



Instituto Tecnológico
GeoMinero de España

PROSPECCION ELECTRICA EN
ESCOZNAR, CAMPOTEJAR, BENA-
LUA DE LAS VILLAS Y CUBI-
LLAS ALTO (GRANADA).

EXPEDIENTE Nº

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ORGANICA Nº

PROGRAMA Nº

CONCEPTO Nº

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MINISTERIO DE INDUSTRIA Y ENERGIA

40370

PROSPECCION ELECTRICA EN
ESCOZNAR, CAMPOTEJAR, BENA-
LUA DE LAS VILLAS Y CUBI-
LLAS ALTO (GRANADA).

Julio 1990

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1.-Introducción

Dentro del extenso trabajo solicitado por la oficina regional del ITGE en Granada - Departamento de Aguas Subterráneas-, el presente informe ocupa las siguientes áreas de trabajo: Escoznar, Alomartes, Tocón; Campotéjar, Benalúa de Las Villas y por último la zona llamada Cubillas Alto.

La toma de datos se hizo con el equipo habitual del Instituto.

Para la interpretación se ha utilizado el paquete software RESIXIP.

2.-Situación y objeto de estudio

Las zonas comprendidas en el informe están localizadas en las siguientes hojas topográficas a escala 1:50 000:

- A) Zonas de Escoznar, Alomartes y Tocón:
Hoja Nº 1008 (Montefrío) y Hoja Nº 1009 (Granada)
- B) Zonas de Benalúa de Las Villas, Campotéjar:
Hoja Nº 991 (Iznalloz)
- C) Zona de Cubillas Alto:
Hoja Nº 992 (Moreda)

En la zona de Escoznar el estudio se centra en la geometría del acuífero superficial; se estima que a unos 30 m debe aparecer un sustrato margoso. En las zonas de Alomartes y Tocón se trata de detectar un sustrato arcilloso, estimándose en este caso que la potencia del aluvial es de unos 15 m como máximo.

En las zonas de Benalúa de las Villas y Campotéjar se trata asimismo de detectar un sustrato arcilloso conductor, estimándose que la potencia del aluvial es como máximo de unos 10 m.

Por último en la zona de Cubillas Alto, se trata de localizar el sustrato impermeable (margoso); se estima en principio a unos 20 m como máximo.

3.-Ficha estadística de la toma de datos

Trabajos de campo: Entre Enero y Febrero de 1990.

Jefe de Equipo: D. Ignacio Arbe Escolar
(Ingeniero de Minas)

Ayudante: D. Julián Coronel Campos
(Ingeniero Técnico de Minas)

Operador: D. Juan Pablo Carrión Rebolledo

5 peones contratados en la zona de trabajo

Material empleado

- Amperímetro marca Geotron
- Milivoltímetro marca Geotrón
- Electrodos impolarizables de potencial
- Electrodos de corriente (barrenas)
- 1 Vehículo todo terreno
- Cables

El número total de SEV ha sido de 48 SEV (ver figs. 1, 2 y 3), se han repartido de la siguiente manera:

Zonas de Escoznar, Alomartes y Tocón

SEV nos: 17, 18, 19, 20, 21, 22, 23,
24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37,
38, 39, 40.

Zonas de Campotéjar y Benalúa de las Villas

SEV nos: 41, 41B, 42, 43, 43B, 44, 45, 46, 47, 48

Zona de Cubillas Alto

SEV nos: 78, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89A,
90, 91, 92.

4.-Metódo utilizado

Para la interpretación se ha utilizado el programa RESIXIP, utilizandose un ordenador HP modelo VECTRA QS/16 para el procesado de datos. Los ficheros correspondientes a todos los SEV realizados aparecen listados en ANEXO I .

5.-Zona de Escoznar (Alomartes, Tocón)

5.1.-Contexto geológico

Regionalmente las áreas de trabajo están situadas en formaciones postorogénicas.

Los SEV realizados se sitúan en Alomartes y Tocón sobre afloramientos cuaternarios (aluviales y terrazas) y también sobre afloramientos pliocenos de margas, limos blancos y calizas.

En el área de Escoznar los SEV realizados se han situado asimismo en afloramientos de aluviales cuaternarios.

Como ya se anticipado en la Introducción en estas áreas se trata de investigar la riqueza hidrológica de unos aluviales. Es sabido de antemano que los mismos no alcanzan desarrollos verticales considerables, estando la potencia media en torno a 10-15 m. (ver fig. 1).

5.2.-Perfiles geoeléctricos

Perfiles I, II, III (SEV nos 26, 27- 25, 28, 38 -23, 24, 22, 37, 39)

Estos tres perfiles aparecen representados en plano 1, tienen todos ellos la misma dirección, y ocupan la zona próxima a Alomartes.

Se observa de manera bastante uniforme en todos ellos que aparece un nivel conductor (entre 10 y 20 m), bastante superficial, en algunos casos incluso aflorante como por ejemplo en los SEV Nos: 26, 25, 28, 39 etc. Después a una profundidad mayor unos 25 o 30 m aparece un nivel aún más conductor de unos 4 Ω -m.

Perfiles IV, V (SEV nos 27, 28, 22, 36- 24, 26)

Estos dos perfiles aparecen también en el plano 1. Son de dirección perpendicular a los tres anteriores. Aparecen los mismos niveles conductores, que se han comentado para los otros tres perfiles.

Perfiles VI, VII, VIII, IX (SEV nros 17, 18, 21- 19, 20, 17-19, 20, 18- 19, 21)

Estos cuatro perfiles aparecen en la zona de Escoznar. En líneas generales se observa en todos ellos un nivel con una resistividad comprendida entre 20 y 35 $\Omega \cdot m$ aproximadamente. Este nivel aparece normalmente a unos 20 m de profundidad. Siguiendo en profundidad aparecen niveles más conductores, pero no muy bien diferenciados de los anteriores. No son demasiado resolutivos estos perfiles.

Perfiles X y XI (SEV nros 32, 31, 29- 34, 20, 28)

Aparecen dibujados asimismo en plano 1. Con estos perfiles se trata de estudiar el arroyo de Tocón. No son resolutivos en cuanto a una buena diferenciación de valores de resistividades, que puedan servir para detectar la potencia del aluvial en cuestión.

5.3.-Conclusiones

Se puede concluir que el trabajo realizado en esta zona no es demasiado resolutivo para la evaluación de la potencia de los aluviales tratados.

6.-Zona de Benalúa de las Villas, Campotéjar

6.1.-Contexto geológico

Geológicamente hablando, las dos pequeñas zonas de trabajo ocupan aluviales de ríos de poco caudal o arroyos. Se trata pues de detectar la potencia de dichos aluviales, formados lógicamente por recubrimientos postorogénicos cuaternarios.

6.2.-Perfiles geoeléctricos

Se han realizado un total de cinco perfiles geoeléctricos que aparecen en el plano nº 2

Perfiles I y II (SEV nros 48, 47- 45, 46)

Se trata de dos perfiles situados en la zona de Campotéjar. Ninguno de ellos es resolutivo para diferenciar las arcillas del sustrato; esto porque desde el principio (desde la superficie del terreno) se presentan valores de resistividades muy bajos. Después aparecen distintos niveles de resistividad, pero las diferencias entre los mismos no son en ningún caso definitivas para poder establecer una buena separación.

Perfiles III, IV, y V (SEV nos 41B, 43B- 43B, 43, 44- 43B, 41, 42)

Se trata de tres perfiles situados en la zona de Benalúa de las Villas. Al igual que en caso anterior aparecen distintos niveles resistivos; pero la diferenciación entre ellos, se entiende no diferenciación a nivel puramente numérico, es bastante ambigua, por lo que no son resolutivos.

6.3.-Conclusiones

Los SEV realizados en estas zonas no han servido para aclarar las ideas en cuanto a la potencia de los aluviales estudiados; así pues el objetivo buscado de detectar el sustrato conductor no se ha conseguido en gran medida.

7.-Zona Cubillas Alto

7.1.-Contexto geológico

La investigación se centra en el aluvial del río Cubillas. Regionalmente hablando la zona está situada sobre materiales neogenos y cuaternarios. El aluvial de este río aparece flanqueado en unos casos por materiales margosos y margocalizos del cretácico inferior, y en otros por costras cálcareas pliocuaternarias. Se trata de detectar un sustrato impermeable arcilloso y lógicamente conductor. (ver fig.3).

7.2.-Perfiles geoelectricos

Se han trazado un total de 6 perfiles, que aparecen en el plano nº 3

Perfiles I, II, III (SEV nos 78, 80, 81, 82, 83- 89A, 88, 87, 84- 90, 91, 92, 86, 85)

Se trata de tres perfiles que flanquean el río Cubillas.

En el primero de ellos el, sustrato margoso (poco conductor) aparece bastante superficial. No es un perfil demasiado resolutivo, pues aparecen distintos niveles de resistividad pero de valores muy próximos entre si lo que hace que la separación entre los mismos sea dudosa.

En el perfil II, se puede observar claramente una discontinuidad entre los SEV nos 88 y 87, la unión en profundidad es dudosa. Por otra parte la correlación entre 87 y 84 es buena según se ve.

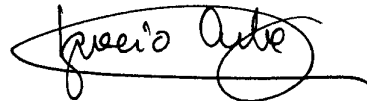
El perfil III se sitúa todo el, sobre un afloramiento pliocuaternario de conglomerados, margas y arcillas. Presenta un paquete resistivo superficial de espesor variable, según nos situemos en uno u otro SEV. Siguiendo en profundidad no es demasiado resolutivo; ya que hay zonas donde el paquete conductor parece presentarse a poca profundidad, caso de los SEV 85 y 86, y en otras como en los SEV 90 y 91, estaría mucho más profundo.

Perfiles IV, V, VI (SEV nros: 87, 86- 88, 92- 89A, 91)

Son tres perfiles trazados en sentido transversal a los perfiles II y III, con el fin de intentar modelizar el aluvial del río. El perfil IV es de difícil correlación en la capa más superficial que se presenta. En 87 el nivel conductor se presenta prácticamente aflorante y en 86 no. En cuanto a los otros dos perfiles, el V y el VI, el nº V presenta un salto o discontinuidad, y en VI, en el SEV 91, el sustrato conductor parece estar muy profundo. En resumen no son resolutivos.

7.3.-Conclusiones

Se trataba en este caso de detectar un sustrato margoso conductor. Se puede decir que los resultados obtenidos no son demasiado resolutivos, a la hora de modelizar el aluvial del río cubillas. Es cierto que hay sondeos eléctricos que detectan un nivel o niveles bastante conductores, pero sin embargo en otros casos no; es por esto que no se presenta una uniformidad que nos permita obtener resultados concluyentes.



Fdo. Ignacio Arbe

Julio 1990.

ANEXO I

LISTADO DE FICHEROS CORRESPONDIENTES A
LOS SEV REALIZADOS.

ZONA DE ESCOZNAR, ALOMARTES Y TOCON

IZ17.RPD, IZ18.RPD, IZ19.RPD, IZ20.RPD, IZ21.RPD, IZ22.RPD, IZ23.RPD
IZ24.RPD, IZ25.RPD, IZ26.RPD, IZ27.RPD, IZ28.RPD, IZ29.RPD, IZ30.RPD
IZ31.RPD, IZ32.RPD, IZ33.RPD, IZ34.RPD, IZ35.RPD, IZ36.RPD, IZ37.RPD
IZ38.RPD, IZ39.RPD, IZ40.RPD

ZONA DE CAMPOTEJAR Y BENALUA DE LAS VILLAS

IZ41.RPD, IZ41B.RPD, IZ42.RPD, IZ43.RPD, IZ43B.RPD, IZ44.RPD, IZ45.RPD
IZ46.RPD, IZ47.RPD, IZ48.RPD

ZONA DE CUBILLAS ALTO

IZ78.RPD, IZ80.RPD, IZ81.RPD, IZ82.RPD, IZ83.RPD, IZ84.RPD, IZ85.RPD
IZ86.RPD, IZ87.RPD, IZ88.RPD, IZ89A.RPD, IZ90.RPD, IZ91.RPD, IZ92.RPD

 LISTADO DE COORDENADAS TOPOGRAFICAS DE LOS SEV REALIZADOS

| SEV N | X (U.T.M.) | Y (U.T.M.) | Z (M) |
|-------|------------|------------|-------|
| 17 | 424750 | 4122250 | 585 |
| 18 | 424300 | 4122800 | 580 |
| 19 | 423350 | 4122950 | 600 |
| 20 | 423800 | 4122800 | 580 |
| 21 | 424225 | 4123450 | 650 |
| 22 | 419450 | 4122150 | 575 |
| 23 | 418850 | 4121600 | 600 |
| 24 | 418850 | 4121400 | 580 |
| 25 | 419100 | 4121250 | 620 |
| 26 | 419000 | 4120500 | 620 |
| 27 | 419950 | 4120800 | 615 |
| 28 | 419550 | 4121450 | 620 |
| 29 | 414450 | 4122900 | 660 |
| 30 | 413550 | 4122350 | 600 |
| 31 | 414300 | 4122200 | 560 |
| 32 | 414350 | 4121000 | 540 |
| 33 | 413650 | 4121700 | 540 |
| 34 | 413000 | 4121600 | 570 |
| 35 | 418950 | 4123100 | 620 |
| 36 | 419450 | 4123000 | 620 |
| 37 | 420050 | 4122500 | 580 |
| 38 | 421050 | 4122500 | 620 |
| 39 | 420975 | 4122800 | 620 |
| 40 | 443050 | 4145100 | 910 |
| 41B | 442300 | 4144700 | 920 |
| 42 | 443400 | 4145700 | 900 |
| 43 | 443050 | 4144850 | 930 |
| 43B | 442800 | 4144400 | 860 |
| 44 | 443800 | 4145200 | 860 |
| 45 | 445050 | 4148850 | 930 |
| 46 | 445500 | 4149000 | 940 |
| 47 | 445300 | 4148200 | 920 |
| 48 | 445050 | 4148050 | 910 |
| 78 | 457900 | 4147700 | 920 |
| 80 | 457750 | 4145350 | 860 |
| 81 | 457750 | 4144850 | 850 |
| 82 | 457875 | 4144050 | 840 |
| 83 | 457750 | 4143250 | 820 |
| 84 | 457000 | 4141700 | 820 |
| 85 | 457750 | 4141700 | 890 |
| 86 | 456950 | 4140800 | 870 |
| 87 | 456100 | 4140850 | 800 |
| 88 | 456100 | 4140300 | 800 |
| 89A | 454450 | 4140050 | 820 |
| 90 | 454300 | 4139200 | 870 |
| 91 | 455000 | 4139450 | 870 |
| 92 | 455750 | 4139800 | 870 |

ANEXO II

CURVAS DE CAMPO CON INTERPRETACION ADOPTADA

DATA SET: IZ-17

CLIENT: ITGE DATE: 31-10-89
 LOCATION: GRANADA SOUNDING: 17
 COUNTY: ANDALUCIA AZIMUTH: N-34-O
 PROJECT: RESISTIVIDAD EQUIPMENT: GEOTRON
 ELEVATION: 585.00
 SOUNDING COORDINATES: X: 424750.0000 Y: 4122250.0000

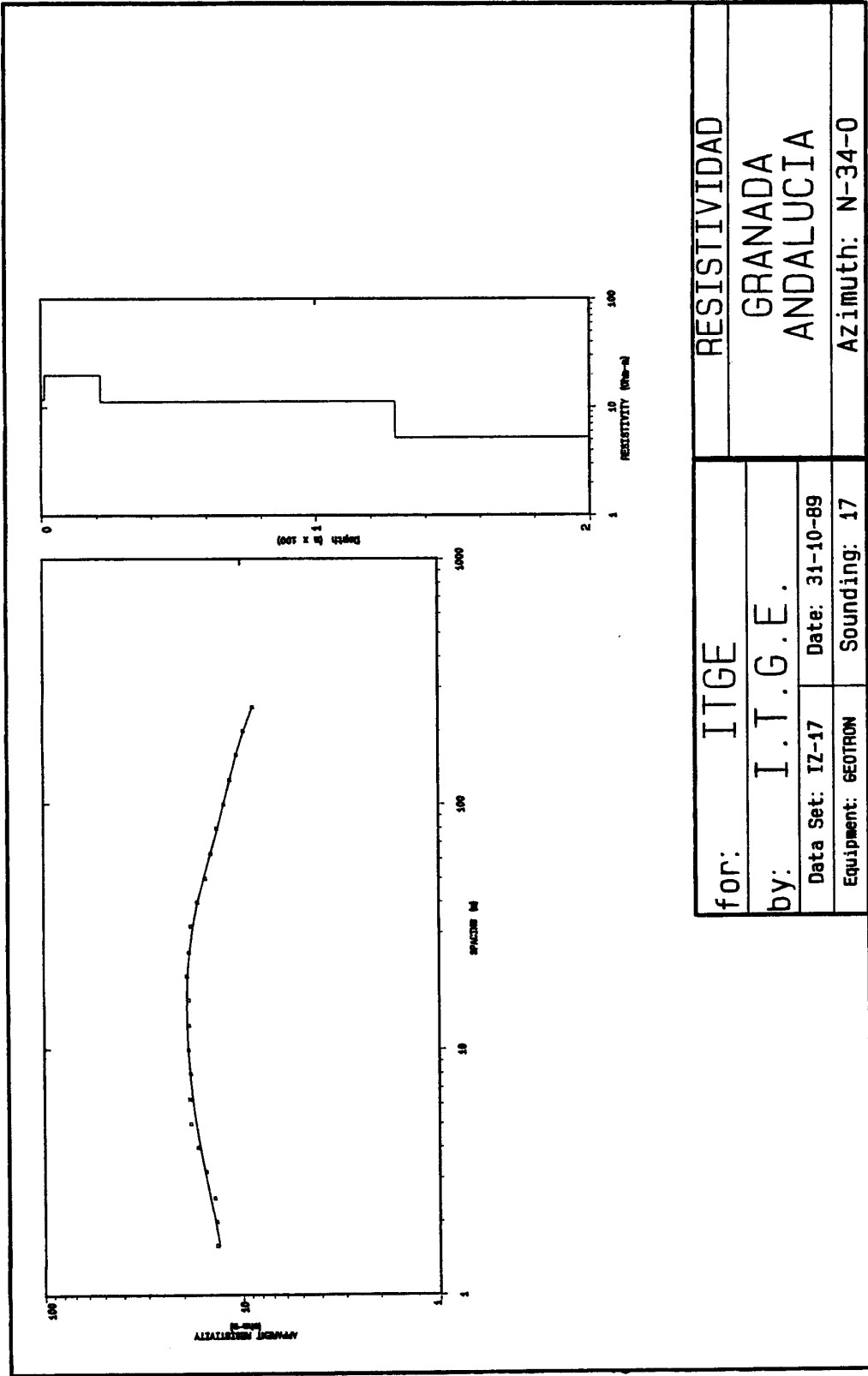
Schlumberger Configuration

FITTING ERROR: 2.175 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 585.0 | |
| 1 | 11.90 | | 1.12 | 583.8 | 0.0946 |
| 2 | 20.05 | | 19.77 | 564.0 | 0.985 |
| 3 | 11.55 | | 91.86 | 472.2 | 7.94 |
| 4 | 6.02 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 13.51 | 13.14 | 2.76 |
| 2 | 2.00 | 13.61 | 13.79 | -1.31 |
| 3 | 2.50 | 13.90 | 14.58 | -4.93 |
| 4 | 3.20 | 15.33 | 15.55 | -1.40 |
| 5 | 4.00 | 16.77 | 16.42 | 2.09 |
| 6 | 5.00 | 18.31 | 17.22 | 5.95 |
| 7 | 6.30 | 18.50 | 17.92 | 3.14 |
| 8 | 8.00 | 18.31 | 18.49 | -0.978 |
| 9 | 10.00 | 18.79 | 18.87 | -0.424 |
| 10 | 12.60 | 18.69 | 19.09 | -2.16 |
| 11 | 16.00 | 18.69 | 19.13 | -2.36 |
| 12 | 20.00 | 19.07 | 18.96 | 0.590 |
| 13 | 25.00 | 18.60 | 18.53 | 0.351 |
| 14 | 32.00 | 18.22 | 17.74 | 2.65 |
| 15 | 40.00 | 16.80 | 16.74 | 0.359 |
| 16 | 50.00 | 15.29 | 15.58 | -1.89 |
| 17 | 63.00 | 14.27 | 14.36 | -0.631 |
| 18 | 80.00 | 13.33 | 13.20 | 0.984 |
| 19 | 100.0 | 12.21 | 12.27 | -0.461 |
| 20 | 126.0 | 11.37 | 11.40 | -0.243 |
| 21 | 160.0 | 10.53 | 10.51 | 0.223 |
| 22 | 200.0 | 9.70 | 9.64 | 0.613 |
| 23 | 250.0 | 8.70 | 8.75 | -0.616 |



| | | | |
|-----------------|--------------------|-----------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ-17 | | ANDALUCIA | |
| Date: 31-10-89 | Equipment: GEOTRON | Azimuth: N-34-0 | |
| Sounding: 17 | | | |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 580.00
 SOUNDING COORDINATES: X: 424300.0000 Y: 4122800.0000

