 2000.00) | 50.00 |
| 42.67 (| 140.00) | 700.00 | 887.88 (| 2913.00) | 48.20 |
| 30.48 (| 100.00) | 810.00 | 887.88 (| 2913.00) | 50.10 |
| 42.67 (| 140.00) | 780.00 | 1161.29 (| 3810.00) | 62.60 |
| 60.96 (| 200.00) | 800.00 | 1677.01 (| 5502.00) | 84.20 |
| | | | 2264.05 (| 7428.00) | 105.00 |



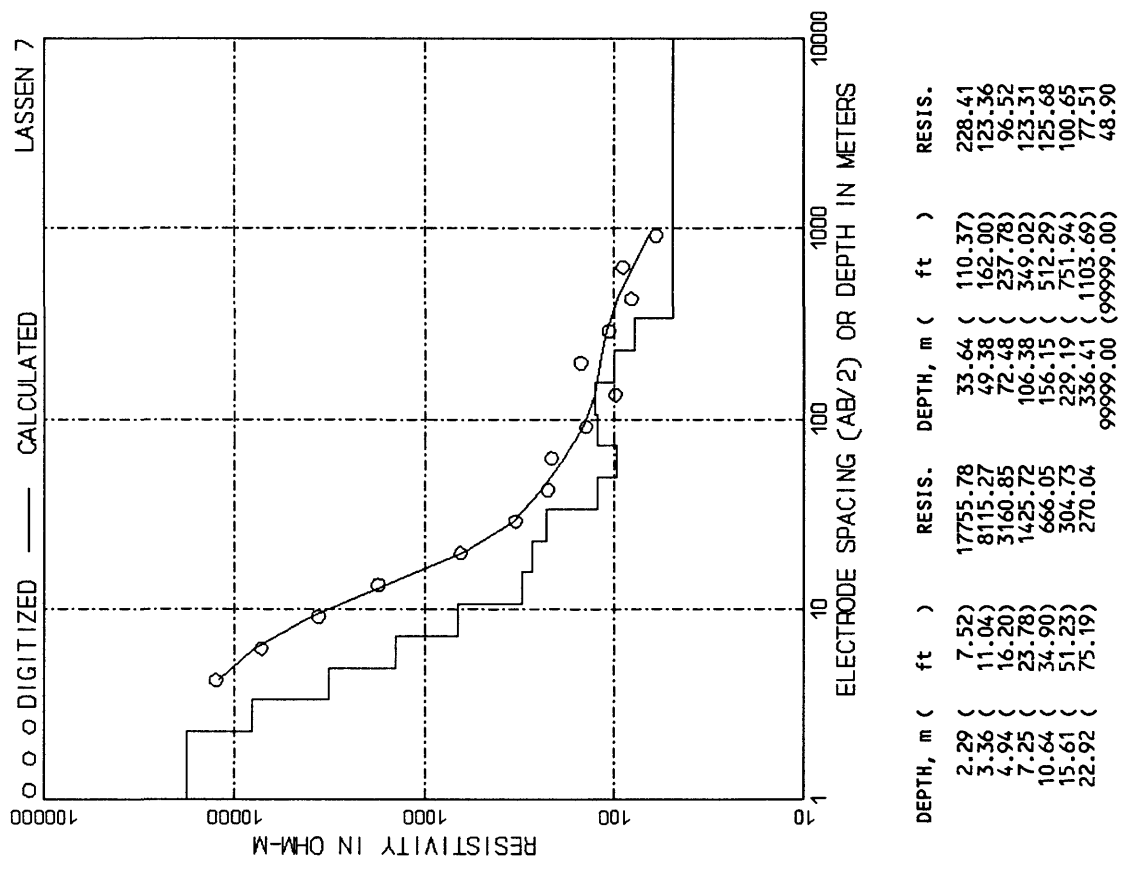
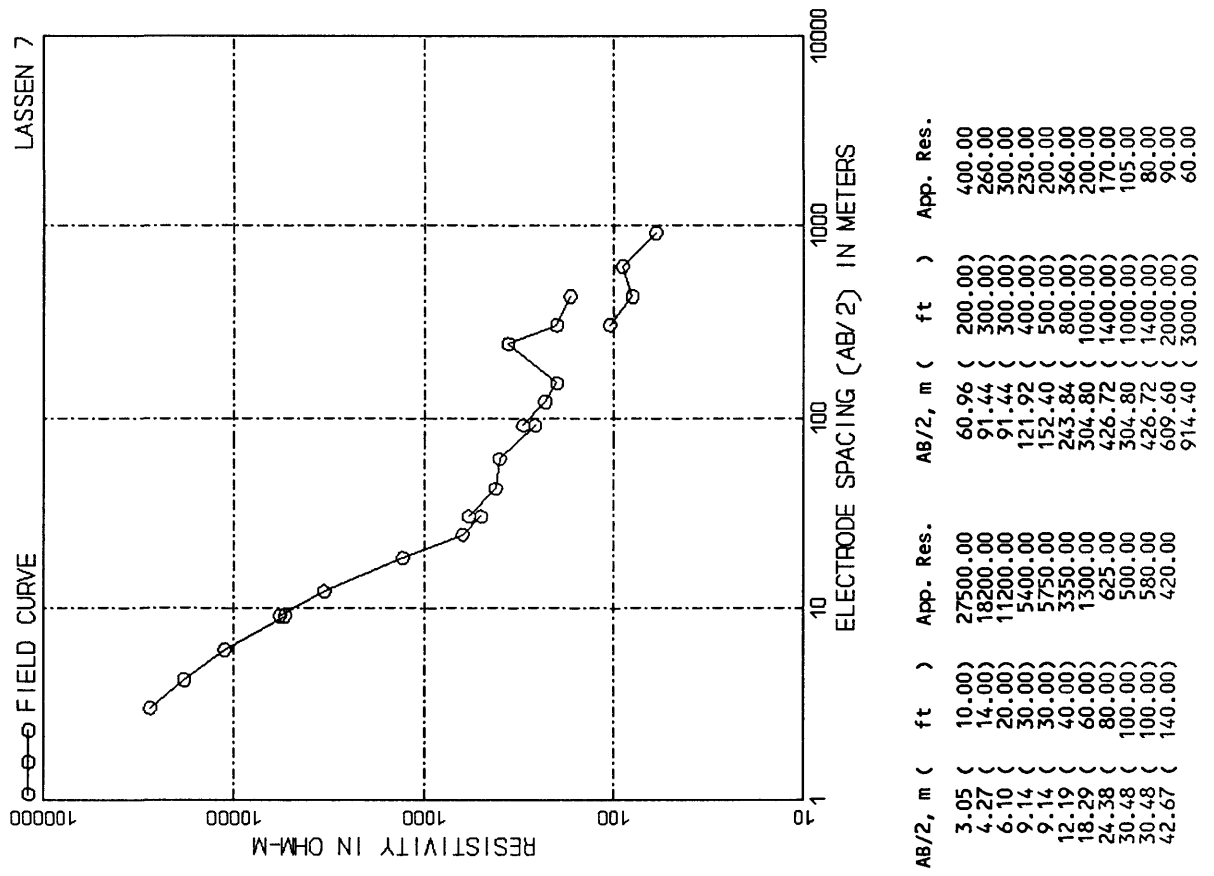
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|----------|------------|-----------|--------|
| 1.62 (| 5.30) | 29329.62 | 51.07 (| 167.56) | 876.06 |
| 2.37 (| 7.78) | 9959.29 | 74.96 (| 245.95) | 828.24 |
| 3.48 (| 11.42) | 2409.60 | 110.03 (| 361.00) | 660.45 |
| 5.11 (| 16.76) | 1232.91 | 161.51 (| 529.88) | 284.08 |
| 7.50 (| 24.59) | 1126.11 | 237.06 (| 777.75) | 43.12 |
| 11.00 (| 36.10) | 722.25 | 347.95 (| 1141.58) | 14.05 |
| 16.15 (| 52.99) | 701.53 | 510.73 (| 1675.62) | 30.33 |
| 23.71 (| 77.78) | 854.89 | 749.65 (| 2459.47) | 80.79 |
| 34.80 (| 114.16) | 911.84 | 99999.00 (| 99999.00) | 219.69 |

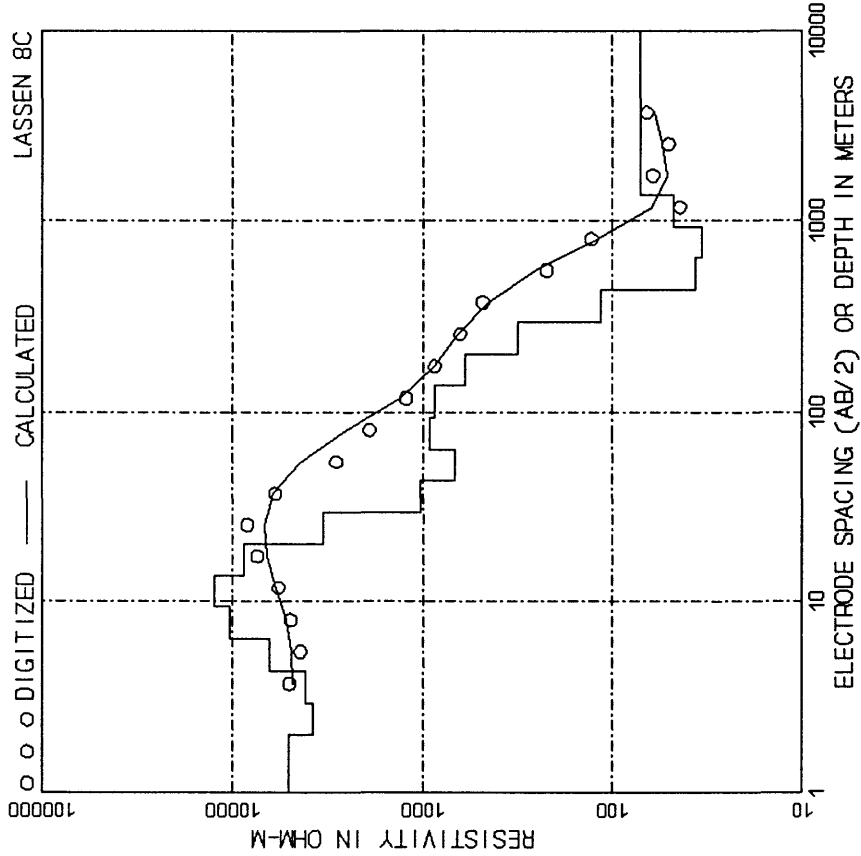


| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|---------|------------|-----------|--------|
| 2.12 (| 6.95) | 3767.62 | 66.97 (| 219.71) | 473.07 |
| 3.11 (| 10.20) | 1052.76 | 98.30 (| 322.49) | 410.07 |
| 4.56 (| 14.97) | 508.84 | 144.28 (| 473.35) | 394.06 |
| 6.70 (| 21.97) | 608.25 | 211.77 (| 694.79) | 396.73 |
| 9.83 (| 32.25) | 907.63 | 310.84 (| 1019.81) | 313.57 |
| 14.43 (| 47.34) | 1068.22 | 456.25 (| 1496.87) | 224.64 |
| 21.18 (| 69.48) | 925.86 | 669.68 (| 2197.10) | 207.24 |
| 31.08 (| 101.98) | 680.58 | 982.95 (| 3224.91) | 98.46 |
| 45.62 (| 149.69) | 540.20 | 1442.78 (| 4733.52) | 21.96 |
| | | | 99999.00 (| 99999.00) | 77.50 |

