UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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# A slingram survey on the Nevada Test site - Part of an integrated geologic-geophysical study of site evaluation for nuclear waste disposal.

by

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Open-File Report 79-277

1979



Prepared by the U.S. Geological Survey

for

Nevada Operations Office
U.S. Department of Energy
(Memorandum of Understanding EW-78-A-08-1543)

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## Abstract

A slingram geophysical survey was made in early 1978 as part of the integrated geological-geophysical study aimed at evaluating the Eleana Formation as a possible repository for nuclear waste. The slingram data were taken over an alluvial fan and pediments along the eastern flank of Syncline Ridge about 45 km north of Mercury, Nevada, on the Nevada Test Site. The data show that the more conductive argillaceous Eleana Formation varies in depth from 40 to 85 m from west to east along traverse lines. Northeast-trending linear anomalies suggest rather abrupt changes in subsurface geology that may be associated with faults and fractures. The results of the slingram survey will, when interpreted in the light of other geologic and geophysical evidence, assist in understanding the shallow parts of the geologic setting of the Eleana Formation.

## Introduction

The purpose of this report is to present the electromagnetic data taken by the U.S. Geological Survey in an integrated geologic-geophysical study aimed at evaluating the Devonian and Mississippian Eleana Formation as a possible repository for nuclear wastes. The survey area is located about 97 km northwest of Las Vegas, Nevada, on the Nevada Test Site (Fig. 1). Data contained in this report were taken along the eastern pediment of Syncline Ridge. Thirty-three east-west traverses were made and each traverse averaged 1.6 km in length for a total of 54.3 km. The location of the traverse lines are shown in Figure 2. The data were referenced to a surveyed grid, where stations had been established previous to this survey at 152.4-m intervals along east-west lines 304.8 m apart.

## Instrumentation and calibration procedures

The equipment used in this survey is a commercially made slingram unit. The slingram method and interpretation are described in detail by Keller and Frischknecht (1966) and Frischknecht (1967). Briefly, the slingram technique is an electromagnetic (E.M.) method using a moving source and receiver. Electromagnetic fields are transmitted into the ground through a transmitting coil, and components of the induced EM field are measured at some fixed distance from the transmitting coil. The slingram unit used in this survey had the capability of measuring the real and imaginary components at five frequencies: 222, 444, 888, 1777, and 3555 Hz. The measured components are referenced to the primary field by an interconnecting cable between the receiving and transmitting coils. Measurement may be made at six coil spacings: 30.4, 61, 91.4, 122, 183 and 244 m. In order to determine the

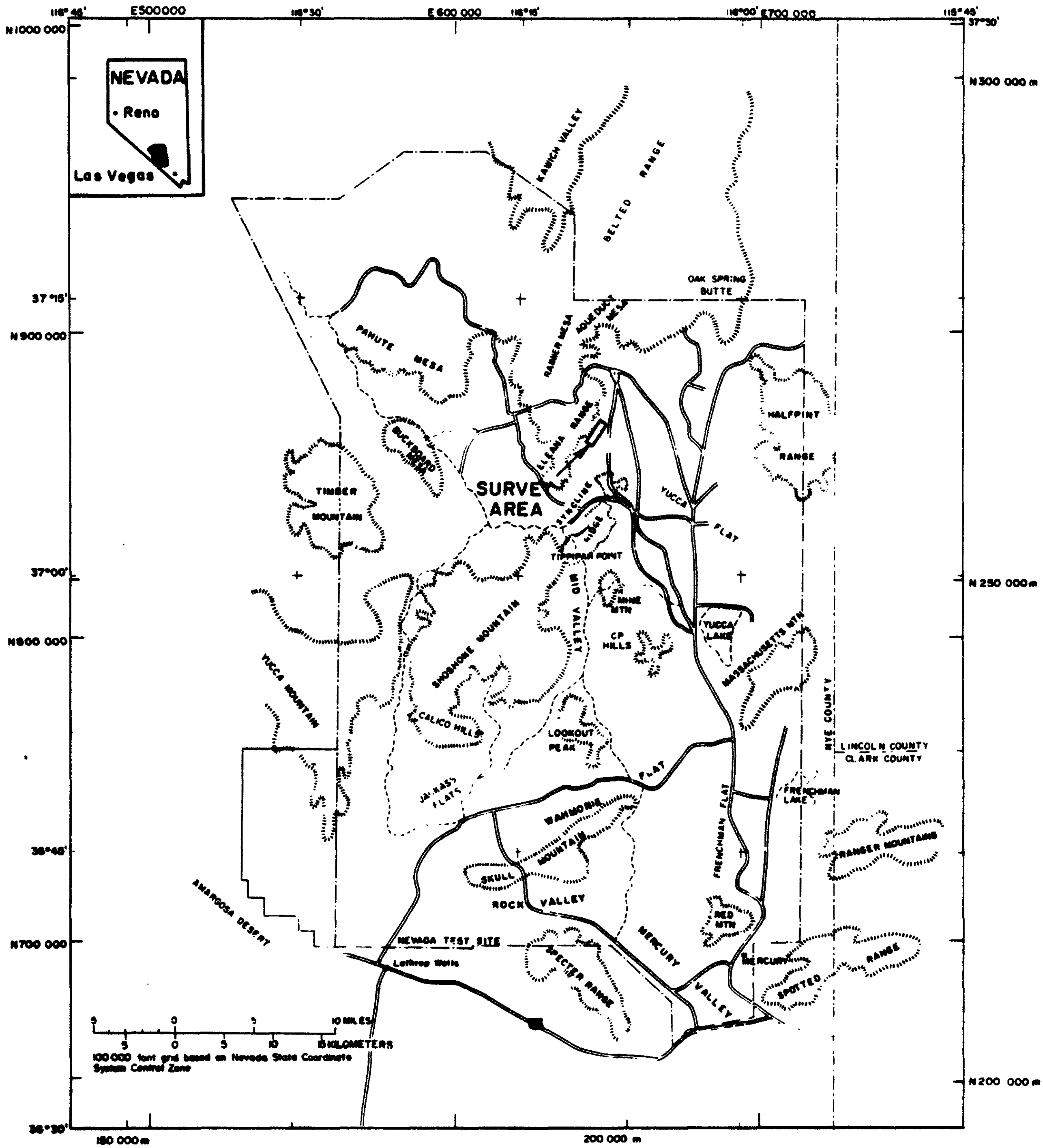
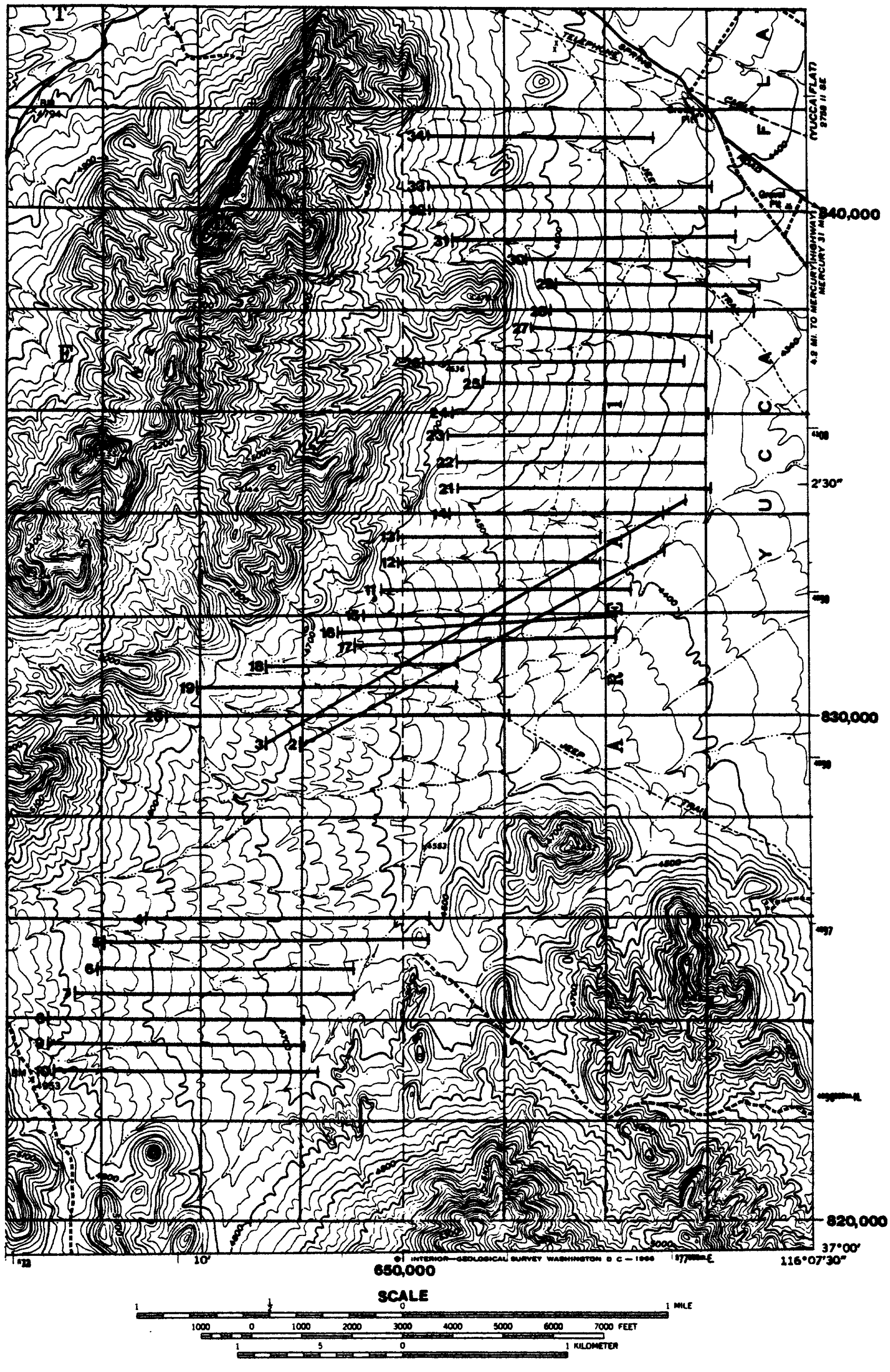


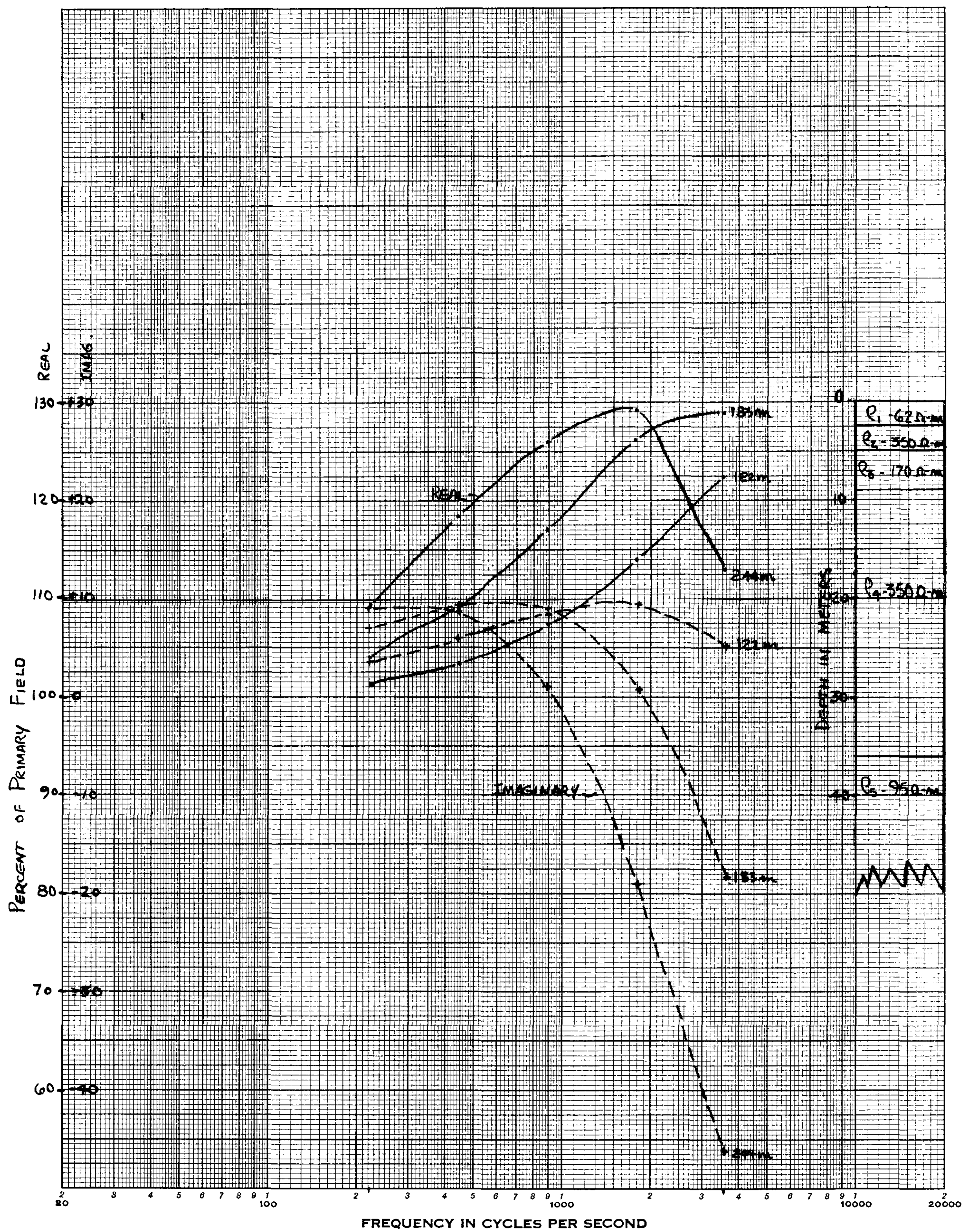

Fig. 1.--Index map of south-central Nevada, showing location of geophysical survey on the Nevada Test Site.



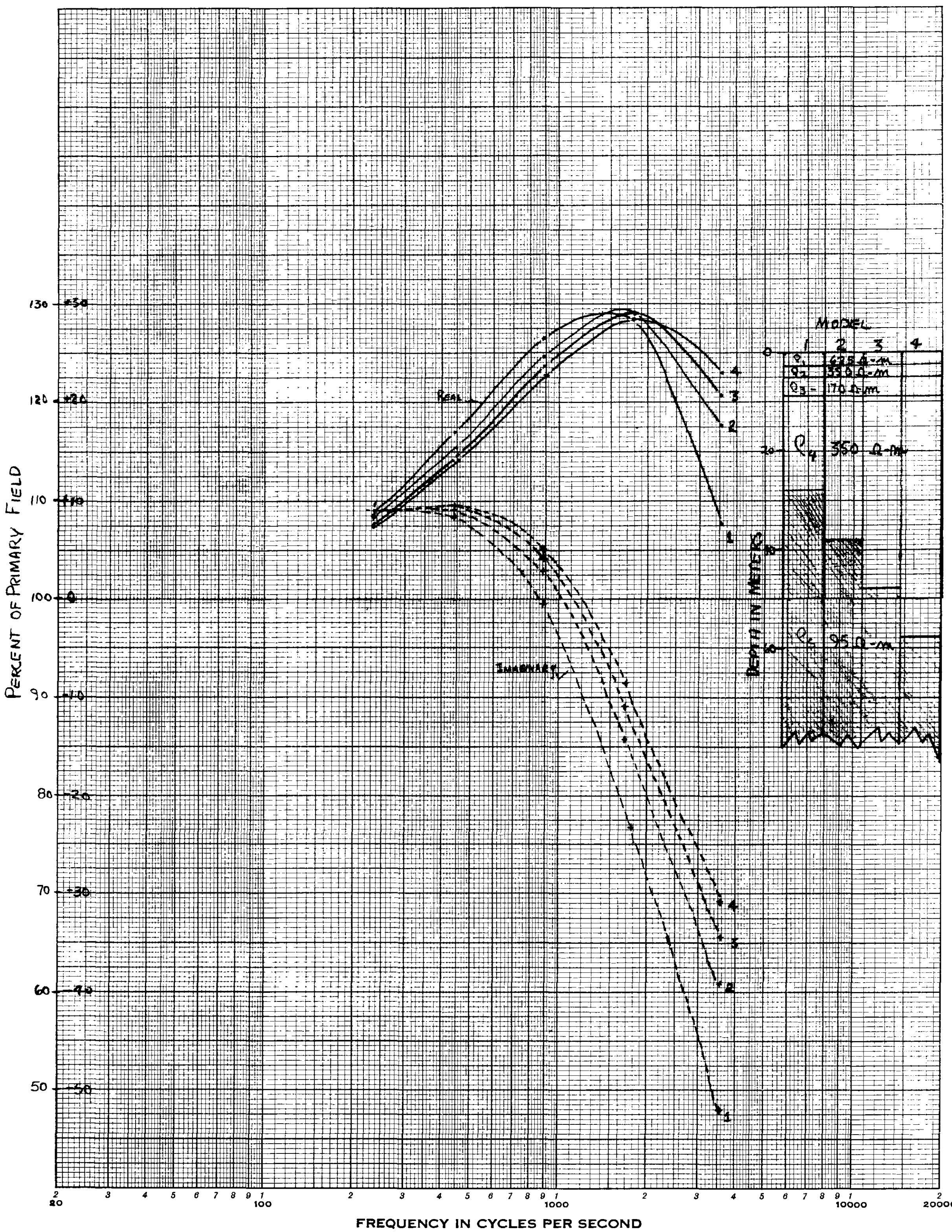

2.--Part of the Tippipah Spring Quadrangle, showing the location of the slingram traverses.

optimum coil spacing for this survey, the response from a layered-earth model was determined from data obtained from a previous dc resistivity sounding made by R. Carroll (U.S. Geological Survey, written commun.,1978). A forward solution was computed to determine the slingram response at the five frequencies and at 122-, 183-, and 244-m coil separations. The results of this computation are illustrated in 3. The slingram response differs significantly for curves at the 122-m and 244-m coil spacings. The response parameter or conductivity parameter (B) at the 244-m coil separation is 0.2887 at 222 Hz and 1.155 at 3555 Hz. At the 122-m coil separation, B is 0.144 at 222 Hz and 0.578 at 3555 Hz. The EM response parameter, a measure of EM coupling, is discussed in detail by Telford and others (1976). From the results of this analysis, a coil separation of 244 m was selected for this survey, because it seemed more likely that changes in the geoelectric section might be better recognized at the widest coil separation. A second series of model computations were made in which the depth to the conductive Eleana Formation was successively increased and the response computed at 244-m coil separation (fig. 4). The response curves are very similar to those shown in figure 3, with the greatest changes in response occurring at frequencies above 888 Hz. It is seen that as the Eleana is deepened ($\rho 5$ in models of figure 4), the imaginary becomes less negative at frequencies above 888 Hz.