DATE: 31-10-89
 SOUNDING: 18
 AZIMUTH: N-34-O
 EQUIPMENT: GEOTRON

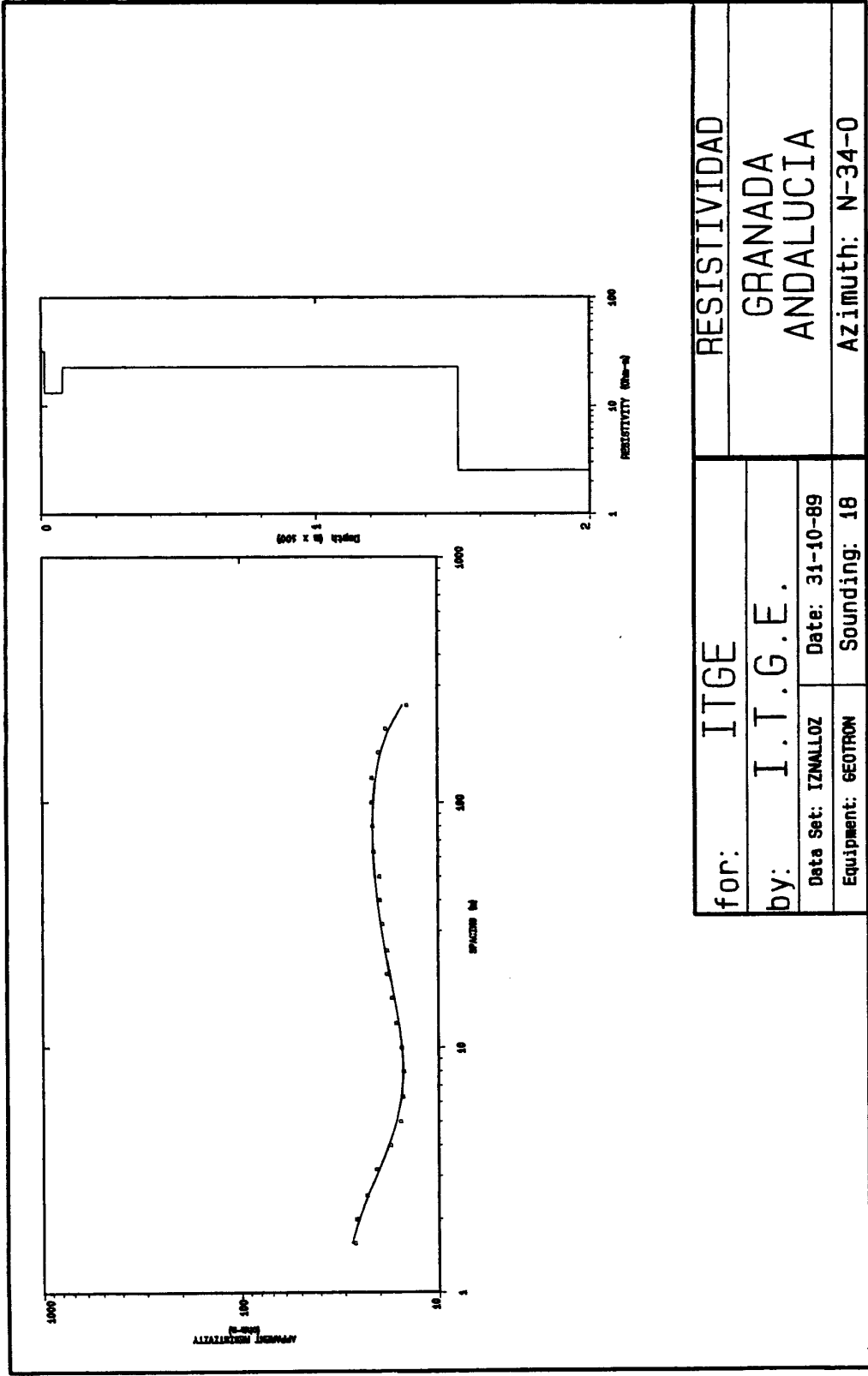
Schlumberger Configuration

FITTING ERROR: 3.058 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 32.18 | | 1.17 | 580.0 | 0.0365 |
| 2 | 13.37 | | 6.61 | 578.8 | 0.494 |
| 3 | 22.86 | | 144.2 | 572.2 | 6.30 |
| 4 | 2.54 | | | 427.9 | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 26.76 | 27.78 | -3.82 |
| 2 | 2.00 | 26.22 | 25.55 | 2.52 |
| 3 | 2.50 | 23.21 | 22.94 | 1.16 |
| 4 | 3.20 | 20.75 | 20.04 | 3.44 |
| 5 | 4.00 | 17.57 | 17.83 | -1.49 |
| 6 | 5.00 | 15.56 | 16.27 | -4.52 |
| 7 | 6.30 | 15.20 | 15.36 | -1.08 |
| 8 | 8.00 | 15.02 | 15.07 | -0.369 |
| 9 | 10.00 | 15.38 | 15.26 | 0.773 |
| 10 | 12.60 | 16.38 | 15.83 | 3.39 |
| 11 | 16.00 | 17.22 | 16.70 | 3.03 |
| 12 | 20.00 | 18.25 | 17.65 | 3.23 |
| 13 | 25.00 | 18.15 | 18.63 | -2.63 |
| 14 | 32.00 | 19.18 | 19.62 | -2.30 |
| 15 | 40.00 | 19.73 | 20.37 | -3.20 |
| 16 | 50.00 | 19.83 | 20.95 | -5.65 |
| 17 | 63.00 | 21.17 | 21.35 | -0.871 |
| 18 | 80.00 | 21.46 | 21.51 | -0.259 |
| 19 | 100.0 | 21.65 | 21.35 | 1.38 |
| 20 | 126.0 | 21.65 | 20.75 | 4.16 |
| 21 | 160.0 | 20.02 | 19.50 | 2.57 |
| 22 | 200.0 | 18.30 | 17.62 | 3.66 |
| 23 | 250.0 | 14.30 | 15.02 | -5.09 |



DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 600.00
 SOUNDING COORDINATES: X: 423350.0000 Y: 4122950.0000

DATE: 31-10-89
 SOUNDING: 19
 AZIMUTH: 0-270
 EQUIPMENT: GEOTRON

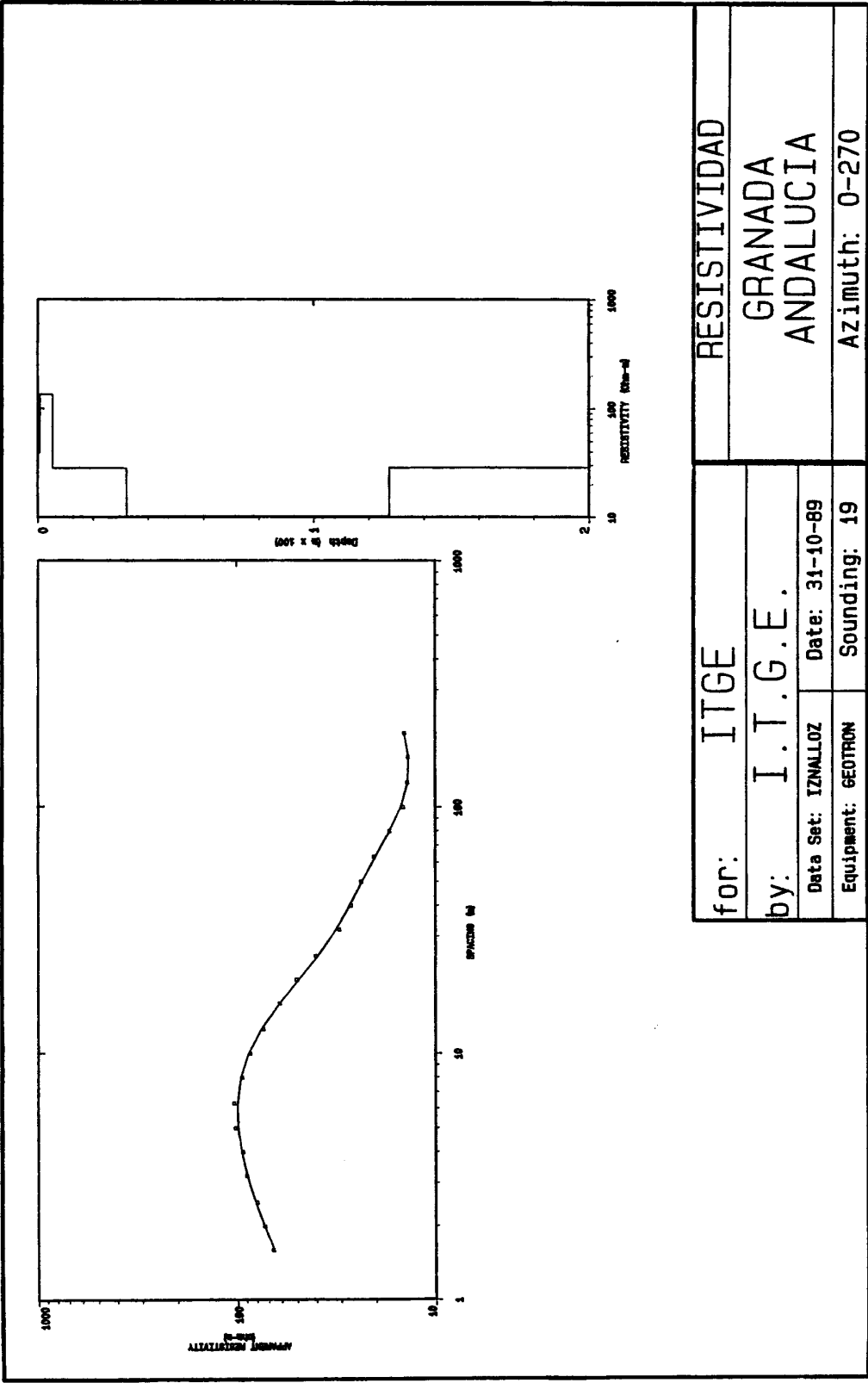
Schlumberger Configuration

FITTING ERROR: 1.999 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 600.0 | |
| 1 | 39.44 | | 0.617 | 599.3 | 0.0156 |
| 2 | 136.6 | | 4.60 | 594.7 | 0.0336 |
| 3 | 28.54 | | 26.83 | 567.9 | 0.939 |
| 4 | 10.17 | | 95.29 | 472.6 | 9.36 |
| 5 | 28.82 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 66.32 | 65.68 | 0.971 |
| 2 | 2.00 | 73.28 | 73.56 | -0.381 |
| 3 | 2.50 | 79.94 | 81.54 | -2.00 |
| 4 | 3.20 | 90.03 | 89.75 | 0.317 |
| 5 | 4.00 | 94.05 | 95.78 | -1.84 |
| 6 | 5.00 | 102.5 | 99.60 | 2.89 |
| 7 | 6.30 | 104.0 | 100.1 | 3.69 |
| 8 | 8.00 | 94.83 | 96.22 | -1.46 |
| 9 | 10.00 | 86.11 | 87.99 | -2.17 |
| 10 | 12.60 | 73.87 | 75.71 | -2.49 |
| 11 | 16.00 | 61.16 | 61.28 | -0.209 |
| 12 | 20.00 | 50.17 | 48.81 | 2.69 |
| 13 | 25.00 | 40.13 | 39.05 | 2.70 |
| 14 | 32.00 | 30.58 | 31.67 | -3.56 |
| 15 | 40.00 | 26.66 | 27.11 | -1.69 |
| 16 | 50.00 | 23.70 | 23.44 | 1.06 |
| 17 | 63.00 | 20.40 | 20.01 | 1.88 |
| 18 | 80.00 | 17.00 | 16.95 | 0.270 |
| 19 | 100.0 | 14.50 | 14.87 | -2.61 |
| 20 | 126.0 | 13.80 | 13.75 | 0.355 |
| 21 | 160.0 | 13.70 | 13.64 | 0.391 |
| 22 | 200.0 | 14.30 | 14.34 | -0.283 |



| | | | |
|--------------------|----------------|----------------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA ANDALUCIA | |
| Data Set: IZNALLOZ | Date: 31-10-89 | Azimuth: 0-270 | |
| Equipment: GEOTRON | Sounding: 19 | | |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 580.00
 SOUNDING COORDINATES: X: 423800.0000 Y: 4122800.0000

DATE: 2-11-89
 SOUNDING: 20
 AZIMUTH: 0-24 -N
 EQUIPMENT: GEOTRON

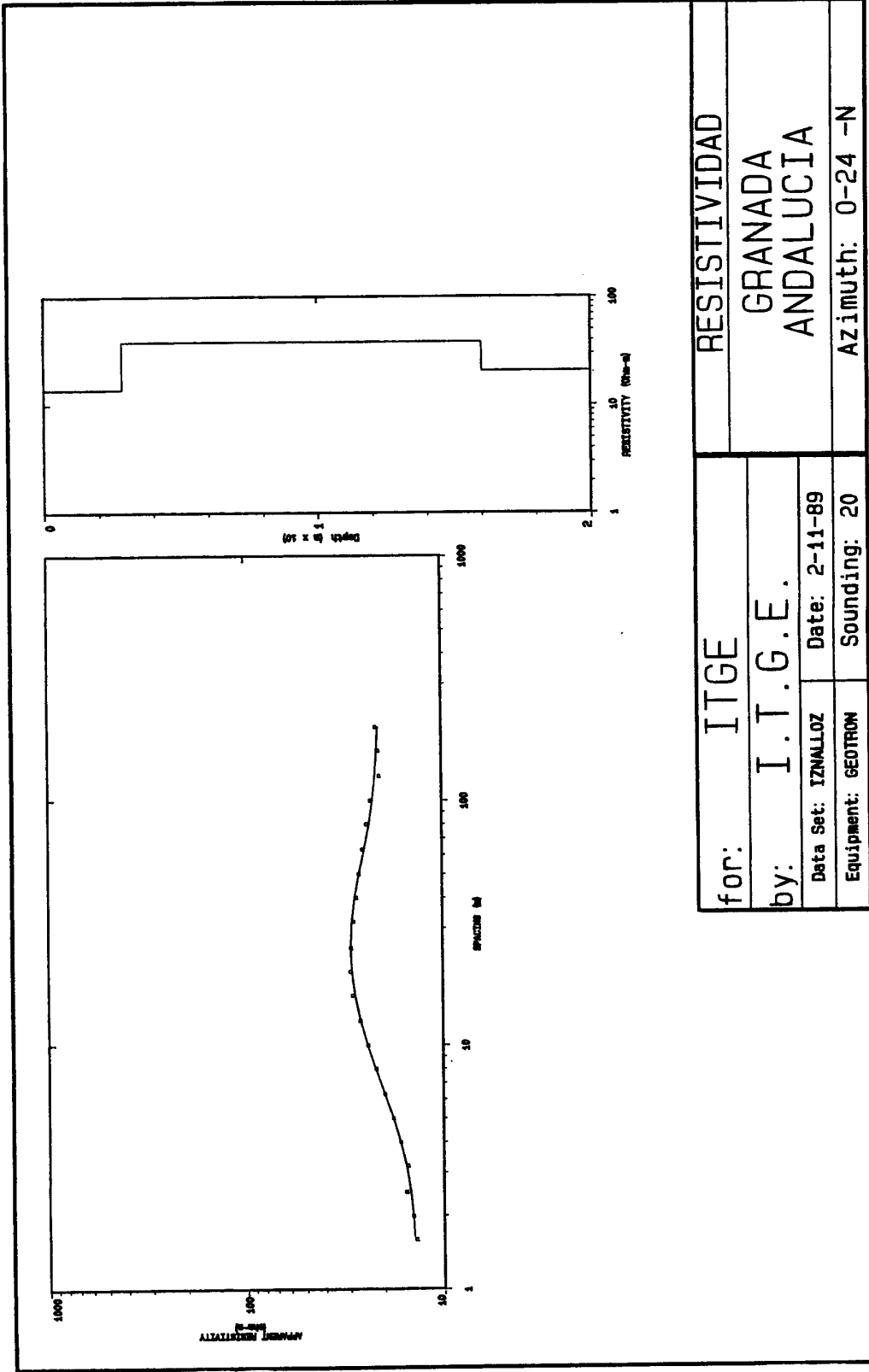
Schlumberger Configuration

FITTING ERROR: 2.261 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 13.88 | | 2.84 | 577.1 | 0.204 |
| 2 | 38.35 | | 13.15 | 564.0 | 0.342 |
| 3 | 20.72 | | | 580.0 | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 13.82 | 14.16 | -2.43 |
| 2 | 2.00 | 14.36 | 14.39 | -0.185 |
| 3 | 2.50 | 15.56 | 14.79 | 4.92 |
| 4 | 3.20 | 15.23 | 15.55 | -2.04 |
| 5 | 4.00 | 16.54 | 16.60 | -0.338 |
| 6 | 5.00 | 18.06 | 18.05 | 0.0675 |
| 7 | 6.30 | 19.91 | 19.95 | -0.170 |
| 8 | 8.00 | 21.98 | 22.18 | -0.891 |
| 9 | 10.00 | 24.16 | 24.32 | -0.653 |
| 10 | 12.60 | 26.45 | 26.38 | 0.252 |
| 11 | 16.00 | 28.89 | 28.12 | 2.64 |
| 12 | 20.00 | 29.63 | 29.20 | 1.44 |
| 13 | 25.00 | 29.42 | 29.60 | -0.605 |
| 14 | 32.00 | 28.46 | 29.16 | -2.45 |
| 15 | 40.00 | 27.51 | 28.08 | -2.08 |
| 16 | 50.00 | 26.55 | 26.60 | -0.189 |
| 17 | 63.00 | 25.42 | 24.99 | 1.67 |
| 18 | 80.00 | 24.28 | 23.55 | 3.01 |
| 19 | 100.0 | 23.04 | 22.54 | 2.15 |
| 20 | 126.0 | 20.77 | 21.84 | -5.19 |
| 21 | 160.0 | 20.97 | 21.40 | -2.02 |
| 22 | 200.0 | 21.70 | 21.14 | 2.54 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 0-24 -N

for: ITGE

by: I.T.G.E.