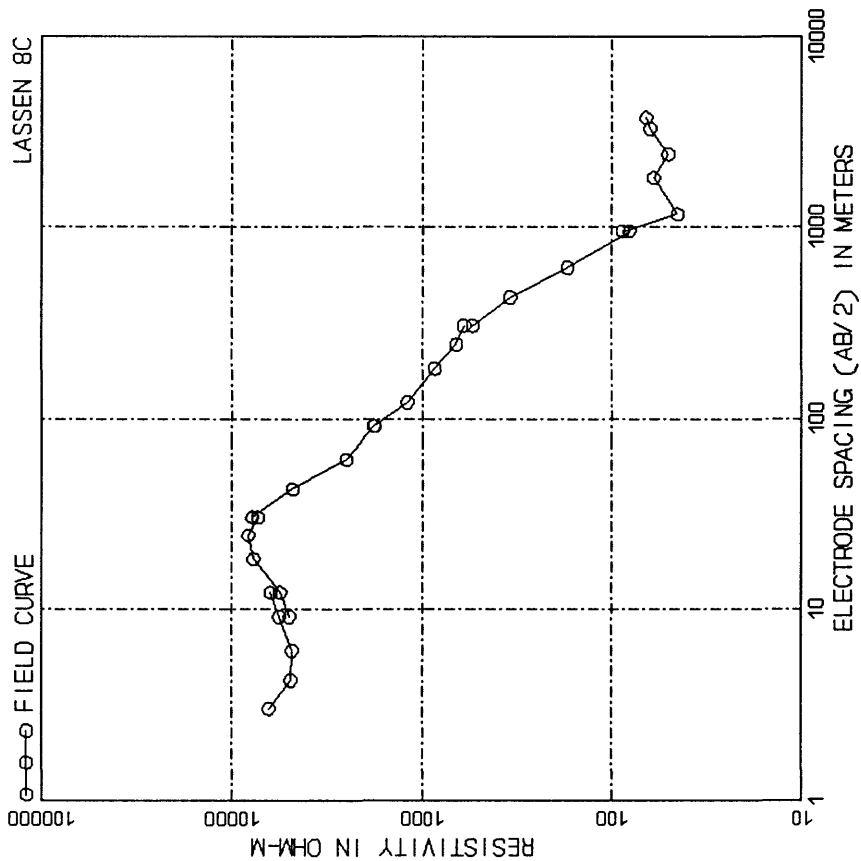


| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|-----------|-----------|
| 3.05 (| 10.00) | 2280.00 | 121.92 (| 400.00) | 454.00 |
| 4.27 (| 14.00) | 1660.00 | 182.88 (| 600.00) | 350.00 |
| 6.10 (| 20.00) | 940.00 | 243.84 (| 800.00) | 356.00 |
| 9.14 (| 30.00) | 700.00 | 304.80 (| 1000.00) | 306.00 |
| 9.14 (| 30.00) | 750.00 | 426.72 (| 1400.00) | 275.00 |
| 12.19 (| 40.00) | 600.00 | 304.80 (| 1000.00) | 425.00 |
| 18.29 (| 60.00) | 650.00 | 426.72 (| 1400.00) | 350.00 |
| 24.38 (| 80.00) | 645.00 | 571.50 (| 1875.00) | 316.20 |
| 30.48 (| 100.00) | 640.00 | 851.00 (| 2792.00) | 221.00 |
| 42.67 (| 140.00) | 600.00 | 851.00 (| 2792.00) | 212.00 |
| 30.48 (| 100.00) | 718.00 | 1129.28 (| 3705.00) | 149.80 |
| 42.67 (| 140.00) | 640.00 | 1605.69 (| 5268.00) | 121.00 |
| 60.96 (| 200.00) | 552.00 | 2382.93 (| 7818.00) | 76.00 |
| 91.44 (| 300.00) | 450.00 | 3089.15 (| 10135.00) | 49.10 |
| 91.44 (| 300.00) | 456.00 | 3454.91 (| 11335.00) | 60.80 |
| | | | 4357.42 (| 14296.00) | 87.50 |

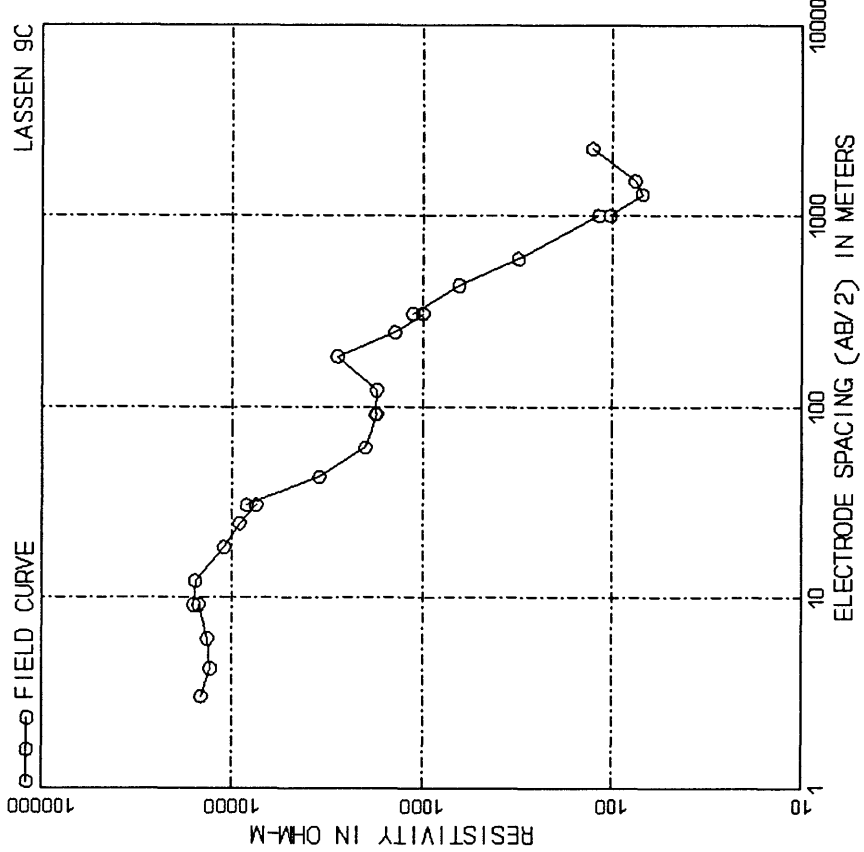
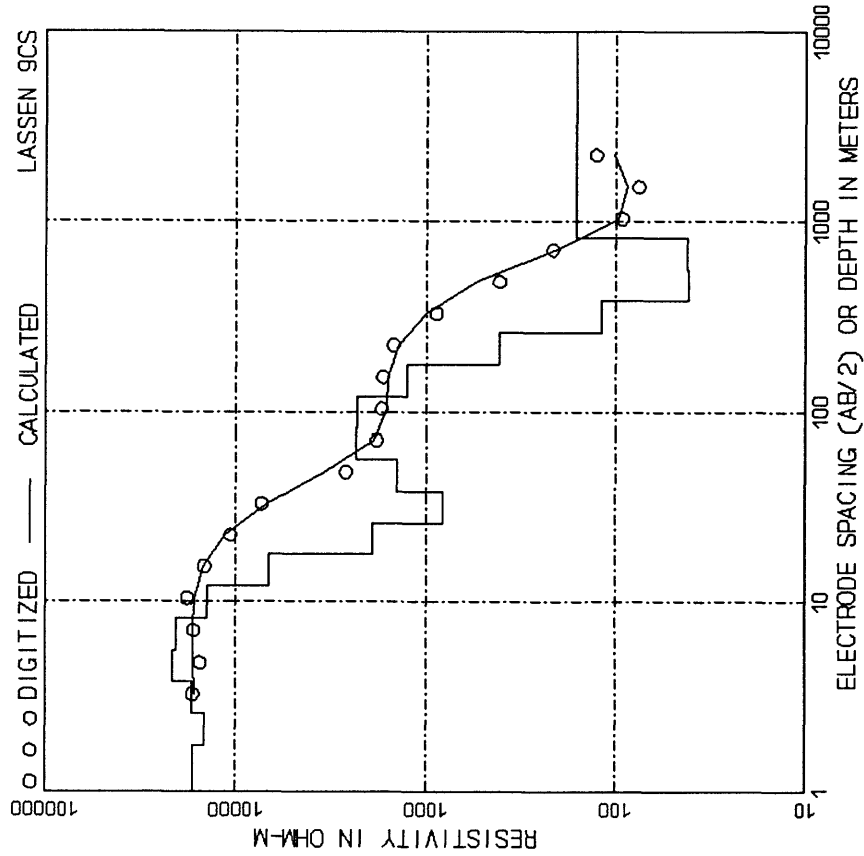




| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|----------|------------|-----------|--------|
| 2.01 (| 6.60) | 5079.92 | 63.60 (| 208.67) | 679.32 |
| 2.95 (| 9.69) | 3786.41 | 93.36 (| 306.29) | 924.16 |
| 4.33 (| 14.22) | 4106.18 | 137.03 (| 449.57) | 859.23 |
| 6.36 (| 20.87) | 6389.97 | 201.13 (| 659.88) | 598.24 |
| 9.34 (| 30.63) | 10386.71 | 295.22 (| 968.57) | 315.30 |
| 13.70 (| 44.96) | 12449.44 | 433.32 (| 1421.67) | 114.66 |
| 20.11 (| 65.99) | 8654.68 | 636.03 (| 2086.72) | 36.74 |
| 29.52 (| 96.86) | 3321.22 | 933.57 (| 3062.89) | 33.66 |
| 43.33 (| 142.17) | 1024.46 | 1370.29 (| 4495.71) | 47.28 |
| | | | 99999.00 (| 99999.00) | 71.25 |

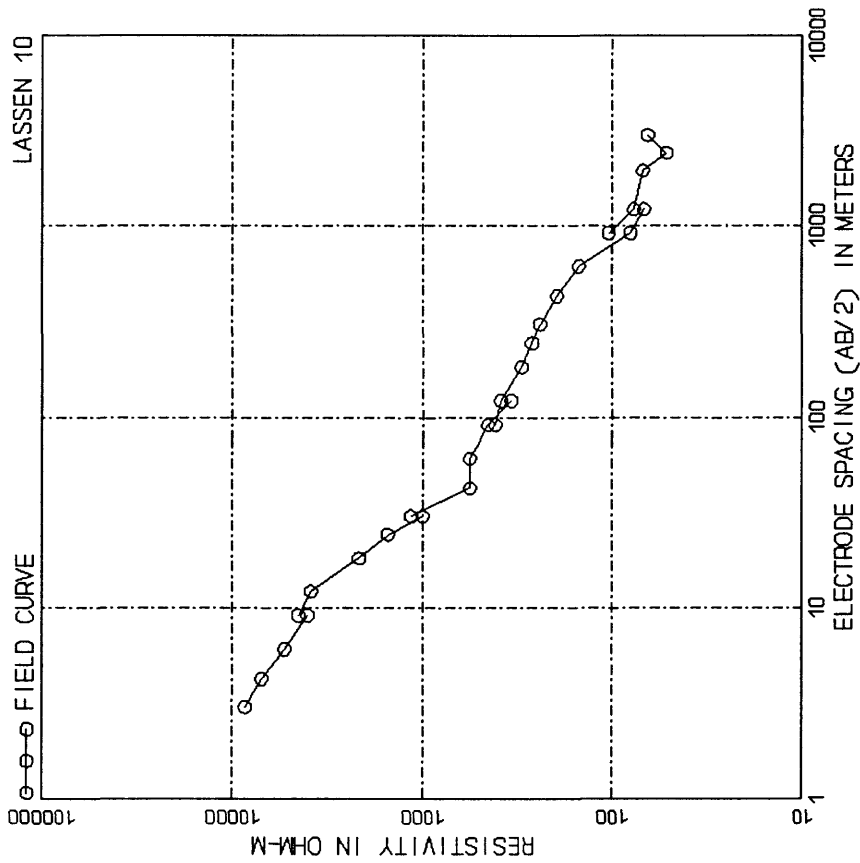


| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|-----------|-----------|
| 3.05 (| 10.00) | 6400.00 | 91.44 (| 300.00) | 1780.00 |
| 4.27 (| 14.00) | 4900.00 | 121.92 (| 400.00) | 1200.00 |
| 6.10 (| 20.00) | 4850.00 | 182.88 (| 600.00) | 860.00 |
| 9.14 (| 30.00) | 5660.00 | 243.84 (| 800.00) | 660.00 |
| 12.19 (| 40.00) | 6250.00 | 304.80 (| 1000.00) | 600.00 |
| 19.14 (| 60.00) | 5000.00 | 426.72 (| 1400.00) | 540.00 |
| 18.29 (| 60.00) | 7700.00 | 609.60 (| 2000.00) | 343.00 |
| 24.38 (| 80.00) | 8200.00 | 948.54 (| 3112.00) | 171.00 |
| 30.48 (| 100.00) | 7300.00 | 1164.34 (| 3820.00) | 80.60 |
| 30.48 (| 100.00) | 7800.00 | 1801.98 (| 5912.00) | 87.70 |
| 42.67 (| 140.00) | 4800.00 | 2398.47 (| 7869.00) | 45.10 |
| 60.96 (| 200.00) | 2500.00 | 3264.41 (| 10710.00) | 60.30 |
| 91.44 (| 300.00) | 1800.00 | 3724.66 (| 12220.00) | 50.50 |
| | | | | | 66.10 |