In order to make inversion sounding models from the slingram data, the zero calibration of the equipment must be determined. The following method was used prior to making field measurements. A calibration test site was established over a highly resistive, homogeneous granitic outcrop southwest of Denver. Vertical electric soundings (VES) and electromagnetic traverses were made over the test site area to determine the depth of weathering and




3.--Diagram showing theoretical slingram response computed over a layered-earth model at 122-, 183-, and 244-m coil separation. The geoelectric model is shown on the right hand side.




4.--Theoretical slingram responses computed at 244-m coil separation and varying the depth to a conductive layer--($\rho_5$) in model shown.

homogeneity of the test area. The VES data were inverted to determine a geoelectric section. A forward-solution computation was made to ascertain the theoretical slingram response over the VES computed model. Comparison of the observed slingram data with the theoretical response established the slingram zero at the various frequencies. Table 1 summarizes the results of the slingram zero-calibration procedures.

Table 1.--Comparison of theoretical and observed slingram response using horizontal coplanar coils and a 244-m coil separation

| Frequency(Hz) | 222 | | 444 | | 888 | | 1777 | | 3555 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Real | Imag | Real | Imag | Real | Imag | Real | Imag | Real | Imag |
| Observed | 97.0 | -2.0 | 95.5 | 3.0 | 96.0 | 7.5 | 99.5 | 14.0 | 100.0 | 25.0 |
| Computed | 100.7 | 2.0 | 101.6 | 3.6 | 103.4 | 5.6 | 106.6 | 7.7 | 111.5 | 9.0 |
| Zero | 96.2 | -3.9 | 94.0 | -0.4 | 93.0 | 2.2 | 93.8 | 6.4 | 90.9 | 15.1 |

The observed field data presented in this report have been corrected to the instrument zero at each frequency by the following formulas:

$$Rc = (Rf + 100)(sd/hd)^3$$

$$\text{Corrected real and imaginary response} = \frac{Rc + iIf}{Ro + iIo} \text{ x100 in percent}$$

where Rc and If are the real and imaginary field values, in which the real has been corrected for changes in slope distance; Ro and Io are the real and imaginary zero values; sd is the slope distance; and hd is the horizontal distance (coil spacing). The terrain in the Nevada Test Site survey area was rather flat (less than 3 percent slope), and so there was no need to correct for the difference in slope and horizontal distances.

## Data handling and interpretation procedures

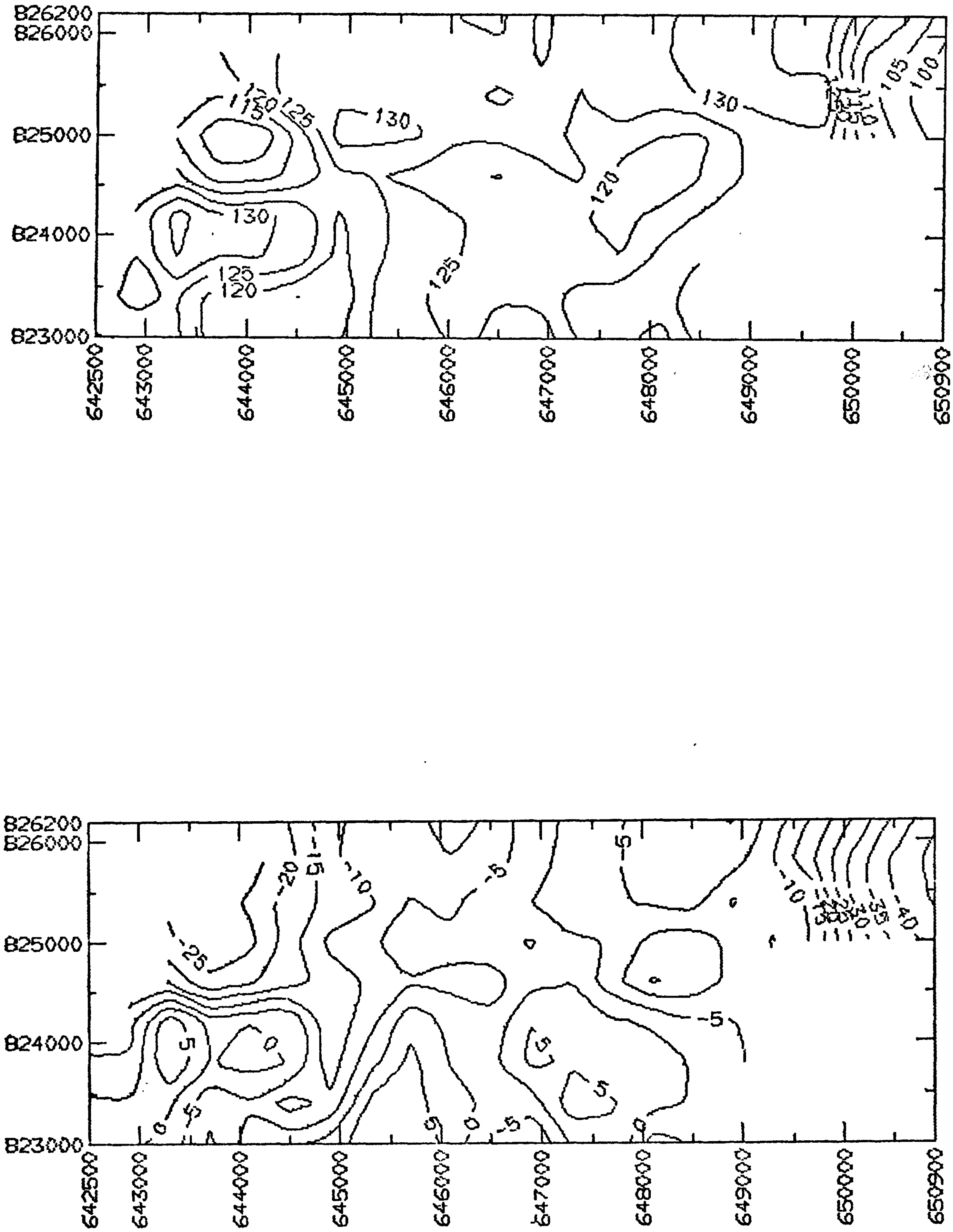
The observed field data were compiled using the assistance of a digital computer. The complete data set is shown in the appendix to this report. Each observation is referenced to the map grid, as shown on figure 2, with an x, y position. Traverse lines 4 through 10 were compiled into contour maps (area A), and lines 2-3 and 11 through 34 were compiled into a second area (B). Contour maps of the slingram response at two frequencies (444 and 1777 Hz) from the areas A and B are shown in figures 5 through 10.

In addition to the contour maps, selected data were treated by quantitative interpretation procedures, whereby a layered-earth model is computed that satisfies the observed data within certain limits. The loop-loop inversion program used in this technique was written by Walter Anderson (unpublished data, 1978). During the process of quantitative analysis, it was found that a satisfactory model which fit the real and imaginary parts of the observations simultaneously could not be derived. The lack of a reasonable fit of both components to the same model probably results from detectable lateral changes in conductivity of the geoelectric section that are not accounted for by the one-dimensional models. Also, a possibility exists that the real component, which is most susceptible to coil orientation and spacing errors, contains uncorrected and unrecognized errors. Further, some of the many surface wire conductors lying across the survey area could not be avoided. These factors no doubt contributed to the data noise. It seems most likely, however, that the subsurface geology and structure are more complex than the assumed simple isotropic, layered-earth model.

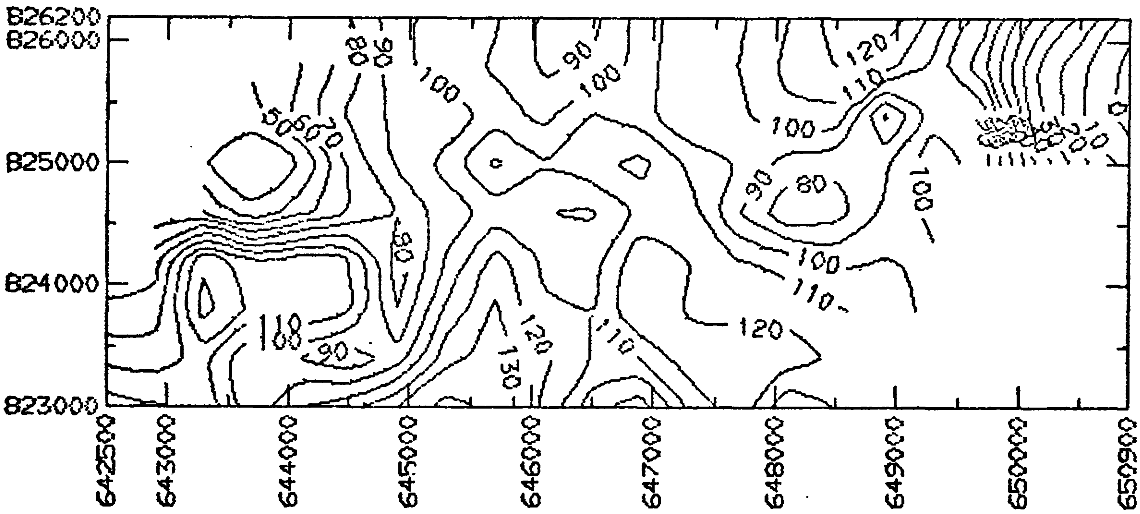
## Discussion of results

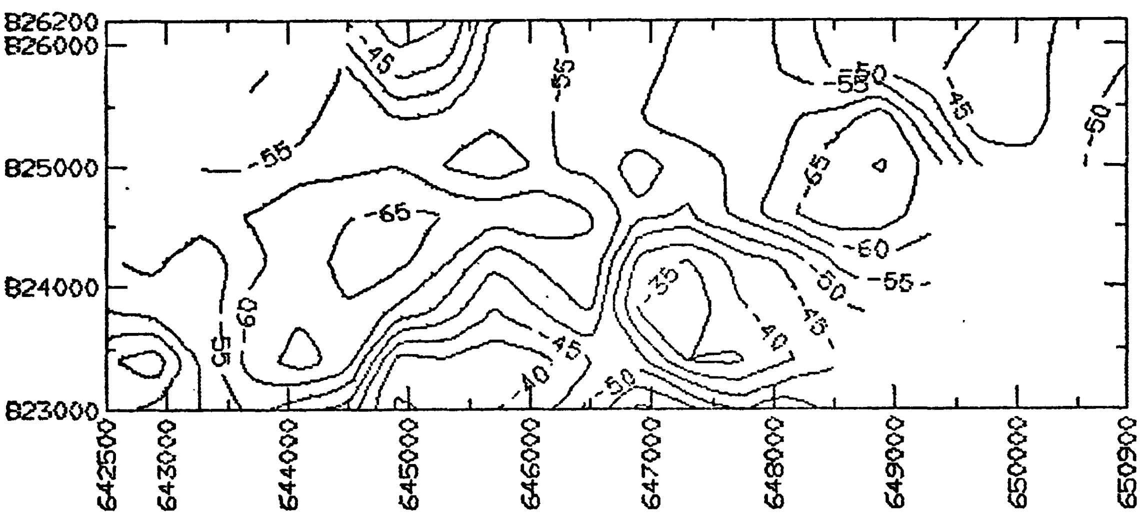
The slingram response at 444 and 1777 Hz in area A (survey lines 4-10) is shown as contour maps in figures 5 and 6. The survey lines began at the west end over unconsolidated fan and stream alluvium and ended at or near outcrops of the Belted Range Tuff (nonwelded ash-flow and ash-fall tuffs) on the east end. The slingram data indicate a general deepening of the alluvium over the central part of the mapped area, which is in accord with gravity data that indicate a small graben in this area. Toward the eastern and western edges, conductive rocks are at shallow depths. Gradients in the contoured EM responses form contour linears trending northeast and suggest rather abrupt changes in the conductivity at shallow depths. These changes in conductivity are most likely due to varying depths of conductivity in the vertical section rather than to lateral changes of conductivity in the alluvium. Whether or not these assumed abrupt changes are related to bedrock topography or faulting cannot be ascertained by these data alone.

In area B, the slingram data (figs. 7-10) indicate trends similar to those in area A. Steeper gradients in the contoured values form northeast trending contour linears. These are most pronounced in the real components at both 444 and 1777 Hz (figs. 7, 9); they are particularly prominent in the southern half of the maps south of grid line 836,000. Here again, it is not possible to say that these contour linears indicate northeastern structures, but it is clear that conductive rocks are nearer the surface of the alluvial fan west of these linears than they are to the east. This is borne out by the higher negative response in the imaginary component at both frequencies 444 and 1777 Hz (figs. 8, 10).

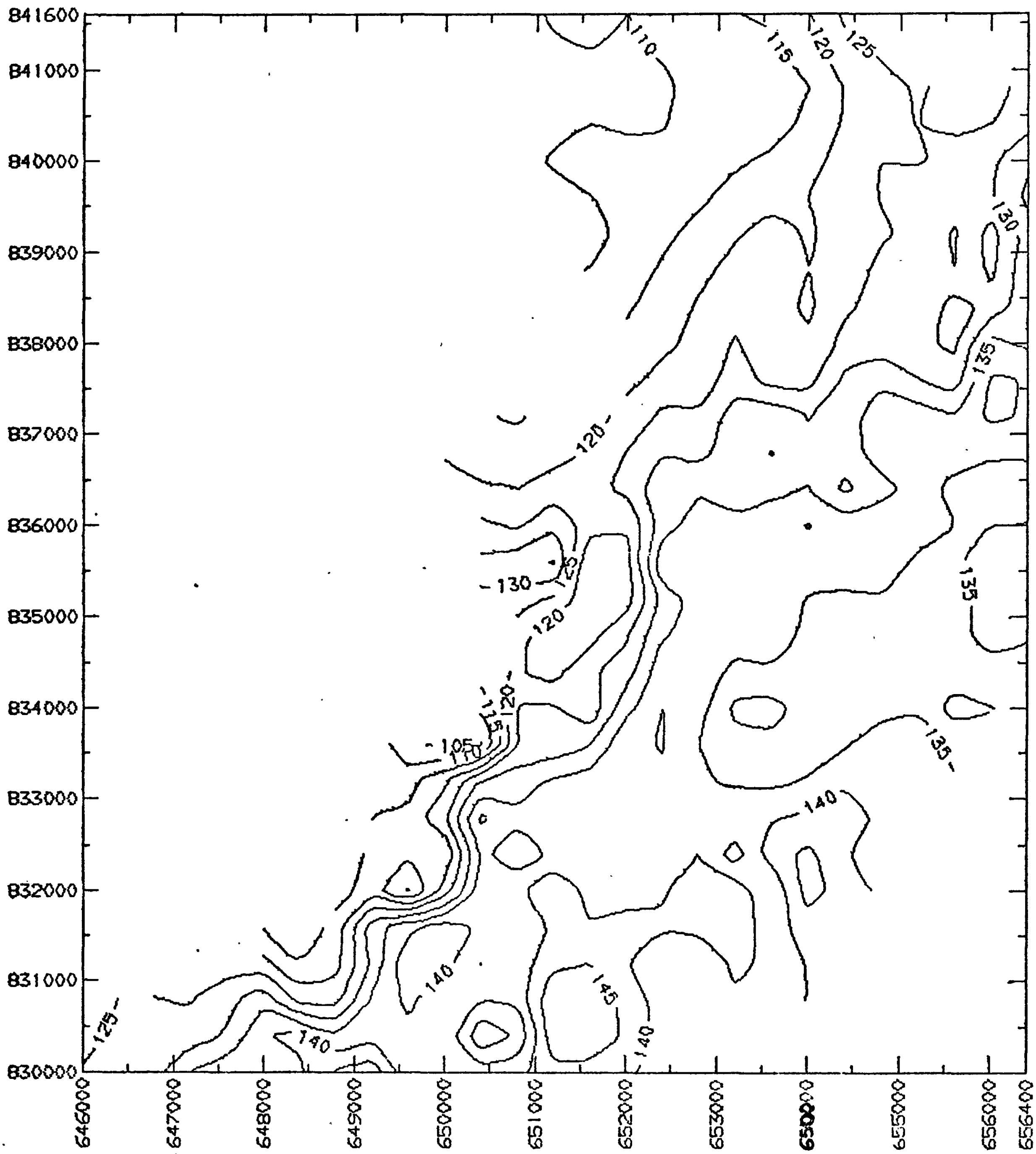



5.--Contour map showing the slingram response in area A at 444 Hz. The upper map is the real-component, the lower is the imaginary. Contour values are in percent of the primary field.