Data Set: IZNALLOZ Date: 2-11-89

Equipment: GEOTRON Sounding: 20

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 650.00
 SOUNDING COORDINATES: X: 424225.0000 Y: 4123450.0000

DATE: 2-11-89
 SOUNDING: 21
 AZIMUTH: 0-24 -N
 EQUIPMENT: GEOTRON

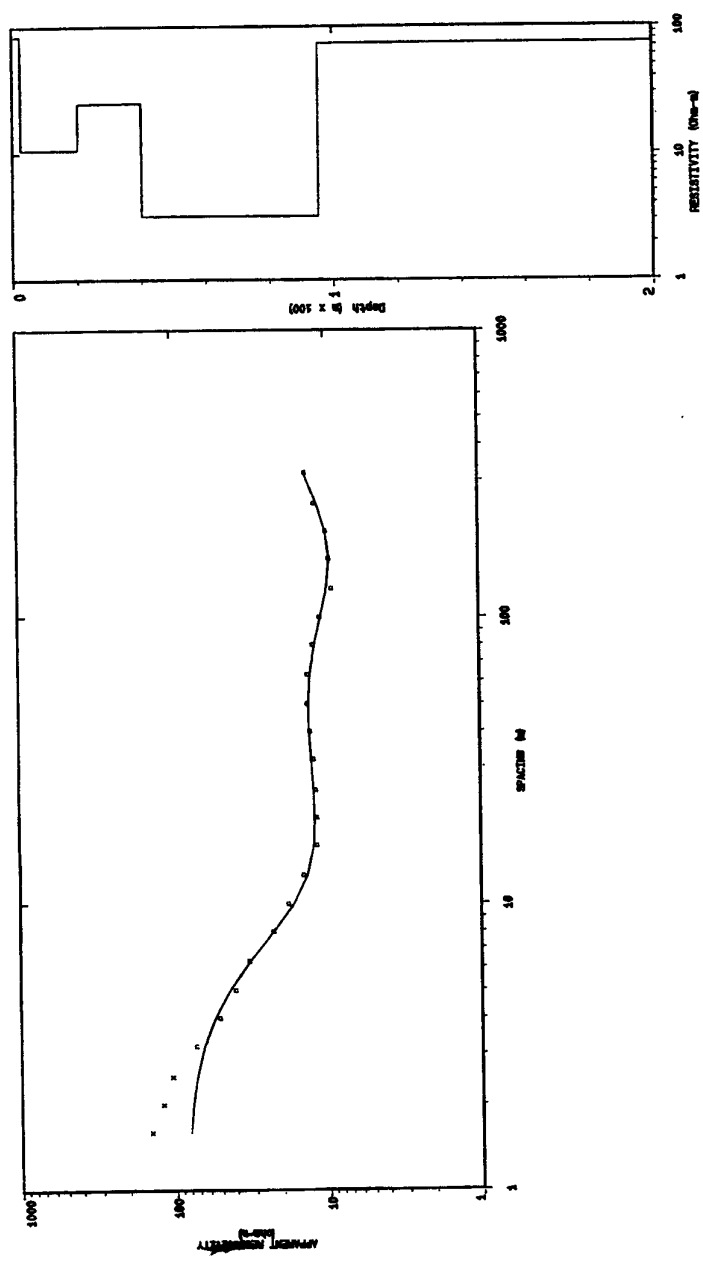
Schlumberger Configuration

FITTING ERROR: 5.170 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 650.0 | |
| 1 | 84.13 | | 2.43 | 647.5 | 0.0289 |
| 2 | 10.77 | | 17.89 | 629.6 | 1.66 |
| 3 | 25.06 | | 19.87 | 609.7 | 0.793 |
| 4 | 3.20 | | 55.22 | 554.5 | 17.23 |
| 5 | 74.52 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 143.6 | 80.55 | 43.91 |
| 2 | 2.00 | 120.3 | 77.67 | 35.47 |
| 3 | 2.50 | 104.6 | 72.98 | 30.23 |
| 4 | 3.20 | 73.67 | 65.06 | 11.69 |
| 5 | 4.00 | 51.37 | 55.30 | -7.64 |
| 6 | 5.00 | 40.39 | 43.91 | -8.69 |
| 7 | 6.30 | 32.69 | 32.25 | 1.33 |
| 8 | 8.00 | 22.76 | 22.54 | 0.966 |
| 9 | 10.00 | 18.09 | 16.67 | 7.85 |
| 10 | 12.60 | 14.36 | 13.53 | 5.73 |
| 11 | 16.00 | 11.71 | 12.30 | -5.06 |
| 12 | 20.00 | 11.71 | 12.07 | -3.06 |
| 13 | 25.00 | 11.84 | 12.24 | -3.36 |
| 14 | 32.00 | 12.21 | 12.63 | -3.41 |
| 15 | 40.00 | 12.84 | 12.99 | -1.09 |
| 16 | 50.00 | 13.35 | 13.10 | 1.82 |
| 17 | 63.00 | 13.23 | 12.77 | 3.48 |
| 18 | 80.00 | 12.20 | 11.89 | 2.51 |
| 19 | 100.0 | 10.93 | 10.78 | 1.41 |
| 20 | 126.0 | 9.09 | 9.76 | -7.36 |
| 21 | 160.0 | 9.43 | 9.37 | 0.633 |
| 22 | 200.0 | 9.90 | 9.92 | -0.248 |
| 23 | 250.0 | 11.80 | 11.34 | 3.86 |
| 24 | 320.0 | 13.50 | 13.72 | -1.68 |



| | | | |
|--------------------|--------------------|------------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZNALLOZ | | ANDALUCIA | |
| Date: 2-11-89 | Equipment: GEOTRON | Azimuth: 0-24 -N | |
| Sounding: 21 | | | |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 575.00
 SOUNDING COORDINATES: X: 419450.0000 Y: 4122150.0000

DATE: 2-11-89
 SOUNDING: 22
 AZIMUTH: 0-30 -N
 EQUIPMENT: GEOTRON

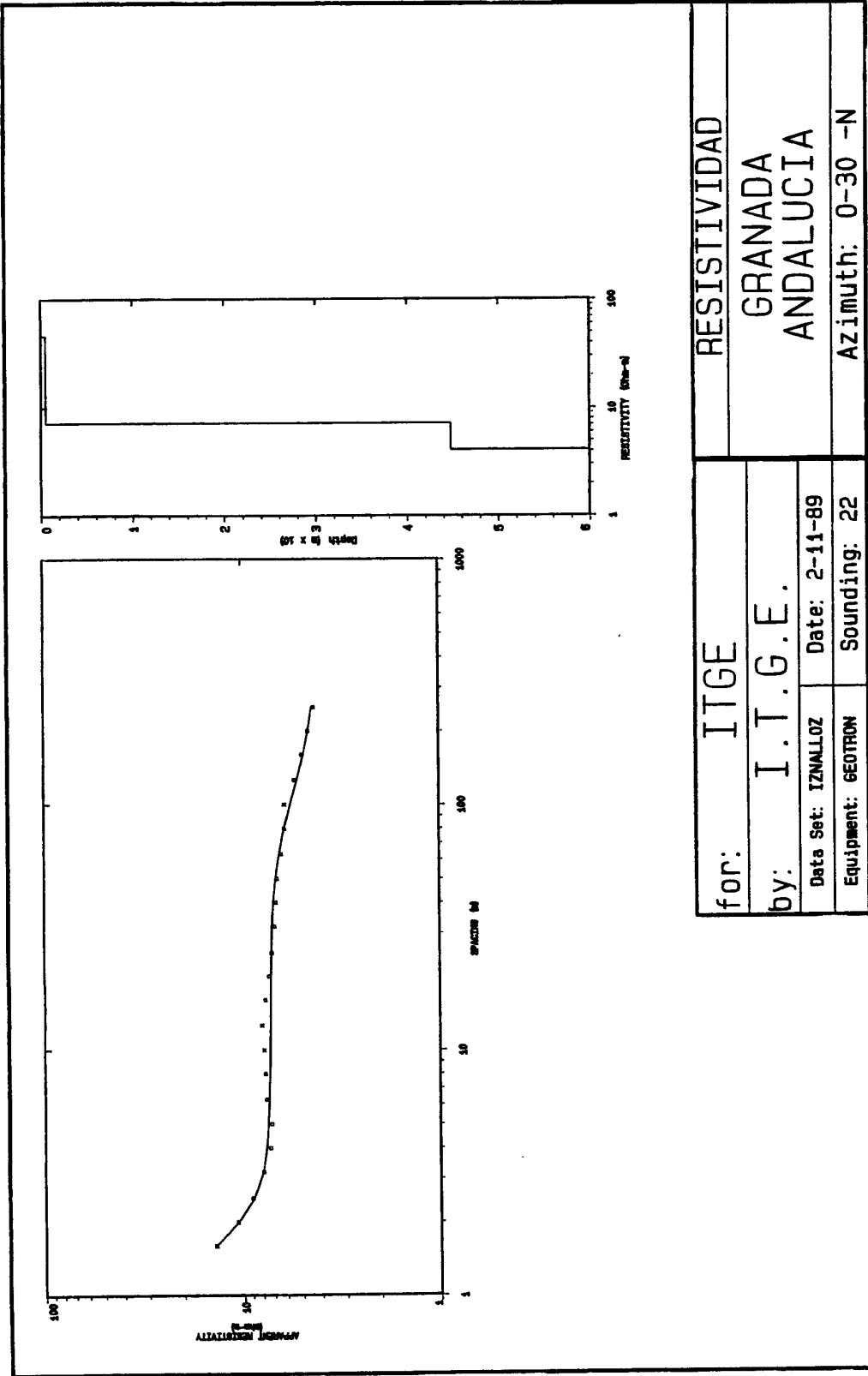
Schlumberger Configuration

FITTING ERROR: 2.902 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 575.0 | |
| 1 | 46.40 | | 0.487 | 574.5 | 0.0105 |
| 2 | 7.25 | | 44.26 | 530.2 | 6.10 |
| 3 | 4.10 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 13.87 | 13.89 | -0.118 |
| 2 | 2.00 | 10.69 | 10.64 | 0.475 |
| 3 | 2.50 | 9.00 | 8.85 | 1.60 |
| 4 | 3.20 | 7.94 | 7.97 | -0.333 |
| 5 | 4.00 | 7.30 | 7.63 | -4.49 |
| 6 | 5.00 | 7.20 | 7.47 | -3.78 |
| 7 | 6.30 | 7.62 | 7.38 | 3.18 |
| 8 | 8.00 | 7.73 | 7.32 | 5.20 |
| 9 | 10.00 | 7.83 | 7.29 | 6.89 |
| 10 | 12.60 | 8.05 | 7.27 | 9.66 |
| 11 | 16.00 | 7.70 | 7.24 | 5.94 |
| 12 | 20.00 | 7.36 | 7.22 | 1.89 |
| 13 | 25.00 | 7.13 | 7.18 | -0.710 |
| 14 | 32.00 | 6.90 | 7.10 | -2.96 |
| 15 | 40.00 | 6.78 | 6.98 | -2.96 |
| 16 | 50.00 | 6.67 | 6.79 | -1.92 |
| 17 | 63.00 | 6.32 | 6.51 | -2.95 |
| 18 | 80.00 | 6.09 | 6.11 | -0.349 |
| 19 | 100.0 | 6.09 | 5.68 | 6.65 |
| 20 | 126.0 | 5.40 | 5.24 | 2.87 |
| 21 | 160.0 | 4.94 | 4.86 | 1.70 |
| 22 | 200.0 | 4.60 | 4.58 | 0.227 |
| 23 | 250.0 | 4.30 | 4.40 | -2.46 |



| | | | |
|--------------------|--------------------|------------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZNALLOZ | | ANDALUCIA | |
| Date: 2-11-89 | Equipment: GEOTRON | Azimuth: 0-30 -N | |
| Sounding: 22 | | | |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 600.00
 SOUNDING COORDINATES: X: 418850.0000 Y: 4121600.0000

DATE: 3-11-89
 SOUNDING: 23
 AZIMUTH: E-38 -N
 EQUIPMENT: GEOTRON

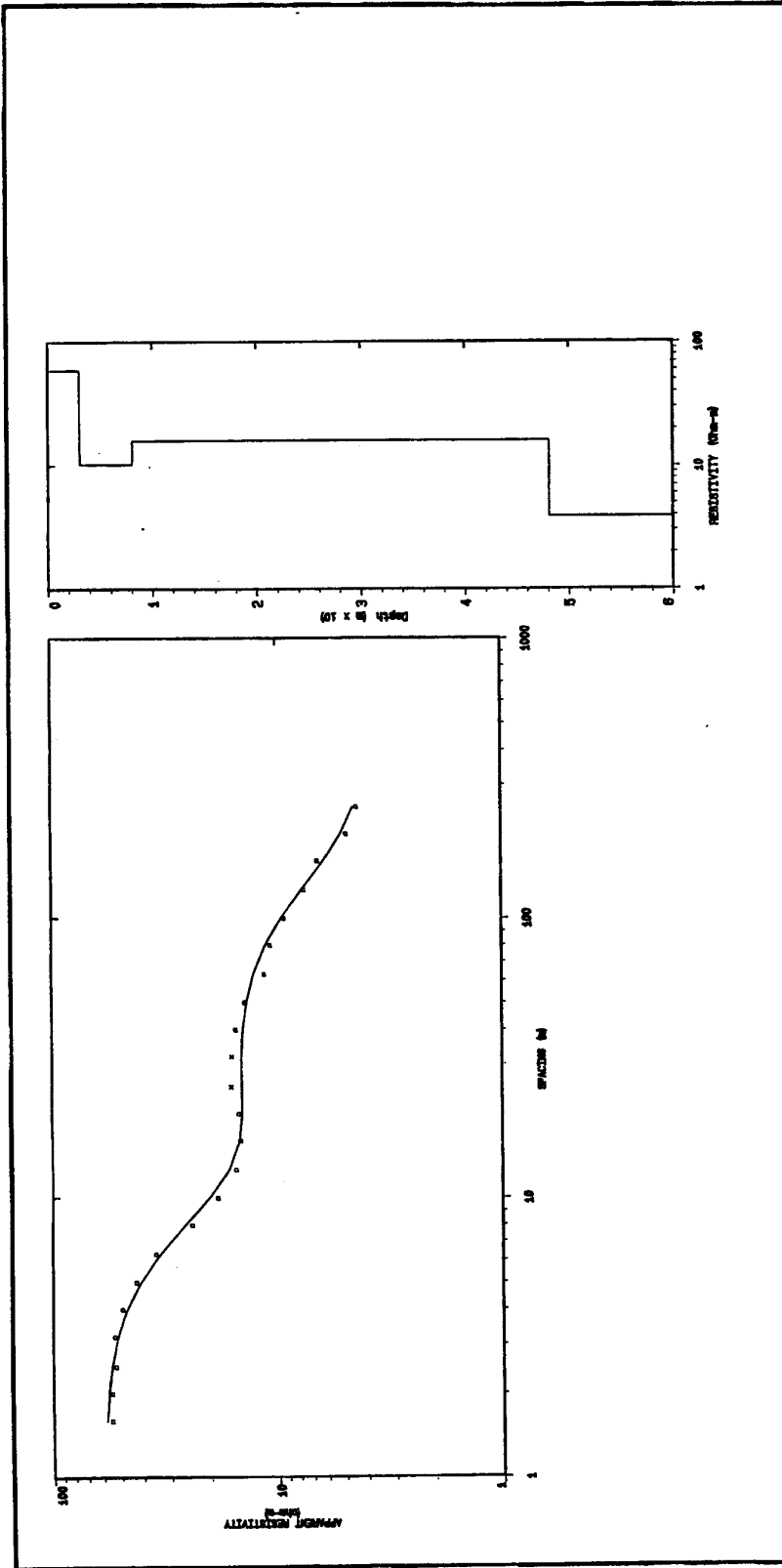
Schlumberger Configuration

FITTING ERROR: 5.531 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 600.0 | |
| 1 | 59.35 | | 3.05 | 596.9 | 0.0515 |
| 2 | 10.32 | | 4.99 | 591.9 | 0.483 |
| 3 | 15.99 | | 40.05 | 551.8 | 2.50 |
| 4 | 3.89 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) | DIFFERENCE (percent) |
|-----|----------------|-------|---------------|-------------------------|
| | | | SYNTHETIC | |
| 1 | 1.60 | 55.28 | 58.12 | -5.13 |
| 2 | 2.00 | 55.28 | 57.07 | -3.24 |
| 3 | 2.50 | 52.95 | 55.24 | -4.33 |
| 4 | 3.20 | 53.56 | 51.87 | 3.16 |
| 5 | 4.00 | 49.38 | 47.22 | 4.39 |
| 6 | 5.00 | 42.87 | 40.99 | 4.40 |
| 7 | 6.30 | 35.01 | 33.44 | 4.48 |
| 8 | 8.00 | 24.08 | 25.80 | -7.16 |
| 9 | 10.00 | 18.55 | 20.14 | -8.56 |
| 10 | 12.60 | 15.35 | 16.47 | -7.30 |
| 11 | 16.00 | 14.68 | 14.80 | -0.788 |
| 12 | 20.00 | 14.90 | 14.40 | 3.38 |
| 13 | 25.00 | 16.14 | 14.43 | 10.59 |
| 14 | 32.00 | 16.02 | 14.45 | 9.80 |
| 15 | 40.00 | 15.35 | 14.26 | 7.11 |
| 16 | 50.00 | 13.90 | 13.74 | 1.13 |
| 17 | 63.00 | 11.40 | 12.76 | -11.96 |
| 18 | 80.00 | 10.70 | 11.26 | -5.31 |
| 19 | 100.0 | 9.30 | 9.55 | -2.79 |
| 20 | 126.0 | 7.60 | 7.75 | -2.07 |
| 21 | 160.0 | 6.60 | 6.19 | 6.20 |
| 22 | 200.0 | 4.90 | 5.17 | -5.53 |
| 23 | 250.0 | 4.40 | 4.56 | -3.77 |



| | |
|----------------------|----------|
| RESISTIVIDAD | |
| GRANADA ANDALUCIA | |
| Azimuth: E-38 -N | |
| for: | ITGE |
| by: | I.T.G.E. |
| Data Set: | IZNALLOZ |
| Date: | 3-11-89 |
| Equipment: | GEOTRON |
| Sounding: | 23 |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 580.00
 SOUNDING COORDINATES: X: 418850.0000 Y: 4121400.0000

DATE: 3-11-89
 SOUNDING: 24
 AZIMUTH: E-38 -N
 EQUIPMENT: GEOTRON

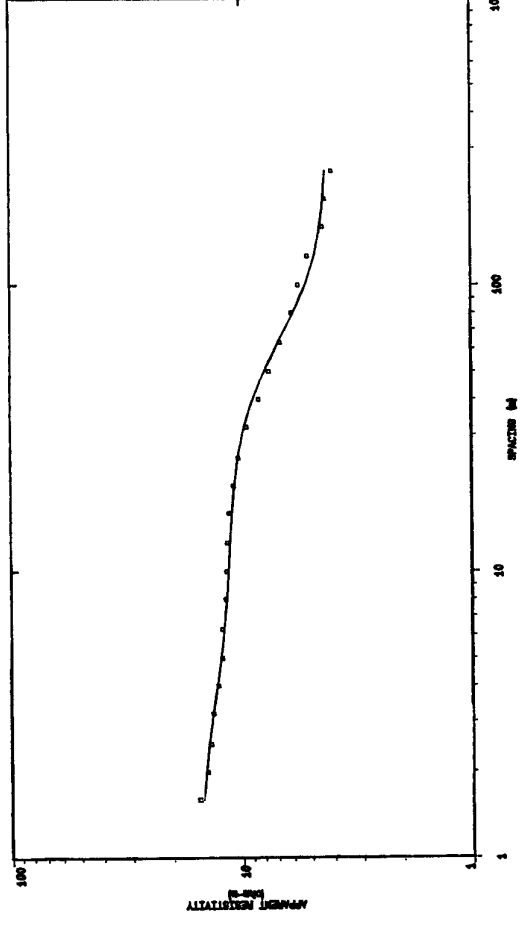
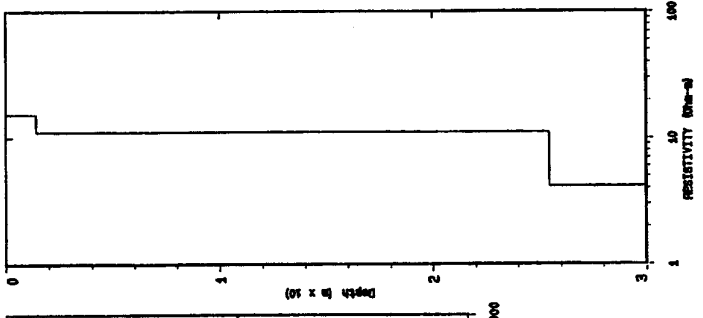
Schlumberger Configuration