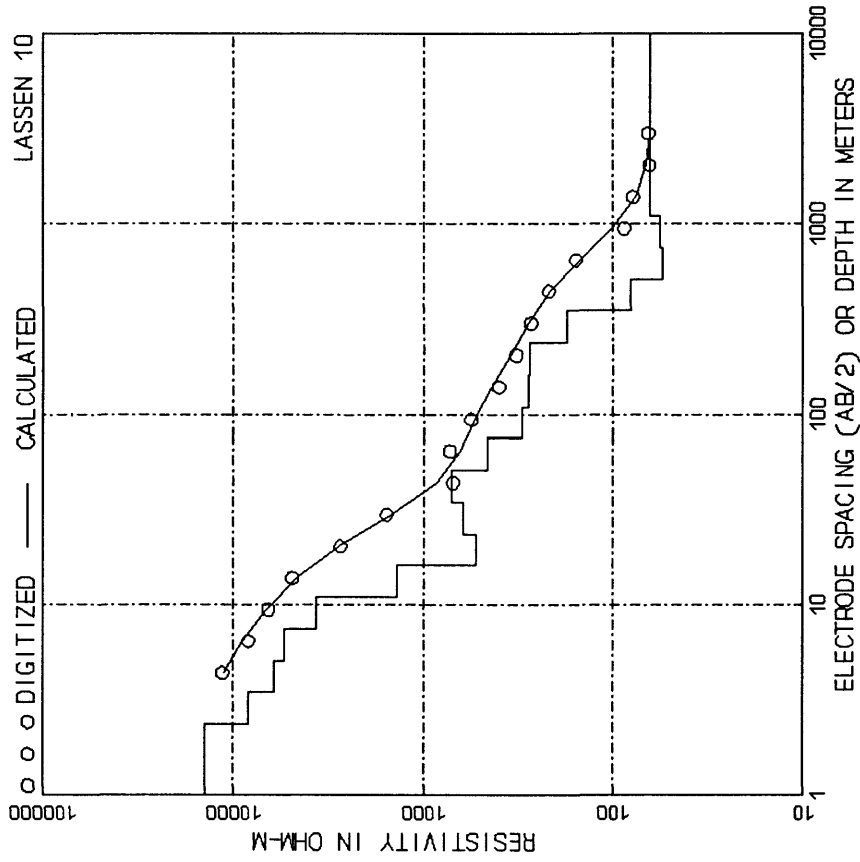


| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|----------|------------|-----------|---------|
| 1.77 (| 5.80) | 16788.29 | 55.94 (| 183.52) | 1410.29 |
| 2.60 (| 8.52) | 14434.74 | 82.11 (| 269.37) | 2346.88 |
| 3.81 (| 12.50) | 17083.09 | 120.51 (| 395.39) | 2312.68 |
| 5.59 (| 18.35) | 21315.63 | 176.89 (| 580.35) | 1254.69 |
| 8.21 (| 26.94) | 20309.23 | 259.64 (| 851.84) | 409.09 |
| 12.05 (| 39.54) | 14081.62 | 381.10 (| 1250.33) | 119.33 |
| 17.69 (| 58.04) | 6717.44 | 559.38 (| 1835.23) | 41.60 |
| 25.96 (| 85.18) | 1907.71 | 821.05 (| 2693.75) | 42.15 |
| 38.11 (| 125.03) | 815.66 | 99999.00 (| 99999.00) | 162.13 |

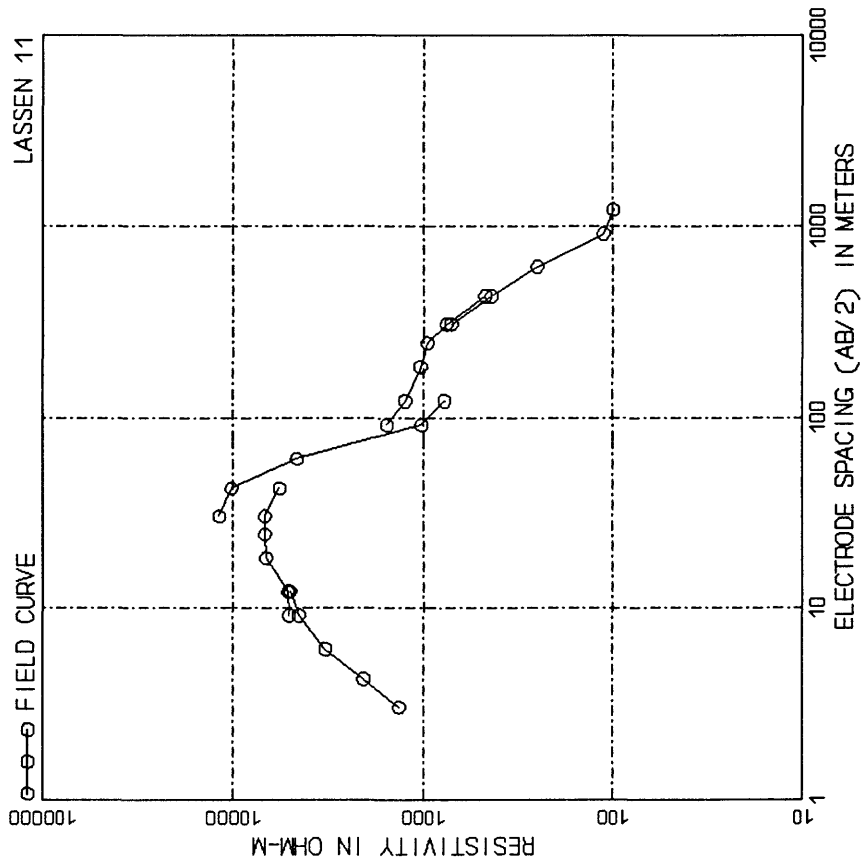
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 14600.00 | 91.44 (| 300.00) | 1770.00 |
| 4.27 (| 14.00) | 13000.00 | 121.92 (| 400.00) | 1740.00 |
| 6.10 (| 20.00) | 13500.00 | 182.88 (| 600.00) | 2800.00 |
| 9.14 (| 30.00) | 15000.00 | 243.84 (| 800.00) | 1400.00 |
| 9.14 (| 30.00) | 16000.00 | 304.80 (| 1000.00) | 1000.00 |
| 12.19 (| 40.00) | 15600.00 | 304.80 (| 1000.00) | 1120.00 |
| 18.29 (| 60.00) | 11000.00 | 426.72 (| 1400.00) | 640.00 |
| 24.38 (| 80.00) | 9120.00 | 589.79 (| 1935.00) | 313.00 |
| 30.48 (| 100.00) | 7500.00 | 1001.27 (| 3285.00) | 118.00 |
| 30.48 (| 100.00) | 8400.00 | 1001.27 (| 3285.00) | 102.60 |
| 42.67 (| 140.00) | 3500.00 | 1293.27 (| 4243.00) | 69.50 |
| 60.96 (| 200.00) | 2000.00 | 1519.73 (| 4986.00) | 76.10 |
| 91.44 (| 300.00) | 1735.00 | 2231.75 (| 7322.00) | 127.00 |



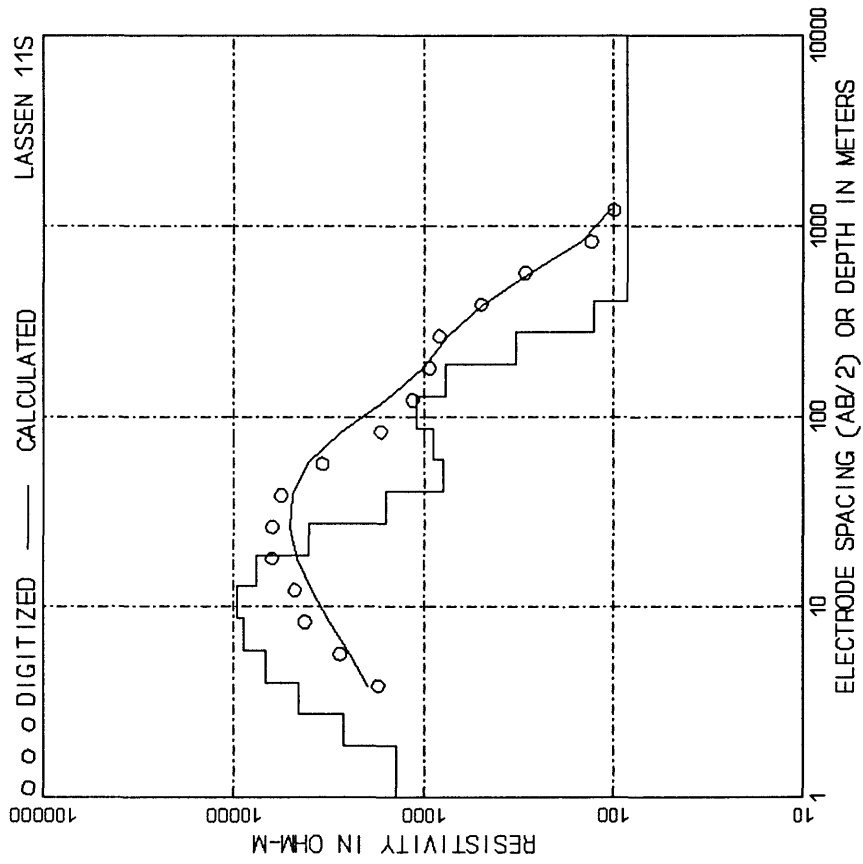
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 8550.00 | 91.44 (| 300.00) | 410.00 |
| 4.27 (| 14.00) | 7000.00 | 121.92 (| 400.00) | 385.00 |
| 6.10 (| 20.00) | 5300.00 | 182.88 (| 600.00) | 300.00 |
| 9.14 (| 30.00) | 4000.00 | 243.84 (| 800.00) | 265.00 |
| 9.14 (| 30.00) | 4500.00 | 304.80 (| 1000.00) | 240.00 |
| 12.19 (| 40.00) | 3850.00 | 304.80 (| 1000.00) | 240.00 |
| 18.29 (| 60.00) | 2150.00 | 426.72 (| 1400.00) | 195.00 |
| 24.38 (| 80.00) | 1520.00 | 609.60 (| 2000.00) | 150.00 |
| 30.48 (| 100.00) | 1000.00 | 914.40 (| 3000.00) | 80.00 |
| 30.48 (| 100.00) | 1150.00 | 1219.20 (| 4000.00) | 68.00 |
| 42.67 (| 140.00) | 560.00 | 914.40 (| 3000.00) | 104.00 |
| 60.96 (| 200.00) | 560.00 | 1219.20 (| 4000.00) | 77.00 |
| 91.44 (| 300.00) | 450.00 | 1944.62 (| 6380.00) | 68.80 |
| 121.92 (| 400.00) | 340.00 | 2406.40 (| 7895.00) | 51.90 |
| | | | 2983.99 (| 9790.00) | 65.30 |



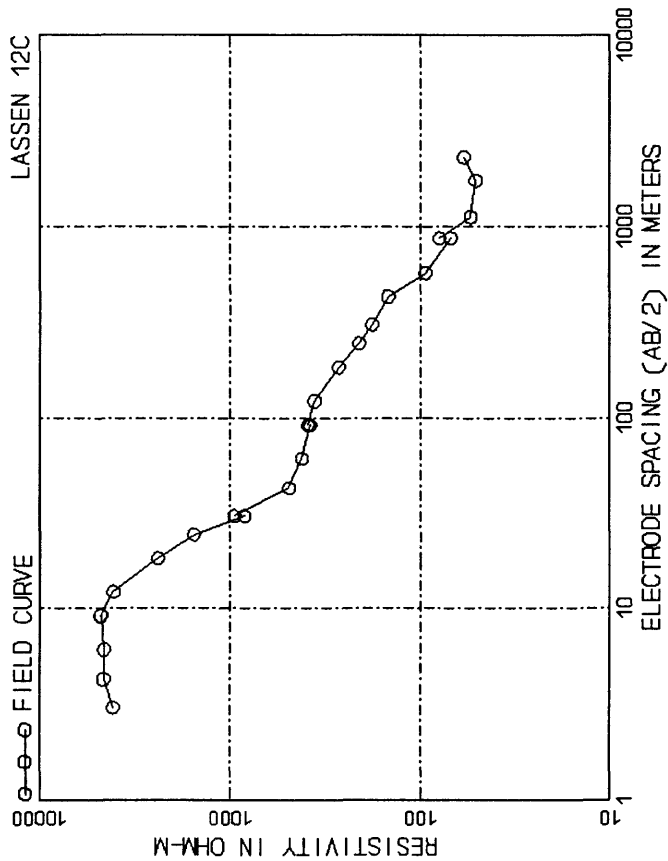
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|----------|------------|----------|--------|
| 2.37 (| 7.76) | 13996.22 | 74.79 (| 245.38) | 460.55 |
| 3.47 (| 11.39) | 8330.03 | 109.78 (| 360.17) | 299.96 |
| 5.10 (| 16.72) | 6092.05 | 161.14 (| 528.66) | 280.73 |
| 7.48 (| 24.54) | 5369.40 | 236.51 (| 775.97) | 273.74 |
| 10.98 (| 36.02) | 3637.68 | 347.16 (| 1138.96) | 174.93 |
| 16.11 (| 52.87) | 1370.85 | 509.56 (| 1671.77) | 80.89 |
| 23.65 (| 77.60) | 525.49 | 747.93 (| 2453.82) | 54.60 |
| 34.72 (| 113.90) | 616.58 | 1097.80 (| 3601.72) | 56.03 |
| 50.96 (| 167.18) | 705.36 | 9999.00 (| 9999.00) | 63.41 |