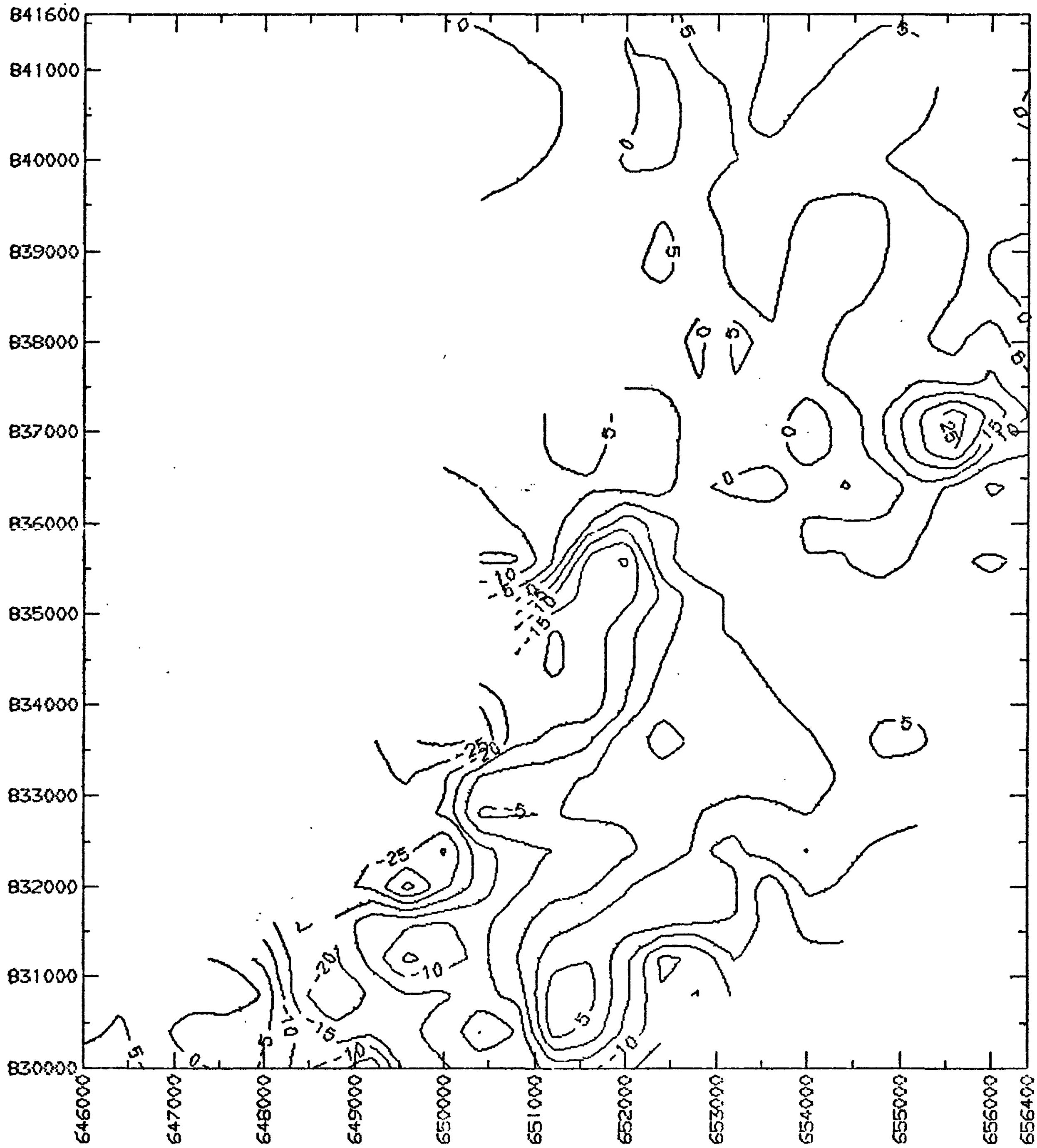


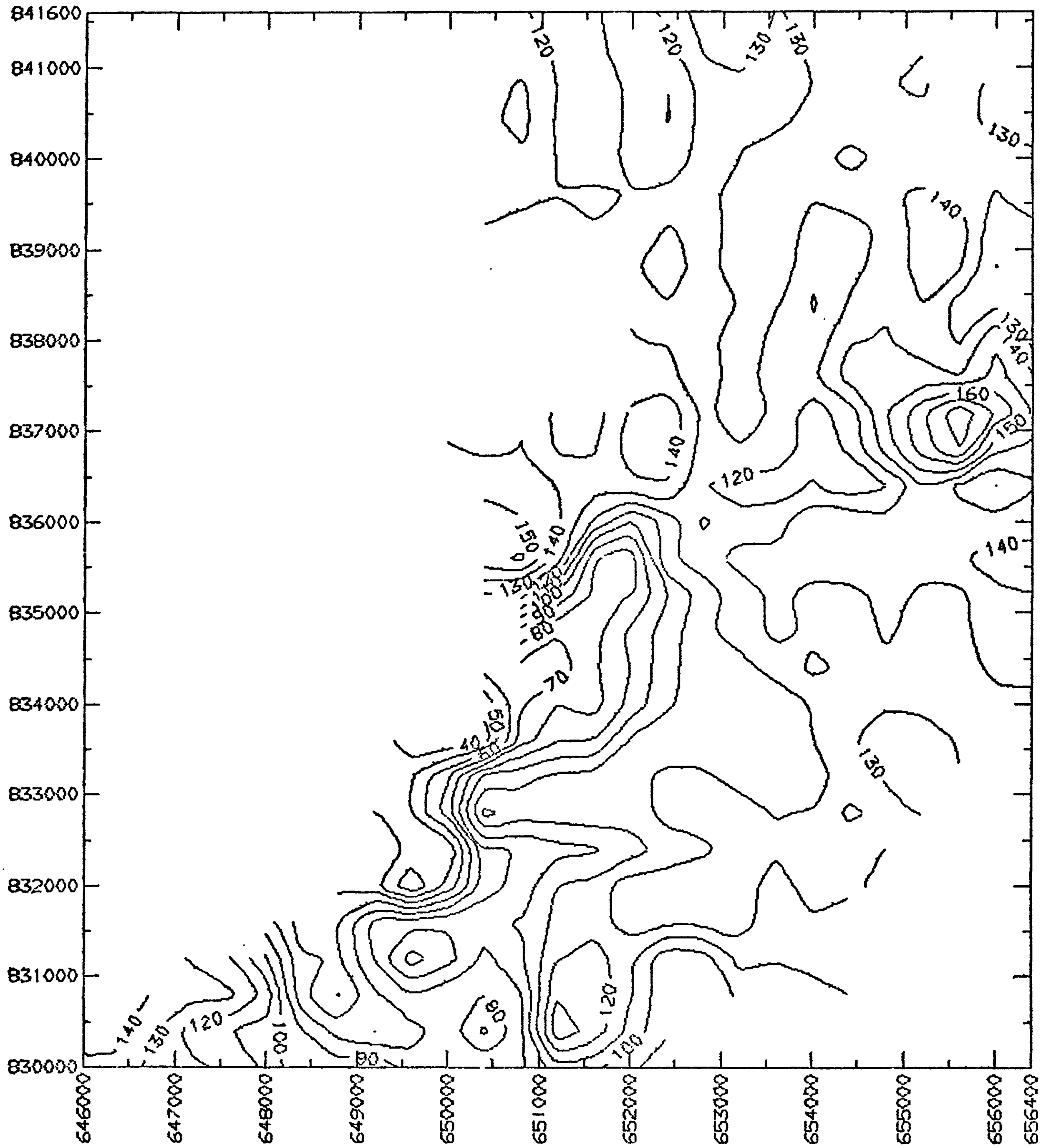

6.--Contour maps of the slingram responses in area A at 1777 Hz. The upper map is the real-component, the lower is the imaginary-component. Contour values are in percent of the primary field.



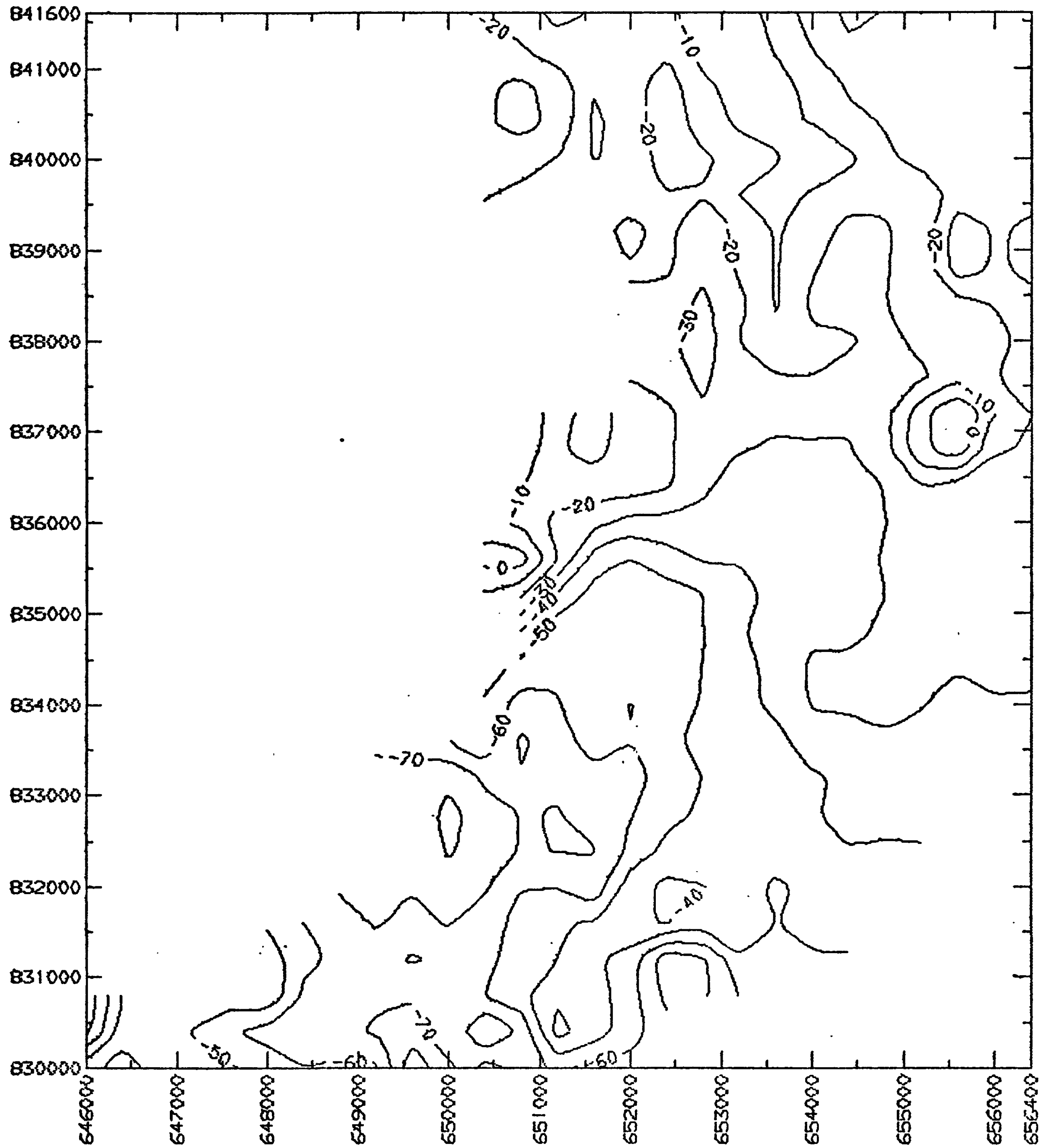

7.--Contour map of the real-component slingram response in area B at 444 Hz. Contour values are in percent of the primary field.




8.--Contour map of the imaginary-component response in area B at 444 Hz. Contour values are in percent of the primary field.




9.--Contour map of the real-component slingram response in area B at 1777 Hz. Contour values are in percent of the primary field.

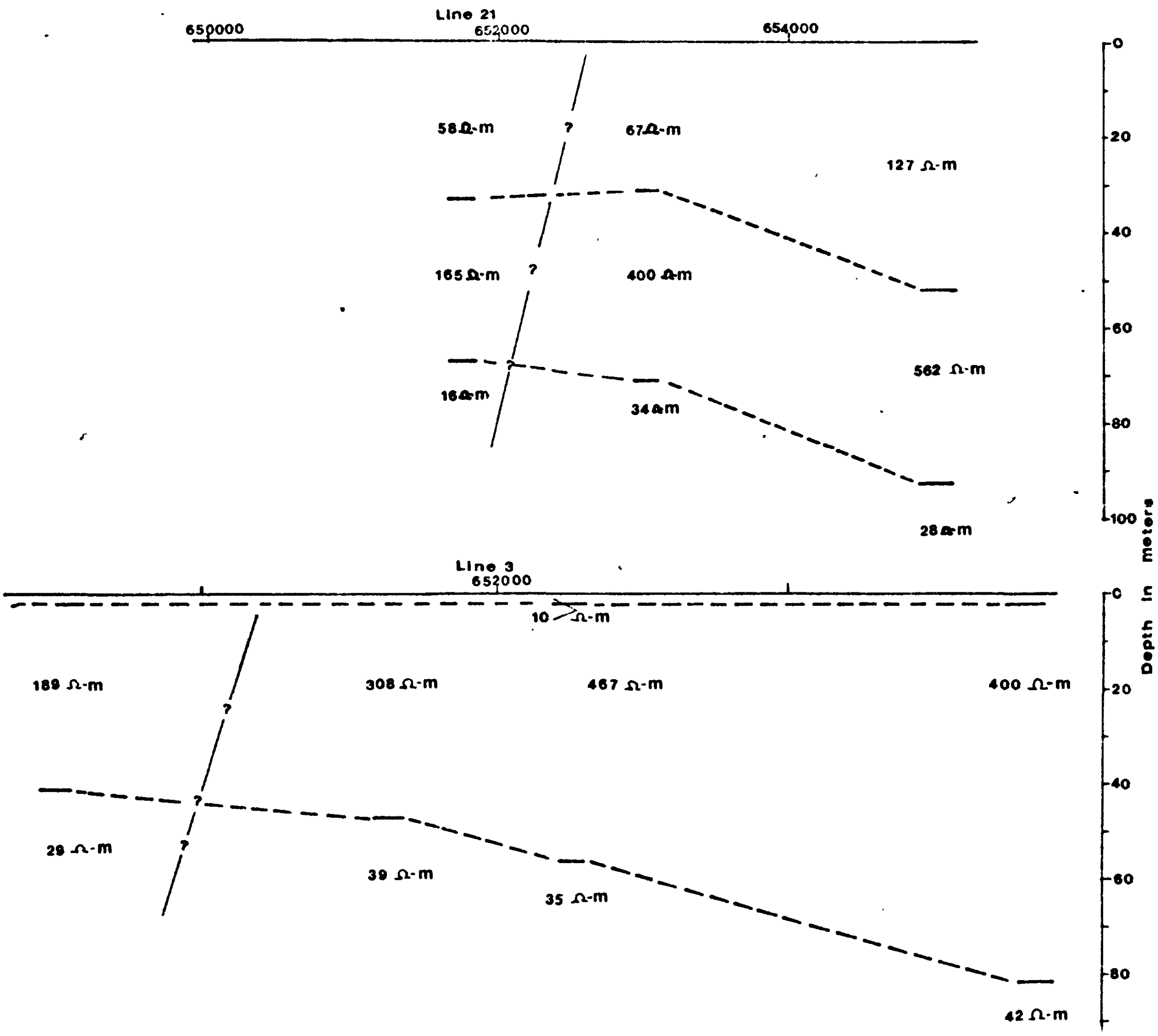



10.--Contour map of the imaginary-component slingram response in area B at 1777 Hz. Contour values are in percent of the primary field.

The data shown on the contour maps (figs. 7-10) are somewhat more uniform north of grid line 837,000 than south of this point. There is some suggestion of a continuation of the northeast trend but it is not nearly as pronounced, suggesting a more uniform section from west to east than is present south of grid line 837,000.

One area of high slingram response is seen near the intersection of grid lines 837,000 and 656,000 (figs. 8, 9). The high response probably results from a surface conductor (a twisted pair of wires) that was crossed along this portion of a traverse.

Data along traverse lines 3 and 21 were inverted and the resultant geoelectric sections are shown in figure 11. In both sections the depth to what appears to be the argillaceous Eleana Formation (20-40 $\Omega$-m) increases from west to east. The overlying high-resistivity material, (300-500 $\Omega$-m), tentatively identified as unsaturated gravel thickens in section to the east. The upper alluvium along line 3 seems to be rather uniform in thickness (> 5m) and apparent resistivity (10 $\Omega$-m). Along line 21 the first layer is somewhat different (58-127 $\Omega$-m), indicating perhaps the presence of a more resistive gravel or coarser alluvial debris. It is interesting to note that the second layer west of station 650,000 on line 3 and west of station 653,000 on line 21 is significantly more conductive than to the east of these stations. How this relates to the subsurface geology is unclear, but a line connecting this break in the second-layer conductivity between traverse lines 3 and 21 corresponds to the contour linear formed by the data on the contour maps mentioned earlier. Hence, a inferred fault is drawn on the sections at this location. The upper two layers, however, are believed to represent differences in lithology of the unsaturated alluvium.




11.--Geoelectric sections along lines 3 and 21 derived from inverting the slingram data.

## Conclusions

The slingram data presented in this report indicate a possible northeastern-trending structure crossing the surveyed area. The feature is characterized by steep gradients in the contoured maps and as a possible break in the second-layer conductivities, as seen by the inverted data sections. Conductive rocks west of this feature are nearer the surface than those to the east. The data indicate a more uniform geologic section north of grid line 837,000 than to the south, although data trend lines do continue northeast through the area north of grid 837,000. While the slingram data alone are not conclusive evidence of northeastern fracturing along the eastern edge of Syncline Ridge, they may provide one line of evidence which, when interpreted in the light of other geologic and geophysical data, will be helpful in understanding the geology and structure of the study area.

## References Cited

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Keller, G. V. and Frischknecht, F. C. 1966, Electrical methods in geophysical prospecting: New York, N.Y., Pergamon press, 517 p.

Telford, W. M., Geldard, L. P., Sheriff, R. E., and Keys, D. A., 1976, Applied geophysics: Cambridge University Press, Electromagnetic methods, p. 514-520.