FITTING ERROR: 3.591 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 580.0 | |
| 1 | 15.44 | | 1.41 | 578.5 | 0.0917 |
| 2 | 11.17 | | 24.01 | 554.5 | 2.14 |
| 3 | 4.16 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 15.46 | 14.86 | 3.89 |
| 2 | 2.00 | 14.27 | 14.51 | -1.67 |
| 3 | 2.50 | 13.73 | 14.05 | -2.30 |
| 4 | 3.20 | 13.41 | 13.45 | -0.271 |
| 5 | 4.00 | 12.76 | 12.88 | -0.976 |
| 6 | 5.00 | 12.22 | 12.38 | -1.32 |
| 7 | 6.30 | 12.22 | 11.96 | 2.10 |
| 8 | 8.00 | 11.79 | 11.64 | 1.21 |
| 9 | 10.00 | 11.68 | 11.43 | 2.16 |
| 10 | 12.60 | 11.57 | 11.24 | 2.87 |
| 11 | 16.00 | 11.36 | 11.03 | 2.92 |
| 12 | 20.00 | 10.83 | 10.76 | 0.655 |
| 13 | 25.00 | 10.31 | 10.37 | -0.622 |
| 14 | 32.00 | 9.47 | 9.72 | -2.74 |
| 15 | 40.00 | 8.41 | 8.92 | -5.99 |
| 16 | 50.00 | 7.57 | 7.94 | -4.89 |
| 17 | 63.00 | 6.75 | 6.88 | -1.90 |
| 18 | 80.00 | 6.04 | 5.91 | 2.13 |
| 19 | 100.0 | 5.63 | 5.22 | 7.17 |
| 20 | 126.0 | 5.11 | 4.76 | 6.89 |
| 21 | 160.0 | 4.40 | 4.49 | -2.11 |
| 22 | 200.0 | 4.30 | 4.35 | -1.35 |
| 23 | 250.0 | 4.00 | 4.28 | -7.02 |



| | |
|----------------------|------------------|
| RESISTIVIDAD | |
| GRANADA ANDALUCIA | |
| for: ITGE | Azimuth: E-38 -N |
| by: I.T.G.E. | |
| Data Set: IZNALLOZ | Date: 3-11-89 |
| Equipment: GEOTRON | Sounding: 24 |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 419100.0000 Y: 4121250.0000

DATE: 3-11-89
 SOUNDING: 25
 AZIMUTH: N-10 -O
 EQUIPMENT: GEOTRON

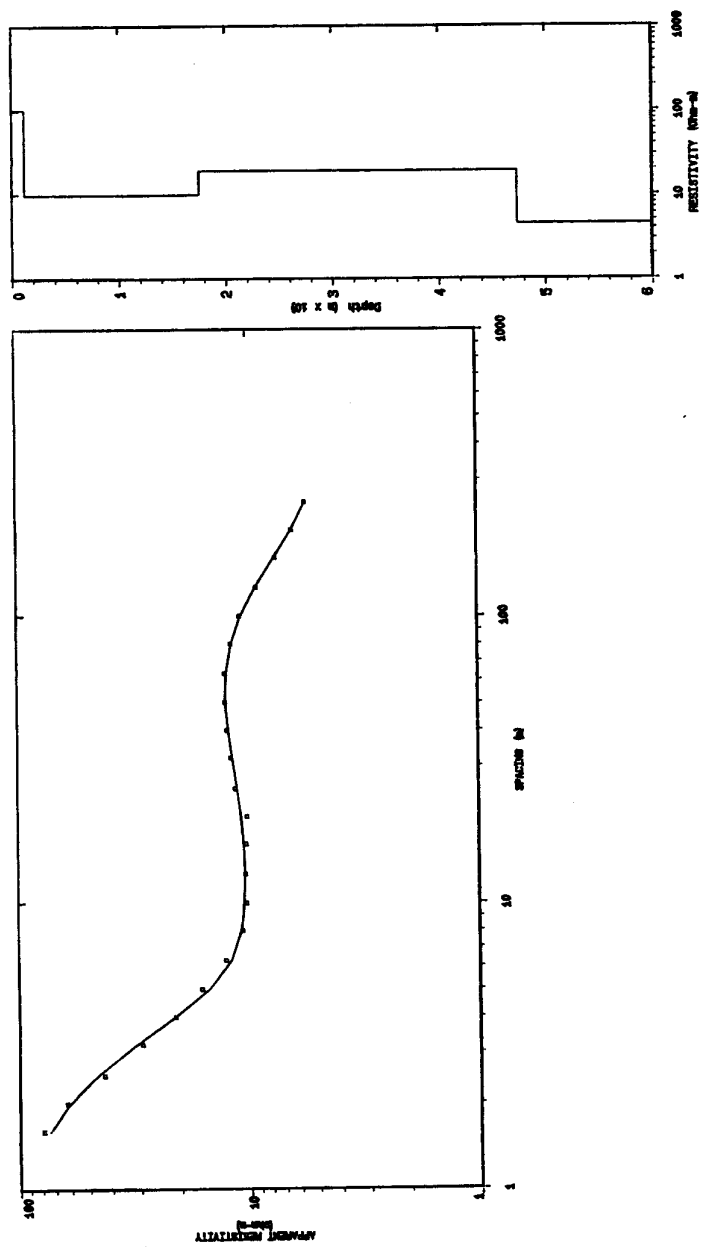
Schlumberger Configuration

FITTING ERROR: 3.592 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 620.0 | |
| 1 | 102.0 | | 1.13 | 618.8 | 0.0111 |
| 2 | 9.89 | | 16.30 | 602.5 | 1.64 |
| 3 | 19.19 | | 29.85 | 572.6 | 1.55 |
| 4 | 4.47 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 79.10 | 74.20 | 6.19 |
| 2 | 2.00 | 62.32 | 60.95 | 2.19 |
| 3 | 2.50 | 43.01 | 46.23 | -7.48 |
| 4 | 3.20 | 29.27 | 31.20 | -6.59 |
| 5 | 4.00 | 21.08 | 21.09 | -0.0249 |
| 6 | 5.00 | 16.15 | 14.99 | 7.21 |
| 7 | 6.30 | 12.69 | 11.99 | 5.54 |
| 8 | 8.00 | 10.70 | 10.84 | -1.33 |
| 9 | 10.00 | 10.28 | 10.50 | -2.12 |
| 10 | 12.60 | 10.38 | 10.42 | -0.346 |
| 11 | 16.00 | 10.28 | 10.53 | -2.42 |
| 12 | 20.00 | 10.17 | 10.79 | -6.09 |
| 13 | 25.00 | 11.43 | 11.20 | 1.98 |
| 14 | 32.00 | 11.96 | 11.77 | 1.58 |
| 15 | 40.00 | 12.38 | 12.25 | 0.992 |
| 16 | 50.00 | 12.59 | 12.55 | 0.309 |
| 17 | 63.00 | 12.59 | 12.46 | 1.01 |
| 18 | 80.00 | 11.85 | 11.81 | 0.383 |
| 19 | 100.0 | 10.80 | 10.69 | 1.04 |
| 20 | 126.0 | 9.12 | 9.20 | -0.827 |
| 21 | 160.0 | 7.55 | 7.63 | -1.04 |
| 22 | 200.0 | 6.40 | 6.41 | -0.257 |
| 23 | 250.0 | 5.60 | 5.57 | 0.504 |



| | | | |
|--------------------|--------------------|------------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZNALLOZ | | ANDALUCIA | |
| Date: 3-11-89 | Equipment: GEOTRON | Azimuth: N-10 -0 | |
| Sounding: 25 | | | |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 419000.0000 Y: 4120500.0000

DATE: 7-11-89
 SOUNDING: 26
 AZIMUTH: N-8 -O
 EQUIPMENT: GEOTRON

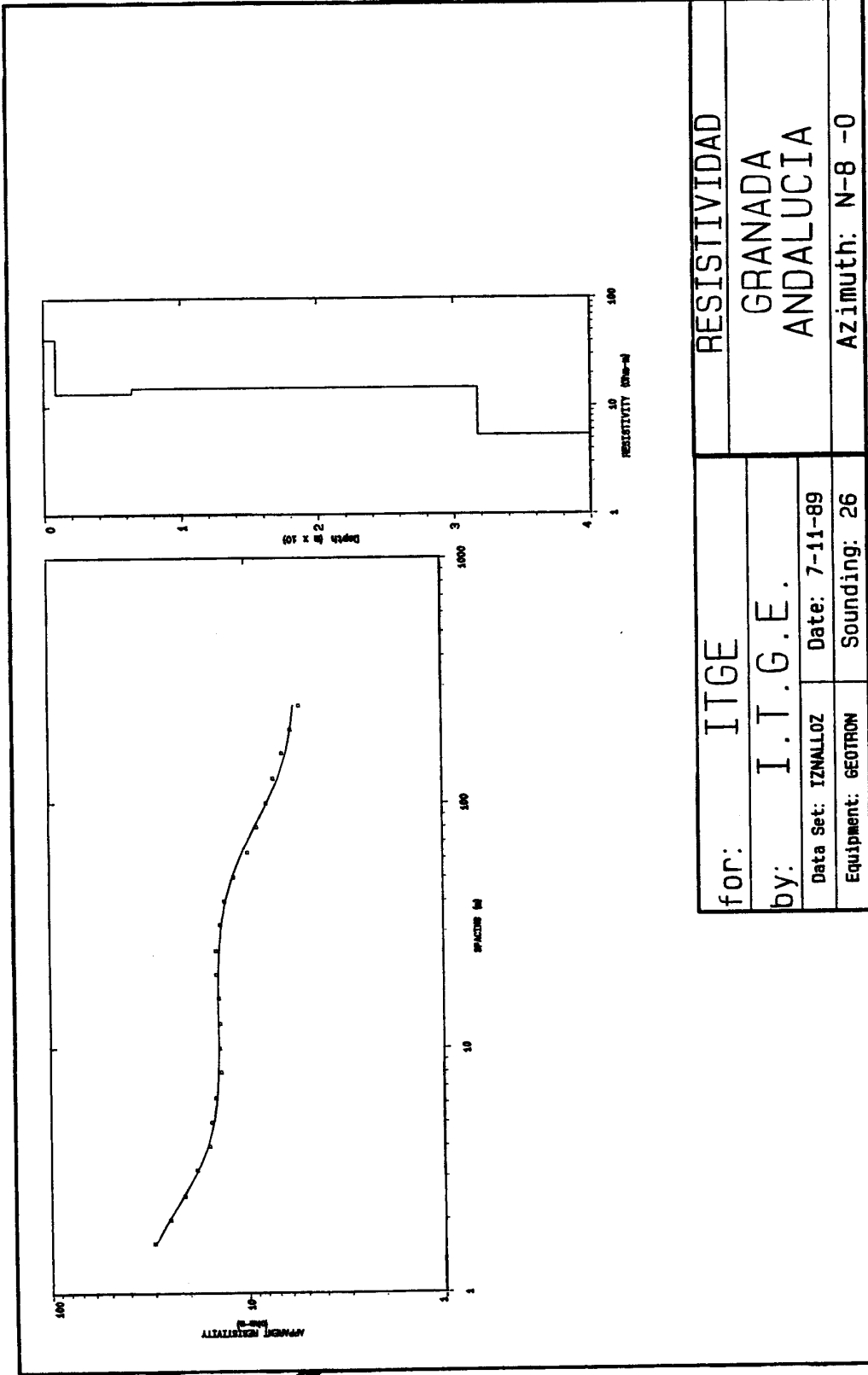
Schlumberger Configuration

FITTING ERROR: 3.071 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 620.0 | |
| 1 | 42.82 | | 0.844 | 619.1 | 0.0197 |
| 2 | 13.41 | | 5.55 | 613.6 | 0.413 |
| 3 | 14.90 | | 25.33 | 588.2 | 1.69 |
| 4 | 5.42 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 30.26 | 29.83 | 1.42 |
| 2 | 2.00 | 25.11 | 25.46 | -1.40 |
| 3 | 2.50 | 21.22 | 21.43 | -0.993 |
| 4 | 3.20 | 18.28 | 18.01 | 1.47 |
| 5 | 4.00 | 15.76 | 16.03 | -1.70 |
| 6 | 5.00 | 15.34 | 14.91 | 2.79 |
| 7 | 6.30 | 14.60 | 14.34 | 1.82 |
| 8 | 8.00 | 13.66 | 14.09 | -3.13 |
| 9 | 10.00 | 13.87 | 14.02 | -1.10 |
| 10 | 12.60 | 13.76 | 14.04 | -2.02 |
| 11 | 16.00 | 13.97 | 14.08 | -0.774 |
| 12 | 20.00 | 14.38 | 14.05 | 2.32 |
| 13 | 25.00 | 14.38 | 13.88 | 3.46 |
| 14 | 32.00 | 13.66 | 13.45 | 1.50 |
| 15 | 40.00 | 12.93 | 12.76 | 1.32 |
| 16 | 50.00 | 11.59 | 11.76 | -1.44 |
| 17 | 63.00 | 9.83 | 10.45 | -6.29 |
| 18 | 80.00 | 8.79 | 9.00 | -2.39 |
| 19 | 100.0 | 7.86 | 7.79 | 0.864 |
| 20 | 126.0 | 7.24 | 6.84 | 5.51 |
| 21 | 160.0 | 6.52 | 6.21 | 4.72 |
| 22 | 200.0 | 5.90 | 5.87 | 0.423 |
| 23 | 250.0 | 5.30 | 5.68 | -7.31 |



| | |
|--------------------|---------------|
| RESISTIVIDAD | |
| for: ITGE | |
| by: I.T.G.E. | |
| Data Set: IZNALLOZ | Date: 7-11-89 |
| Equipment: GEOTRON | Sounding: 26 |
| Azimuth: N-8 -0 | |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 615.00
 SOUNDING COORDINATES: X: 419950.0000 Y: 4120800.0000

DATE: 7-11-89
 SOUNDING: 27
 AZIMUTH: N-10 -O
 EQUIPMENT: GEOTRON

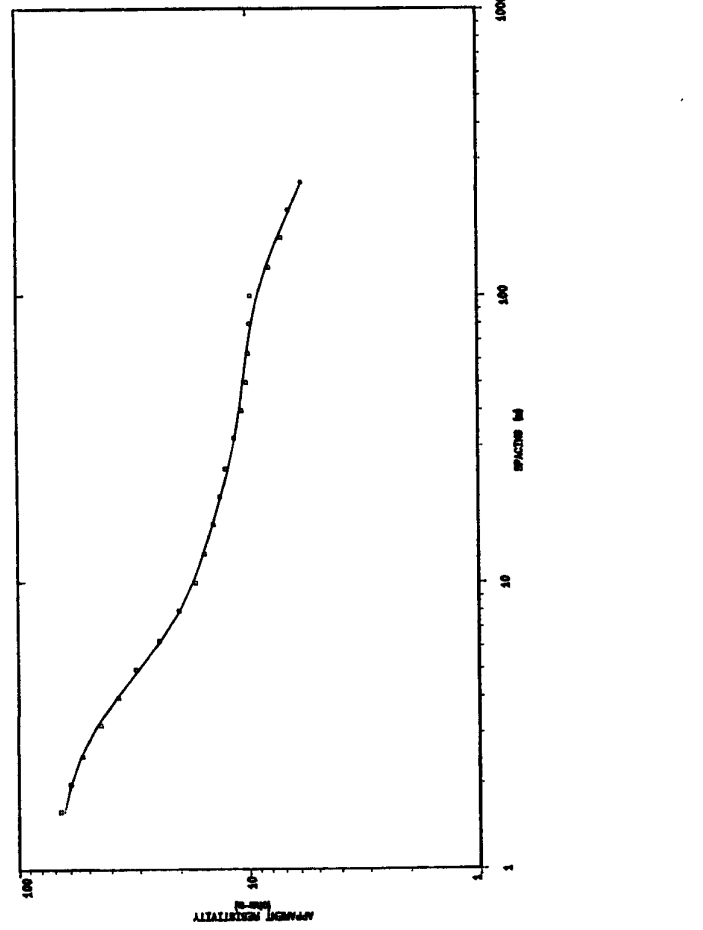
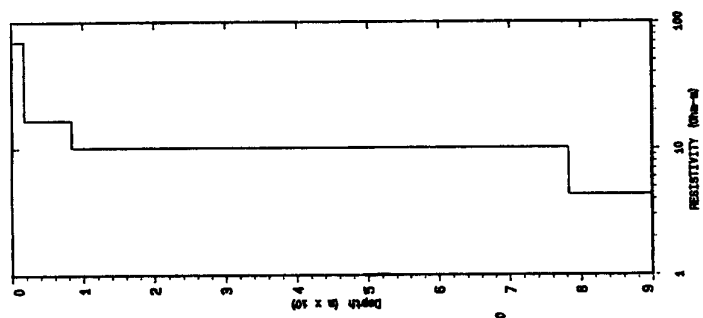
Schlumberger Configuration

FITTING ERROR: 2.667 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 615.0 | |
| 1 | 69.49 | | 1.70 | 613.2 | 0.0245 |
| 2 | 16.80 | | 6.67 | 606.6 | 0.397 |
| 3 | 10.24 | | 69.84 | 536.7 | 6.81 |
| 4 | 4.37 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 65.81 | 63.51 | 3.50 |
| 2 | 2.00 | 59.65 | 59.47 | 0.302 |
| 3 | 2.50 | 52.73 | 53.70 | -1.83 |
| 4 | 3.20 | 43.91 | 45.54 | -3.71 |
| 5 | 4.00 | 36.89 | 37.47 | -1.56 |
| 6 | 5.00 | 30.94 | 30.01 | 2.98 |
| 7 | 6.30 | 24.45 | 23.99 | 1.87 |
| 8 | 8.00 | 20.09 | 19.86 | 1.15 |
| 9 | 10.00 | 17.01 | 17.44 | -2.56 |
| 10 | 12.60 | 15.52 | 15.72 | -1.27 |
| 11 | 16.00 | 14.16 | 14.27 | -0.777 |
| 12 | 20.00 | 13.23 | 13.11 | 0.860 |
| 13 | 25.00 | 12.50 | 12.16 | 2.71 |
| 14 | 32.00 | 11.46 | 11.37 | 0.761 |
| 15 | 40.00 | 10.62 | 10.86 | -2.20 |
| 16 | 50.00 | 10.10 | 10.46 | -3.51 |
| 17 | 63.00 | 9.90 | 10.07 | -1.72 |
| 18 | 80.00 | 9.79 | 9.59 | 2.02 |
| 19 | 100.0 | 9.69 | 9.02 | 6.90 |
| 20 | 126.0 | 8.04 | 8.26 | -2.77 |
| 21 | 160.0 | 7.11 | 7.36 | -3.45 |
| 22 | 200.0 | 6.60 | 6.51 | 1.30 |
| 23 | 250.0 | 5.80 | 5.78 | 0.287 |



| | |
|----------------------|---------------|
| RESISTIVIDAD | |
| GRANADA ANDALUCIA | |
| Azimuth: N-10 -0 | |
| for: | ITGE |
| by: | I.T.G.E. |
| Data Set: IZMULLOZ | Date: 7-11-89 |
| Equipment: GEOTRON | Sounding: 27 |

DATA SET: IZNALLOZ

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 419550.0000 Y: 4121450.0000