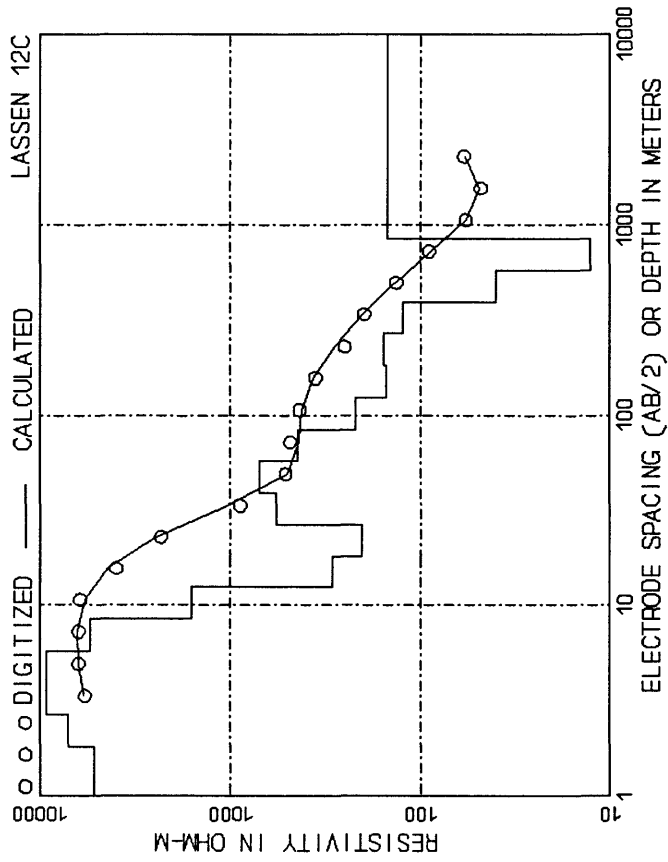
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 1340.00 | 60.96 (| 200.00) | 4600.00 |
| 4.27 (| 14.00) | 2050.00 | 91.44 (| 300.00) | 1020.00 |
| 6.10 (| 20.00) | 3260.00 | 121.92 (| 400.00) | 770.00 |
| 9.14 (| 30.00) | 4500.00 | 91.44 (| 300.00) | 1550.00 |
| 12.19 (| 40.00) | 5000.00 | 121.92 (| 400.00) | 1240.00 |
| 9.14 (| 30.00) | 5050.00 | 182.88 (| 600.00) | 1030.00 |
| 12.19 (| 40.00) | 5150.00 | 243.84 (| 800.00) | 950.00 |
| 18.29 (| 60.00) | 6700.00 | 304.80 (| 1000.00) | 750.00 |
| 24.38 (| 80.00) | 6800.00 | 426.72 (| 1400.00) | 470.00 |
| 30.48 (| 100.00) | 6800.00 | 304.80 (| 1000.00) | 710.00 |
| 42.67 (| 140.00) | 5700.00 | 426.72 (| 1400.00) | 435.00 |
| 30.48 (| 100.00) | 11800.00 | 609.60 (| 2000.00) | 250.00 |
| 42.67 (| 140.00) | 10200.00 | 914.40 (| 3000.00) | 112.00 |
| | | | 1219.20 (| 4000.00) | 99.30 |



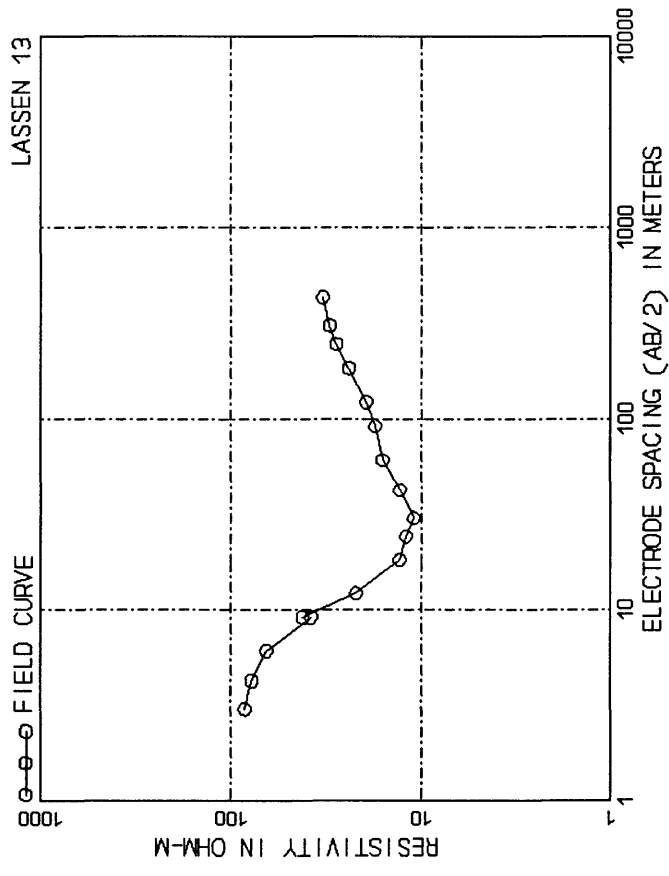
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|--------|---------|------------|-----------|---------|
| 1.87 (| 6.15) | 1403.90 | 40.37 (| 132.44) | 1572.46 |
| 2.75 (| 9.02) | 2644.40 | 59.25 (| 194.40) | 782.62 |
| 4.04 (| 13.24) | 4510.90 | 86.97 (| 285.34) | 895.69 |
| 5.93 (| 19.44) | 6786.30 | 127.66 (| 418.82) | 1095.39 |
| 8.70 (| 28.53) | 8889.56 | 187.37 (| 614.75) | 760.51 |
| 12.77 (| 41.88) | 9528.38 | 275.03 (| 902.33) | 326.80 |
| 18.74 (| 61.47) | 7548.94 | 403.69 (| 1324.43) | 126.63 |
| 27.50 (| 90.23) | 4033.00 | 99999.00 (| 99999.00) | 84.84 |



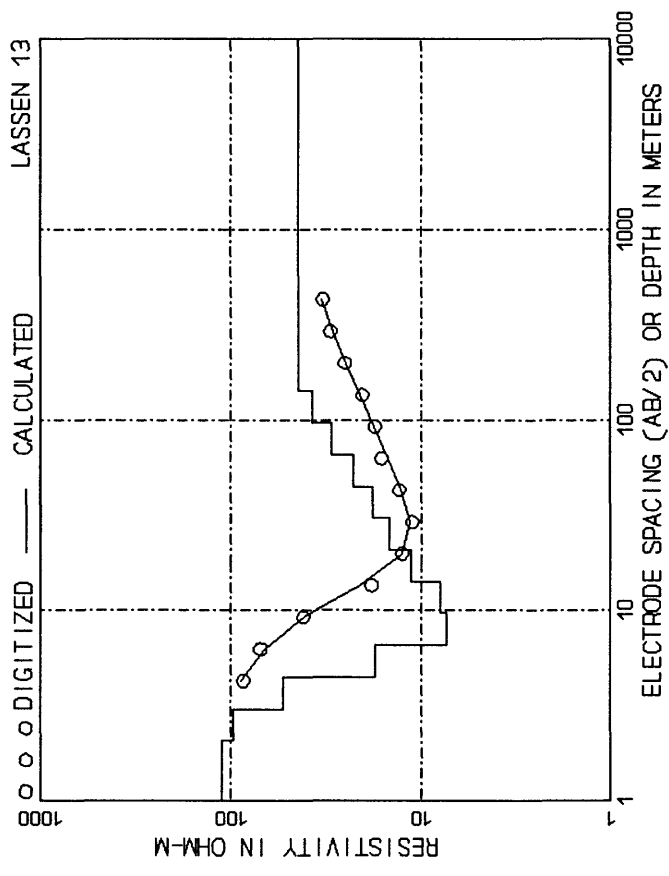
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 4135.00 | 91.44 (| 300.00) | 390.00 |
| 4.27 (| 14.00) | 4620.00 | 121.92 (| 400.00) | 360.00 |
| 6.10 (| 20.00) | 4600.00 | 182.88 (| 600.00) | 270.00 |
| 9.14 (| 30.00) | 4750.00 | 243.84 (| 800.00) | 210.00 |
| 9.14 (| 30.00) | 4800.00 | 304.80 (| 1000.00) | 180.00 |
| 12.19 (| 40.00) | 4100.00 | 304.80 (| 1000.00) | 180.00 |
| 18.29 (| 60.00) | 2400.00 | 426.72 (| 1400.00) | 148.00 |
| 24.38 (| 80.00) | 1550.00 | 567.23 (| 1861.00) | 93.80 |
| 30.48 (| 100.00) | 840.00 | 869.90 (| 2854.00) | 69.20 |
| 30.48 (| 100.00) | 950.00 | 869.90 (| 2854.00) | 79.30 |
| 42.67 (| 140.00) | 490.00 | 1121.05 (| 3678.00) | 54.30 |
| 60.96 (| 200.00) | 420.00 | 1737.66 (| 5701.00) | 51.00 |
| 91.44 (| 300.00) | 378.00 | 2290.27 (| 7514.00) | 59.10 |



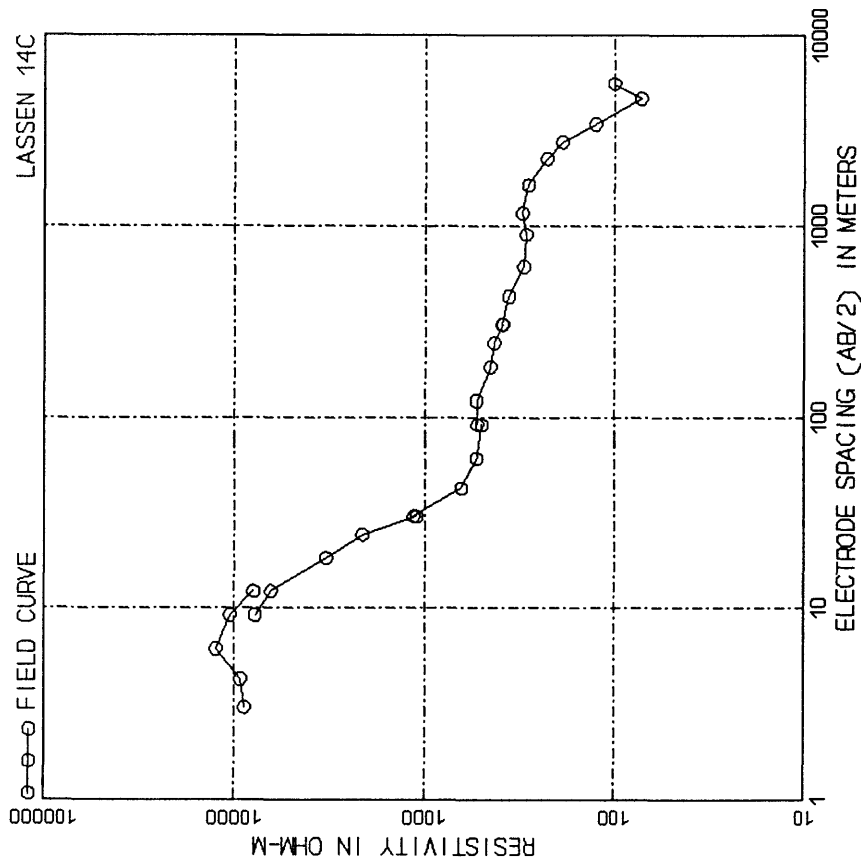
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|---------|------------|----------|--------|
| 1.82 (| 5.96) | 5218.96 | 57.40 (| 188.34) | 703.57 |
| 2.66 (| 8.74) | 7072.66 | 84.26 (| 276.44) | 442.89 |
| 3.91 (| 12.83) | 9199.17 | 123.67 (| 405.76) | 219.17 |
| 5.74 (| 18.83) | 9202.55 | 181.53 (| 595.57) | 151.14 |
| 8.43 (| 27.64) | 5439.11 | 266.45 (| 874.17) | 157.15 |
| 12.37 (| 40.58) | 1600.66 | 391.09 (| 1283.11) | 123.99 |
| 18.15 (| 59.56) | 289.17 | 574.05 (| 1883.35) | 59.81 |
| 26.64 (| 87.42) | 205.05 | 842.58 (| 2764.38) | 12.69 |
| 39.11 (| 128.31) | 577.48 | 9999.00 (| 9999.00) | 150.00 |