# Appendix

## Slingram field data--Nevada Test Site

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 650900.00 | 834000.00 | 118.35 | 3.76 | 126.67 | -16.48 | 111.87 | -43.51 | 67.19 | -62.15 | 20.19 | -50.66 |
| 2 | 14 | 651300.00 | 834000.00 | 120.47 | 2.80 | 126.67 | -16.48 | 115.17 | -40.36 | 78.16 | -57.57 | 32.14 | -51.54 |
| 3 | 14 | 651700.00 | 834000.00 | 116.36 | 1.60 | 121.35 | -17.57 | 107.65 | -40.18 | 73.15 | -52.97 | 23.40 | -51.19 |
| 4 | 14 | 652100.00 | 834000.00 | 121.30 | 6.04 | 135.14 | -9.00 | 126.05 | -35.24 | 90.82 | -59.50 | 36.79 | -63.32 |
| 5 | 14 | 652500.00 | 834000.00 | 122.12 | 13.27 | 140.42 | 0.60 | 139.20 | -24.80 | 105.97 | -56.27 | 55.34 | -64.20 |
| 6 | 14 | 652900.00 | 834000.00 | 121.17 | 11.15 | 136.17 | -0.48 | 139.22 | -23.72 | 111.85 | -48.14 | 69.08 | -67.58 |
| 7 | 14 | 653300.00 | 834000.00 | 119.22 | 7.95 | 127.68 | -3.71 | 128.50 | -22.39 | 107.97 | -42.55 | 70.15 | -61.16 |
| 8 | 14 | 653700.00 | 834000.00 | 116.10 | 9.99 | 127.66 | -0.52 | 128.63 | -17.02 | 109.47 | -36.25 | 78.89 | -54.91 |
| 9 | 14 | 654100.00 | 834000.00 | 117.02 | 10.98 | 132.97 | 2.69 | 134.10 | -12.85 | 119.52 | -29.48 | 94.59 | -53.12 |
| 10 | 14 | 654500.00 | 834000.00 | 119.09 | 11.07 | 130.84 | 2.68 | 134.13 | -11.78 | 119.52 | -29.48 | 96.73 | -53.47 |
| 11 | 14 | 654900.00 | 834000.00 | 119.05 | 12.10 | 132.96 | 3.76 | 136.30 | -10.75 | 124.83 | -29.84 | 100.48 | -57.39 |
| 12 | 14 | 655100.00 | 834000.00 | 119.01 | 13.14 | 134.03 | 3.76 | 136.28 | -11.83 | 122.71 | -29.69 | 98.34 | -57.04 |
| 13 | 13 | 653900.00 | 833500.00 | 119.18 | 6.99 | 132.99 | -2.63 | 133.95 | -19.30 | 113.71 | -36.54 | 93.69 | -51.87 |
| 14 | 13 | 653500.00 | 833500.00 | 120.17 | 10.07 | 132.99 | -1.56 | 136.05 | -21.50 | 118.29 | -47.52 | 92.46 | -79.17 |
| 15 | 13 | 653100.00 | 833500.00 | 116.06 | 11.02 | 132.99 | -1.56 | 132.80 | -22.50 | 113.13 | -45.03 | 79.43 | -64.90 |
| 16 | 13 | 652700.00 | 833500.00 | 121.13 | 12.19 | 135.11 | -0.49 | 137.05 | -24.75 | 109.03 | -42.62 | 73.90 | -71.68 |
| 17 | 13 | 652300.00 | 833500.00 | 123.20 | 12.27 | 140.42 | 0.60 | 141.35 | -24.85 | 110.07 | -58.68 | 70.69 | -77.75 |
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| 19 | 13 | 651500.00 | 833500.00 | 118.27 | 5.83 | 129.83 | -11.15 | 124.97 | -35.21 | 83.76 | -53.69 | 70.17 | -94.16 |
| 20 | 13 | 651100.00 | 833500.00 | 116.36 | 1.60 | 124.53 | -14.36 | 116.42 | -39.36 | 85.16 | -64.45 | 59.46 | -92.39 |
| 21 | 13 | 650700.00 | 833500.00 | 118.39 | 2.72 | 126.66 | -15.42 | 115.12 | -42.51 | 72.76 | -74.26 | 11.27 | -51.38 |
| 22 | 13 | 650300.00 | 833500.00 | 107.73 | -16.42 | 96.96 | -34.69 | 75.98 | -60.94 | 20.67 | -40.86 | -0.35 | -21.94 |
| 23 | 13 | 649900.00 | 833500.00 | 106.52 | -10.15 | 104.39 | -31.47 | 82.73 | -48.19 | 27.85 | -60.54 | 60.33 | -54.03 |
| 24 | 12 | 649900.00 | 833000.00 | 114.45 | -2.64 | 121.36 | -20.76 | 110.55 | -54.23 | 63.69 | -82.17 | 17.87 | -57.97 |
| 25 | 12 | 650300.00 | 833000.00 | 121.13 | 12.19 | 140.43 | -1.53 | 144.39 | -32.45 | 121.72 | -75.47 | 74.11 | -130.02 |
| 26 | 12 | 650700.00 | 833000.00 | 120.09 | 12.45 | 135.13 | -4.74 | 136.92 | -30.12 | 110.41 | -69.37 | 65.53 | -102.20 |
| 27 | 12 | 651100.00 | 833000.00 | 122.25 | 10.15 | 138.32 | -4.73 | 136.92 | -30.12 | 112.38 | -71.63 | 80.88 | -109.14 |
| 28 | 12 | 651500.00 | 833000.00 | 122.25 | 10.15 | 140.44 | -2.59 | 141.17 | -32.37 | 118.05 | -66.69 | 89.26 | -105.04 |
| 29 | 12 | 651900.00 | 833000.00 | 121.21 | 10.11 | 136.32 | -4.73 | 139.10 | -29.10 | 109.78 | -62.93 | 78.91 | -94.52 |
| 30 | 12 | 652300.00 | 833000.00 | 122.25 | 10.15 | 140.43 | -1.53 | 141.30 | -27.00 | 118.41 | -61.38 | 85.69 | -100.04 |
| 31 | 12 | 652700.00 | 833000.00 | 121.17 | 11.15 | 136.18 | -1.55 | 141.35 | -24.85 | 121.11 | -53.04 | 90.14 | -86.48 |
| 32 | 12 | 653100.00 | 833000.00 | 120.17 | 10.07 | 135.11 | -1.55 | 137.07 | -23.67 | 115.11 | -47.30 | 90.67 | -70.07 |
| 33 | 12 | 653500.00 | 833000.00 | 119.26 | 6.91 | 135.12 | -2.62 | 131.68 | -24.62 | 109.95 | -44.82 | 83.71 | -65.61 |
| 34 | 12 | 653900.00 | 833000.00 | 121.30 | 8.04 | 135.13 | -4.74 | 127.38 | -24.52 | 106.62 | -46.72 | 80.50 | -65.08 |
| 35 | 11 | 654600.00 | 832500.00 | 121.17 | 11.15 | 136.17 | -0.48 | 134.98 | -21.47 | 116.53 | -42.07 | 106.73 | -66.13 |
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| 37 | 11 | 653800.00 | 832500.00 | 121.21 | 10.11 | 136.18 | -1.55 | 136.03 | -22.57 | 117.38 | -45.32 | 102.09 | -74.16 |
| 38 | 11 | 653400.00 | 832500.00 | 119.18 | 8.99 | 121.30 | -5.87 | 136.03 | -22.57 | 117.30 | -46.38 | 93.35 | -73.81 |
| 39 | 11 | 653000.00 | 832500.00 | 119.14 | 10.03 | 133.00 | -4.75 | 133.82 | -24.67 | 108.38 | -52.17 | 80.50 | -71.68 |
| 40 | 11 | 652600.00 | 832500.00 | 122.21 | 11.19 | 138.31 | -3.67 | 137.00 | -26.90 | 106.19 | -53.09 | 80.50 | -71.68 |
| 41 | 11 | 652600.00 | 832500.00 | 121.30 | 8.04 | 138.32 | -5.79 | 136.87 | -32.27 | 104.40 | -63.63 | 70.87 | -83.28 |
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| 43 | 11 | 651400.00 | 832500.00 | 120.43 | 3.64 | 133.03 | -11.14 | 124.65 | -40.59 | 85.71 | -71.95 | 43.92 | -53.50 |
| 44 | 11 | 651000.00 | 832500.00 | 118.27 | 5.83 | 126.65 | -12.23 | 121.65 | -39.44 | 80.69 | -67.34 | 35.90 | -68.67 |
| 45 | 11 | 649600.00 | 832500.00 | 114.49 | -3.67 | 116.17 | -20.77 | 101.97 | -52.95 | 48.86 | -65.17 | 54.11 | -91.50 |
| 46 | 3 | 647265.00 | 829280.00 | 126.27 | 13.44 | 136.17 | 0.58 | 137.15 | -20.45 | 118.66 | -42.21 | 87.99 | -66.32 |
| 47 | 3 | 647612.00 | 829480.00 | 124.20 | 13.35 | 140.42 | 0.60 | 137.05 | -24.75 | 114.27 | -44.04 | 75.50 | -62.05 |
| 48 | 3 | 647960.00 | 829679.00 | 126.32 | 12.40 | 140.44 | -3.66 | 133.75 | -27.90 | 104.43 | -47.64 | 64.80 | -60.27 |
| 49 | 3 | 648307.00 | 829879.00 | 126.53 | 7.21 | 135.17 | -14.32 | 122.65 | -42.69 | 81.63 | -53.54 | 30.89 | -45.84 |
| 50 | 3 | 648654.00 | 830079.00 | 129.51 | 10.45 | 143.66 | -10.03 | 135.67 | -37.62 | 87.49 | -61.41 | 37.68 | -57.96 |
| 51 | 3 | 649001.00 | 830278.00 | 131.67 | 8.46 | 143.67 | -12.15 | 133.39 | -42.94 | 83.73 | -69.68 | 13.77 | -62.79 |
| 52 | 3 | 649349.00 | 830478.00 | 128.60 | 7.29 | 138.37 | -16.43 | 122.52 | -48.06 | 78.43 | -69.32 | 18.23 | -55.83 |
| 53 | 3 | 649696.00 | 830677.00 | 128.73 | 4.18 | 140.50 | -17.49 | 121.50 | -45.88 | 77.36 | -69.24 | 29.47 | -54.40 |
| 54 | 3 | 650043.00 | 830877.00 | 122.46 | 4.96 | 135.18 | -17.51 | 115.05 | -45.73 | 75.68 | -62.73 | 25.00 | -48.16 |
| 55 | 3 | 650390.00 | 831076.00 | 121.42 | 4.92 | 133.04 | -13.26 | 119.47 | -40.46 | 76.88 | -60.68 | 25.00 | -48.16 |
| 56 | 3 | 650736.00 | 831276.00 | 122.29 | 9.12 | 136.19 | -5.80 | 128.27 | -32.07 | 92.10 | -56.39 | 40.89 | -58.50 |
| 57 | 3 | 651085.00 | 831475.00 | 122.21 | 11.19 | 138.31 | -2.60 | 139.15 | -26.95 | 106.40 | -49.90 | 69.79 | -63.30 |
| 58 | 3 | 651433.00 | 831675.00 | 122.25 | 10.15 | 138.31 | -2.60 | 135.92 | -26.87 | 105.20 | -51.95 | 61.58 | -59.74 |
| 59 | 3 | 651780.00 | 831874.00 | 129.39 | 13.56 | 143.61 | 1.67 | 142.45 | -23.80 | 113.83 | -50.41 | 71.76 | -64.73 |
| 60 | 3 | 652127.00 | 832074.00 | 122.25 | 10.15 | 138.29 | 1.65 | 139.33 | -19.42 | 120.71 | -43.42 | 83.00 | -63.29 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 35555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | 3 | 652474.00 | 832274.00 | 125.25 | 11.23 | 136.18 | -1.55 | 136.05 | -21.50 | 112.22 | -42.84 | 78.53 | -57.05 |
| 62 | 3 | 652822.00 | 832473.00 | 122.25 | 10.15 | 140.42 | 0.60 | 139.25 | -22.65 | 115.13 | -45.03 | 76.04 | -58.84 |
| 63 | 3 | 653169.00 | 832673.00 | 126.55 | 13.52 | 141.48 | 2.73 | 145.62 | -19.53 | 121.98 | -40.31 | 85.31 | -55.98 |
| 64 | 3 | 653516.00 | 832873.00 | 122.17 | 12.23 | 136.29 | 1.65 | 139.53 | -19.42 | 114.41 | -41.92 | 80.67 | -57.41 |
| 65 | 3 | 653864.00 | 833072.00 | 124.53 | 10.24 | 135.12 | -2.62 | 133.82 | -24.67 | 108.89 | -44.74 | 75.18 | -56.16 |
| 66 | 3 | 654211.00 | 833272.00 | 120.05 | 13.18 | 135.11 | -0.49 | 139.33 | -19.42 | 117.74 | -40.02 | 78.53 | -57.05 |
| 67 | 3 | 654558.00 | 833471.00 | 121.13 | 12.19 | 136.15 | 3.77 | 141.58 | -15.18 | 128.57 | -37.56 | 93.52 | -59.54 |
| 68 | 3 | 654905.00 | 833671.00 | 122.08 | 14.30 | 138.27 | 6.97 | 145.80 | -12.00 | 136.36 | -32.76 | 94.77 | -65.25 |
| 69 | 3 | 655253.00 | 833870.00 | 122.17 | 12.23 | 138.27 | 5.91 | 142.75 | -10.90 | 130.91 | -34.52 | 99.59 | -62.75 |
| 70 | 3 | 655600.00 | 834070.00 | 117.02 | 10.98 | 127.66 | 0.54 | 130.83 | -14.92 | 115.98 | -34.57 | 87.10 | -58.47 |
| 71 | 2 | 655040.00 | 833050.00 | 122.25 | 10.15 | 138.29 | 1.65 | 141.55 | -16.25 | 130.83 | -35.58 | 111.36 | -64.70 |
| 72 | 2 | 654830.00 | 832950.00 | 119.01 | 15.14 | 135.09 | 2.70 | 136.15 | -17.20 | 123.41 | -35.07 | 106.72 | -59.53 |
| 73 | 2 | 654660.00 | 832865.00 | 129.39 | 15.56 | 140.40 | 4.85 | 141.53 | -17.33 | 128.71 | -35.43 | 115.82 | -57.74 |
| 74 | 2 | 654480.00 | 832775.00 | 131.55 | 11.57 | 146.80 | 2.75 | 142.57 | -16.43 | 130.83 | -35.58 | 101.01 | -60.78 |
| 75 | 2 | 654300.00 | 832680.00 | 126.39 | 12.48 | 141.48 | 1.67 | 146.90 | -17.45 | 141.52 | -35.24 | 130.27 | -56.84 |
| 76 | 2 | 654120.00 | 832590.00 | 136.65 | 13.66 | 148.92 | 3.83 | 152.27 | -17.58 | 141.45 | -36.30 | 113.86 | -62.92 |
| 77 | 2 | 653940.00 | 832500.00 | 129.30 | 15.64 | 145.72 | 5.94 | 146.90 | -17.45 | 125.02 | -42.65 | 88.35 | -64.18 |
| 78 | 2 | 653775.00 | 832405.00 | 127.23 | 15.55 | 142.54 | 3.80 | 146.87 | -18.53 | 123.96 | -42.57 | 87.63 | -61.86 |
| 79 | 2 | 653610.00 | 832310.00 | 129.35 | 14.60 | 143.60 | 3.80 | 144.65 | -21.70 | 119.64 | -43.34 | 87.81 | -67.39 |
| 80 | 2 | 653445.00 | 832215.00 | 124.16 | 14.59 | 142.54 | 2.73 | 143.60 | -20.60 | 120.78 | -42.36 | 88.88 | -60.97 |
| 81 | 2 | 653268.00 | 832123.00 | 129.30 | 15.64 | 143.60 | 3.80 | 146.85 | -19.60 | 125.02 | -42.65 | 87.28 | -64.00 |
| 82 | 2 | 653091.00 | 832030.00 | 129.30 | 15.64 | 145.73 | 3.81 | 147.92 | -19.63 | 129.41 | -40.81 | 94.59 | -59.72 |
| 83 | 2 | 652914.00 | 831937.00 | 129.30 | 15.64 | 143.60 | 3.80 | 146.87 | -18.53 | 122.90 | -42.50 | 84.42 | -54.73 |
| 84 | 2 | 652737.00 | 831844.00 | 128.27 | 15.59 | 141.47 | 3.79 | 146.90 | -17.45 | 125.31 | -38.40 | 86.74 | -60.61 |
| 85 | 2 | 652560.00 | 831752.00 | 124.20 | 13.35 | 140.41 | 2.73 | 142.57 | -18.43 | 120.22 | -34.86 | 96.19 | -56.68 |
| 86 | 2 | 652383.00 | 831659.00 | 128.27 | 15.59 | 141.47 | 3.79 | 142.63 | -16.28 | 121.14 | -37.05 | 97.62 | -54.72 |
| 87 | 2 | 652206.00 | 831566.00 | 127.51 | 13.48 | 141.48 | 1.67 | 142.55 | -19.50 | 118.94 | -37.97 | 89.77 | -55.62 |
| 88 | 2 | 652028.00 | 831473.00 | 126.31 | 14.56 | 141.48 | 1.67 | 143.62 | -19.53 | 117.59 | -42.14 | 84.24 | -55.80 |
| 89 | 2 | 651851.00 | 831381.00 | 127.35 | 12.44 | 141.48 | 1.67 | 141.42 | -21.63 | 117.38 | -45.32 | 86.88 | -60.97 |
| 90 | 2 | 651674.00 | 831288.00 | 129.30 | 15.64 | 145.73 | 3.81 | 146.82 | -20.68 | 120.42 | -47.66 | 83.00 | -63.29 |
| 91 | 2 | 651497.00 | 831195.00 | 126.27 | 15.59 | 145.72 | 5.94 | 150.02 | -21.83 | 121.48 | -47.73 | 81.57 | -65.26 |
| 92 | 2 | 651320.00 | 831102.00 | 120.22 | 16.63 | 145.72 | 4.88 | 147.85 | -22.85 | 120.20 | -50.85 | 88.53 | -63.11 |
| 93 | 2 | 651142.00 | 831010.00 | 126.27 | 15.59 | 145.73 | 2.75 | 146.72 | -24.98 | 110.50 | -52.32 | 74.96 | -58.66 |
| 94 | 2 | 650966.00 | 830917.00 | 127.44 | 10.56 | 140.44 | -3.66 | 135.85 | -30.10 | 96.71 | -51.37 | 64.43 | -49.21 |
| 95 | 2 | 650789.00 | 830824.00 | 125.29 | 10.20 | 136.21 | -8.99 | 124.97 | -35.21 | 84.96 | -51.64 | 58.90 | -42.79 |
| 96 | 2 | 650611.00 | 830731.00 | 122.58 | 7.04 | 135.15 | -10.06 | 123.82 | -38.41 | 81.78 | -51.42 | 46.59 | -37.44 |
| 97 | 2 | 650434.00 | 830639.00 | 125.57 | 8.12 | 136.33 | -6.86 | 124.92 | -37.36 | 81.63 | -53.54 | 46.94 | -35.30 |
| 98 | 2 | 650080.00 | 830453.00 | 124.24 | 12.31 | 141.51 | -5.78 | 135.77 | -33.32 | 87.09 | -51.78 | 54.97 | -33.33 |
| 99 | 2 | 649725.00 | 830268.00 | 127.14 | 17.63 | 145.74 | 1.68 | 142.30 | -30.25 | 95.65 | -51.30 | 64.78 | -27.26 |
| 100 | 2 | 649371.00 | 830082.00 | 129.14 | 19.79 | 151.04 | 4.90 | 149.82 | -30.43 | 98.61 | -54.70 | 59.96 | -23.16 |
| 101 | 2 | 649017.00 | 829897.00 | 129.22 | 17.71 | 146.80 | 2.75 | 142.30 | -30.25 | 98.28 | -44.02 | 66.20 | -18.70 |
| 102 | 2 | 648663.00 | 829711.00 | 122.17 | 12.23 | 141.50 | -3.65 | 132.55 | -33.24 | 87.81 | -41.17 | 57.99 | -15.13 |
| 103 | 2 | 648309.00 | 829526.00 | 123.41 | 7.08 | 133.04 | -14.33 | 115.25 | -37.13 | 77.63 | -34.08 | 53.71 | -7.82 |
| 104 | 2 | 647954.00 | 829340.00 | 126.15 | 10.55 | 143.61 | 2.74 | 139.25 | -22.65 | 88.75 | -27.38 | 94.57 | -26.71 |
| 105 | 15 | 652000.00 | 832000.00 | 129.43 | 12.52 | 138.30 | -0.48 | 139.27 | -21.57 | 121.62 | -45.61 | 92.81 | -70.42 |
| 106 | 15 | 651600.00 | 832000.00 | 129.51 | 10.45 | 138.52 | -5.79 | 139.20 | -24.80 | 107.44 | -65.97 | 75.86 | -73.11 |
| 107 | 15 | 651200.00 | 832000.00 | 129.51 | 10.45 | 143.65 | -6.84 | 139.07 | -30.17 | 104.62 | -60.44 | 69.62 | -77.57 |
| 108 | 15 | 650800.00 | 832000.00 | 129.60 | 8.37 | 138.35 | -11.11 | 127.00 | -40.64 | 88.70 | -59.36 | 54.45 | -69.55 |
| 109 | 15 | 650400.00 | 832000.00 | 129.77 | 4.22 | 138.37 | -17.50 | 121.50 | -45.88 | 80.55 | -69.46 | 42.86 | -73.13 |
| 110 | 15 | 650000.00 | 832000.00 | 119.77 | -5.54 | 122.45 | -26.07 | 100.82 | -56.15 | 48.35 | -72.60 | 2.70 | -49.95 |
| 111 | 15 | 649600.00 | 832000.00 | 114.87 | -15.01 | 109.73 | -36.77 | 84.58 | -61.14 | 27.49 | -65.84 | -1.76 | -43.71 |
| 112 | 15 | 649200.00 | 832000.00 | 114.58 | -5.75 | 117.13 | -26.10 | 98.67 | -56.10 | 48.35 | -72.60 | -3.54 | -54.42 |
| 113 | 16 | 648640.00 | 831500.00 | 110.34 | -3.84 | 112.85 | -20.80 | 98.93 | -45.35 | 60.05 | -57.40 | 50.90 | -90.96 |
| 114 | 16 | 649040.00 | 831532.00 | 124.54 | 5.05 | 133.02 | -9.01 | 133.57 | -35.42 | 93.28 | -70.33 | 41.08 | -83.83 |
| 115 | 16 | 649440.00 | 831564.00 | 124.33 | 10.24 | 143.64 | -5.77 | 138.82 | -40.92 | 102.13 | -65.60 | 46.43 | -84.72 |
| 116 | 16 | 649840.00 | 831596.00 | 129.51 | 10.45 | 143.06 | -8.96 | 138.94 | -35.54 | 96.47 | -70.55 | 46.43 | -84.72 |
| 117 | 16 | 650240.00 | 831628.00 | 129.64 | 7.33 | 138.36 | -14.30 | 127.00 | -40.64 | 88.34 | -64.66 | 43.75 | -67.77 |
| 118 | 16 | 650640.00 | 831660.00 | 129.56 | 9.41 | 138.53 | -7.92 | 133.57 | -35.42 | 95.07 | -59.79 | 49.10 | -68.66 |
| 119 | 16 | 651040.00 | 831692.00 | 129.60 | 8.37 | 143.64 | -4.71 | 139.07 | -30.17 | 108.16 | -55.35 | 69.62 | -77.57 |
| 120 | 16 | 651440.00 | 831724.00 | 129.64 | 7.53 | 138.33 | -7.92 | 133.70 | -30.04 | 102.86 | -54.99 | 66.05 | -65.98 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 121 | 16 | 651840.00 | 831756.00 | 129.64 | 7.53 | 138.51 | -2.60 | 139.20 | -24.80 | 111.71 | -50.27 | 75.86 | -73.11 |