DATE: 7-11-89
 SOUNDING: 28
 AZIMUTH: N-10 -O
 EQUIPMENT: GEOTRON

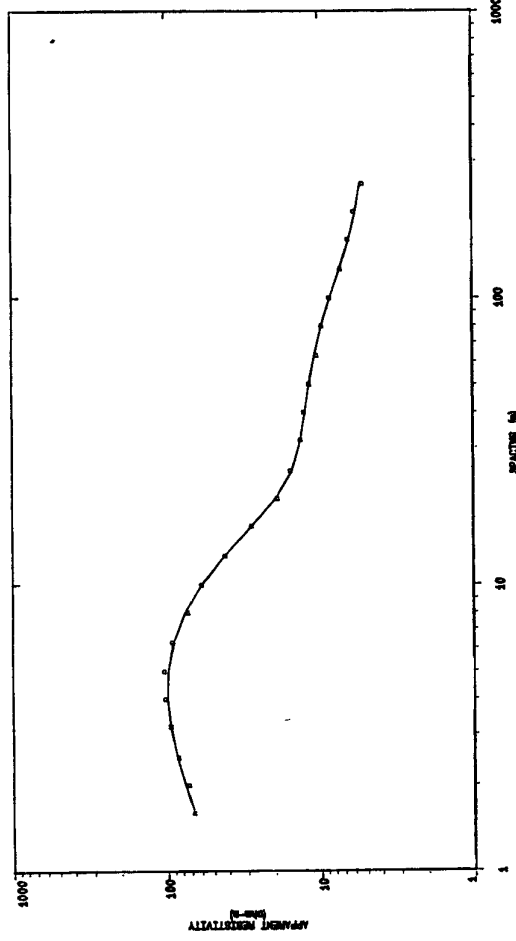
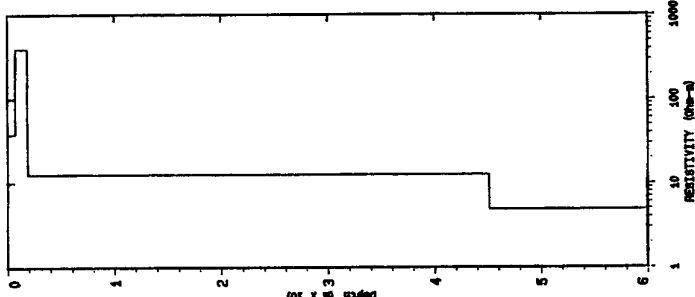
Schlumberger Configuration

FITTING ERROR: 2.602 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 620.0 | |
| 1 | 38.12 | | 0.732 | 619.2 | 0.0192 |
| 2 | 397.9 | | 1.11 | 618.1 | 0.00281 |
| 3 | 12.65 | | 43.25 | 574.8 | 3.41 |
| 4 | 4.86 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 67.86 | 67.33 | 0.777 |
| 2 | 2.00 | 73.52 | 77.30 | -5.15 |
| 3 | 2.50 | 85.62 | 87.10 | -1.73 |
| 4 | 3.20 | 95.68 | 95.83 | -0.154 |
| 5 | 4.00 | 103.6 | 99.93 | 3.54 |
| 6 | 5.00 | 104.9 | 98.79 | 5.87 |
| 7 | 6.30 | 92.52 | 91.11 | 1.52 |
| 8 | 8.00 | 73.40 | 76.68 | -4.47 |
| 9 | 10.00 | 59.60 | 59.60 | 0.00455 |
| 10 | 12.60 | 41.73 | 42.02 | -0.689 |
| 11 | 16.00 | 27.97 | 27.73 | 0.840 |
| 12 | 20.00 | 19.01 | 19.43 | -2.20 |
| 13 | 25.00 | 15.62 | 15.23 | 2.46 |
| 14 | 32.00 | 13.32 | 13.30 | 0.148 |
| 15 | 40.00 | 12.67 | 12.45 | 1.75 |
| 16 | 50.00 | 11.69 | 11.69 | -0.0407 |
| 17 | 63.00 | 10.37 | 10.77 | -3.78 |
| 18 | 80.00 | 9.61 | 9.62 | -0.114 |
| 19 | 100.0 | 8.52 | 8.45 | 0.813 |
| 20 | 126.0 | 7.21 | 7.29 | -1.20 |
| 21 | 160.0 | 6.44 | 6.34 | 1.63 |
| 22 | 200.0 | 5.90 | 5.73 | 2.86 |
| 23 | 250.0 | 5.20 | 5.36 | -3.11 |



RESISTIVIDAD
 GRANADA
 ANDALUCIA
 Azimuth: N-10 -0

for: ITGE

by: I.T.G.E.

Data Set: IZNALLOZ Date: 7-11-89

Equipment: GEOTRON Sounding: 28

DATA SET: IZ29

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 660.00
 SOUNDING COORDINATES: X: 414450.0000 Y: 4122900.0000

DATE: 20-2-90
 SOUNDING: 29
 AZIMUTH: N-4
 EQUIPMENT: GEOTRON

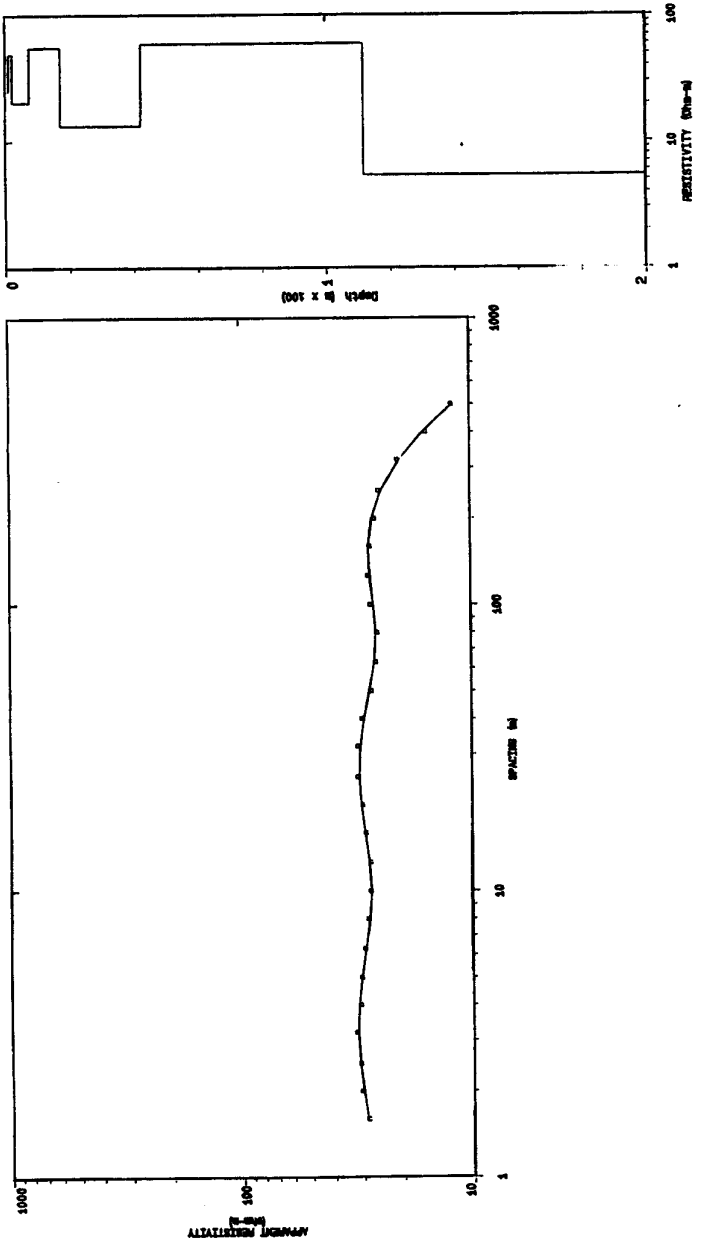
Schlumberger Configuration

FITTING ERROR: 1.792 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 660.0 | |
| 1 | 25.51 | | 0.968 | 659.0 | 0.0379 |
| 2 | 49.49 | | 1.11 | 657.9 | 0.0226 |
| 3 | 20.51 | | 5.39 | 652.5 | 0.263 |
| 4 | 55.86 | | 9.75 | 642.7 | 0.174 |
| 5 | 13.41 | | 25.05 | 617.7 | 1.86 |
| 6 | 59.77 | | 69.33 | 548.3 | 1.16 |
| 7 | 5.42 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 28.79 | 28.99 | -0.693 |
| 2 | 2.00 | 30.74 | 30.25 | 1.61 |
| 3 | 2.50 | 31.05 | 31.32 | -0.856 |
| 4 | 3.20 | 32.29 | 31.88 | 1.25 |
| 5 | 4.00 | 30.85 | 31.60 | -2.42 |
| 6 | 5.00 | 30.54 | 30.62 | -0.278 |
| 7 | 6.30 | 29.51 | 29.26 | 0.832 |
| 8 | 8.00 | 28.48 | 28.08 | 1.39 |
| 9 | 10.00 | 27.76 | 27.67 | 0.315 |
| 10 | 12.60 | 27.76 | 28.13 | -1.34 |
| 11 | 16.00 | 29.06 | 29.29 | -0.777 |
| 12 | 20.00 | 29.93 | 30.43 | -1.67 |
| 13 | 25.00 | 31.45 | 31.05 | 1.27 |
| 14 | 32.00 | 31.45 | 30.68 | 2.43 |
| 15 | 40.00 | 30.04 | 29.45 | 1.96 |
| 16 | 50.00 | 27.22 | 27.82 | -2.21 |
| 17 | 63.00 | 25.99 | 26.47 | -1.84 |
| 18 | 80.00 | 25.58 | 26.06 | -1.88 |
| 19 | 100.0 | 27.42 | 26.61 | 2.95 |
| 20 | 126.0 | 28.04 | 27.53 | 1.81 |
| 21 | 160.0 | 27.53 | 27.89 | -1.31 |
| 22 | 200.0 | 26.20 | 26.95 | -2.89 |
| 23 | 250.0 | 25.10 | 24.50 | 2.36 |
| 24 | 320.0 | 20.70 | 20.30 | 1.91 |
| 25 | 400.0 | 15.50 | 15.92 | -2.71 |
| 26 | 500.0 | 12.00 | 11.89 | 0.845 |



RESISTIVIDAD

for: ITGE

GRANADA
ANDALUCIA

by: I.T.G.E.

Data Set: 1729 Date: 20-2-90

Equipment: GEOTRON Sounding: 29

Azimuth: N-4

DATA SET: IZ30

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 700.00
 SOUNDING COORDINATES: X: 413550.0000 Y: 4122350.0000

DATE: 22-2-90
 SOUNDING: 30
 AZIMUTH: 34
 EQUIPMENT: GEOTRON

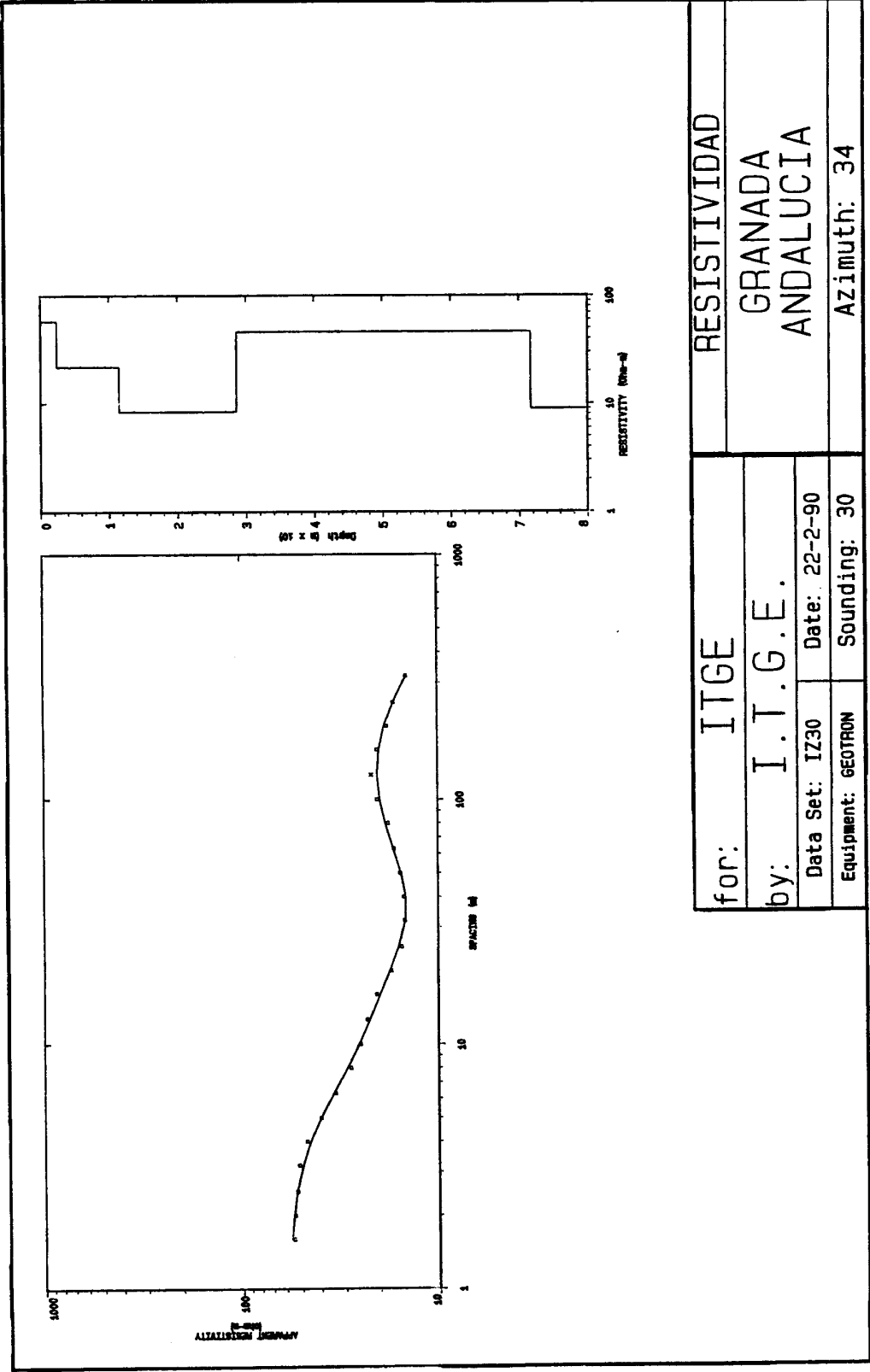
Schlumberger Configuration

FITTING ERROR: 2.518 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 700.0 | |
| 1 | 58.36 | | 2.34 | 697.6 | 0.0402 |
| 2 | 22.05 | | 9.09 | 688.5 | 0.412 |
| 3 | 8.45 | | 17.18 | 671.3 | 2.03 |
| 4 | 46.43 | | 43.04 | 628.3 | 0.926 |
| 5 | 8.97 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 55.12 | 56.70 | -2.86 |
| 2 | 2.00 | 54.51 | 55.37 | -1.57 |
| 3 | 2.50 | 52.90 | 53.22 | -0.599 |
| 4 | 3.20 | 51.59 | 49.59 | 3.88 |
| 5 | 4.00 | 47.07 | 45.13 | 4.12 |
| 6 | 5.00 | 39.93 | 39.87 | 0.144 |
| 7 | 6.30 | 33.69 | 34.29 | -1.77 |
| 8 | 8.00 | 28.06 | 29.18 | -4.01 |
| 9 | 10.00 | 25.04 | 25.39 | -1.41 |
| 10 | 12.60 | 23.03 | 22.35 | 2.95 |
| 11 | 16.00 | 20.55 | 19.75 | 3.91 |
| 12 | 20.00 | 17.32 | 17.60 | -1.59 |
| 13 | 25.00 | 15.28 | 15.82 | -3.52 |
| 14 | 32.00 | 14.74 | 14.64 | 0.694 |
| 15 | 40.00 | 14.85 | 14.55 | 1.99 |
| 16 | 50.00 | 15.49 | 15.37 | 0.824 |
| 17 | 63.00 | 16.64 | 16.83 | -1.15 |
| 18 | 80.00 | 17.89 | 18.49 | -3.35 |
| 19 | 100.0 | 20.28 | 19.71 | 2.82 |
| 20 | 126.0 | 21.74 | 20.27 | 6.73 |
| 21 | 160.0 | 20.28 | 19.89 | 1.93 |
| 22 | 200.0 | 18.10 | 18.63 | -2.92 |
| 23 | 250.0 | 16.70 | 16.72 | -0.144 |
| 24 | 320.0 | 14.40 | 14.35 | 0.317 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 34

for: ITGE

by: I.T.G.E.

Data Set: IZ30 Date: 22-2-90

Equipment: 6EOTRON Sounding: 30

DATA SET: IZ31

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 660.00
 SOUNDING COORDINATES: X: 414300.0000 Y: 4122200.0000

DATE: 21-2-90
 SOUNDING: 31
 AZIMUTH: 22
 EQUIPMENT: GEOTRON

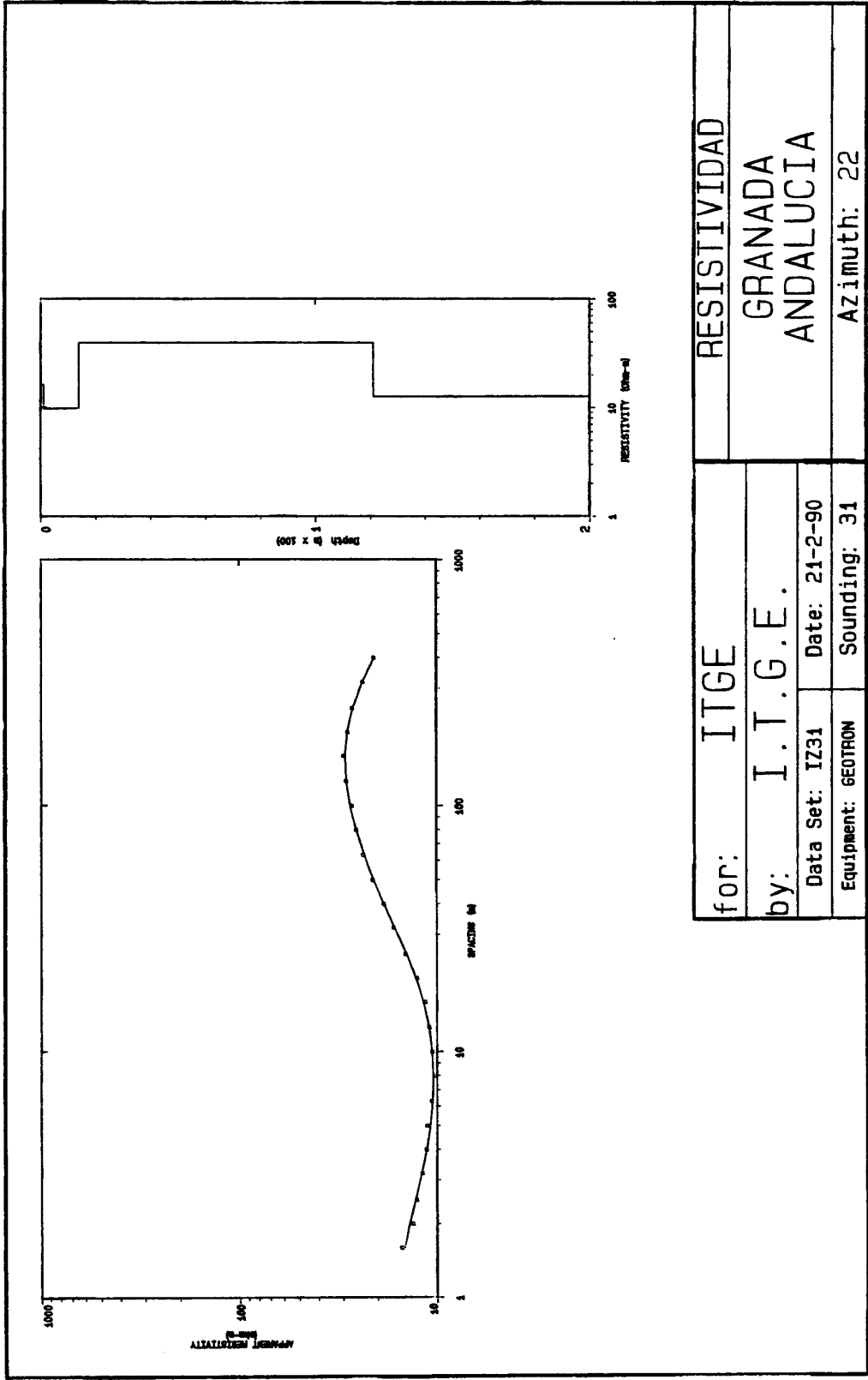
Schlumberger Configuration

FITTING ERROR: 1.710 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 16.43 | | 1.02 | 660.0 | 0.0622 |
| 2 | 9.81 | | 12.79 | 658.9 | 1.30 |
| 3 | 39.55 | | 107.3 | 646.1 | 2.71 |
| 4 | 12.65 | | | 538.8 | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 15.11 | 14.58 | 3.51 |
| 2 | 2.00 | 13.26 | 13.76 | -3.78 |
| 3 | 2.50 | 12.70 | 12.86 | -1.27 |
| 4 | 3.20 | 11.87 | 11.93 | -0.552 |
| 5 | 4.00 | 11.31 | 11.26 | 0.464 |
| 6 | 5.00 | 11.22 | 10.79 | 3.82 |
| 7 | 6.30 | 10.66 | 10.52 | 1.35 |
| 8 | 8.00 | 10.20 | 10.45 | -2.42 |
| 9 | 10.00 | 10.57 | 10.57 | -0.0529 |
| 10 | 12.60 | 10.94 | 10.95 | -0.0989 |
| 11 | 16.00 | 11.43 | 11.68 | -2.17 |
| 12 | 20.00 | 12.62 | 12.76 | -1.14 |
| 13 | 25.00 | 14.39 | 14.26 | 0.899 |
| 14 | 32.00 | 16.56 | 16.37 | 1.15 |
| 15 | 40.00 | 18.53 | 18.57 | -0.217 |
| 16 | 50.00 | 21.10 | 20.93 | 0.806 |
| 17 | 63.00 | 23.66 | 23.37 | 1.21 |
| 18 | 80.00 | 25.63 | 25.73 | -0.379 |
| 19 | 100.0 | 26.91 | 27.56 | -2.41 |
| 20 | 126.0 | 28.79 | 28.85 | -0.198 |
| 21 | 160.0 | 29.77 | 29.22 | 1.84 |
| 22 | 200.0 | 28.30 | 28.51 | -0.742 |
| 23 | 250.0 | 26.80 | 26.72 | 0.295 |
| 24 | 320.0 | 23.70 | 23.77 | -0.326 |
| 25 | 400.0 | 20.80 | 20.77 | 0.113 |