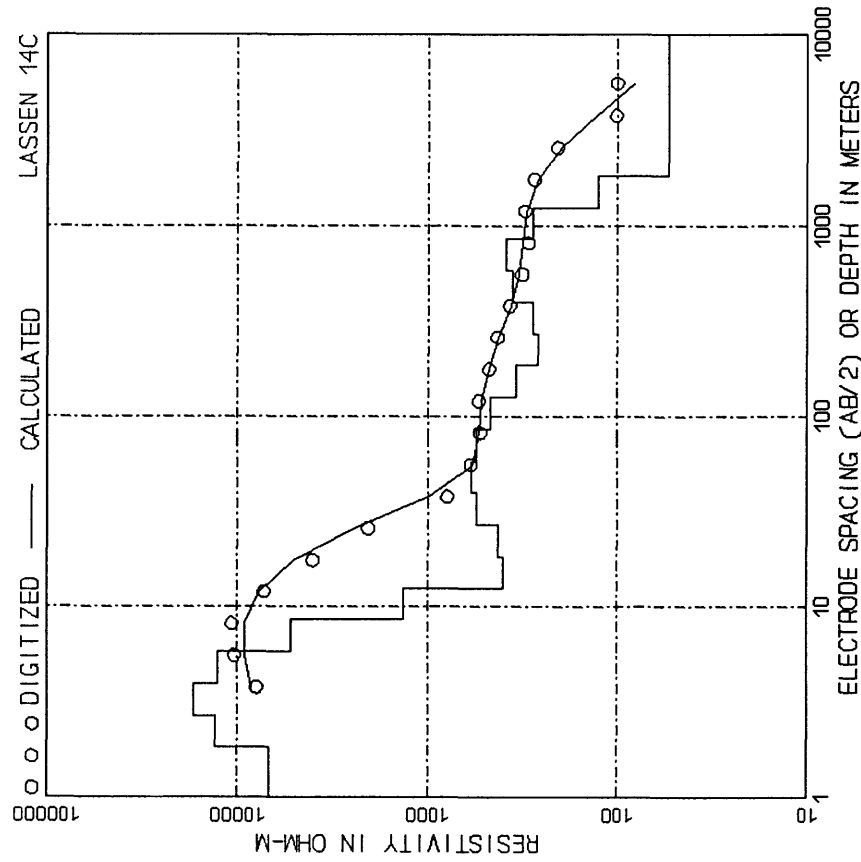
| AB/2, m (ft) | App. Res. | AB/2, m (ft) | App. Res. |
|------------------|-----------|--------------------|-----------|
| 3.05 (10.00) | 85.00 | 30.48 (100.00) | 11.00 |
| 4.27 (14.00) | 78.00 | 42.67 (140.00) | 13.00 |
| 6.10 (20.00) | 65.00 | 60.96 (200.00) | 16.00 |
| 9.14 (30.00) | 38.00 | 91.44 (300.00) | 17.50 |
| 9.14 (30.00) | 42.00 | 121.92 (400.00) | 19.50 |
| 12.19 (40.00) | 22.00 | 182.88 (600.00) | 24.00 |
| 18.29 (60.00) | 13.00 | 243.84 (800.00) | 28.00 |
| 24.38 (80.00) | 12.00 | 304.80 (1000.00) | 30.30 |
| 30.48 (100.00) | 11.00 | 426.72 (1400.00) | 33.00 |



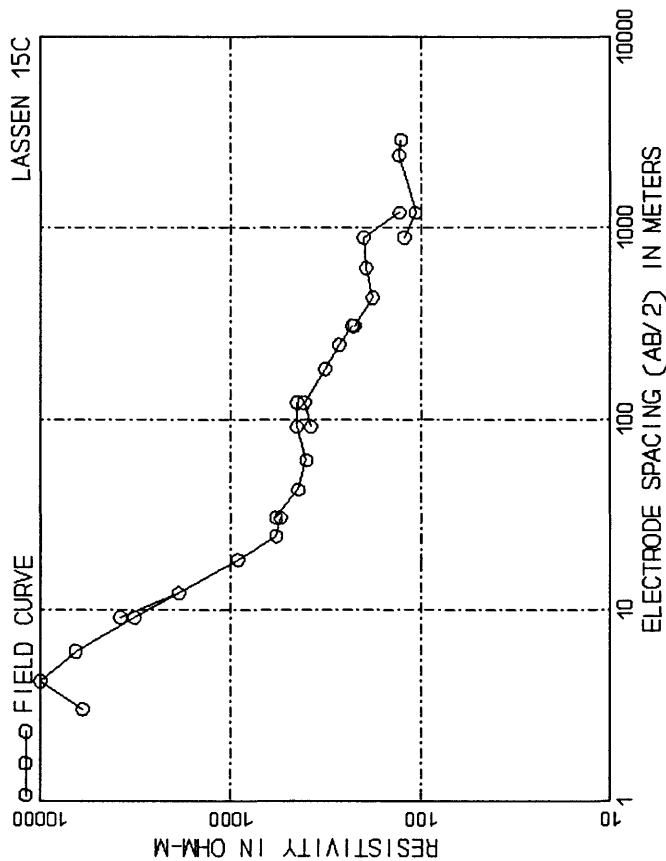
| DEPTH, m (ft) | RESIS. | DEPTH, m (ft) | RESIS. |
|-----------------|--------|-----------------------|--------|
| 2.07 (6.80) | 112.09 | 20.74 (68.04) | 11.24 |
| 3.04 (9.99) | 96.91 | 30.44 (99.87) | 14.73 |
| 4.47 (14.66) | 53.13 | 44.68 (146.59) | 18.09 |
| 6.56 (21.52) | 17.39 | 65.58 (215.16) | 22.81 |
| 9.63 (31.58) | 7.33 | 96.26 (315.81) | 29.63 |
| 14.13 (46.36) | 7.89 | 141.29 (463.55) | 37.35 |
| | | 99999.00 (99999.00) | 44.06 |



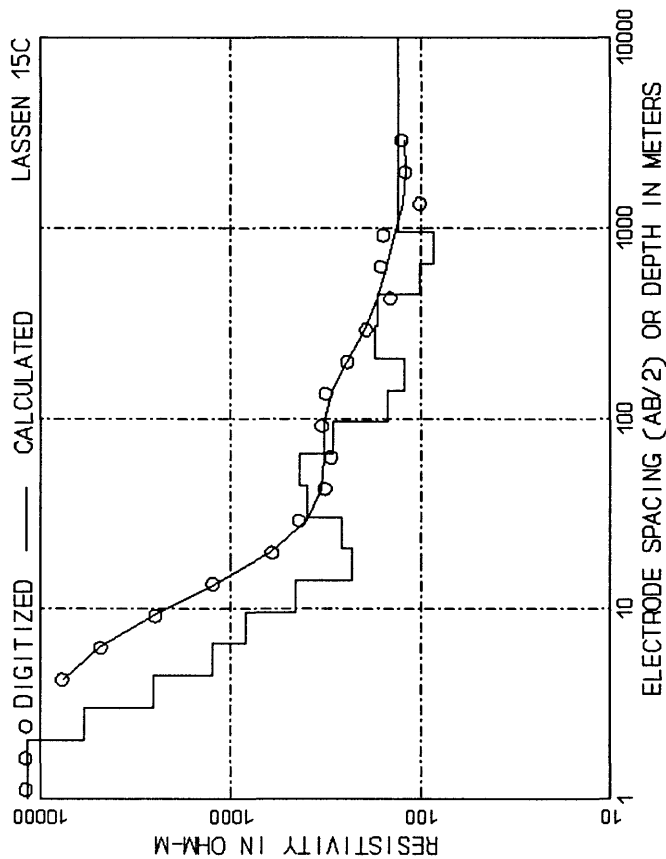
| AB/2, m (ft) | App. Res. | AB/2, m (ft) | App. Res. |
|------------------|-----------|----------------------|-----------|
| 3.05 (10.00) | 8875.00 | 121.92 (400.00) | 530.00 |
| 4.27 (14.00) | 9300.00 | 182.88 (600.00) | 450.00 |
| 6.10 (20.00) | 12500.00 | 243.84 (800.00) | 430.00 |
| 9.14 (30.00) | 10500.00 | 304.80 (1000.00) | 385.00 |
| 12.19 (40.00) | 7900.00 | 304.80 (1000.00) | 392.00 |
| 9.14 (30.00) | 7750.00 | 426.72 (1400.00) | 360.00 |
| 12.19 (40.00) | 6400.00 | 609.60 (2000.00) | 300.00 |
| 18.29 (60.00) | 3300.00 | 902.21 (2960.00) | 293.00 |
| 24.38 (80.00) | 2120.00 | 1167.38 (3830.00) | 293.00 |
| 30.48 (100.00) | 1100.00 | 1643.48 (5392.00) | 306.70 |
| 30.48 (100.00) | 1140.00 | 2254.00 (7395.00) | 285.70 |
| 42.67 (140.00) | 640.00 | 2757.83 (9048.00) | 228.50 |
| 60.96 (200.00) | 530.00 | 3419.55 (11219.00) | 189.80 |
| 91.44 (300.00) | 500.00 | 4656.73 (15278.00) | 126.50 |
| | 525.00 | 5553.46 (18220.00) | 72.70 |
| | | | 100.60 |



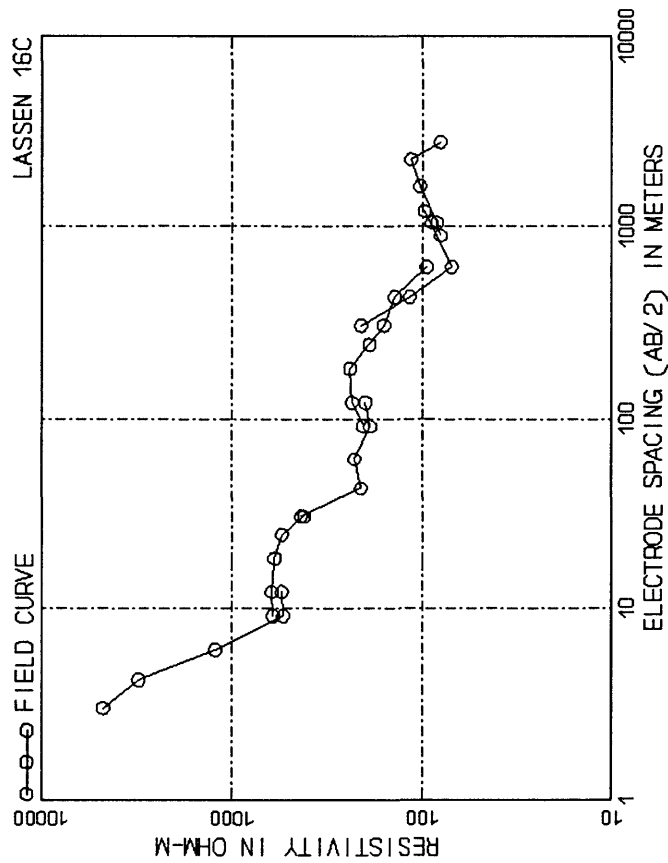
| DEPTH, m (ft) | RESIS. | DEPTH, m (ft) | RESIS. |
|------------------|----------|---------------------|--------|
| 1.84 (6.03) | 6769.00 | 85.35 (280.02) | 552.39 |
| 2.70 (8.85) | 13118.12 | 125.28 (411.01) | 464.52 |
| 5.96 (19.08) | 16853.92 | 183.88 (603.28) | 342.65 |
| 8.53 (28.00) | 12576.95 | 269.90 (885.49) | 263.54 |
| 12.53 (41.10) | 5263.22 | 396.16 (1299.72) | 276.61 |
| 18.39 (60.33) | 1334.10 | 581.48 (1907.74) | 354.96 |
| 26.99 (88.55) | 400.46 | 853.49 (2800.17) | 387.33 |
| 39.62 (129.97) | 420.45 | 1252.76 (4110.09) | 277.91 |
| 58.15 (190.77) | 548.79 | 1838.79 (6032.79) | 126.08 |
| | 584.56 | 9999.00 (9999.00) | 54.07 |