| 122 | 16 | 652240.00 | 831788.00 | 124.33 | 10.24 | 138.50 | 0.59 | 139.33 | -19.42 | 119.86 | -40.16 | 84.07 | -63.47 |
| 123 | 16 | 652640.00 | 831820.00 | 129.22 | 17.71 | 148.90 | 9.14 | 150.20 | -14.31 | 136.50 | -30.64 | 115.64 | -52.21 |
| 124 | 16 | 653040.00 | 831852.00 | 129.81 | 5.18 | 138.57 | -17.50 | 117.45 | -35.04 | 80.91 | -64.16 | -16.01 | -96.35 |
| 125 | 16 | 653440.00 | 831884.00 | 124.66 | 1.94 | 125.61 | -18.61 | 116.38 | -35.01 | 95.07 | -59.79 | 55.56 | -97.20 |
| 126 | 16 | 653840.00 | 831916.00 | 129.59 | 13.56 | 148.93 | 1.70 | 149.97 | -25.98 | 124.60 | -45.83 | 95.84 | -65.43 |
| 127 | 16 | 654240.00 | 831948.00 | 129.43 | 12.52 | 143.62 | -0.45 | 139.20 | -24.80 | 118.44 | -45.39 | 91.74 | -70.25 |
| 128 | 17 | 654220.00 | 831440.00 | 129.64 | 7.53 | 143.64 | -5.77 | 139.20 | -24.80 | 108.53 | -50.05 | 78.89 | -68.11 |
| 129 | 17 | 653820.00 | 831427.99 | 129.60 | 8.57 | 138.52 | -5.79 | 130.55 | -26.74 | 108.53 | -50.05 | 82.11 | -68.64 |
| 130 | 17 | 653420.00 | 831415.99 | 129.60 | 8.37 | 138.53 | -6.86 | 130.55 | -26.74 | 107.46 | -49.98 | 75.86 | -73.11 |
| 131 | 17 | 653020.00 | 831403.99 | 129.50 | 15.64 | 143.61 | 0.61 | 144.57 | -24.93 | 118.44 | -45.39 | 97.98 | -65.78 |
| 132 | 17 | 652620.00 | 831391.99 | 124.54 | 5.05 | 133.05 | -17.52 | 122.70 | -40.54 | 83.37 | -74.98 | 8.07 | -83.85 |
| 133 | 17 | 652220.00 | 831379.99 | 124.75 | -0.14 | 133.06 | -18.58 | 120.55 | -40.49 | 84.07 | -80.36 | 6.50 | -94.56 |
| 134 | 17 | 651820.00 | 831367.99 | 129.51 | 10.45 | 143.61 | 2.74 | 144.65 | -21.70 | 120.92 | -40.23 | 91.56 | -64.71 |
| 135 | 17 | 651420.00 | 831355.99 | 124.33 | 10.24 | 138.52 | -4.73 | 139.20 | -24.80 | 107.32 | -52.10 | 66.05 | -65.98 |
| 136 | 17 | 651020.00 | 831343.99 | 129.51 | 10.45 | 140.45 | -4.72 | 133.70 | -30.04 | 102.86 | -54.99 | 60.69 | -65.09 |
| 137 | 17 | 650620.00 | 831331.99 | 124.45 | 7.12 | 140.45 | -4.72 | 139.07 | -30.17 | 103.92 | -55.06 | 61.95 | -70.80 |
| 138 | 17 | 650220.00 | 831319.99 | 124.41 | 8.16 | 140.45 | -5.79 | 139.07 | -30.17 | 100.59 | -56.97 | 57.31 | -72.23 |
| 139 | 17 | 649820.00 | 831307.99 | 129.43 | 12.52 | 143.63 | -3.64 | 144.44 | -30.30 | 108.86 | -60.73 | 64.27 | -76.68 |
| 140 | 17 | 649420.00 | 831295.99 | 129.50 | 15.64 | 143.61 | 0.61 | 144.57 | -24.93 | 117.71 | -56.01 | 69.62 | -77.57 |
| 141 | 17 | 649020.00 | 831283.99 | 124.54 | 5.05 | 123.47 | -16.50 | 115.17 | -40.36 | 75.60 | -63.79 | 17.87 | -57.97 |
| 142 | 18 | 647440.00 | 830800.00 | 113.95 | 9.82 | 125.52 | 3.73 | 137.53 | -12.93 | 130.11 | -46.19 | 82.83 | -90.77 |
| 143 | 18 | 647840.00 | 830819.99 | 117.02 | 10.98 | 132.96 | 3.76 | 139.45 | -14.05 | 122.49 | -32.88 | 86.21 | -63.83 |
| 144 | 18 | 648240.00 | 830839.99 | 114.58 | -5.75 | 117.11 | -20.78 | 103.55 | -40.08 | 65.56 | -57.76 | 13.41 | -51.73 |
| 145 | 18 | 648640.00 | 830859.99 | 114.58 | -5.75 | 116.07 | -26.10 | 93.43 | -50.60 | 47.17 | -58.66 | -2.65 | -49.06 |
| 146 | 18 | 649040.00 | 830879.99 | 119.55 | 4.84 | 135.19 | -18.57 | 117.20 | -45.78 | 78.79 | -64.01 | 18.76 | -52.62 |
| 147 | 18 | 649440.00 | 830899.99 | 129.51 | 10.45 | 143.65 | -7.90 | 138.89 | -37.69 | 95.64 | -65.02 | 43.75 | -67.77 |
| 148 | 18 | 649840.00 | 830919.99 | 129.51 | 10.45 | 140.48 | -12.17 | 133.52 | -37.57 | 83.03 | -64.30 | 33.58 | -62.78 |
| 149 | 18 | 650240.00 | 830939.99 | 129.72 | 5.26 | 133.06 | -18.58 | 122.70 | -40.54 | 70.30 | -65.43 | 29.47 | -54.40 |
| 150 | 18 | 650640.00 | 830959.99 | 129.72 | 5.26 | 135.16 | -13.25 | 121.62 | -40.51 | 81.13 | -60.97 | 29.47 | -54.40 |
| 151 | 18 | 651040.00 | 830979.99 | 129.43 | 12.52 | 143.62 | -0.45 | 144.57 | -24.93 | 109.59 | -50.12 | 71.40 | -66.87 |
| 152 | 19 | 651100.00 | 830500.00 | 129.09 | 20.83 | 148.89 | 11.27 | 155.60 | -13.36 | 141.81 | -31.00 | 136.17 | -74.32 |
| 153 | 19 | 650700.00 | 830500.00 | 114.58 | -5.75 | 125.62 | -20.74 | 109.55 | -50.98 | 69.57 | -74.04 | -36.55 | -54.44 |
| 154 | 19 | 650300.00 | 830500.00 | 114.79 | -10.94 | 120.32 | -26.08 | 101.85 | -58.32 | 49.39 | -88.66 | -50.81 | -74.07 |
| 155 | 19 | 649900.00 | 830500.00 | 124.54 | 5.05 | 138.55 | -12.18 | 122.70 | -40.54 | 81.13 | -60.97 | 34.82 | -55.29 |
| 156 | 19 | 649500.00 | 830500.00 | 129.65 | 2.15 | 138.58 | -19.62 | 118.14 | -51.18 | 66.54 | -71.70 | 13.41 | -51.73 |
| 157 | 19 | 649100.00 | 830500.00 | 129.93 | 0.07 | 133.07 | -20.71 | 106.20 | -56.28 | 55.80 | -70.84 | 14.50 | -46.38 |
| 158 | 19 | 648700.00 | 830500.00 | 124.75 | -0.14 | 133.07 | -20.71 | 114.97 | -48.96 | 70.30 | -63.43 | 18.76 | -52.62 |
| 159 | 19 | 648300.00 | 830500.00 | 129.51 | 10.45 | 143.65 | -6.84 | 138.94 | -35.54 | 93.28 | -70.53 | 31.26 | -76.70 |
| 160 | 19 | 647900.00 | 830500.00 | 124.33 | 10.24 | 138.51 | -2.60 | 139.07 | -30.17 | 102.06 | -66.67 | 41.08 | -83.83 |
| 161 | 19 | 647500.00 | 830500.00 | 119.14 | 10.03 | 125.55 | -4.78 | 135.82 | -24.67 | 103.77 | -57.19 | 58.03 | -81.15 |
| 162 | 19 | 647100.00 | 830500.00 | 114.16 | 4.63 | 124.48 | -3.73 | 127.43 | -22.37 | 110.65 | -50.19 | 58.03 | -81.15 |
| 163 | 19 | 646700.00 | 830500.00 | 113.95 | 9.82 | 126.58 | 2.67 | 139.48 | -12.98 | 132.23 | -46.34 | 75.16 | -97.19 |
| 164 | 19 | 646300.00 | 830500.00 | 116.02 | 9.90 | 126.57 | 5.86 | 139.58 | -8.68 | 140.72 | -46.91 | 85.19 | -101.83 |
| 165 | 19 | 645900.00 | 830500.00 | 108.76 | 9.61 | 120.21 | 1.58 | 134.10 | -12.85 | 137.83 | -89.36 | 72.31 | -94.52 |
| 166 | 20 | 645400.00 | 830000.00 | 108.76 | 9.61 | 121.27 | 2.64 | 134.13 | -11.78 | 130.33 | -43.01 | 78.73 | -95.59 |
| 167 | 20 | 645600.00 | 830000.00 | 113.99 | 8.78 | 124.45 | 4.78 | 139.45 | -14.05 | 130.04 | -47.25 | 66.95 | -93.63 |
| 168 | 20 | 646200.00 | 830000.00 | 113.95 | 9.82 | 125.50 | 7.98 | 143.90 | -7.71 | 135.78 | -41.25 | 85.33 | -82.38 |
| 169 | 20 | 646600.00 | 830000.00 | 113.95 | 9.82 | 124.47 | 0.53 | 133.98 | -18.22 | 116.17 | -47.57 | 69.27 | -79.71 |
| 170 | 20 | 647000.00 | 830000.00 | 119.22 | 7.95 | 132.98 | -0.50 | 139.27 | -21.57 | 115.95 | -50.56 | 69.62 | -77.57 |
| 171 | 20 | 647400.00 | 830000.00 | 121.30 | 8.04 | 136.50 | -0.48 | 139.20 | -24.80 | 113.69 | -52.53 | 70.33 | -73.29 |
| 172 | 20 | 647600.00 | 830000.00 | 121.30 | 8.04 | 138.52 | -5.79 | 135.92 | -26.87 | 104.98 | -55.14 | 59.81 | -70.44 |
| 173 | 20 | 648200.00 | 830000.00 | 126.61 | 5.13 | 135.16 | -13.25 | 122.82 | -35.16 | 85.88 | -53.83 | 40.17 | -56.18 |
| 174 | 20 | 648600.00 | 830000.00 | 129.72 | 5.26 | 138.36 | -14.30 | 121.62 | -40.51 | 83.39 | -58.99 | 40.17 | -56.18 |
| 175 | 20 | 649000.00 | 830000.00 | 129.51 | 10.45 | 143.65 | -7.90 | 133.52 | -37.57 | 90.82 | -59.50 | 50.88 | -57.96 |
| 176 | 20 | 649400.00 | 830000.00 | 129.93 | 0.07 | 133.07 | -20.71 | 119.30 | -47.98 | 73.79 | -90.32 | -42.77 | -91.91 |
| 177 | 20 | 649800.00 | 830000.00 | 121.63 | -0.27 | 133.07 | -20.71 | 113.85 | -51.08 | 69.21 | -79.35 | -7.99 | -81.18 |
| 178 | 20 | 650200.00 | 830000.00 | 119.22 | 7.95 | 138.53 | -6.06 | 133.67 | -31.12 | 90.49 | -48.82 | 58.01 | -48.14 |
| 179 | 20 | 650600.00 | 830000.00 | 124.49 | 6.09 | 138.34 | -10.05 | 124.97 | -35.21 | 85.52 | -59.14 | 49.10 | -68.66 |
| 180 | 20 | 651000.00 | 830000.00 | 129.51 | 10.45 | 143.64 | -5.77 | 139.07 | -30.17 | 106.04 | -55.21 | 59.81 | -70.44 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3553 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 181 | 20 | 651400.00 | 830000.00 | 129.51 | 10.45 | 143.64 | -4.71 | 141.22 | -30.22 | 105.68 | -60.52 | 53.56 | -74.90 |
| 182 | 20 | 651800.00 | 830000.00 | 129.72 | 5.26 | 143.67 | -12.15 | 127.12 | -35.27 | 91.88 | -59.57 | 37.51 | -72.24 |
| 183 | 20 | 652200.00 | 830000.00 | 129.93 | 0.07 | 135.18 | -17.51 | 119.47 | -40.46 | 80.91 | -64.16 | 32.15 | -71.35 |
| 184 | 21 | 656000.00 | 834500.00 | 119.14 | 10.03 | 132.96 | 3.76 | 139.58 | -8.68 | 131.41 | -27.09 | 119.91 | -26.52 |
| 185 | 21 | 655600.00 | 834500.00 | 119.14 | 10.03 | 132.98 | 0.57 | 136.28 | -11.83 | 121.65 | -29.62 | 104.40 | -47.04 |
| 186 | 21 | 655200.00 | 834500.00 | 124.33 | 10.24 | 132.97 | 2.69 | 136.28 | -11.83 | 124.83 | -29.84 | 106.00 | -50.61 |
| 187 | 21 | 654800.00 | 834500.00 | 119.14 | 10.03 | 132.97 | 2.69 | 136.28 | -11.83 | 123.77 | -29.77 | 100.83 | -55.25 |
| 188 | 21 | 654400.00 | 834500.00 | 119.14 | 10.03 | 132.97 | 2.69 | 136.28 | -11.83 | 124.83 | -29.84 | 100.48 | -57.39 |
| 189 | 21 | 654000.00 | 834500.00 | 119.09 | 11.07 | 135.09 | 3.77 | 139.50 | -11.90 | 131.20 | -30.27 | 99.94 | -60.61 |
| 190 | 21 | 653600.00 | 834500.00 | 124.37 | 9.20 | 135.10 | 1.64 | 139.40 | -16.20 | 122.20 | -37.12 | 92.27 | -67.03 |
| 191 | 21 | 653200.00 | 834500.00 | 121.21 | 10.11 | 134.05 | -1.56 | 136.05 | -21.50 | 113.13 | -45.03 | 69.26 | -66.51 |
| 192 | 21 | 652800.00 | 834500.00 | 124.11 | 15.43 | 138.30 | -1.54 | 139.20 | -24.80 | 111.71 | -50.27 | 71.40 | -66.87 |
| 193 | 21 | 652400.00 | 834500.00 | 122.29 | 9.12 | 138.52 | -4.73 | 134.85 | -26.85 | 102.86 | -54.99 | 60.69 | -65.09 |
| 194 | 21 | 652000.00 | 834500.00 | 119.55 | 4.84 | 125.58 | -12.23 | 117.53 | -31.81 | 85.18 | -48.46 | 51.77 | -52.60 |
| 195 | 21 | 651600.00 | 834500.00 | 119.56 | -0.55 | 124.54 | -17.56 | 114.95 | -40.28 | 75.97 | -58.49 | 28.93 | -57.61 |
| 196 | 21 | 651200.00 | 834500.00 | 114.49 | -5.67 | 117.11 | -20.78 | 97.85 | -45.33 | 60.27 | -54.22 | 15.19 | -41.03 |
| 197 | 22 | 651200.00 | 835000.00 | 114.45 | -2.64 | 117.10 | -18.65 | 103.43 | -36.86 | 74.35 | -50.92 | 29.82 | -52.26 |
| 198 | 22 | 651600.00 | 835000.00 | 114.57 | -0.56 | 118.16 | -16.52 | 106.70 | -34.78 | 76.53 | -53.18 | 33.21 | -51.72 |
| 199 | 22 | 652000.00 | 835000.00 | 119.55 | 4.84 | 123.45 | -10.11 | 118.65 | -29.69 | 90.49 | -48.82 | 50.88 | -57.96 |
| 200 | 22 | 652400.00 | 835000.00 | 126.53 | 7.21 | 135.02 | -9.01 | 126.18 | -29.87 | 96.49 | -54.56 | 55.34 | -64.20 |
| 201 | 22 | 652800.00 | 835000.00 | 122.25 | 10.15 | 136.30 | -0.48 | 141.35 | -24.85 | 114.89 | -50.48 | 70.51 | -72.22 |
| 202 | 22 | 653200.00 | 835000.00 | 122.17 | 12.23 | 136.30 | 0.59 | 139.35 | -18.35 | 120.78 | -42.36 | 85.32 | -69.18 |
| 203 | 22 | 653600.00 | 835000.00 | 122.17 | 12.23 | 136.29 | 2.72 | 141.58 | -15.18 | 130.83 | -35.58 | 99.05 | -65.96 |
| 204 | 22 | 654000.00 | 835000.00 | 119.14 | 10.03 | 132.98 | 0.57 | 139.43 | -15.13 | 122.35 | -35.00 | 89.60 | -69.89 |
| 205 | 22 | 654400.00 | 835000.00 | 124.33 | 10.24 | 132.97 | 1.63 | 137.25 | -16.15 | 120.22 | -34.86 | 89.24 | -58.83 |
| 206 | 22 | 654600.00 | 835000.00 | 119.14 | 10.03 | 132.97 | 2.69 | 139.50 | -11.90 | 131.20 | -30.27 | 103.15 | -61.14 |
| 207 | 22 | 655200.00 | 835000.00 | 120.17 | 10.07 | 132.97 | 1.63 | 136.25 | -12.90 | 123.77 | -29.77 | 109.93 | -53.46 |
| 208 | 22 | 655600.00 | 835000.00 | 124.33 | 10.24 | 132.97 | 1.63 | 136.30 | -10.75 | 123.84 | -28.71 | 112.43 | -51.68 |
| 209 | 22 | 656000.00 | 835000.00 | 123.25 | 11.23 | 138.28 | 3.78 | 141.73 | -8.73 | 136.79 | -26.39 | 124.19 | -27.23 |
| 210 | 23 | 656000.00 | 835500.00 | 129.39 | 13.56 | 140.40 | 5.92 | 145.00 | -6.66 | 142.10 | -26.75 | 136.52 | -58.98 |
| 211 | 23 | 655600.00 | 835508.00 | 124.24 | 12.51 | 132.96 | 4.82 | 139.61 | -7.60 | 136.86 | -25.33 | 116.71 | -52.39 |
| 212 | 23 | 655200.00 | 835516.00 | 124.37 | 9.20 | 132.96 | 3.76 | 139.58 | -8.68 | 131.41 | -27.09 | 112.25 | -46.15 |
| 213 | 23 | 654800.00 | 835524.00 | 129.39 | 13.56 | 138.27 | 6.97 | 144.95 | -8.81 | 136.50 | -30.64 | 111.54 | -57.03 |
| 214 | 23 | 654400.00 | 835532.00 | 124.33 | 10.24 | 138.28 | 4.84 | 144.88 | -12.03 | 136.14 | -35.94 | 102.27 | -66.49 |
| 215 | 23 | 654000.00 | 835540.00 | 124.20 | 13.35 | 138.28 | 4.84 | 141.60 | -14.10 | 130.83 | -35.58 | 101.38 | -71.85 |
| 216 | 23 | 653600.00 | 835548.00 | 124.20 | 13.35 | 138.28 | 4.84 | 144.80 | -15.25 | 130.47 | -40.89 | 89.60 | -69.89 |
| 217 | 23 | 653200.00 | 835556.00 | 124.11 | 15.43 | 138.28 | 4.84 | 144.80 | -15.25 | 130.47 | -40.89 | 90.85 | -75.60 |
| 218 | 23 | 652800.00 | 835564.00 | 124.28 | 11.28 | 136.29 | 2.72 | 139.38 | -17.28 | 120.92 | -40.23 | 88.70 | -62.04 |
| 219 | 23 | 652400.00 | 835572.00 | 124.37 | 9.20 | 138.50 | -1.54 | 136.05 | -21.50 | 113.13 | -45.03 | 71.40 | -66.87 |
| 220 | 23 | 652000.00 | 835580.00 | 116.57 | -5.59 | 118.17 | -20.77 | 108.78 | -38.06 | 71.38 | -47.51 | 30.36 | -49.05 |
| 221 | 23 | 651600.00 | 835588.00 | 114.49 | -3.67 | 114.97 | -17.60 | 101.41 | -31.43 | 77.05 | -42.57 | 32.13 | -38.34 |
| 222 | 23 | 651200.00 | 835596.00 | 124.20 | 13.35 | 135.09 | 4.83 | 139.61 | -7.60 | 131.70 | -22.85 | 117.42 | -41.51 |
| 223 | 23 | 650600.00 | 835604.00 | 124.11 | 15.43 | 132.91 | 15.46 | 145.44 | 11.61 | 159.90 | -0.25 | 175.04 | -38.98 |
| 224 | 24 | 650900.00 | 836000.00 | 113.95 | 9.82 | 123.37 | 6.91 | 134.38 | -1.03 | 142.46 | -21.45 | 132.06 | -65.94 |
| 225 | 24 | 651300.00 | 836000.00 | 118.10 | 9.99 | 126.58 | 3.73 | 134.23 | -7.48 | 132.40 | -26.22 | 114.58 | -65.24 |
| 226 | 24 | 651700.00 | 836000.00 | 113.95 | 9.82 | 123.40 | 0.53 | 124.43 | -12.62 | 115.42 | -27.07 | 100.47 | -44.19 |
| 227 | 24 | 652100.00 | 836000.00 | 116.23 | 4.71 | 122.37 | -6.93 | 117.76 | -22.14 | 97.94 | -33.33 | 74.07 | -50.81 |
| 228 | 24 | 652500.00 | 836000.00 | 119.26 | 6.91 | 132.99 | -2.63 | 127.48 | -20.22 | 109.61 | -34.13 | 80.67 | -57.41 |
| 229 | 24 | 652900.00 | 836000.00 | 121.13 | 12.19 | 136.28 | 3.78 | 144.83 | -14.18 | 130.83 | -35.58 | 99.05 | -65.96 |
| 230 | 24 | 653300.00 | 836000.00 | 119.05 | 12.10 | 138.29 | 2.72 | 139.40 | -16.20 | 119.02 | -36.91 | 87.10 | -58.47 |
| 231 | 24 | 653700.00 | 836000.00 | 122.17 | 12.23 | 136.29 | 2.72 | 139.38 | -17.28 | 121.98 | -40.31 | 86.03 | -58.29 |
| 232 | 24 | 654100.00 | 836000.00 | 126.27 | 13.44 | 140.40 | 5.92 | 144.83 | -14.18 | 136.14 | -35.94 | 101.20 | -66.32 |
| 233 | 24 | 654500.00 | 836000.00 | 124.16 | 14.39 | 136.27 | 5.91 | 144.88 | -12.03 | 135.78 | -41.25 | 98.16 | -71.31 |
| 234 | 24 | 654900.00 | 836000.00 | 121.13 | 12.19 | 138.27 | 5.91 | 144.88 | -12.03 | 131.20 | -30.27 | 102.08 | -60.96 |
| 235 | 24 | 655300.00 | 836000.00 | 124.20 | 13.35 | 138.27 | 5.91 | 139.55 | -9.75 | 131.34 | -28.15 | 115.46 | -46.68 |
| 236 | 24 | 655700.00 | 836000.00 | 124.33 | 10.24 | 135.09 | 2.70 | 139.55 | -9.75 | 131.49 | -26.03 | 115.46 | -46.68 |
| 237 | 24 | 656100.00 | 836000.00 | 124.33 | 10.24 | 134.03 | 2.70 | 139.55 | -9.75 | 131.49 | -26.03 | 115.46 | -46.68 |
| 238 | 25 | 656000.00 | 836500.00 | 124.37 | 9.20 | 132.98 | 0.57 | 134.10 | -12.85 | 119.60 | -28.42 | 103.68 | -44.73 |
| 239 | 25 | 655600.00 | 836500.00 | 121.17 | 11.15 | 132.96 | 3.76 | 136.53 | -9.68 | 124.06 | -25.52 | 109.03 | -45.62 |