DATA SET: IZ32

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 540.00
 SOUNDING COORDINATES: X: 414350.0000 Y: 4121000.0000

DATE: 21-2-90
 SOUNDING: 32
 AZIMUTH: 65
 EQUIPMENT: GEOTRON

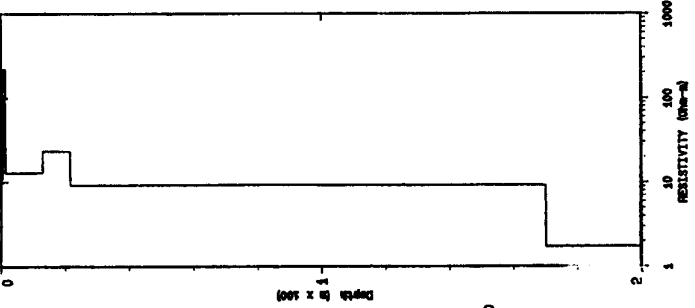
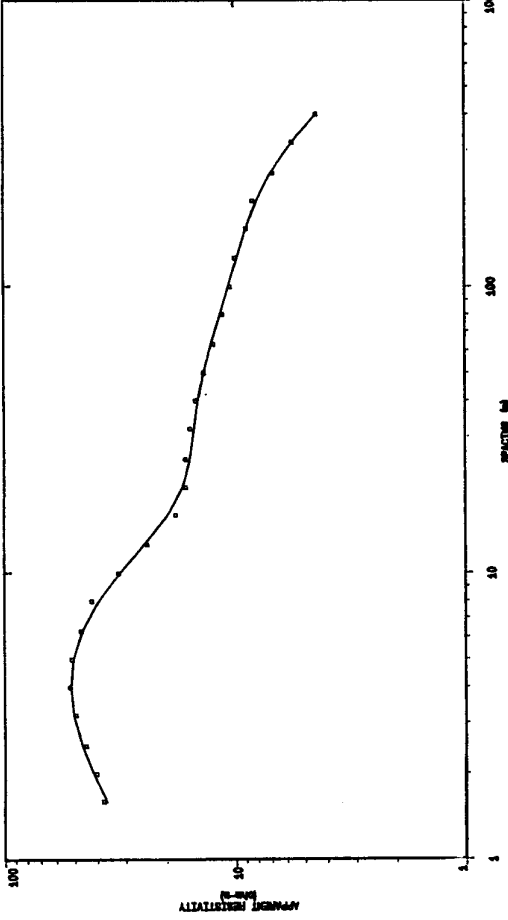
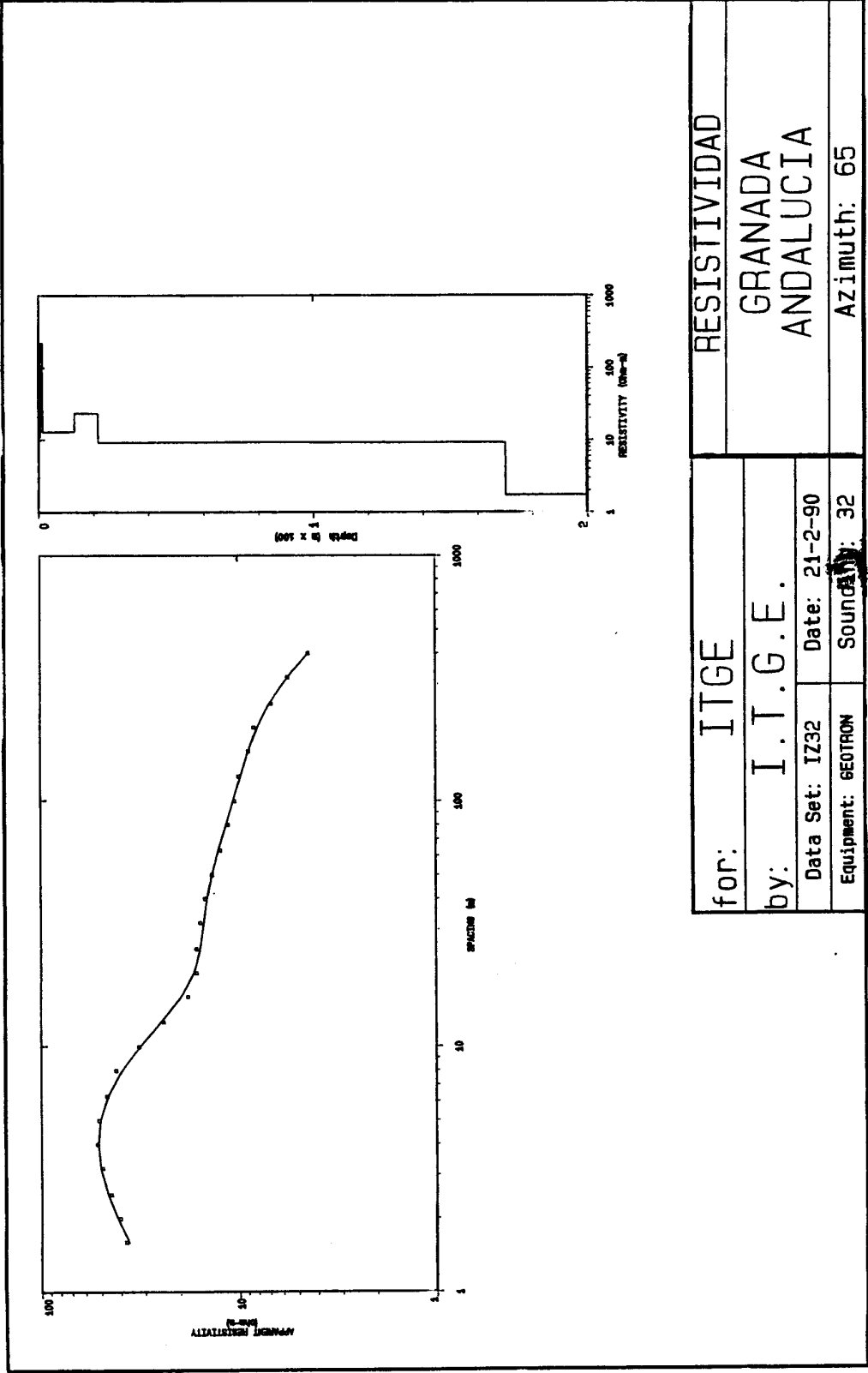
Schlumberger Configuration

FITTING ERROR: 3.194 PERCENT

| L = | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 540.0 | |
| 1 | 11.00 | | 0.371 | 539.6 | 0.0337 |
| 2 | 220.7 | | 0.895 | 538.7 | 0.00406 |
| 3 | 13.12 | | 11.69 | 527.0 | 0.890 |
| 4 | 23.61 | | 8.44 | 518.5 | 0.357 |
| 5 | 9.30 | | 148.5 | 370.0 | 15.97 |
| 6 | 1.73 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 37.48 | 36.28 | 3.19 |
| 2 | 2.00 | 40.34 | 41.63 | -3.20 |
| 3 | 2.50 | 44.72 | 46.47 | -3.91 |
| 4 | 3.20 | 49.30 | 50.38 | -2.18 |
| 5 | 4.00 | 52.25 | 51.76 | 0.939 |
| 6 | 5.00 | 51.24 | 50.48 | 1.47 |
| 7 | 6.30 | 46.65 | 46.16 | 1.04 |
| 8 | 8.00 | 41.97 | 39.16 | 6.68 |
| 9 | 10.00 | 32.08 | 31.67 | 1.27 |
| 10 | 12.60 | 24.04 | 24.68 | -2.66 |
| 11 | 16.00 | 18.12 | 19.55 | -7.86 |
| 12 | 20.00 | 16.40 | 16.88 | -2.89 |
| 13 | 25.00 | 16.40 | 15.66 | 4.53 |
| 14 | 32.00 | 15.64 | 15.02 | 3.98 |
| 15 | 40.00 | 14.78 | 14.44 | 2.30 |
| 16 | 50.00 | 13.64 | 13.64 | -0.0144 |
| 17 | 63.00 | 12.30 | 12.62 | -2.54 |
| 18 | 80.00 | 11.25 | 11.52 | -2.35 |
| 19 | 100.0 | 10.39 | 10.58 | -1.79 |
| 20 | 126.0 | 9.92 | 9.72 | 1.95 |
| 21 | 160.0 | 8.87 | 8.87 | -0.0698 |
| 22 | 200.0 | 8.30 | 7.99 | 3.62 |
| 23 | 250.0 | 6.80 | 6.95 | -2.23 |
| 24 | 320.0 | 5.60 | 5.61 | -0.293 |
| 25 | 400.0 | 4.40 | 4.39 | 0.110 |



DATA SET: IZ33

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 540.00
 SOUNDING COORDINATES: X: 413650.0000 Y: 4121700.0000

DATE: 21-2-90
 SOUNDING: 33
 AZIMUTH: 81
 EQUIPMENT: GEOTRON

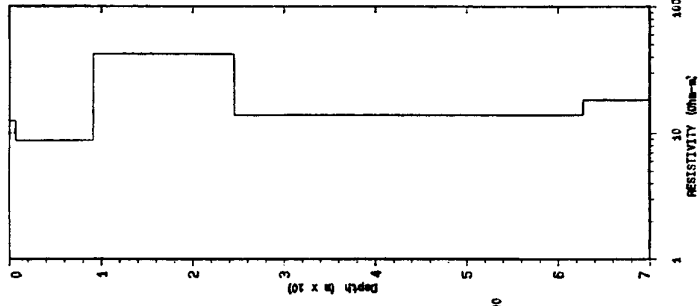
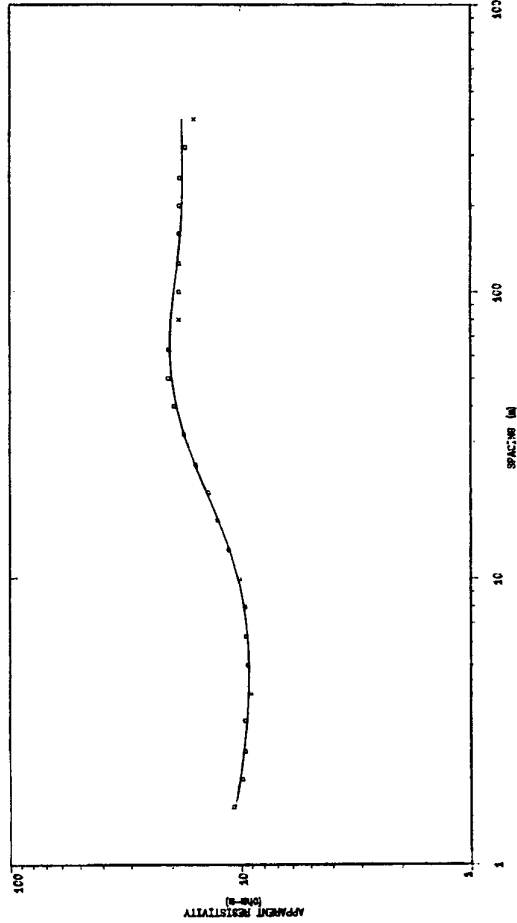
Schlumberger Configuration

FITTING ERROR: 2.118 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 540.0 | |
| 1 | 12.50 | | 0.657 | 539.3 | 0.0526 |
| 2 | 8.75 | | 8.44 | 530.8 | 0.964 |
| 3 | 42.19 | | 15.44 | 515.4 | 0.366 |
| 4 | 13.83 | | 38.12 | 477.3 | 2.75 |
| 5 | 18.30 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 10.78 | 10.57 | 1.90 |
| 2 | 2.00 | 9.88 | 10.10 | -2.25 |
| 3 | 2.50 | 9.61 | 9.71 | -1.03 |
| 4 | 3.20 | 9.61 | 9.41 | 2.13 |
| 5 | 4.00 | 9.07 | 9.26 | -2.04 |
| 6 | 5.00 | 9.34 | 9.23 | 1.15 |
| 7 | 6.30 | 9.52 | 9.36 | 1.73 |
| 8 | 8.00 | 9.61 | 9.69 | -0.810 |
| 9 | 10.00 | 10.15 | 10.26 | -1.08 |
| 10 | 12.60 | 11.32 | 11.19 | 1.09 |
| 11 | 16.00 | 12.66 | 12.56 | 0.771 |
| 12 | 20.00 | 13.91 | 14.16 | -1.77 |
| 13 | 25.00 | 15.73 | 15.90 | -1.08 |
| 14 | 32.00 | 17.75 | 17.77 | -0.123 |
| 15 | 40.00 | 19.57 | 19.16 | 2.09 |
| 16 | 50.00 | 20.72 | 20.08 | 3.08 |
| 17 | 63.00 | 20.53 | 20.44 | 0.452 |
| 18 | 80.00 | 18.59 | 20.19 | -8.61 |
| 19 | 100.0 | 18.59 | 19.59 | -5.39 |
| 20 | 126.0 | 18.59 | 18.87 | -1.52 |
| 21 | 160.0 | 18.50 | 18.29 | 1.11 |
| 22 | 200.0 | 18.50 | 17.99 | 2.72 |
| 23 | 250.0 | 18.40 | 17.90 | 2.67 |
| 24 | 320.0 | 17.40 | 17.94 | -3.15 |
| 25 | 400.0 | 16.00 | 18.02 | -12.66 |



for: ITGE

by: I.T.G.E.

Data Set: IZ33 Date: 21-2-90

Equipment: GEOTRON Sounding: 33

RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 81

DATA SET: IZ34

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 570.00
 SOUNDING COORDINATES: X: 413000.0000 Y: 4121600.0000

DATE: 22-2-90
 SOUNDING: 34
 AZIMUTH: 77
 EQUIPMENT: GEOTRON

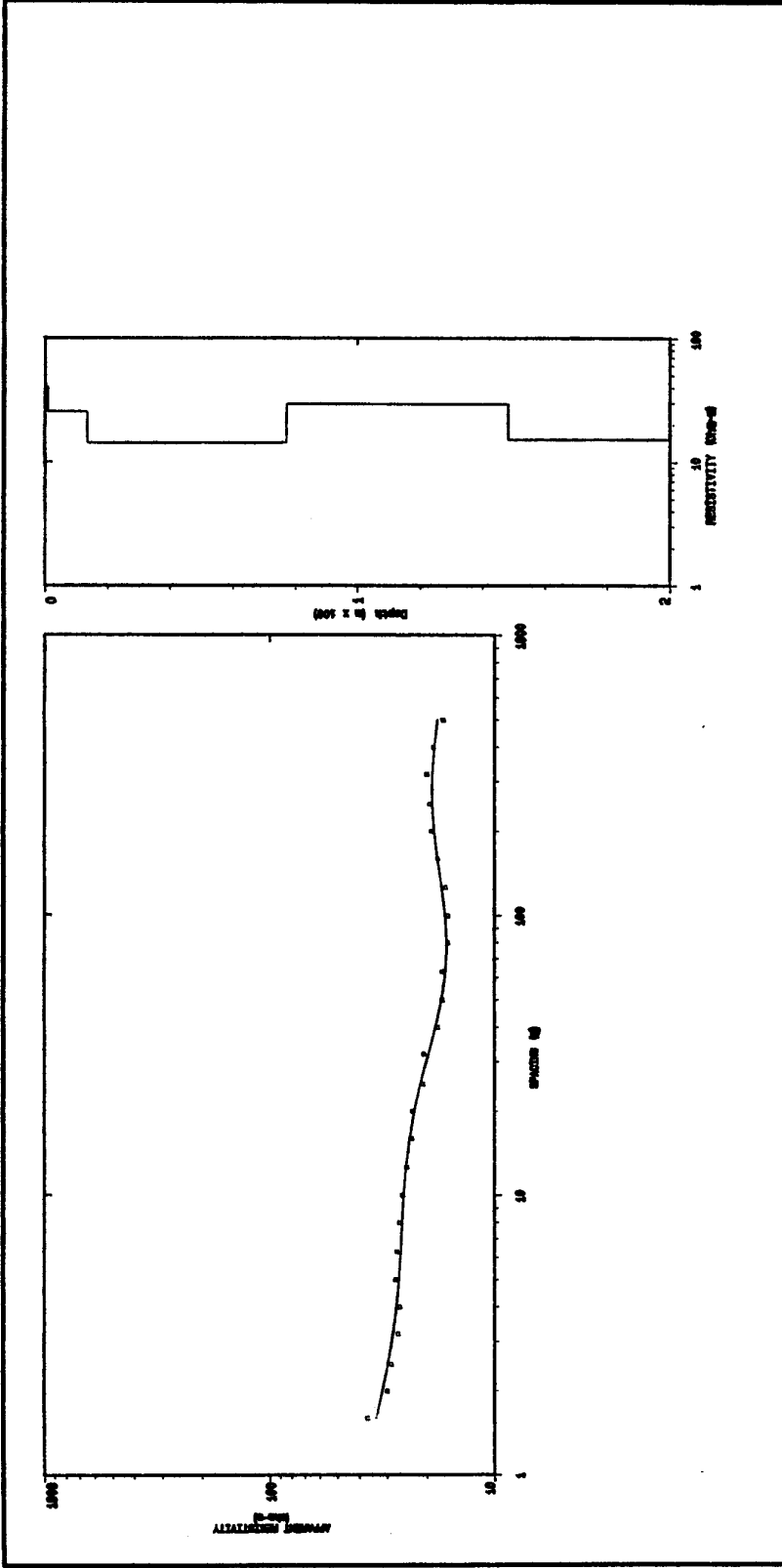
Schlumberger Configuration

FITTING ERROR: 3.726 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 570.0 | |
| 1 | 40.83 | | 0.727 | 569.2 | 0.0178 |
| 2 | 25.76 | | 12.72 | 556.5 | 0.493 |
| 3 | 14.33 | | 63.59 | 492.9 | 4.43 |
| 4 | 29.65 | | 71.07 | 421.8 | 2.39 |
| 5 | 15.25 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 36.80 | 33.78 | 8.21 |
| 2 | 2.00 | 30.12 | 31.75 | -5.42 |
| 3 | 2.50 | 28.89 | 29.94 | -3.63 |
| 4 | 3.20 | 26.92 | 28.38 | -5.45 |
| 5 | 4.00 | 26.45 | 27.40 | -3.60 |
| 6 | 5.00 | 27.67 | 26.73 | 3.40 |
| 7 | 6.30 | 27.29 | 26.24 | 3.86 |
| 8 | 8.00 | 26.54 | 25.82 | 2.72 |
| 9 | 10.00 | 25.69 | 25.39 | 1.17 |
| 10 | 12.60 | 24.56 | 24.80 | -0.967 |
| 11 | 16.00 | 23.34 | 23.92 | -2.49 |
| 12 | 20.00 | 23.24 | 22.79 | 1.93 |
| 13 | 25.00 | 20.79 | 21.37 | -2.79 |
| 14 | 32.00 | 20.59 | 19.66 | 4.49 |
| 15 | 40.00 | 17.83 | 18.23 | -2.21 |
| 16 | 50.00 | 17.02 | 17.13 | -0.638 |
| 17 | 63.00 | 17.02 | 16.45 | 3.32 |
| 18 | 80.00 | 16.08 | 16.27 | -1.16 |
| 19 | 100.0 | 16.08 | 16.53 | -2.76 |
| 20 | 126.0 | 16.50 | 17.13 | -3.79 |
| 21 | 160.0 | 17.85 | 17.91 | -0.363 |
| 22 | 200.0 | 19.10 | 18.58 | 2.70 |
| 23 | 250.0 | 19.40 | 18.97 | 2.20 |
| 24 | 320.0 | 20.00 | 18.95 | 5.22 |
| 25 | 400.0 | 18.70 | 18.55 | 0.750 |
| 26 | 500.0 | 16.90 | 17.93 | -6.15 |



| | | | |
|----------------|--------------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ34 | | ANDALUCIA | |
| Date: 22-2-90 | Equipment: GEOTRON | Azimuth: 77 | |
| Sounding: 34 | | | |