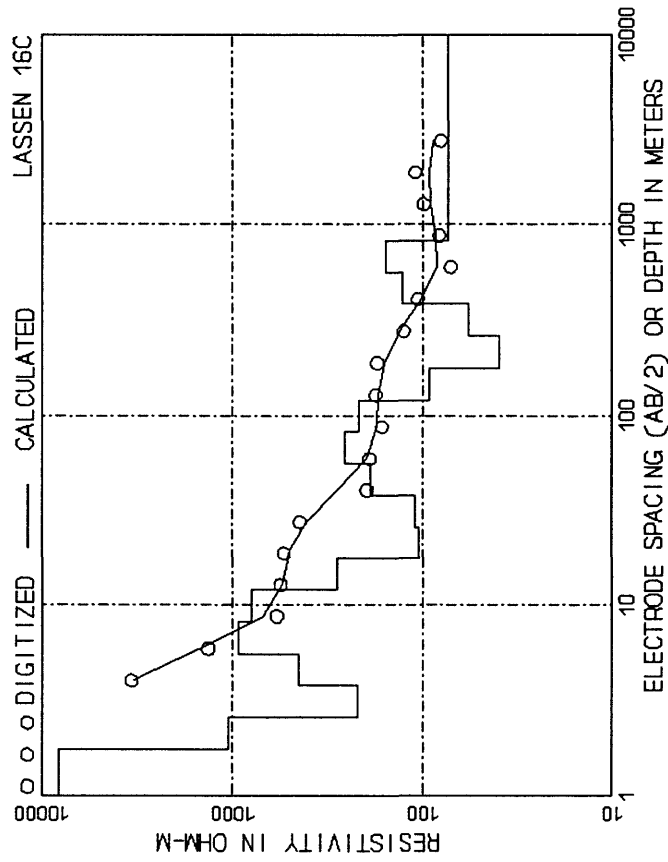
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 6000.00 | 121.92 (| 400.00) | 448.00 |
| 4.27 (| 14.00) | 10000.00 | 91.44 (| 300.00) | 380.00 |
| 6.10 (| 20.00) | 6500.00 | 121.92 (| 400.00) | 412.00 |
| 9.14 (| 30.00) | 3200.00 | 182.88 (| 600.00) | 320.00 |
| 12.19 (| 40.00) | 1880.00 | 243.84 (| 800.00) | 270.00 |
| 9.14 (| 30.00) | 3800.00 | 304.80 (| 1000.00) | 230.00 |
| 12.19 (| 40.00) | 1880.00 | 304.80 (| 1000.00) | 225.00 |
| 18.29 (| 60.00) | 920.00 | 426.72 (| 1400.00) | 180.00 |
| 24.38 (| 80.00) | 580.00 | 609.60 (| 2000.00) | 195.00 |
| 30.48 (| 100.00) | 550.00 | 887.58 (| 2912.00) | 200.00 |
| 30.48 (| 100.00) | 580.00 | 1198.17 (| 3931.00) | 130.00 |
| 42.67 (| 140.00) | 440.00 | 887.58 (| 2912.00) | 122.80 |
| 60.96 (| 200.00) | 400.00 | 1198.17 (| 3931.00) | 107.00 |
| 91.44 (| 300.00) | 450.00 | 2397.86 (| 7867.00) | 129.80 |
| | | | 2895.90 (| 9501.00) | 127.00 |



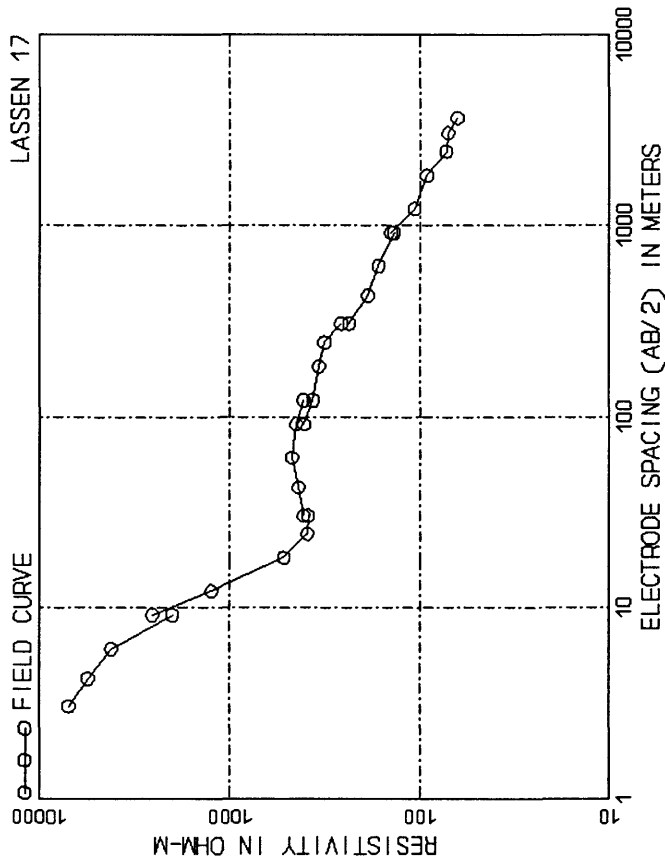
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|----------|------------|-----------|--------|
| 2.07 (| 6.78) | 11650.59 | 65.33 (| 214.32) | 434.14 |
| 3.03 (| 9.95) | 5903.87 | 95.89 (| 314.59) | 291.95 |
| 4.45 (| 14.60) | 2544.67 | 140.74 (| 461.75) | 148.56 |
| 6.53 (| 21.43) | 1248.67 | 206.58 (| 677.75) | 121.95 |
| 9.59 (| 31.46) | 835.96 | 303.22 (| 994.81) | 175.47 |
| 14.07 (| 46.17) | 455.60 | 445.06 (| 1460.18) | 170.04 |
| 20.66 (| 67.78) | 231.01 | 653.26 (| 2143.25) | 101.10 |
| 30.32 (| 99.48) | 259.83 | 958.86 (| 3145.86) | 86.09 |
| 44.51 (| 146.02) | 393.65 | 9999.00 (| 99999.00) | 131.17 |



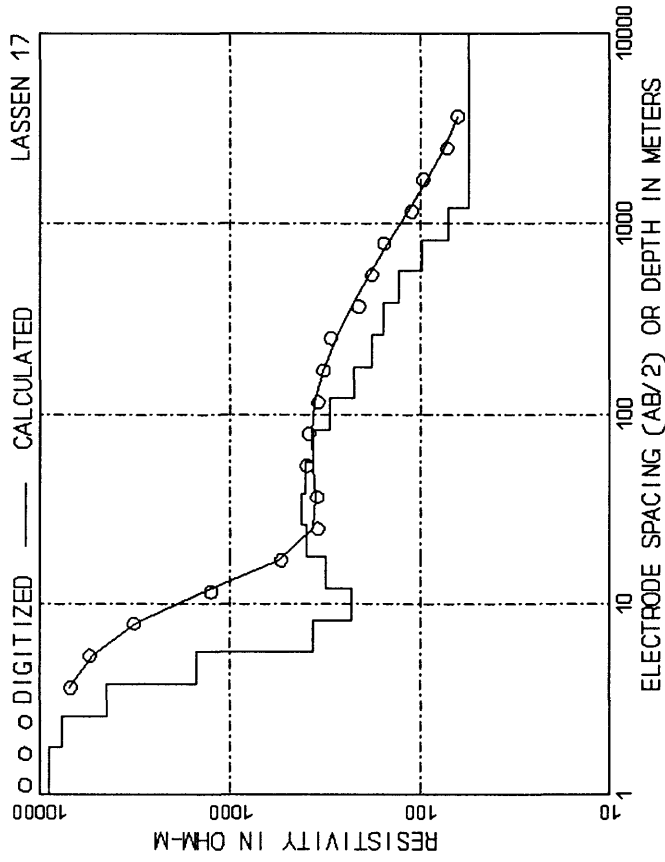
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 4750.00 | 121.92 (| 400.00) | 235.00 |
| 4.27 (| 14.00) | 3100.00 | 182.88 (| 600.00) | 240.00 |
| 6.10 (| 20.00) | 1225.00 | 243.84 (| 800.00) | 190.00 |
| 9.14 (| 30.00) | 540.00 | 304.80 (| 1000.00) | 160.00 |
| 12.19 (| 40.00) | 550.00 | 426.72 (| 1400.00) | 140.00 |
| 9.14 (| 30.00) | 610.00 | 609.60 (| 2000.00) | 95.00 |
| 12.19 (| 40.00) | 620.00 | 304.80 (| 1000.00) | 210.00 |
| 18.29 (| 60.00) | 600.00 | 426.72 (| 1400.00) | 117.00 |
| 24.38 (| 80.00) | 550.00 | 609.60 (| 2000.00) | 70.00 |
| 30.48 (| 100.00) | 420.00 | 1199.39 (| 3935.00) | 97.80 |
| 30.48 (| 100.00) | 435.00 | 1043.33 (| 3423.00) | 89.40 |
| 42.67 (| 140.00) | 210.00 | 894.59 (| 2935.00) | 80.10 |
| 60.96 (| 200.00) | 228.00 | 1043.33 (| 3423.00) | 83.80 |
| 91.44 (| 300.00) | 188.00 | 1619.10 (| 5312.00) | 103.00 |
| 121.92 (| 400.00) | 199.50 | 2241.19 (| 7353.00) | 115.00 |
| 91.44 (| 300.00) | 205.00 | 2755.70 (| 9041.00) | 80.50 |



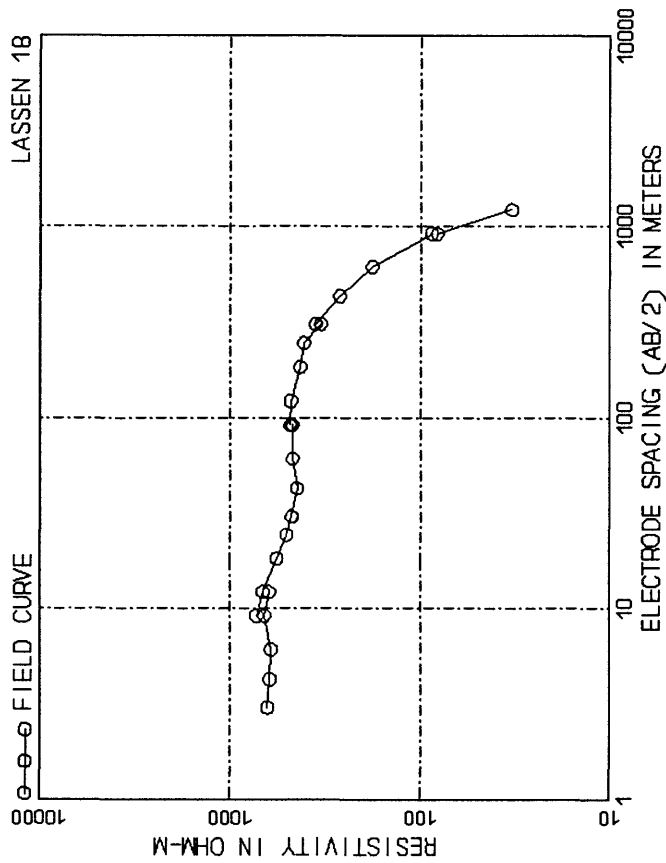
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|---------|------------|----------|--------|
| 1.77 (| 5.80) | 8156.28 | 55.95 (| 183.55) | 187.80 |
| 2.60 (| 8.52) | 1058.28 | 82.12 (| 269.42) | 256.41 |
| 3.81 (| 12.51) | 221.05 | 120.53 (| 395.45) | 215.06 |
| 5.59 (| 18.36) | 446.03 | 176.92 (| 580.45) | 91.88 |
| 8.21 (| 26.94) | 929.56 | 259.68 (| 851.98) | 39.51 |
| 12.05 (| 39.55) | 791.87 | 381.16 (| 1250.53) | 56.79 |
| 17.69 (| 58.04) | 283.80 | 559.47 (| 1835.53) | 128.80 |
| 25.97 (| 85.20) | 103.71 | 821.19 (| 2694.19) | 156.83 |
| 38.12 (| 125.05) | 110.12 | 9999.00 (| 9999.00) | 73.79 |