| 240 | 25 | 655200.00 | 836500.00 | 124.11 | 15.43 | 138.25 | 10.16 | 145.08 | -5.43 | 142.46 | -21.45 | 124.91 | -42.75 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 241 | 25 | 654800.00 | 836500.00 | 119.14 | 10.03 | 132.98 | 0.57 | 134.03 | -16.07 | 115.28 | -29.19 | 91.02 | -48.12 |
| 242 | 25 | 654400.00 | 836500.00 | 119.22 | 7.95 | 126.60 | -1.59 | 126.40 | -20.19 | 106.43 | -33.91 | 80.31 | -46.34 |
| 243 | 25 | 654000.00 | 836500.00 | 119.14 | 10.03 | 135.09 | 2.70 | 139.38 | -17.28 | 116.89 | -36.76 | 86.56 | -55.08 |
| 244 | 25 | 653600.00 | 836500.00 | 120.17 | 10.07 | 132.99 | -2.63 | 133.90 | -21.45 | 110.31 | -39.51 | 78.18 | -59.19 |
| 245 | 25 | 653200.00 | 836500.00 | 124.37 | 9.20 | 127.67 | -1.58 | 126.43 | -19.12 | 110.67 | -34.20 | 82.63 | -52.23 |
| 246 | 25 | 652800.00 | 836500.00 | 124.41 | 8.16 | 132.98 | -0.50 | 127.58 | -15.92 | 115.28 | -29.19 | 90.13 | -53.48 |
| 247 | 25 | 652400.00 | 836500.00 | 118.93 | 15.22 | 132.94 | 8.01 | 139.71 | -3.50 | 139.35 | -20.17 | 131.16 | -51.49 |
| 248 | 25 | 652000.00 | 836500.00 | 119.14 | 10.03 | 126.56 | 7.99 | 137.63 | -0.03 | 139.64 | -15.92 | 137.40 | -47.03 |
| 249 | 25 | 651600.00 | 836500.00 | 113.95 | 9.82 | 122.31 | 6.90 | 127.96 | 0.20 | 135.47 | -14.57 | 139.90 | -45.24 |
| 250 | 26 | 650400.00 | 837000.00 | 110.96 | 6.58 | 114.87 | 4.74 | 122.61 | 1.40 | 132.36 | -13.30 | 132.95 | -60.59 |
| 251 | 26 | 650800.00 | 837000.00 | 108.76 | 9.61 | 114.86 | 9.00 | 123.87 | 8.90 | 138.53 | -0.92 | 148.63 | -32.39 |
| 252 | 26 | 651200.00 | 837000.00 | 110.01 | 4.46 | 117.01 | 2.63 | 122.46 | -5.05 | 122.08 | -23.25 | 106.37 | -61.67 |
| 253 | 26 | 651600.00 | 837000.00 | 110.96 | 6.58 | 119.14 | 1.57 | 128.53 | -21.32 | 123.91 | -27.64 | 102.98 | -75.41 |
| 254 | 26 | 652000.00 | 837000.00 | 113.86 | 11.69 | 123.37 | 7.97 | 134.41 | 0.05 | 142.82 | -16.14 | 143.66 | -62.37 |
| 255 | 26 | 652400.00 | 837000.00 | 116.01 | 12.06 | 127.63 | 7.99 | 139.76 | -1.16 | 144.58 | -21.59 | 138.30 | -61.48 |
| 256 | 26 | 652800.00 | 837000.00 | 119.14 | 10.03 | 126.59 | 0.54 | 128.71 | -13.80 | 120.59 | -29.55 | 93.70 | -65.07 |
| 257 | 26 | 653200.00 | 837000.00 | 120.13 | 11.11 | 132.96 | 3.76 | 136.33 | -9.68 | 131.27 | -29.21 | 110.65 | -62.39 |
| 258 | 26 | 653600.00 | 837000.00 | 121.17 | 11.15 | 135.09 | 2.70 | 139.45 | -14.05 | 125.89 | -29.91 | 100.83 | -55.25 |
| 259 | 26 | 654000.00 | 837000.00 | 119.22 | 7.95 | 130.66 | -2.63 | 124.31 | -17.99 | 111.03 | -28.90 | 91.91 | -42.77 |
| 260 | 26 | 654400.00 | 837000.00 | 119.14 | 10.03 | 132.97 | 2.69 | 135.20 | -11.80 | 123.77 | -29.77 | 99.94 | -60.61 |
| 261 | 26 | 654800.00 | 837000.00 | 121.00 | 15.30 | 138.25 | 11.23 | 150.53 | -0.34 | 150.66 | -26.27 | 137.95 | -63.62 |
| 262 | 26 | 655200.00 | 837000.00 | 118.72 | 20.41 | 138.20 | 21.86 | 156.34 | 17.81 | 170.58 | 0.09 | 184.50 | -48.25 |
| 263 | 26 | 655600.00 | 837000.00 | 121.70 | 23.64 | 138.16 | 32.50 | 162.09 | 33.80 | 197.69 | 6.77 | 210.56 | -56.98 |
| 264 | 27 | 656100.00 | 837500.00 | 129.30 | 15.64 | 143.57 | 11.25 | 150.53 | -0.34 | 152.85 | -25.35 | 256.95 | -75.69 |
| 265 | 27 | 655700.00 | 837519.99 | 119.14 | 10.03 | 127.63 | 5.86 | 134.38 | -1.03 | 137.44 | -16.84 | 130.62 | -41.50 |
| 266 | 27 | 655300.00 | 837539.99 | 118.93 | 15.22 | 130.81 | 10.13 | 139.77 | -0.73 | 142.17 | -25.69 | 140.97 | -45.42 |
| 267 | 27 | 654900.00 | 837559.99 | 118.93 | 15.22 | 135.06 | 10.15 | 145.16 | -0.21 | 147.77 | -21.81 | 135.62 | -57.73 |
| 268 | 27 | 654500.00 | 837579.99 | 124.28 | 11.28 | 132.94 | 8.01 | 141.86 | -3.36 | 142.17 | -25.69 | 128.66 | -40.07 |
| 269 | 27 | 654100.00 | 837599.99 | 117.06 | 9.94 | 124.46 | 2.66 | 128.88 | -6.27 | 126.40 | -22.48 | 113.32 | -46.33 |
| 270 | 27 | 653700.00 | 837619.99 | 113.95 | 9.82 | 121.27 | 0.52 | 122.33 | -10.42 | 114.72 | -21.69 | 103.68 | -38.12 |
| 271 | 27 | 653300.00 | 837639.99 | 119.14 | 10.03 | 127.63 | 5.86 | 136.48 | -5.23 | 137.23 | -20.02 | 128.49 | -54.35 |
| 272 | 27 | 652900.00 | 837659.99 | 114.16 | 4.63 | 122.34 | -0.54 | 125.48 | -13.72 | 118.10 | -34.71 | 82.29 | -74.18 |
| 273 | 27 | 652500.00 | 837679.99 | 113.95 | 9.82 | 121.27 | 1.58 | 126.68 | -8.37 | 125.89 | -29.91 | 99.42 | -77.02 |
| 274 | 28 | 652900.00 | 838000.00 | 114.16 | 4.63 | 122.35 | -1.61 | 125.43 | -15.87 | 119.02 | -36.91 | 85.68 | -80.24 |
| 275 | 28 | 653300.00 | 838000.00 | 116.02 | 9.90 | 125.50 | 6.92 | 135.43 | -2.13 | 139.35 | -20.17 | 133.84 | -55.24 |
| 276 | 28 | 653700.00 | 838000.00 | 113.95 | 9.82 | 121.26 | 3.71 | 123.56 | -4.00 | 121.60 | -14.69 | 121.52 | -36.69 |
| 277 | 28 | 654100.00 | 838000.00 | 114.03 | 7.74 | 121.27 | 1.58 | 123.46 | -8.30 | 120.10 | -20.99 | 109.92 | -40.26 |
| 278 | 28 | 654500.00 | 838000.00 | 117.97 | 13.10 | 127.63 | 7.99 | 139.76 | -1.16 | 139.28 | -21.23 | 129.02 | -51.14 |
| 279 | 28 | 654900.00 | 838000.00 | 118.01 | 12.06 | 126.57 | 6.92 | 137.53 | -4.33 | 136.86 | -25.33 | 116.89 | -57.92 |
| 280 | 28 | 655300.00 | 838000.00 | 118.10 | 9.99 | 125.51 | 4.79 | 134.33 | -3.18 | 131.99 | -18.60 | 130.26 | -43.64 |
| 281 | 28 | 655700.00 | 838000.00 | 118.10 | 9.99 | 124.45 | 3.72 | 126.79 | -4.07 | 125.92 | -13.92 | 122.77 | -35.80 |
| 282 | 28 | 656100.00 | 838000.00 | 126.23 | 14.47 | 138.26 | 9.10 | 147.28 | -1.53 | 148.06 | -17.56 | 140.44 | -48.63 |
| 283 | 28 | 656500.00 | 838000.00 | 121.21 | 10.11 | 132.99 | -1.56 | 134.00 | -17.15 | 118.32 | -31.53 | 95.12 | -56.51 |
| 284 | 28 | 656900.00 | 838000.00 | 118.22 | 6.87 | 124.49 | -4.79 | 122.13 | -19.02 | 111.03 | -28.90 | 104.04 | -55.79 |
| 285 | 29 | 657100.00 | 838500.00 | 129.72 | 5.26 | 135.11 | -1.55 | 135.08 | -17.17 | 120.59 | -29.55 | 100.83 | -55.25 |
| 286 | 29 | 656700.00 | 838500.00 | 129.64 | 7.53 | 132.99 | -1.56 | 134.03 | -16.07 | 119.74 | -26.29 | 104.93 | -50.43 |
| 287 | 29 | 656300.00 | 838500.00 | 119.14 | 10.03 | 132.98 | -0.50 | 127.66 | -12.70 | 118.61 | -27.28 | 104.75 | -44.90 |
| 288 | 29 | 655900.00 | 838500.00 | 110.22 | 6.87 | 123.40 | 1.59 | 125.61 | -8.55 | 120.95 | -24.24 | 107.96 | -45.44 |
| 289 | 29 | 655500.00 | 838500.00 | 119.14 | 10.03 | 121.26 | 4.77 | 126.79 | -4.07 | 123.65 | -15.90 | 117.95 | -38.30 |
| 290 | 29 | 655100.00 | 838500.00 | 119.01 | 13.14 | 132.94 | 9.08 | 139.86 | 3.14 | 143.11 | -11.90 | 146.32 | -46.31 |
| 291 | 29 | 654700.00 | 838500.00 | 118.93 | 15.22 | 126.58 | 4.79 | 134.26 | -6.40 | 133.68 | -25.11 | 114.57 | -52.04 |
| 292 | 29 | 654300.00 | 838500.00 | 113.95 | 9.82 | 122.32 | 3.71 | 126.76 | -5.15 | 125.19 | -24.53 | 114.21 | -54.18 |
| 293 | 29 | 653900.00 | 838500.00 | 114.16 | 4.63 | 118.09 | -1.63 | 119.11 | -10.34 | 113.52 | -23.74 | 97.26 | -43.66 |
| 294 | 29 | 653500.00 | 838500.00 | 108.55 | 14.60 | 122.31 | 7.97 | 128.01 | 2.35 | 134.91 | -7.07 | 137.75 | -31.68 |
| 295 | 29 | 653100.00 | 838500.00 | 113.95 | 9.62 | 122.33 | 2.65 | 126.68 | -8.37 | 123.84 | -28.71 | 102.80 | -63.28 |
| 296 | 30 | 652400.00 | 839000.00 | 108.76 | 9.61 | 114.86 | 6.87 | 122.61 | 1.40 | 133.13 | -17.61 | 132.06 | -65.94 |
| 297 | 30 | 652800.00 | 839000.00 | 109.96 | 5.50 | 118.08 | 1.57 | 123.74 | 3.52 | 120.59 | -29.55 | 96.02 | -70.96 |
| 298 | 30 | 653200.00 | 839000.00 | 111.67 | 9.73 | 120.18 | 6.89 | 127.91 | -1.95 | 134.04 | -19.81 | 130.63 | -54.70 |
| 299 | 30 | 653600.00 | 839000.00 | 113.91 | 10.65 | 122.31 | 7.97 | 129.09 | 2.32 | 137.45 | -9.41 | 141.86 | -40.07 |
| 300 | 30 | 654000.00 | 839000.00 | 111.91 | 8.70 | 119.15 | 0.51 | 121.54 | -7.17 | 117.98 | -20.84 | 107.78 | -39.91 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 301 | 50 | 654400.00 | 839000.00 | 115.99 | 8.78 | 122.33 | 1.58 | 125.63 | -7.27 | 124.06 | -25.52 | 116.70 | -25.99 |
| 302 | 50 | 654800.00 | 839000.00 | 118.06 | 11.02 | 125.51 | 4.79 | 136.43 | -5.38 | 131.63 | -23.91 | 119.91 | -26.52 |
| 303 | 50 | 655200.00 | 839000.00 | 115.82 | 12.93 | 125.49 | 9.04 | 139.86 | 3.14 | 142.97 | -14.02 | 145.43 | -51.66 |
| 304 | 50 | 655600.00 | 839000.00 | 119.01 | 13.14 | 132.95 | 6.95 | 139.81 | 0.99 | 140.72 | -46.91 | 140.08 | -50.77 |
| 305 | 50 | 656000.00 | 839000.00 | 114.07 | 6.70 | 121.28 | -1.61 | 120.11 | -13.59 | 113.30 | -26.92 | 99.40 | -44.01 |
| 306 | 50 | 656400.00 | 839000.00 | 122.58 | 7.04 | 135.11 | -0.49 | 137.28 | -15.08 | 122.35 | -35.00 | 104.57 | -39.37 |
| 307 | 50 | 656800.00 | 839000.00 | 122.58 | 7.04 | 135.11 | -1.55 | 134.03 | -16.07 | 121.50 | -31.74 | 101.20 | -66.32 |
| 308 | 51 | 656600.00 | 839500.00 | 124.24 | 12.51 | 138.28 | 3.78 | 142.78 | -9.83 | 138.62 | -30.78 | 111.01 | -73.45 |
| 309 | 51 | 656200.00 | 839491.99 | 119.22 | 7.95 | 130.85 | 0.56 | 134.08 | -13.92 | 122.71 | -29.69 | 103.15 | -61.14 |
| 310 | 51 | 655800.00 | 839483.99 | 119.35 | 4.84 | 125.53 | -0.53 | 126.76 | -11.65 | 123.77 | -29.77 | 104.41 | -66.85 |
| 311 | 51 | 655400.00 | 839475.99 | 119.09 | 11.07 | 131.88 | 8.01 | 139.86 | 3.14 | 145.02 | -15.23 | 150.43 | -54.69 |
| 312 | 51 | 655000.00 | 839467.99 | 116.02 | 9.90 | 125.51 | 5.85 | 134.36 | -2.10 | 137.37 | -17.90 | 134.73 | -49.88 |
| 313 | 51 | 654600.00 | 839459.99 | 105.59 | 15.71 | 123.39 | 2.65 | 134.23 | -7.48 | 131.49 | -26.03 | 110.47 | -56.85 |
| 314 | 51 | 654200.00 | 839451.99 | 111.91 | 8.70 | 121.26 | 3.71 | 124.66 | -2.95 | 125.77 | -16.04 | 121.70 | -42.22 |
| 315 | 51 | 653800.00 | 839443.99 | 110.83 | 9.69 | 119.12 | 5.83 | 124.74 | 0.28 | 127.05 | -12.93 | 132.58 | -42.93 |
| 316 | 51 | 653400.00 | 839435.99 | 111.75 | 12.85 | 120.17 | 11.15 | 129.21 | 7.70 | 141.57 | -3.26 | 148.10 | -35.60 |
| 317 | 51 | 653000.00 | 839427.99 | 108.84 | 7.53 | 114.87 | 4.74 | 122.54 | -1.82 | 124.49 | -19.16 | 117.24 | -49.18 |
| 318 | 51 | 652600.00 | 839419.99 | 108.97 | 4.42 | 113.81 | 5.80 | 120.41 | -0.70 | 123.50 | -18.02 | 109.22 | -51.15 |
| 319 | 51 | 652200.00 | 839411.99 | 108.97 | 4.42 | 112.75 | 4.74 | 120.44 | 0.38 | 125.63 | -18.17 | 119.03 | -58.28 |
| 320 | 51 | 651800.00 | 839403.99 | 105.90 | 3.25 | 109.58 | -1.66 | 113.76 | -9.14 | 109.97 | -28.83 | 90.49 | -64.54 |
| 321 | 51 | 651400.00 | 839395.99 | 103.78 | 4.21 | 107.44 | 1.52 | 113.91 | -2.69 | 117.28 | -15.46 | 109.75 | -47.93 |
| 322 | 51 | 651000.00 | 839387.99 | 103.78 | 4.21 | 107.44 | 2.58 | 115.07 | 0.50 | 120.61 | -13.56 | 115.64 | -52.21 |
| 323 | 52 | 650600.00 | 840000.00 | 103.78 | 4.21 | 107.46 | -2.73 | 110.49 | -11.22 | 106.79 | -28.61 | 81.92 | -63.11 |
| 324 | 52 | 651000.00 | 840000.00 | 105.94 | 2.22 | 110.64 | 0.47 | 117.06 | -6.00 | 117.84 | -22.97 | 108.85 | -26.88 |
| 325 | 52 | 651400.00 | 840000.00 | 108.76 | 9.01 | 111.69 | 3.67 | 118.34 | 2.58 | 126.13 | -10.74 | 134.73 | -49.88 |
| 326 | 52 | 651800.00 | 840000.00 | 106.98 | 2.26 | 111.71 | -1.65 | 115.79 | -8.07 | 114.46 | -9.94 | 98.87 | -60.43 |
| 327 | 52 | 652200.00 | 840000.00 | 103.78 | 4.21 | 110.65 | -1.66 | 115.74 | -10.22 | 110.12 | -26.70 | 89.24 | -58.83 |
| 328 | 52 | 652600.00 | 840000.00 | 103.78 | 4.21 | 112.76 | 1.54 | 118.16 | -4.95 | 120.03 | -22.05 | 108.51 | -62.03 |
| 329 | 52 | 653000.00 | 840000.00 | 106.93 | 5.46 | 112.75 | 3.67 | 119.31 | -1.75 | 124.49 | -19.16 | 119.03 | -58.28 |
| 330 | 52 | 653400.00 | 840000.00 | 111.00 | 5.54 | 114.87 | 4.74 | 121.51 | 0.35 | 132.28 | -14.36 | 129.38 | -48.99 |
| 331 | 52 | 653800.00 | 840000.00 | 110.88 | 8.65 | 117.00 | 5.82 | 124.79 | 2.42 | 132.50 | -11.17 | 135.62 | -44.53 |
| 332 | 52 | 654200.00 | 840000.00 | 111.87 | 9.73 | 121.23 | 10.09 | 134.51 | 4.34 | 143.40 | -7.65 | 147.21 | -40.96 |
| 333 | 52 | 654600.00 | 840000.00 | 117.10 | 8.91 | 125.51 | 5.85 | 134.36 | -2.10 | 137.15 | -21.09 | 124.02 | -48.10 |
| 334 | 52 | 655000.00 | 840000.00 | 114.07 | 6.70 | 122.53 | 1.58 | 127.73 | -9.47 | 123.91 | -27.64 | 106.37 | -61.67 |
| 335 | 52 | 655400.00 | 840000.00 | 114.03 | 7.74 | 125.52 | 3.73 | 134.28 | -5.33 | 136.86 | -25.33 | 128.85 | -65.41 |
| 336 | 52 | 655800.00 | 840000.00 | 116.02 | 9.90 | 126.59 | 1.60 | 134.21 | -8.55 | 131.49 | -26.03 | 126.70 | -58.45 |
| 337 | 52 | 656200.00 | 840000.00 | 119.14 | 10.03 | 132.98 | 0.57 | 134.08 | -13.92 | 125.89 | -29.91 | 104.59 | -72.38 |
| 338 | 52 | 656600.00 | 840000.00 | 124.54 | 5.05 | 124.53 | -15.43 | 110.06 | -29.49 | 97.43 | -40.76 | 73.20 | -89.17 |
| 339 | 53 | 656100.00 | 840500.00 | 116.06 | 8.86 | 124.47 | -0.53 | 127.63 | -13.77 | 121.65 | -29.62 | 98.16 | -71.31 |
| 340 | 53 | 655700.00 | 840500.00 | 117.02 | 10.98 | 123.40 | 1.59 | 127.76 | -8.40 | 126.11 | -26.73 | 114.93 | -63.10 |
| 341 | 53 | 655300.00 | 840500.00 | 116.02 | 9.90 | 125.51 | 5.85 | 134.28 | -5.33 | 136.86 | -25.33 | 126.71 | -65.05 |
| 342 | 53 | 654900.00 | 840500.00 | 113.95 | 9.82 | 124.44 | 5.85 | 134.31 | -4.25 | 136.94 | -24.27 | 126.71 | -65.05 |
| 343 | 53 | 654500.00 | 840500.00 | 113.95 | 9.82 | 121.25 | 5.84 | 127.86 | -4.10 | 131.63 | -23.91 | 112.61 | -57.21 |
| 344 | 53 | 654100.00 | 840500.00 | 113.74 | 15.01 | 117.00 | 5.82 | 122.61 | 1.40 | 132.28 | -14.36 | 130.26 | -43.64 |
| 345 | 53 | 653700.00 | 840500.00 | 108.97 | 4.42 | 112.75 | 3.67 | 118.29 | 0.43 | 123.94 | -11.65 | 130.26 | -43.64 |
| 346 | 53 | 653300.00 | 840500.00 | 107.76 | 8.53 | 111.68 | 5.79 | 118.37 | 3.65 | 126.42 | -6.49 | 141.68 | -41.14 |
| 347 | 53 | 652900.00 | 840500.00 | 108.97 | 4.42 | 112.75 | 4.74 | 119.39 | 1.48 | 127.12 | -11.87 | 129.38 | -48.99 |
| 348 | 53 | 652500.00 | 840500.00 | 103.99 | -0.98 | 109.59 | -3.79 | 111.51 | -13.39 | 104.67 | -28.46 | 77.64 | -62.40 |
| 349 | 53 | 652100.00 | 840500.00 | 108.97 | 4.42 | 108.51 | 0.46 | 112.79 | -4.82 | 112.82 | -18.36 | 106.00 | -50.61 |
| 350 | 53 | 651700.00 | 840500.00 | 108.97 | 4.42 | 109.55 | 5.79 | 116.27 | 5.85 | 126.50 | -5.43 | 140.97 | -45.42 |
| 351 | 53 | 651300.00 | 840500.00 | 103.91 | 1.09 | 108.51 | -0.60 | 112.71 | -8.04 | 122.71 | -29.69 | 89.60 | -69.89 |
| 352 | 53 | 650900.00 | 840500.00 | 103.91 | 1.09 | 107.47 | -5.93 | 110.41 | -14.44 | 103.24 | -33.70 | 73.72 | -72.75 |
| 353 | 53 | 650500.00 | 840500.00 | 105.86 | 4.29 | 107.46 | -2.73 | 112.64 | -11.27 | 109.97 | -28.83 | 81.22 | -74.00 |
| 354 | 54 | 650500.00 | 841500.00 | 103.78 | 4.21 | 109.57 | 0.47 | 112.79 | -4.82 | 115.86 | -20.70 | 106.19 | -56.14 |
| 355 | 54 | 650900.00 | 841500.00 | 104.82 | 4.25 | 108.50 | 2.59 | 114.99 | -2.72 | 117.35 | -14.40 | 111.54 | -57.03 |
| 356 | 54 | 651300.00 | 841500.00 | 103.78 | 4.21 | 110.62 | 4.73 | 116.19 | 2.63 | 120.97 | -8.25 | 121.70 | -42.22 |
| 357 | 54 | 651700.00 | 841500.00 | 103.78 | 4.21 | 110.63 | 1.53 | 113.91 | -2.69 | 118.49 | -13.41 | 114.21 | -40.97 |
| 358 | 54 | 652100.00 | 841500.00 | 103.78 | 4.21 | 109.58 | -0.60 | 112.76 | -5.89 | 112.75 | -19.42 | 104.40 | -47.04 |
| 359 | 54 | 652500.00 | 841500.00 | 107.93 | 4.38 | 111.69 | 2.60 | 117.16 | -1.70 | 120.54 | -14.62 | 112.61 | -57.21 |
| 360 | 54 | 652900.00 | 841500.00 | 107.69 | 5.41 | 114.86 | 9.00 | 125.84 | 7.82 | 138.46 | -1.98 | 151.49 | -35.07 |