DATA SET: IZ35

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 418950.0000 Y: 4123100.0000

DATE: 19-2-90
 SOUNDING: 35
 AZIMUTH: 10
 EQUIPMENT: GEOTRON

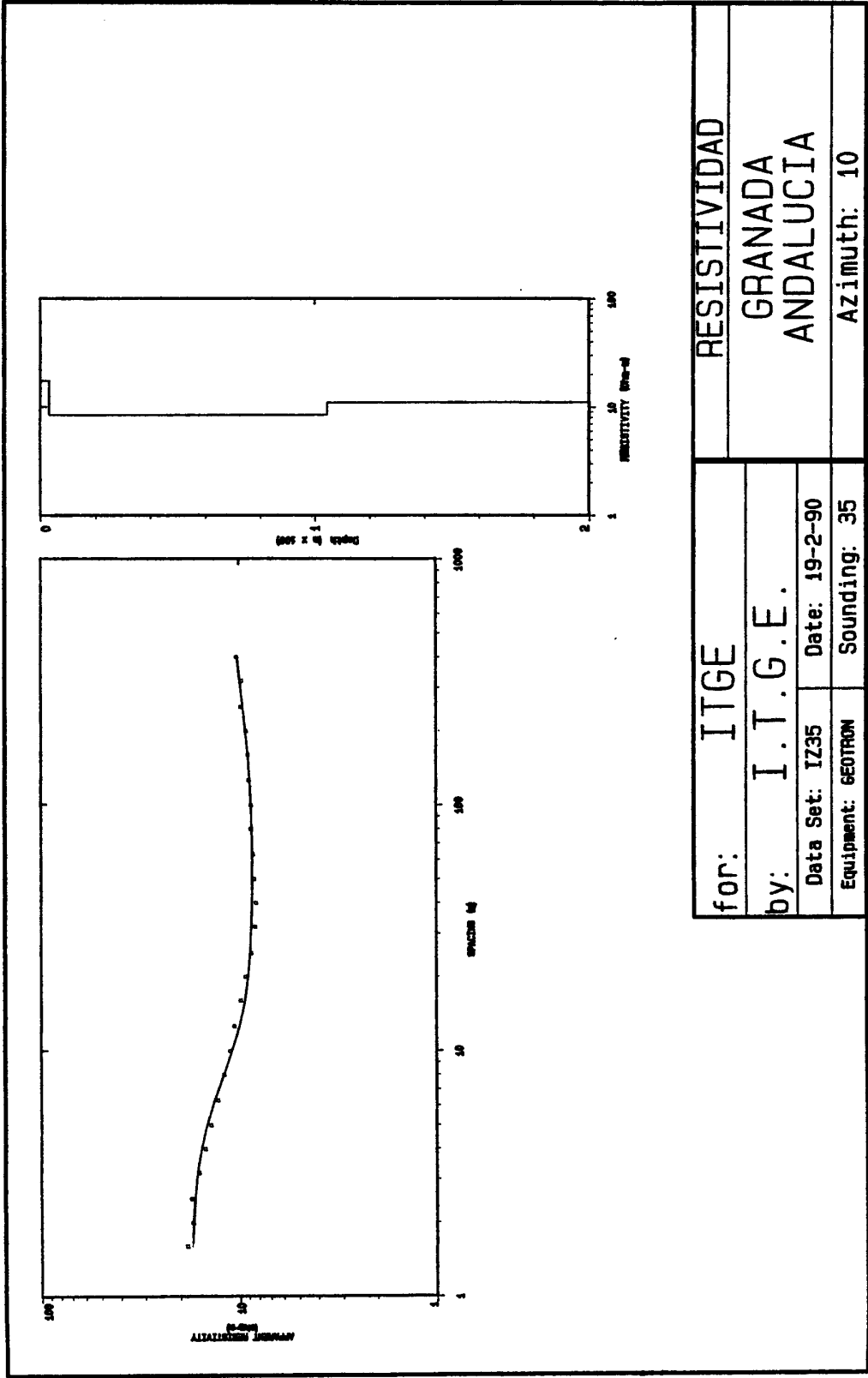
Schlumberger Configuration

FITTING ERROR: 3.225 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 17.62 | | 3.04 | 620.0 | |
| 2 | 8.47 | | 101.3 | 616.9 | 0.172 |
| 3 | 11.12 | | | 515.6 | 11.95 |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 18.51 | 17.43 | 5.81 |
| 2 | 2.00 | 17.33 | 17.27 | 0.353 |
| 3 | 2.50 | 17.60 | 16.98 | 3.53 |
| 4 | 3.20 | 16.15 | 16.44 | -1.81 |
| 5 | 4.00 | 14.97 | 15.69 | -4.84 |
| 6 | 5.00 | 13.97 | 14.67 | -5.03 |
| 7 | 6.30 | 12.88 | 13.40 | -4.00 |
| 8 | 8.00 | 11.97 | 12.02 | -0.412 |
| 9 | 10.00 | 11.16 | 10.88 | 2.47 |
| 10 | 12.60 | 10.61 | 9.97 | 6.01 |
| 11 | 16.00 | 9.85 | 9.35 | 5.02 |
| 12 | 20.00 | 9.27 | 9.00 | 2.92 |
| 13 | 25.00 | 8.70 | 8.80 | -1.11 |
| 14 | 32.00 | 8.32 | 8.67 | -4.21 |
| 15 | 40.00 | 8.22 | 8.60 | -4.66 |
| 16 | 50.00 | 8.41 | 8.58 | -1.94 |
| 17 | 63.00 | 8.51 | 8.58 | -0.773 |
| 18 | 80.00 | 8.71 | 8.61 | 1.08 |
| 19 | 100.0 | 8.71 | 8.68 | 0.238 |
| 20 | 126.0 | 8.90 | 8.82 | 0.947 |
| 21 | 160.0 | 9.00 | 9.02 | -0.275 |
| 22 | 200.0 | 9.20 | 9.28 | -0.922 |
| 23 | 250.0 | 9.80 | 9.58 | 2.23 |
| 24 | 320.0 | 9.70 | 9.91 | -2.26 |
| 25 | 400.0 | 10.30 | 10.20 | 0.940 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 10

for: ITGE

by: I.T.G.E.

Data Set: IZ35 Date: 19-2-90

Equipment: GEOTRON Sounding: 35

DATA SET: IZ36

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 419450.0000 Y: 4123000.0000

DATE: 19-2-90
 SOUNDING: 36
 AZIMUTH: 87
 EQUIPMENT: GEOTRON

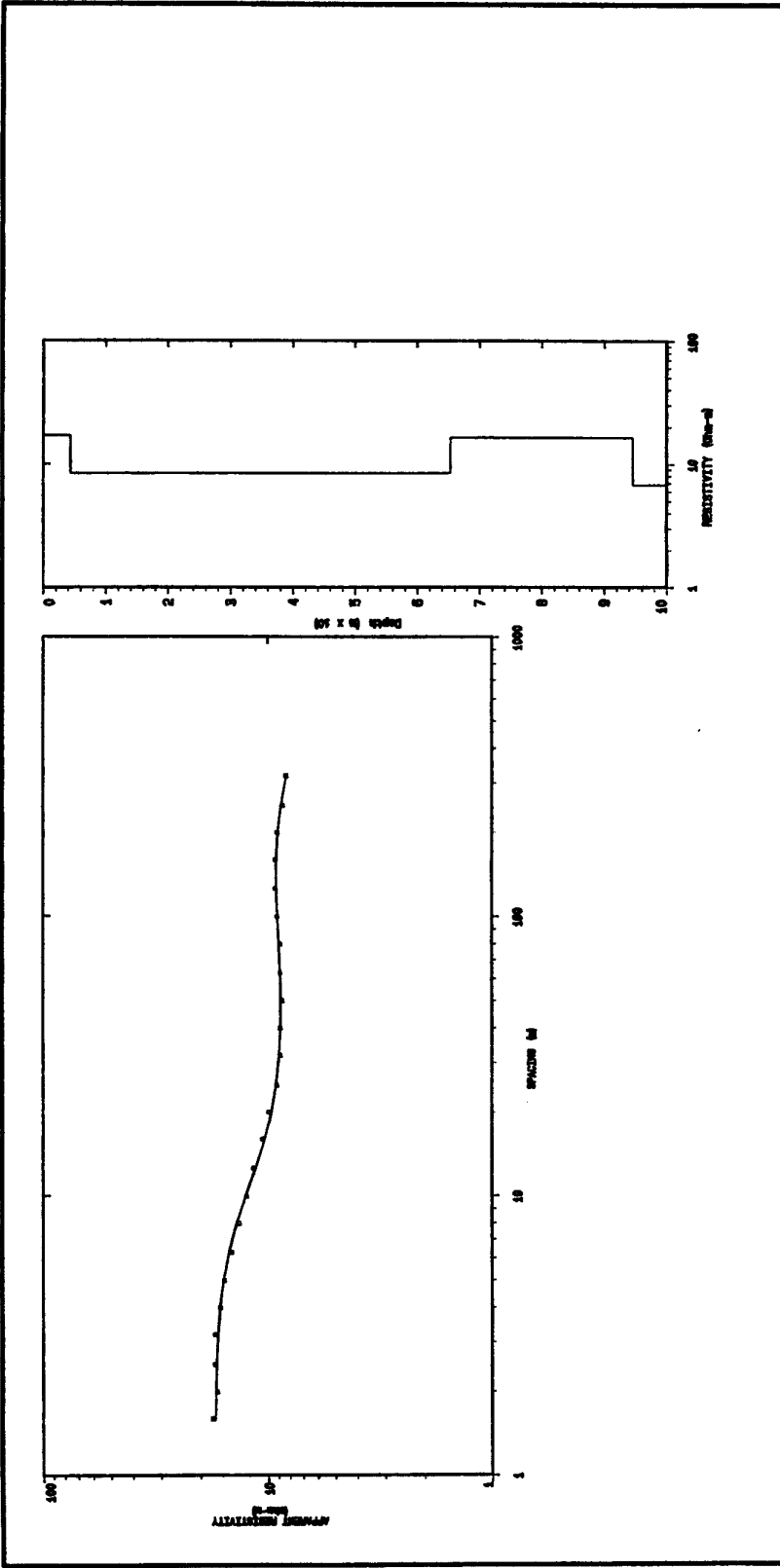
Schlumberger Configuration

FITTING ERROR: 1.712 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 620.0 | |
| 1 | 17.30 | | 4.30 | 615.6 | 0.248 |
| 2 | 8.46 | | 60.99 | 554.7 | 7.20 |
| 3 | 16.50 | | 29.22 | 525.4 | 1.77 |
| 4 | 6.80 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 17.67 | 17.23 | 2.50 |
| 2 | 2.00 | 16.88 | 17.17 | -1.66 |
| 3 | 2.50 | 17.28 | 17.05 | 1.29 |
| 4 | 3.20 | 17.28 | 16.82 | 2.64 |
| 5 | 4.00 | 16.39 | 16.45 | -0.360 |
| 6 | 5.00 | 15.71 | 15.87 | -1.07 |
| 7 | 6.30 | 14.53 | 15.00 | -3.26 |
| 8 | 8.00 | 13.45 | 13.83 | -2.82 |
| 9 | 10.00 | 12.47 | 12.59 | -1.02 |
| 10 | 12.60 | 11.58 | 11.36 | 1.91 |
| 11 | 16.00 | 10.59 | 10.31 | 2.62 |
| 12 | 20.00 | 9.90 | 9.62 | 2.82 |
| 13 | 25.00 | 9.11 | 9.18 | -0.778 |
| 14 | 32.00 | 8.81 | 8.91 | -1.09 |
| 15 | 40.00 | 8.81 | 8.79 | 0.197 |
| 16 | 50.00 | 8.61 | 8.77 | -1.81 |
| 17 | 63.00 | 8.80 | 8.82 | -0.146 |
| 18 | 80.00 | 8.80 | 8.94 | -1.50 |
| 19 | 100.0 | 9.10 | 9.08 | 0.141 |
| 20 | 126.0 | 9.29 | 9.20 | 0.914 |
| 21 | 160.0 | 9.29 | 9.21 | 0.850 |
| 22 | 200.0 | 9.10 | 9.05 | 0.523 |
| 23 | 250.0 | 8.60 | 8.73 | -1.55 |
| 24 | 320.0 | 8.30 | 8.27 | 0.271 |



| | | | |
|--------------------|---------------|----------------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA ANDALUCIA | |
| Data Set: IZ36 | Date: 19-2-90 | Azimuth: 87 | |
| Equipment: GEOTRON | Sounding: 36 | | |

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 580.00
 SOUNDING COORDINATES: X: 420050.0000 Y: 4122500.0000

DATE: 20-2-90
 SOUNDING: 37
 AZIMUTH: 92
 EQUIPMENT: GEOTRON

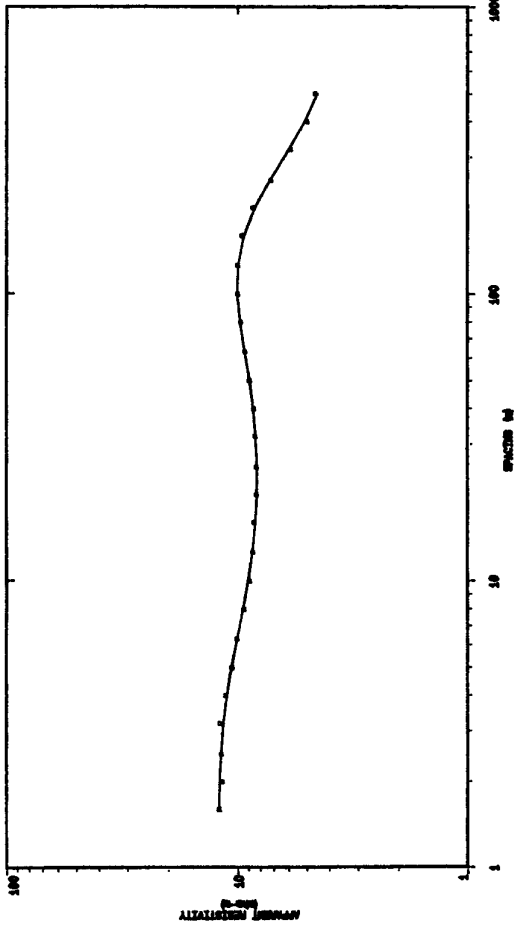
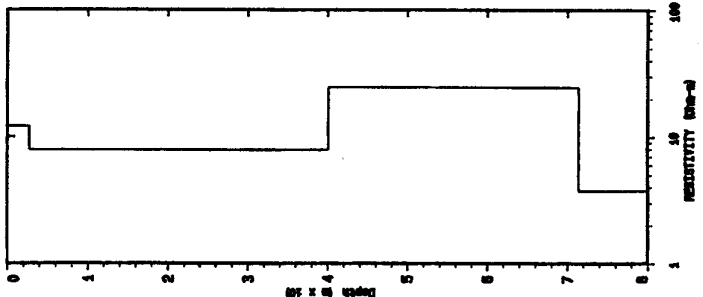
Schlumberger Configuration

FITTING ERROR: 1.381 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 580.0 | |
| 1 | 12.25 | | 2.67 | 577.3 | 0.218 |
| 2 | 7.92 | | 37.36 | 539.9 | 4.71 |
| 3 | 24.67 | | 31.30 | 508.6 | 1.26 |
| 4 | 3.76 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 12.08 | 12.13 | -0.411 |
| 2 | 2.00 | 11.73 | 12.03 | -2.54 |
| 3 | 2.50 | 11.82 | 11.86 | -0.380 |
| 4 | 3.20 | 11.99 | 11.56 | 3.56 |
| 5 | 4.00 | 11.30 | 11.17 | 1.13 |
| 6 | 5.00 | 10.60 | 10.66 | -0.552 |
| 7 | 6.30 | 10.08 | 10.06 | 0.150 |
| 8 | 8.00 | 9.38 | 9.46 | -0.849 |
| 9 | 10.00 | 8.86 | 8.99 | -1.44 |
| 10 | 12.60 | 8.60 | 8.63 | -0.324 |
| 11 | 16.00 | 8.50 | 8.39 | 1.29 |
| 12 | 20.00 | 8.31 | 8.28 | 0.312 |
| 13 | 25.00 | 8.31 | 8.27 | 0.507 |
| 14 | 32.00 | 8.41 | 8.36 | 0.518 |
| 15 | 40.00 | 8.50 | 8.57 | -0.754 |
| 16 | 50.00 | 8.90 | 8.90 | -0.0137 |
| 17 | 63.00 | 9.30 | 9.34 | -0.472 |
| 18 | 80.00 | 9.70 | 9.80 | -1.07 |
| 19 | 100.0 | 10.00 | 10.06 | -0.665 |
| 20 | 126.0 | 10.00 | 9.98 | 0.179 |
| 21 | 160.0 | 9.60 | 9.40 | 2.08 |
| 22 | 200.0 | 8.60 | 8.44 | 1.82 |
| 23 | 250.0 | 7.20 | 7.26 | -0.901 |
| 24 | 320.0 | 5.90 | 5.99 | -1.64 |
| 25 | 400.0 | 5.00 | 5.09 | -1.91 |
| 26 | 500.0 | 4.60 | 4.49 | 2.19 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 92

for: ITGE

by: I.T.G.E.