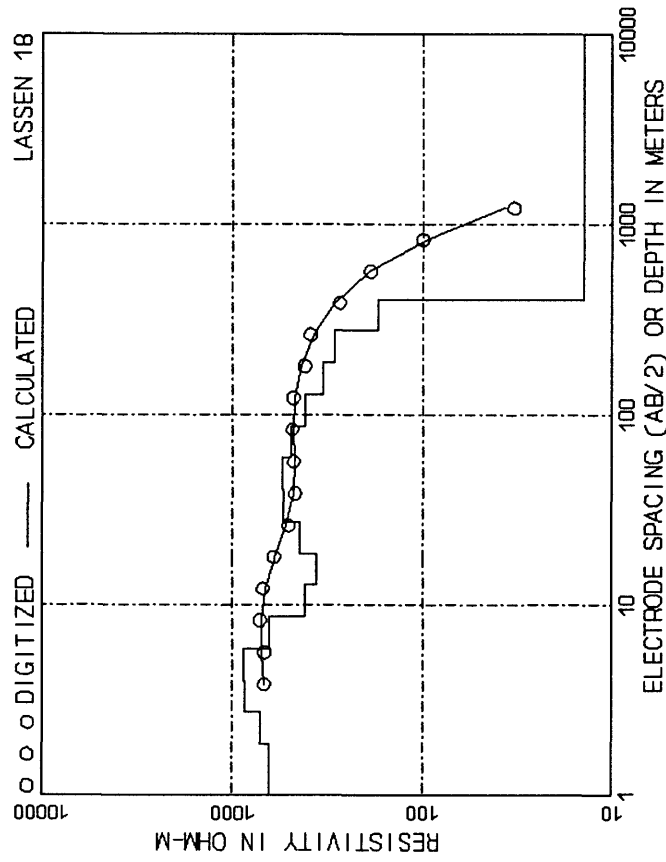
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|-----------|-----------|
| 3.05 (| 10.00) | 7000.00 | 91.44 (| 300.00) | 408.00 |
| 4.27 (| 14.00) | 5550.00 | 121.92 (| 400.00) | 365.00 |
| 6.10 (| 20.00) | 4200.00 | 182.88 (| 600.00) | 340.00 |
| 9.14 (| 30.00) | 2000.00 | 243.84 (| 800.00) | 318.00 |
| 9.14 (| 30.00) | 2550.00 | 304.80 (| 1000.00) | 260.00 |
| 12.19 (| 40.00) | 1250.00 | 304.80 (| 1000.00) | 236.00 |
| 18.29 (| 60.00) | 520.00 | 426.72 (| 1400.00) | 188.00 |
| 24.38 (| 80.00) | 392.00 | 609.60 (| 2000.00) | 165.50 |
| 30.48 (| 100.00) | 387.50 | 914.40 (| 3000.00) | 137.00 |
| 30.48 (| 100.00) | 410.00 | 914.40 (| 3000.00) | 142.00 |
| 42.67 (| 140.00) | 435.00 | 1219.20 (| 4000.00) | 107.00 |
| 60.96 (| 200.00) | 473.00 | 1828.80 (| 6000.00) | 92.00 |
| 91.44 (| 300.00) | 450.00 | 2438.40 (| 8000.00) | 72.60 |
| 121.92 (| 400.00) | 410.00 | 3048.00 (| 10000.00) | 71.30 |
| | | | 3657.60 (| 12000.00) | 63.50 |



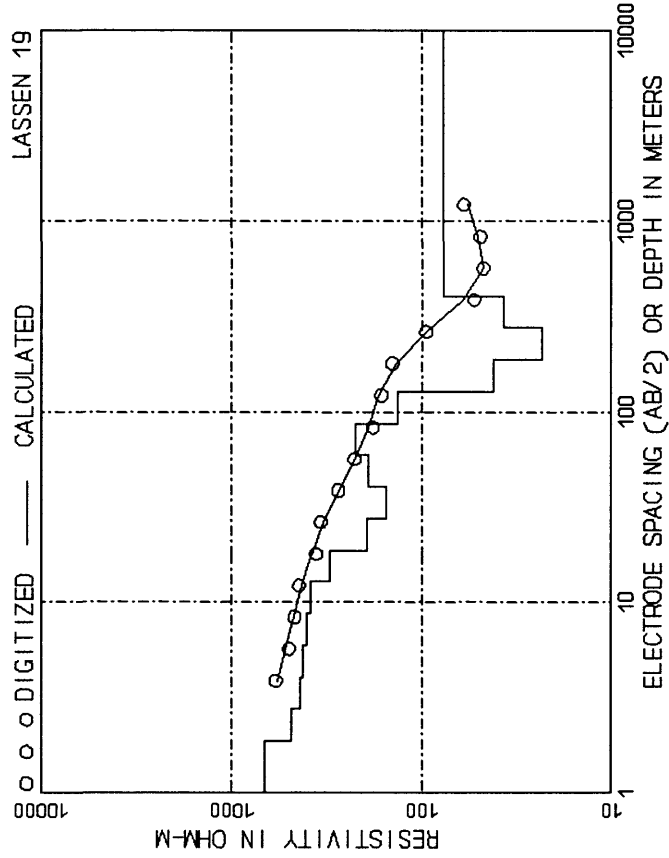
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|---------|------------|-----------|--------|
| 1.78 (| 5.83) | 8896.58 | 56.21 (| 184.42) | 404.30 |
| 2.61 (| 8.56) | 7597.62 | 82.51 (| 270.70) | 367.99 |
| 3.83 (| 12.56) | 4474.22 | 121.11 (| 397.33) | 299.53 |
| 5.62 (| 18.44) | 1497.65 | 177.76 (| 583.20) | 223.50 |
| 8.25 (| 27.07) | 366.04 | 260.92 (| 856.02) | 180.68 |
| 12.11 (| 39.73) | 231.26 | 382.97 (| 1256.47) | 156.54 |
| 17.78 (| 58.32) | 314.15 | 562.12 (| 1844.24) | 129.15 |
| 26.09 (| 85.60) | 399.38 | 825.09 (| 2706.98) | 98.49 |
| 38.30 (| 125.65) | 422.21 | 1211.06 (| 3973.30) | 70.83 |
| | | | 99999.00 (| 99999.00) | 55.11 |



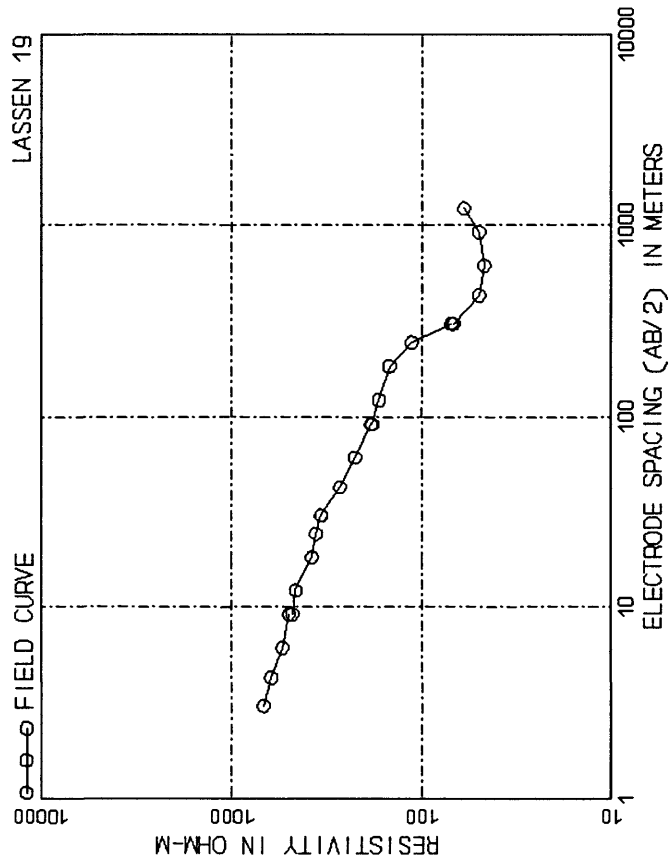
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 637.50 | 60.96 (| 200.00) | 470.00 |
| 4.27 (| 14.00) | 620.00 | 91.44 (| 300.00) | 470.00 |
| 6.10 (| 20.00) | 610.00 | 91.44 (| 300.00) | 485.00 |
| 9.14 (| 30.00) | 660.00 | 121.92 (| 400.00) | 481.00 |
| 12.19 (| 40.00) | 625.00 | 182.88 (| 600.00) | 430.00 |
| 9.14 (| 30.00) | 730.00 | 243.84 (| 800.00) | 410.00 |
| 12.19 (| 40.00) | 675.00 | 304.80 (| 1000.00) | 335.00 |
| 18.29 (| 60.00) | 570.00 | 304.80 (| 1000.00) | 357.00 |
| 24.38 (| 80.00) | 505.00 | 426.72 (| 1400.00) | 265.00 |
| 30.48 (| 100.00) | 478.00 | 609.60 (| 2000.00) | 180.00 |
| 30.48 (| 100.00) | 475.00 | 914.40 (| 3000.00) | 87.50 |
| 42.67 (| 140.00) | 445.00 | 914.40 (| 3000.00) | 82.00 |
| | | | 1219.20 (| 4000.00) | 33.10 |



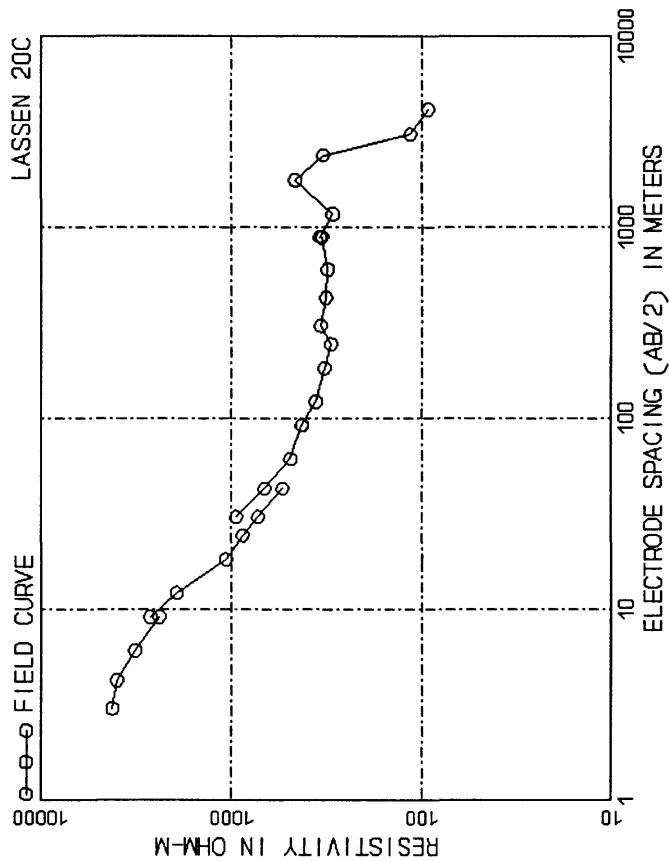
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|--------|--------|------------|-----------|--------|
| 1.87 (| 6.15) | 638.56 | 40.37 (| 132.44) | 538.41 |
| 2.75 (| 9.02) | 712.24 | 59.25 (| 194.40) | 547.13 |
| 4.04 (| 13.24) | 856.68 | 86.97 (| 285.34) | 492.98 |
| 5.93 (| 19.44) | 869.27 | 127.66 (| 418.82) | 412.54 |
| 8.70 (| 28.53) | 642.66 | 187.37 (| 614.75) | 335.92 |
| 12.77 (| 41.88) | 415.00 | 275.03 (| 902.33) | 290.89 |
| 18.74 (| 61.47) | 359.80 | 403.69 (| 1324.43) | 170.85 |
| 27.50 (| 90.23) | 442.05 | 99999.00 (| 99999.00) | 14.27 |