| Sta tion | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 361 | 34 | 653300.00 | 841500.00 | 106.68 | 6.49 | 114.86 | 6.87 | 122.66 | 3.55 | 132.72 | -7.99 | 143.11 | -45.78 |
| 362 | 34 | 653700.00 | 841500.00 | 106.88 | 6.49 | 115.90 | 3.68 | 120.36 | -2.85 | 124.57 | -18.09 | 120.10 | -58.45 |
| 363 | 34 | 654100.00 | 841500.00 | 111.96 | 7.66 | 120.20 | 3.70 | 126.76 | -5.15 | 131.34 | -28.15 | 111.37 | -71.31 |
| 364 | 34 | 654500.00 | 841500.00 | 111.91 | 6.70 | 127.64 | 4.80 | 136.36 | -8.60 | 136.14 | -35.94 | 107.80 | -72.91 |
| 365 | 34 | 654900.00 | 841500.00 | 115.03 | 8.62 | 125.51 | 4.79 | 136.41 | -6.45 | 136.50 | -30.64 | 113.33 | -79.33 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 644900.00 | 826000.00 | 129.64 | 7.53 | 135.14 | -9.00 | 124.15 | -24.44 | 105.70 | -44.53 | 67.48 | -77.22 |
| 2 | 4 | 645300.00 | 826000.00 | 129.51 | 10.45 | 138.32 | -5.79 | 133.82 | -24.67 | 111.56 | -52.39 | 50.90 | -90.96 |
| 3 | 4 | 645700.00 | 826000.00 | 120.17 | 10.07 | 133.02 | -10.07 | 127.20 | -32.04 | 98.59 | -70.69 | 17.53 | -93.12 |
| 4 | 4 | 646100.00 | 826000.00 | 121.46 | 5.88 | 135.03 | -11.14 | 122.90 | -31.94 | 86.22 | -64.52 | 21.09 | -71.71 |
| 5 | 4 | 646500.00 | 826000.00 | 121.51 | 2.85 | 131.95 | -9.01 | 121.75 | -35.14 | 89.47 | -63.67 | 19.31 | -69.21 |
| 6 | 4 | 646900.00 | 826000.00 | 126.36 | 11.36 | 141.48 | 1.67 | 144.57 | -24.93 | 112.96 | -65.14 | 46.43 | -84.72 |
| 7 | 4 | 647300.00 | 826000.00 | 126.53 | 7.21 | 133.02 | -9.01 | 127.20 | -32.04 | 90.32 | -66.93 | 24.30 | -72.24 |
| 8 | 4 | 647700.00 | 826000.00 | 121.25 | 9.07 | 135.13 | -4.74 | 135.85 | -30.10 | 105.10 | -69.00 | 26.99 | -89.19 |
| 9 | 4 | 648100.00 | 826000.00 | 123.29 | 10.20 | 138.30 | -1.54 | 143.50 | -24.90 | 117.21 | -63.43 | 44.30 | -97.57 |
| 10 | 4 | 648500.00 | 826000.00 | 124.24 | 12.31 | 140.43 | -0.47 | 146.82 | -20.68 | 131.51 | -56.95 | 61.96 | -103.80 |
| 11 | 4 | 648900.00 | 826000.00 | 124.28 | 11.28 | 142.56 | -0.46 | 144.57 | -24.93 | 127.26 | -56.66 | 63.59 | -101.84 |
| 12 | 4 | 649300.00 | 826000.00 | 124.49 | 6.09 | 134.09 | -11.13 | 125.05 | -31.99 | 97.55 | -54.63 | 50.53 | -79.90 |
| 13 | 4 | 649700.00 | 826000.00 | 129.65 | 2.15 | 135.19 | -20.70 | 110.75 | -45.63 | 74.21 | -53.04 | 35.35 | -52.08 |
| 14 | 4 | 650100.00 | 826000.00 | 121.84 | -5.46 | 118.22 | -31.41 | 86.75 | -60.12 | 34.03 | -48.16 | 11.61 | -29.43 |
| 15 | 4 | 650500.00 | 826000.00 | 122.18 | -13.76 | 115.07 | -42.06 | 75.77 | -69.53 | 15.63 | -52.24 | -8.55 | -18.38 |
| 16 | 5 | 650500.00 | 825500.00 | 116.49 | -13.97 | 107.63 | -42.10 | 69.30 | -70.46 | 6.99 | -53.78 | -11.05 | -20.17 |
| 17 | 5 | 650100.00 | 825500.00 | 116.95 | -12.93 | 111.66 | -36.76 | 78.20 | -57.76 | 28.79 | -46.74 | 0.73 | -28.72 |
| 18 | 5 | 649700.00 | 825500.00 | 132.50 | 13.69 | 145.79 | -10.02 | 135.85 | -30.10 | 102.30 | -47.49 | 64.80 | -73.47 |
| 19 | 5 | 649300.00 | 825500.00 | 129.51 | 10.45 | 140.45 | -6.85 | 135.80 | -32.24 | 103.56 | -60.37 | 39.83 | -91.33 |
| 20 | 5 | 648900.00 | 825500.00 | 129.64 | 7.33 | 140.48 | -12.17 | 133.52 | -37.57 | 58.82 | -75.44 | 5.94 | -96.70 |
| 21 | 5 | 648500.00 | 825500.00 | 124.53 | 10.24 | 140.43 | -0.47 | 143.45 | -27.05 | 114.51 | -71.78 | 24.32 | -105.25 |
| 22 | 5 | 648100.00 | 825500.00 | 124.57 | 9.20 | 136.18 | -2.61 | 141.30 | -27.00 | 114.65 | -69.66 | 32.53 | -102.21 |
| 23 | 5 | 647700.00 | 825500.00 | 126.40 | 10.32 | 138.32 | -4.73 | 133.62 | -33.27 | 100.71 | -70.84 | 21.99 | -86.16 |
| 24 | 5 | 647300.00 | 825500.00 | 120.30 | 6.96 | 133.02 | -10.07 | 127.22 | -30.97 | 89.25 | -66.86 | 22.70 | -75.28 |
| 25 | 5 | 646900.00 | 825500.00 | 126.41 | 9.28 | 135.14 | -6.87 | 141.27 | -28.07 | 100.93 | -67.65 | 27.70 | -84.91 |
| 26 | 5 | 646500.00 | 825500.00 | 124.33 | 10.24 | 140.43 | -0.47 | 141.35 | -24.85 | 115.11 | -61.02 | 50.90 | -90.96 |
| 27 | 5 | 646100.00 | 825500.00 | 122.58 | 7.04 | 136.20 | -7.93 | 134.72 | -32.22 | 94.56 | -67.22 | 24.43 | -86.52 |
| 28 | 5 | 645700.00 | 825500.00 | 124.53 | 10.24 | 138.31 | -3.67 | 139.15 | -26.95 | 106.38 | -65.89 | 27.71 | -98.11 |
| 29 | 5 | 645300.00 | 825500.00 | 126.48 | 8.25 | 136.22 | -12.19 | 130.35 | -35.34 | 92.44 | -67.07 | 10.93 | -86.52 |
| 30 | 5 | 644900.00 | 825500.00 | 130.72 | 6.34 | 136.24 | -15.38 | 126.05 | -35.24 | 93.72 | -63.96 | 20.03 | -84.74 |
| 31 | 5 | 644500.00 | 825500.00 | 131.80 | 5.54 | 138.58 | -16.56 | 121.57 | -42.66 | 83.88 | -67.56 | 14.85 | -76.17 |
| 32 | 5 | 644100.00 | 825500.00 | 124.62 | 2.97 | 132.02 | -24.97 | 104.30 | -45.48 | 68.39 | -60.10 | 2.71 | -63.16 |
| 33 | 6 | 643900.00 | 825000.00 | 112.50 | -5.83 | 112.89 | -29.31 | 88.95 | -58.02 | 35.28 | -61.04 | -8.72 | -39.26 |
| 34 | 6 | 644300.00 | 825000.00 | 116.32 | 2.64 | 122.42 | -19.69 | 110.82 | -42.41 | 75.60 | -63.79 | 5.03 | -69.04 |
| 35 | 6 | 644700.00 | 825000.00 | 126.36 | 11.36 | 143.65 | -7.90 | 134.57 | -38.67 | 94.34 | -70.40 | 35.37 | -85.08 |
| 36 | 6 | 645100.00 | 825000.00 | 129.56 | 9.41 | 140.45 | -6.85 | 135.65 | -32.19 | 101.29 | -62.35 | 38.94 | -83.48 |
| 37 | 6 | 645500.00 | 825000.00 | 124.24 | 12.31 | 141.49 | 0.60 | 146.80 | -21.75 | 132.35 | -60.20 | 62.15 | -109.33 |
| 38 | 6 | 645900.00 | 825000.00 | 124.41 | 8.16 | 136.18 | -2.61 | 137.05 | -24.75 | 112.89 | -64.21 | 41.62 | -100.42 |
| 39 | 6 | 646300.00 | 825000.00 | 121.25 | 9.07 | 136.18 | -1.55 | 141.35 | -24.85 | 148.05 | -66.69 | 41.99 | -111.49 |
| 40 | 6 | 646700.00 | 825000.00 | 123.20 | 12.27 | 136.16 | 2.71 | 146.92 | -16.38 | 132.71 | -54.90 | 68.03 | -107.01 |
| 41 | 6 | 647100.00 | 825000.00 | 120.22 | 9.03 | 133.00 | -4.75 | 135.97 | -24.72 | 106.38 | -65.89 | 34.66 | -95.97 |
| 42 | 6 | 647500.00 | 825000.00 | 119.14 | 10.03 | 132.99 | -2.63 | 137.00 | -26.90 | 108.50 | -66.04 | 31.45 | -95.43 |
| 43 | 6 | 647900.00 | 825000.00 | 121.30 | 8.04 | 133.01 | -7.94 | 128.27 | -32.07 | 95.62 | -67.29 | 25.91 | -75.81 |
| 44 | 6 | 648300.00 | 825000.00 | 119.35 | 4.84 | 127.72 | -13.29 | 122.70 | -40.54 | 80.04 | -76.89 | -3.53 | -74.22 |
| 45 | 6 | 648700.00 | 825000.00 | 121.38 | 5.96 | 135.14 | -7.94 | 132.45 | -37.54 | 90.65 | -77.61 | 5.93 | -83.49 |
| 46 | 6 | 649100.00 | 825000.00 | 124.28 | 11.29 | 138.31 | -3.67 | 143.45 | -27.05 | 110.12 | -73.61 | 22.53 | -96.15 |
| 47 | 7 | 649100.00 | 824500.00 | 119.22 | 7.95 | 135.13 | -5.81 | 135.87 | -29.02 | 101.55 | -74.09 | 17.89 | -90.98 |
| 48 | 7 | 648700.00 | 824500.00 | 119.35 | 4.84 | 133.02 | -10.07 | 124.90 | -38.44 | 84.29 | -77.18 | 0.04 | -79.21 |
| 49 | 7 | 648300.00 | 824500.00 | 116.40 | 0.56 | 120.29 | -18.64 | 109.67 | -45.61 | 65.33 | -73.75 | -10.14 | -61.02 |
| 50 | 7 | 647900.00 | 824500.00 | 114.24 | 2.55 | 121.32 | -11.19 | 116.38 | -35.01 | 80.77 | -66.28 | 9.13 | -64.22 |
| 51 | 7 | 647500.00 | 824500.00 | 117.97 | 13.10 | 136.15 | 4.83 | 144.75 | -17.40 | 129.39 | -56.80 | 66.78 | -101.30 |
| 52 | 7 | 647100.00 | 824500.00 | 119.14 | 10.03 | 132.98 | -0.50 | 136.00 | -23.65 | 114.02 | -63.22 | 40.55 | -100.25 |
| 53 | 7 | 646700.00 | 824500.00 | 117.25 | 5.79 | 125.57 | -9.04 | 125.10 | -29.84 | 94.56 | -67.22 | 24.13 | -86.52 |
| 54 | 7 | 646300.00 | 824500.00 | 112.99 | 7.70 | 126.62 | -5.84 | 133.70 | -30.04 | 100.35 | -76.14 | 8.26 | -102.58 |
| 55 | 7 | 645900.00 | 824500.00 | 110.11 | 7.83 | 126.63 | -7.97 | 126.12 | -32.02 | 94.90 | -77.90 | 1.30 | -104.73 |
| 56 | 7 | 645500.00 | 824500.00 | 119.22 | 7.95 | 131.95 | -7.95 | 133.65 | -32.19 | 99.07 | -79.25 | 0.23 | -104.55 |
| 57 | 7 | 645100.00 | 824500.00 | 118.31 | 4.80 | 131.96 | -11.14 | 123.85 | -37.34 | 87.47 | -77.40 | -4.41 | -92.78 |
| 58 | 7 | 644700.00 | 824500.00 | 119.30 | 5.88 | 124.54 | -16.49 | 112.97 | -42.46 | 74.88 | -74.41 | -7.63 | -79.04 |
| 59 | 7 | 644300.00 | 824500.00 | 118.31 | 4.80 | 127.72 | -14.35 | 119.40 | -43.68 | 77.70 | -79.93 | -14.58 | -87.79 |
| 60 | 7 | 643900.00 | 824500.00 | 116.44 | -0.48 | 120.31 | -22.89 | 99.75 | -56.12 | 46.45 | -69.27 | -20.85 | -46.04 |

| Station | Line | X-position | Y-position | 222 Hz. Real | 222 Hz. Imaginary | 444 Hz. Real | 444 Hz. Imaginary | 888 Hz. Real | 888 Hz. Imaginary | 1777 Hz. Real | 1777 Hz. Imaginary | 3555 Hz. Real | 3555 Hz. Imaginary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | 7 | 643500.00 | 824500.00 | 116.06 | 8.86 | 135.02 | -10.07 | 125.87 | -42.76 | 72.06 | -68.88 | -18.16 | -76.19 |
| 62 | 8 | 642900.00 | 824000.00 | 124.41 | 8.16 | 135.01 | -6.88 | 135.65 | -32.19 | 88.19 | -66.79 | 39.64 | -65.99 |
| 63 | 8 | 643300.00 | 824000.00 | 128.01 | 21.62 | 148.87 | 15.53 | 166.24 | -17.91 | 150.25 | -63.56 | 77.13 | -111.82 |
| 64 | 8 | 643700.00 | 824000.00 | 124.20 | 13.55 | 146.43 | -1.53 | 146.64 | -28.20 | 118.61 | -74.19 | 33.06 | -99.00 |
| 65 | 8 | 644100.00 | 824000.00 | 128.35 | 13.52 | 141.47 | 3.79 | 150.00 | -22.90 | 128.16 | -74.84 | 51.61 | -99.88 |
| 66 | 8 | 644500.00 | 824000.00 | 119.01 | 13.14 | 140.41 | 3.79 | 147.80 | -25.00 | 118.24 | -79.50 | 25.92 | -89.01 |
| 67 | 8 | 644900.00 | 824000.00 | 116.53 | -2.55 | 123.48 | -18.62 | 110.93 | -38.11 | 66.39 | -73.83 | 1.46 | -57.45 |
| 68 | 8 | 645300.00 | 824000.00 | 120.26 | 7.99 | 132.99 | -2.63 | 141.35 | -24.85 | 113.59 | -69.58 | 34.66 | -89.37 |
| 69 | 8 | 645700.00 | 824000.00 | 121.04 | 14.26 | 136.26 | 8.04 | 148.18 | -8.88 | 136.67 | -59.43 | 69.28 | -112.72 |
| 70 | 8 | 646100.00 | 824000.00 | 118.18 | 7.91 | 132.99 | -2.63 | 135.97 | -24.72 | 106.38 | -65.89 | 31.45 | -88.83 |
| 71 | 8 | 646500.00 | 824000.00 | 114.03 | 7.74 | 130.86 | -1.57 | 137.05 | -24.75 | 111.32 | -71.56 | 40.20 | -108.99 |
| 72 | 8 | 646900.00 | 824000.00 | 117.93 | 14.14 | 132.94 | 9.08 | 144.98 | -7.73 | 141.08 | -41.61 | 89.61 | -96.29 |
| 73 | 8 | 647300.00 | 824000.00 | 115.03 | 8.82 | 124.46 | 1.59 | 131.88 | -16.02 | 114.19 | -45.10 | 67.48 | -77.22 |
| 74 | 8 | 647700.00 | 824000.00 | 114.98 | 9.86 | 125.53 | 0.53 | 132.88 | -19.27 | 113.54 | -54.66 | 54.29 | -90.43 |
| 75 | 8 | 648100.00 | 824000.00 | 119.09 | 11.07 | 134.03 | 2.70 | 141.45 | -20.55 | 116.65 | -55.93 | 54.64 | -88.28 |
| 76 | 9 | 648100.00 | 823500.00 | 122.29 | 9.12 | 136.15 | 3.77 | 145.88 | -15.28 | 132.02 | -49.52 | 77.83 | -87.74 |
| 77 | 9 | 647700.00 | 823500.00 | 121.13 | 12.19 | 136.15 | 5.90 | 144.90 | -10.95 | 135.63 | -43.37 | 93.89 | -83.80 |
| 78 | 9 | 647300.00 | 823500.00 | 118.93 | 15.22 | 136.12 | 11.22 | 139.66 | -5.45 | 135.78 | -41.25 | 66.60 | -95.77 |
| 79 | 9 | 646900.00 | 823500.00 | 106.77 | 7.45 | 129.79 | -1.58 | 136.03 | -22.57 | 115.45 | -57.98 | 53.04 | -91.32 |
| 80 | 9 | 646500.00 | 823500.00 | 117.14 | 7.87 | 129.79 | -0.51 | 136.08 | -20.42 | 115.66 | -54.80 | 51.79 | -85.61 |
| 81 | 9 | 646100.00 | 823500.00 | 111.79 | 11.81 | 130.84 | 3.75 | 139.45 | -14.05 | 127.77 | -49.23 | 62.14 | -89.53 |
| 82 | 9 | 645700.00 | 823500.00 | 116.01 | 12.06 | 132.95 | 5.88 | 144.90 | -10.95 | 139.44 | -50.03 | 81.94 | -96.12 |
| 83 | 9 | 645300.00 | 823500.00 | 116.97 | 14.18 | 135.07 | 8.02 | 146.13 | -11.03 | 129.60 | -53.62 | 78.02 | -106.47 |
| 84 | 9 | 644900.00 | 823500.00 | 115.24 | 3.63 | 124.51 | -9.04 | 127.33 | -26.67 | 96.01 | -46.00 | 13.60 | -70.47 |
| 85 | 9 | 644500.00 | 823500.00 | 115.28 | 2.59 | 122.40 | -14.37 | 118.40 | -40.44 | 80.19 | -74.77 | -10.67 | -64.23 |
| 86 | 9 | 644100.00 | 823500.00 | 117.23 | 5.79 | 127.68 | -4.78 | 132.45 | -37.54 | 90.44 | -80.80 | 8.25 | -82.78 |
| 87 | 9 | 643700.00 | 823500.00 | 116.11 | 7.83 | 125.57 | -7.98 | 131.47 | -33.22 | 90.94 | -73.37 | 8.61 | -80.64 |
| 88 | 9 | 643300.00 | 823500.00 | 116.93 | 13.06 | 135.10 | 1.64 | 137.13 | -21.52 | 116.99 | -66.62 | 50.01 | -96.32 |
| 89 | 9 | 642900.00 | 823500.00 | 116.89 | 14.09 | 130.84 | 1.62 | 133.98 | -18.22 | 106.77 | -44.60 | 75.51 | -75.25 |
| 90 | 10 | 643100.00 | 823000.00 | 121.04 | 14.26 | 135.11 | -0.49 | 144.72 | -18.48 | 121.60 | -61.60 | 74.45 | -94.88 |
| 91 | 10 | 643500.00 | 823000.00 | 116.44 | -0.48 | 122.41 | -16.50 | 118.40 | -40.44 | 77.22 | -71.37 | 13.95 | -68.32 |
| 92 | 10 | 643900.00 | 823000.00 | 116.23 | 4.71 | 124.49 | -4.79 | 128.40 | -26.69 | 103.19 | -65.68 | 40.72 | -85.97 |
| 93 | 10 | 644300.00 | 823000.00 | 115.07 | 7.78 | 125.55 | -4.78 | 130.55 | -26.74 | 105.53 | -62.64 | 49.29 | -87.40 |
| 94 | 10 | -644700.00 | 823000.00 | 114.98 | 9.86 | 124.47 | 0.53 | 134.05 | -15.00 | 123.74 | -45.76 | 75.87 | -86.31 |
| 95 | 10 | 645100.00 | 823000.00 | 111.53 | 18.04 | 132.95 | 5.88 | 144.93 | -9.88 | 143.76 | -49.25 | 81.77 | -103.79 |
| 96 | 10 | 645500.00 | 823000.00 | 119.01 | 13.14 | 136.13 | 9.09 | 150.30 | -10.01 | 140.36 | -52.22 | 79.63 | -103.44 |
| 97 | 10 | 645900.00 | 823000.00 | 116.98 | 12.02 | 132.96 | 4.82 | 141.55 | -16.25 | 124.30 | -53.26 | 71.41 | -86.67 |
| 98 | 10 | 646300.00 | 823000.00 | 110.92 | 7.62 | 124.49 | -4.79 | 127.38 | -24.52 | 100.52 | -58.03 | 51.78 | -72.41 |
| 99 | 10 | 646700.00 | 823000.00 | 115.28 | 2.59 | 122.39 | -11.18 | 118.53 | -35.06 | 80.69 | -67.34 | 16.63 | -65.47 |
| 100 | 10 | 647100.00 | 823000.00 | 119.05 | 12.10 | 135.10 | 1.64 | 141.37 | -23.77 | 115.93 | -66.55 | 40.19 | -89.18 |
| 101 | 10 | 647500.00 | 823000.00 | 119.84 | 18.37 | 138.25 | 11.23 | 152.53 | -6.83 | 147.64 | -54.85 | 86.23 | -110.03 |
| 102 | 10 | 647900.00 | 823000.00 | 118.31 | 4.80 | 127.70 | -9.03 | 126.12 | -32.02 | 97.96 | -64.25 | 41.44 | -81.69 |
| 103 | 10 | 648300.00 | 823000.00 | 131.55 | 11.57 | 143.62 | -1.52 | 146.77 | -22.83 | 120.75 | -58.35 | 51.43 | -87.75 |