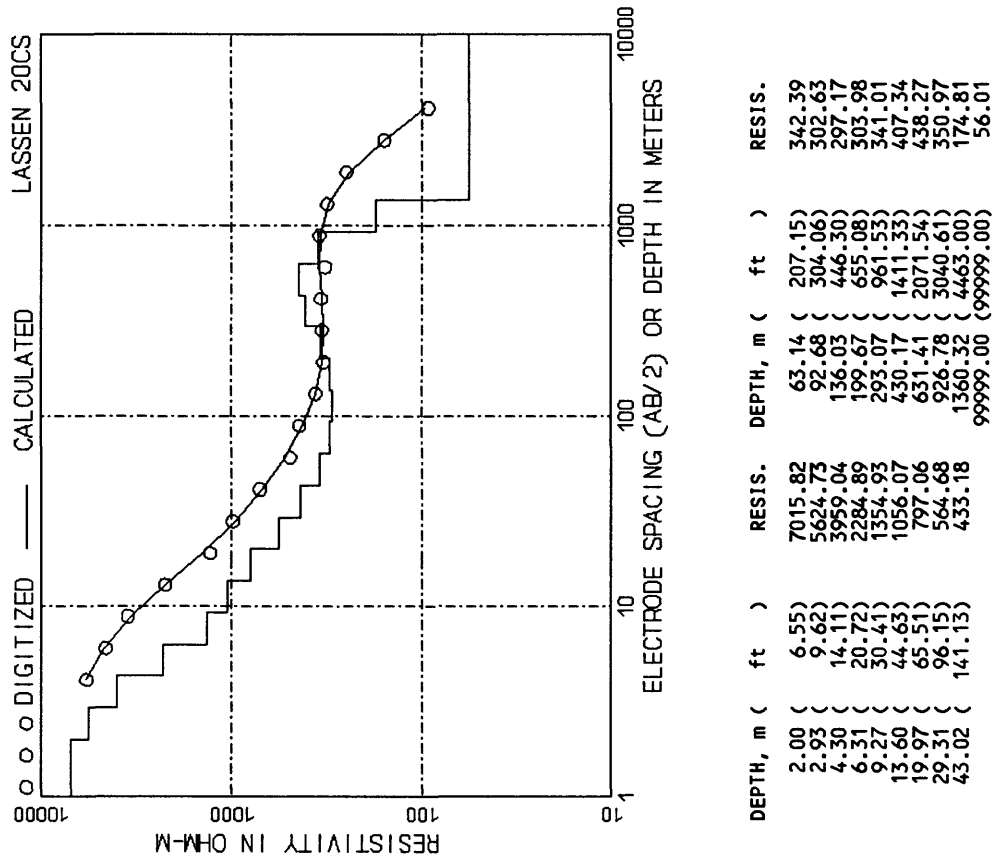
| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|--------|--------|------------|-----------|--------|
| 1.87 (| 6.15) | 670.17 | 40.37 (| 132.44) | 154.04 |
| 2.75 (| 9.02) | 485.95 | 59.25 (| 194.40) | 190.87 |
| 4.04 (| 13.24) | 437.41 | 86.97 (| 285.34) | 222.01 |
| 5.93 (| 19.44) | 423.13 | 127.66 (| 418.82) | 133.11 |
| 8.70 (| 28.53) | 404.30 | 187.37 (| 614.75) | 42.18 |
| 12.77 (| 41.88) | 384.80 | 275.03 (| 902.33) | 23.24 |
| 18.74 (| 61.47) | 305.09 | 403.69 (| 1324.43) | 37.17 |
| 27.50 (| 90.23) | 195.62 | 99999.00 (| 99999.00) | 76.55 |



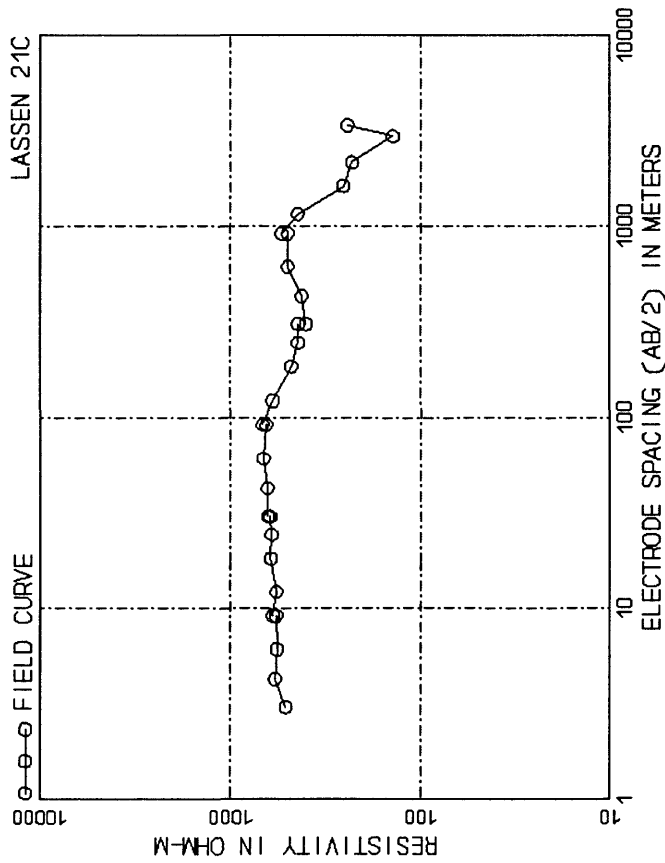
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|----------|-----------|
| 3.05 (| 10.00) | 680.00 | 60.96 (| 200.00) | 225.00 |
| 4.27 (| 14.00) | 620.00 | 91.44 (| 300.00) | 185.00 |
| 6.10 (| 20.00) | 540.00 | 121.92 (| 400.00) | 182.00 |
| 9.14 (| 30.00) | 500.00 | 182.88 (| 600.00) | 168.00 |
| 9.14 (| 30.00) | 480.00 | 243.84 (| 800.00) | 148.00 |
| 12.19 (| 40.00) | 460.00 | 304.80 (| 1000.00) | 113.00 |
| 18.29 (| 60.00) | 380.00 | 304.80 (| 1000.00) | 70.00 |
| 24.38 (| 80.00) | 360.00 | 426.72 (| 1400.00) | 68.00 |
| 30.48 (| 100.00) | 338.00 | 609.60 (| 2000.00) | 50.00 |
| 30.48 (| 100.00) | 340.00 | 914.40 (| 3000.00) | 47.00 |
| 42.67 (| 140.00) | 270.00 | 1219.20 (| 4000.00) | 60.00 |



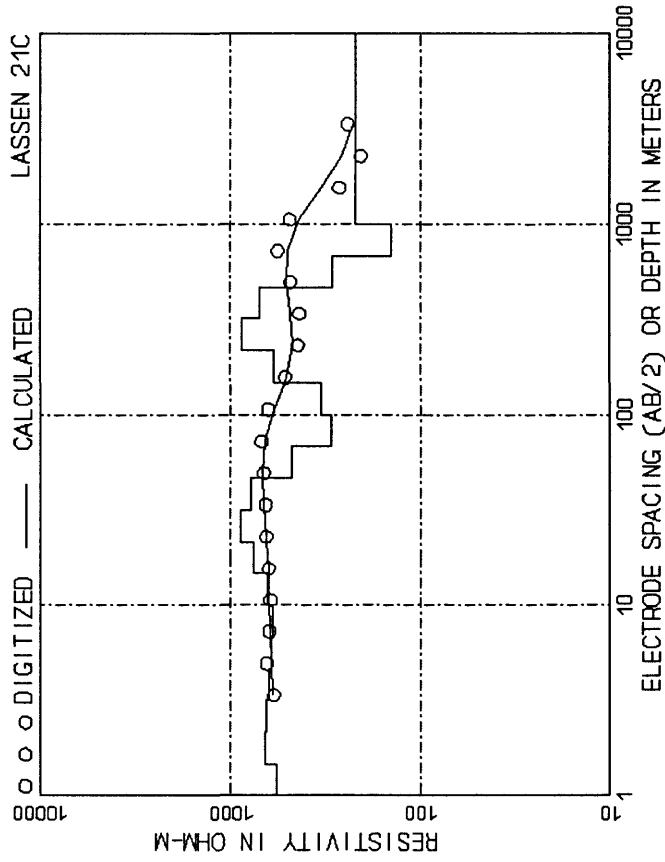
| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|-----------|-----------|
| 3.05 (| 10.00) | 4225.00 | 91.44 (| 300.00) | 425.00 |
| 4.27 (| 14.00) | 4000.00 | 121.92 (| 400.00) | 360.00 |
| 6.10 (| 20.00) | 3200.00 | 182.88 (| 600.00) | 325.00 |
| 9.14 (| 30.00) | 2400.00 | 243.84 (| 800.00) | 300.00 |
| 9.14 (| 30.00) | 2680.00 | 304.80 (| 1000.00) | 340.00 |
| 12.19 (| 40.00) | 1940.00 | 304.80 (| 1000.00) | 340.00 |
| 18.29 (| 60.00) | 1075.00 | 426.72 (| 1400.00) | 320.00 |
| 24.38 (| 80.00) | 875.00 | 600.46 (| 1970.00) | 313.00 |
| 30.48 (| 100.00) | 725.00 | 890.32 (| 2921.00) | 334.00 |
| 42.67 (| 140.00) | 540.00 | 890.32 (| 2921.00) | 343.70 |
| 30.48 (| 100.00) | 945.00 | 1168.91 (| 3835.00) | 294.00 |
| 42.67 (| 140.00) | 672.00 | 1755.65 (| 5760.00) | 461.00 |
| 60.96 (| 200.00) | 490.00 | 2368.60 (| 7771.00) | 330.00 |
| 91.44 (| 300.00) | 430.00 | 3040.68 (| 9976.00) | 115.10 |
| | | | 4108.40 (| 13479.00) | 92.30 |



| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|---------|------------|-----------|--------|
| 2.00 (| 6.55) | 7015.82 | 63.14 (| 207.15) | 342.39 |
| 2.93 (| 9.62) | 5624.73 | 92.68 (| 304.06) | 302.63 |
| 4.30 (| 14.11) | 3959.04 | 136.03 (| 446.30) | 297.17 |
| 6.31 (| 20.72) | 2284.89 | 199.67 (| 655.08) | 303.98 |
| 9.27 (| 30.41) | 1354.93 | 293.07 (| 961.53) | 341.01 |
| 13.60 (| 44.63) | 1056.07 | 430.17 (| 1411.33) | 407.34 |
| 19.97 (| 65.51) | 797.06 | 631.41 (| 2071.54) | 438.27 |
| 29.31 (| 96.15) | 564.68 | 926.78 (| 3040.61) | 350.97 |
| 43.02 (| 141.13) | 433.18 | 1360.32 (| 4463.00) | 174.81 |
| | | | 99999.00 (| 99999.00) | 56.01 |



| AB/2, m (| ft) | App. Res. | AB/2, m (| ft) | App. Res. |
|-----------|---------|-----------|-----------|-----------|-----------|
| 3.05 (| 10.00) | 512.50 | 121.92 (| 400.00) | 600.00 |
| 4.27 (| 14.00) | 585.00 | 182.88 (| 600.00) | 480.00 |
| 6.10 (| 20.00) | 570.00 | 243.84 (| 800.00) | 440.00 |
| 9.14 (| 30.00) | 578.00 | 304.80 (| 1000.00) | 440.00 |
| 9.14 (| 30.00) | 600.00 | 304.80 (| 1000.00) | 400.00 |
| 12.19 (| 40.00) | 575.00 | 426.72 (| 1400.00) | 423.00 |
| 18.29 (| 60.00) | 617.50 | 609.60 (| 2000.00) | 500.00 |
| 24.38 (| 80.00) | 610.00 | 914.40 (| 3000.00) | 500.00 |
| 30.48 (| 100.00) | 620.00 | 914.40 (| 3000.00) | 540.00 |
| 30.48 (| 100.00) | 638.00 | 1160.37 (| 3807.00) | 442.00 |
| 42.67 (| 140.00) | 640.00 | 1625.50 (| 5333.00) | 255.00 |
| 60.96 (| 200.00) | 675.00 | 2170.48 (| 7121.00) | 229.00 |
| 91.44 (| 300.00) | 650.00 | 2949.85 (| 9678.00) | 140.00 |
| 91.44 (| 300.00) | 680.00 | 3356.76 (| 11013.00) | 243.00 |



| DEPTH, m (| ft) | RESIS. | DEPTH, m (| ft) | RESIS. |
|------------|---------|--------|------------|-----------|--------|
| 1.47 (| 4.82) | 572.37 | 46.43 (| 152.33) | 781.85 |
| 2.16 (| 7.07) | 655.69 | 68.15 (| 223.59) | 481.10 |
| 3.16 (| 10.38) | 654.55 | 100.03 (| 328.16) | 296.20 |
| 4.64 (| 15.23) | 626.89 | 146.82 (| 481.71) | 332.88 |
| 6.82 (| 22.36) | 609.88 | 215.51 (| 707.05) | 591.30 |
| 10.00 (| 32.82) | 603.34 | 316.32 (| 1037.81) | 880.59 |
| 14.68 (| 48.17) | 641.88 | 464.30 (| 1523.30) | 706.02 |
| 21.55 (| 70.71) | 761.87 | 681.50 (| 2235.89) | 292.14 |
| 31.63 (| 103.78) | 881.12 | 1000.31 (| 3281.84) | 143.42 |
| | | | 99999.00 (| 99999.00) | 219.73 |