Data Set: IZ37 Date: 20-2-90

Equipment: GEOTRON Sounding: 37

DATA SET: IZ38

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 421050.0000 Y: 4122500.0000

DATE: 16-2-90
 SOUNDING: 38
 AZIMUTH: 88
 EQUIPMENT: GEOTRON

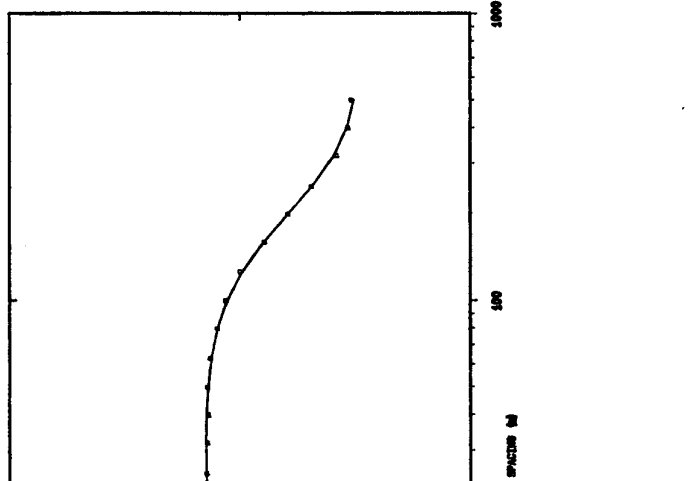
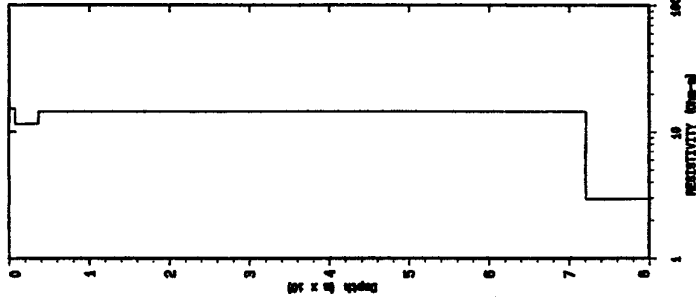
Schlumberger Configuration

FITTING ERROR: 1.235 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 620.0 | |
| 1 | 15.41 | | 0.742 | 619.2 | 0.0481 |
| 2 | 11.60 | | 2.89 | 616.3 | 0.249 |
| 3 | 14.59 | | 68.39 | 547.9 | 4.68 |
| 4 | 2.96 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 13.96 | 13.79 | 1.17 |
| 2 | 2.00 | 13.34 | 13.32 | 0.124 |
| 3 | 2.50 | 12.72 | 12.91 | -1.50 |
| 4 | 3.20 | 12.41 | 12.59 | -1.46 |
| 5 | 4.00 | 12.61 | 12.46 | 1.24 |
| 6 | 5.00 | 12.51 | 12.47 | 0.272 |
| 7 | 6.30 | 12.72 | 12.64 | 0.627 |
| 8 | 8.00 | 13.03 | 12.91 | 0.882 |
| 9 | 10.00 | 13.23 | 13.21 | 0.135 |
| 10 | 12.60 | 13.44 | 13.52 | -0.629 |
| 11 | 16.00 | 13.74 | 13.80 | -0.394 |
| 12 | 20.00 | 13.95 | 13.99 | -0.320 |
| 13 | 25.00 | 14.05 | 14.11 | -0.485 |
| 14 | 32.00 | 13.95 | 14.16 | -1.54 |
| 15 | 40.00 | 13.84 | 14.09 | -1.77 |
| 16 | 50.00 | 13.95 | 13.87 | 0.556 |
| 17 | 63.00 | 13.53 | 13.40 | 0.946 |
| 18 | 80.00 | 12.60 | 12.58 | 0.200 |
| 19 | 100.0 | 11.57 | 11.41 | 1.38 |
| 20 | 126.0 | 10.02 | 9.81 | 2.11 |
| 21 | 160.0 | 7.85 | 7.91 | -0.803 |
| 22 | 200.0 | 6.20 | 6.22 | -0.351 |
| 23 | 250.0 | 4.90 | 4.86 | 0.639 |
| 24 | 320.0 | 3.80 | 3.90 | -2.66 |
| 25 | 400.0 | 3.40 | 3.43 | -1.07 |
| 26 | 500.0 | 3.30 | 3.21 | 2.66 |



| | | | |
|--------------------|---------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ38 | | ANDALUCIA | |
| Equipment: GEOTRON | Date: 16-2-90 | Azimuth: 88 | |
| | Sounding: 38 | | |

DATA SET: IZ39

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 620.00
 SOUNDING COORDINATES: X: 420975.0000 Y: 4122800.0000

DATE: 16-2-90
 SOUNDING: 39
 AZIMUTH: 108
 EQUIPMENT: GEOTRON

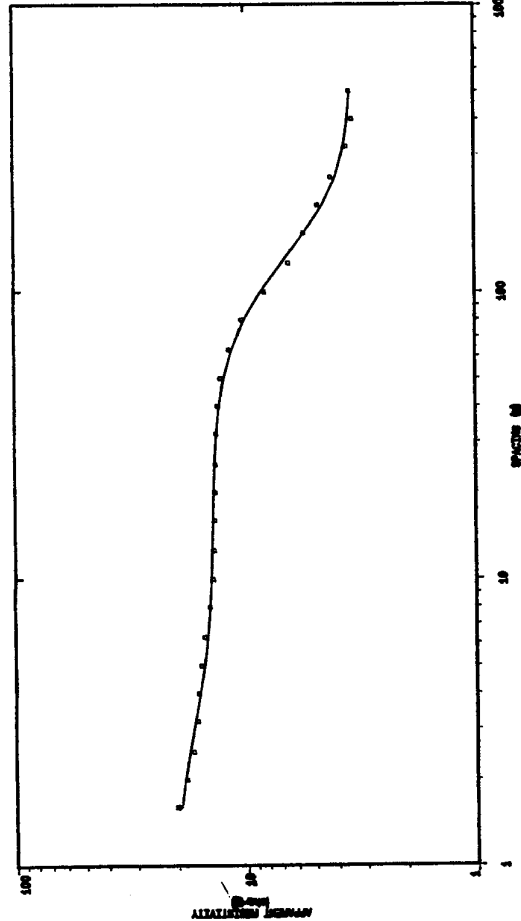
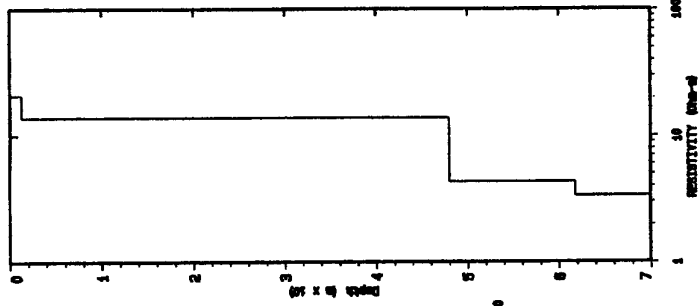
Schlumberger Configuration

FITTING ERROR: 3.047 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 20.79 | | 1.21 | 618.7 | 0.0582 |
| 2 | 13.88 | | 46.74 | 572.0 | 3.36 |
| 3 | 4.33 | | 13.77 | 558.2 | 3.17 |
| 4 | 3.36 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 20.26 | 19.45 | 3.96 |
| 2 | 2.00 | 18.46 | 18.74 | -1.50 |
| 3 | 2.50 | 17.16 | 17.87 | -4.11 |
| 4 | 3.20 | 16.46 | 16.84 | -2.31 |
| 5 | 4.00 | 16.26 | 15.99 | 1.66 |
| 6 | 5.00 | 15.77 | 15.30 | 2.92 |
| 7 | 6.30 | 15.27 | 14.78 | 3.15 |
| 8 | 8.00 | 14.47 | 14.43 | 0.267 |
| 9 | 10.00 | 13.97 | 14.21 | -1.74 |
| 10 | 12.60 | 13.77 | 14.06 | -2.11 |
| 11 | 16.00 | 13.66 | 13.94 | -2.01 |
| 12 | 20.00 | 13.56 | 13.83 | -2.00 |
| 13 | 25.00 | 13.56 | 13.69 | -0.969 |
| 14 | 32.00 | 13.46 | 13.44 | 0.136 |
| 15 | 40.00 | 13.25 | 13.05 | 1.50 |
| 16 | 50.00 | 12.83 | 12.42 | 3.15 |
| 17 | 63.00 | 11.79 | 11.45 | 2.83 |
| 18 | 80.00 | 10.33 | 10.07 | 2.46 |
| 19 | 100.0 | 8.24 | 8.53 | -3.56 |
| 20 | 126.0 | 6.46 | 6.91 | -6.95 |
| 21 | 160.0 | 5.53 | 5.50 | 0.512 |
| 22 | 200.0 | 4.80 | 4.56 | 4.83 |
| 23 | 250.0 | 4.20 | 4.00 | 4.66 |
| 24 | 320.0 | 3.60 | 3.68 | -2.35 |
| 25 | 400.0 | 3.40 | 3.54 | -4.28 |
| 26 | 500.0 | 3.50 | 3.47 | 0.775 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 108

for: ITGE

by: I.T.G.E.

Data Set: 1739 Date: 16-2-90

Equipment: GEOTRON Sounding: 39

DATA SET: IZ40

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 610.00
 SOUNDING COORDINATES: X: 418800.0000 Y: 4122700.0000

DATE: 19-2-90
 SOUNDING: 40
 AZIMUTH: 48
 EQUIPMENT: GEOTRON

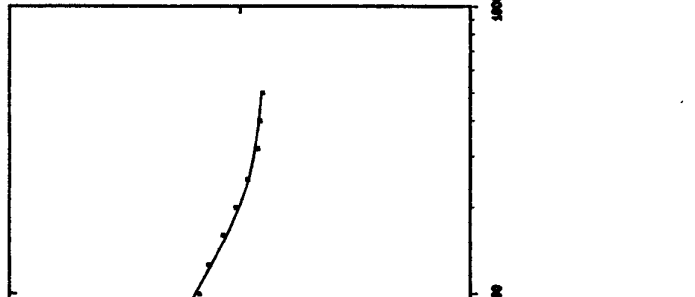
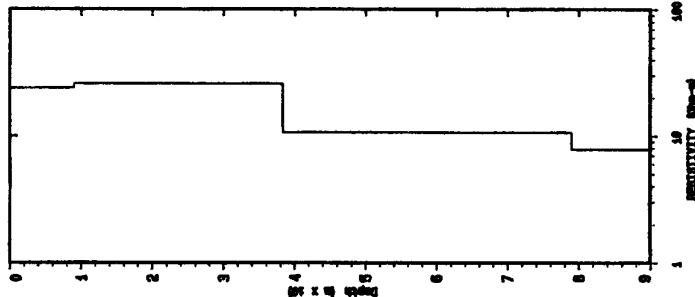
Schlumberger Configuration

FITTING ERROR: 2.980 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 610.0 | |
| 1 | 23.98 | | 8.91 | 601.0 | 0.371 |
| 2 | 25.94 | | 29.32 | 571.7 | 1.13 |
| 3 | 10.68 | | 40.68 | 531.0 | 3.80 |
| 4 | 7.82 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 28.13 | 23.98 | 14.76 |
| 2 | 2.00 | 25.22 | 23.98 | 4.92 |
| 3 | 2.50 | 23.71 | 23.98 | -1.13 |
| 4 | 3.20 | 23.39 | 23.99 | -2.55 |
| 5 | 4.00 | 22.96 | 24.00 | -4.52 |
| 6 | 5.00 | 23.50 | 24.01 | -2.19 |
| 7 | 6.30 | 24.25 | 24.04 | 0.876 |
| 8 | 8.00 | 25.22 | 24.08 | 4.50 |
| 9 | 10.00 | 24.25 | 24.15 | 0.405 |
| 10 | 12.60 | 24.14 | 24.25 | -0.446 |
| 11 | 16.00 | 24.48 | 24.37 | 0.450 |
| 12 | 20.00 | 25.26 | 24.44 | 3.22 |
| 13 | 25.00 | 25.48 | 24.40 | 4.24 |
| 14 | 32.00 | 24.70 | 24.08 | 2.49 |
| 15 | 40.00 | 23.70 | 23.41 | 1.20 |
| 16 | 50.00 | 22.25 | 22.25 | 0.00696 |
| 17 | 63.00 | 20.17 | 20.47 | -1.47 |
| 18 | 80.00 | 16.84 | 18.12 | -7.56 |
| 19 | 100.0 | 15.08 | 15.72 | -4.27 |
| 20 | 126.0 | 13.72 | 13.38 | 2.52 |
| 21 | 160.0 | 11.85 | 11.40 | 3.83 |
| 22 | 200.0 | 10.40 | 10.06 | 3.24 |
| 23 | 250.0 | 9.30 | 9.17 | 1.32 |
| 24 | 320.0 | 8.40 | 8.58 | -2.23 |
| 25 | 400.0 | 8.20 | 8.28 | -1.01 |
| 26 | 500.0 | 8.00 | 8.10 | -1.30 |



for: ITGE
 by: I.T.G.E.
 Data Set: IZ40 Date: 19-2-90
 Equipment: GEOTRON Sounding: 40

RESISTIVIDAD
 GRANADA
 ANDALUCIA
 Azimuth: 48

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 910.00
 SOUNDING COORDINATES: X: 443050.0000 Y: 4145100.0000

DATE: 15-2-90
 SOUNDING: 41
 AZIMUTH: 57
 EQUIPMENT: GEOTRON

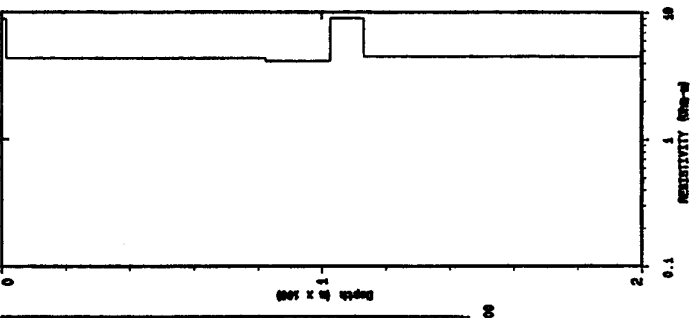
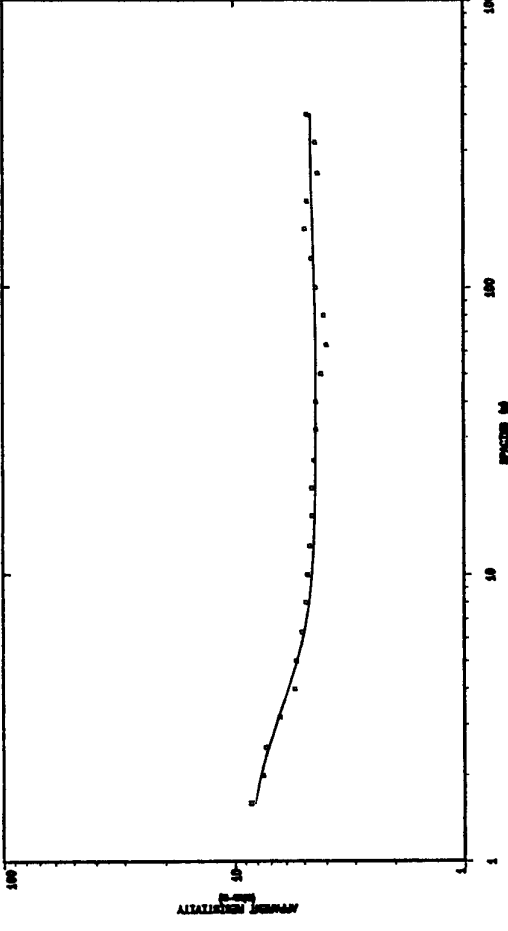
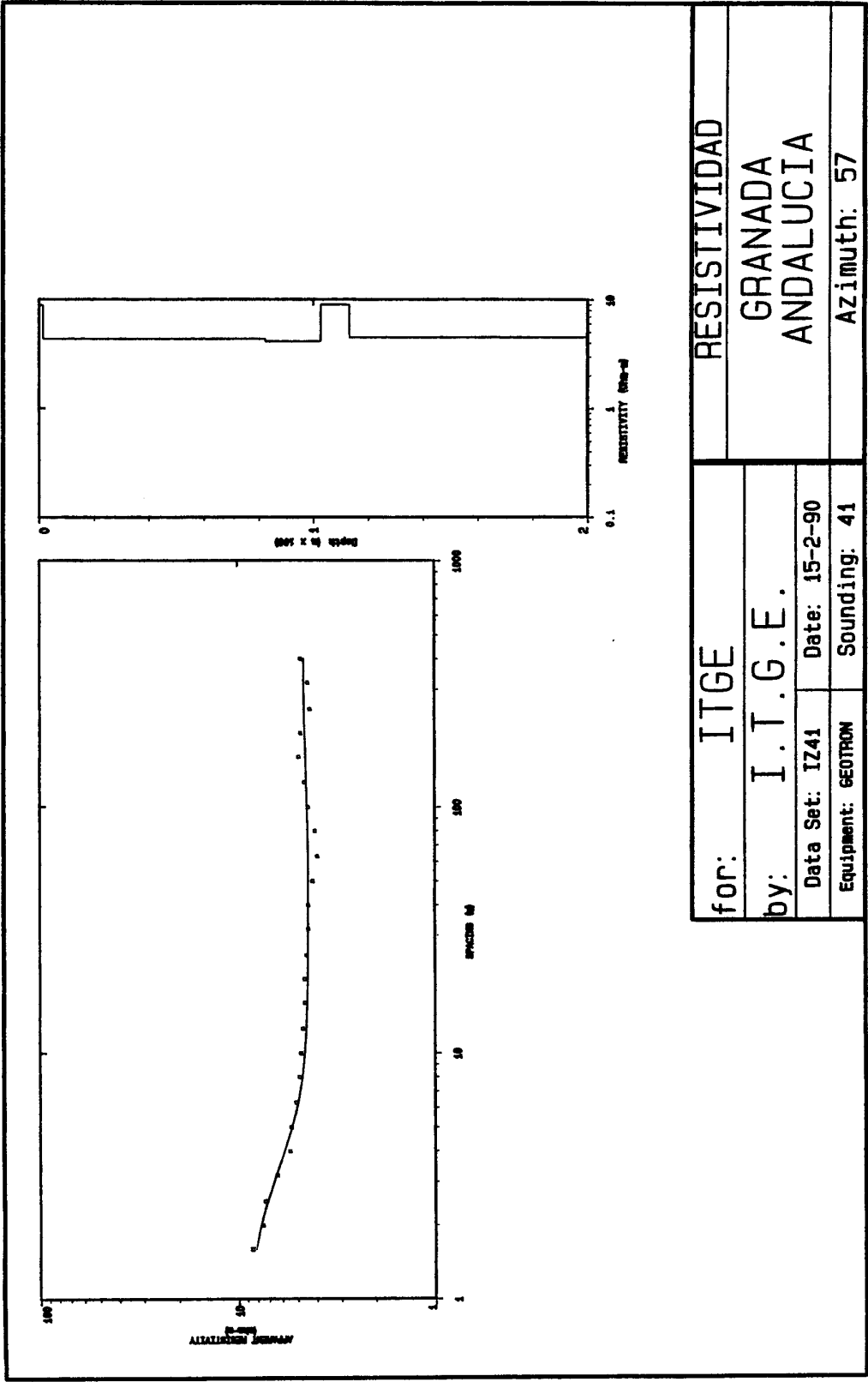
Schlumberger Configuration

FITTING ERROR: 4.846 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 910.0 | |
| 1 | 8.95 | | 1.34 | 908.6 | 0.150 |
| 2 | 4.37 | | 80.95 | 827.7 | 18.49 |
| 3 | 4.16 | | 20.32 | 807.3 | 4.88 |
| 4 | 9.04 | | 10.43 | 796.9 | 1.15 |
| 5 | 4.52 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 8.50 | 8.18 | 3.80 |
| 2 | 2.00 | 7.52 | 7.73 | -2.73 |
| 3 | 2.50 | 7.33 | 7.16 | 2.34 |
| 4 | 3.20 | 6.35 | 6.45 | -1.51 |
| 5 | 4.00 | 5.47 | 5.83 | -6.63 |
| 6 | 5.00 | 5.37 | 5.33 | 0.816 |
| 7 | 6.30 | 5.08 | 4.95 | 2.45 |
| 8 | 8.00 | 4.88 | 4.71 | 3.52 |
| 9 | 10.00 | 4.79 | 4.58 | 4.35 |
| 10 | 12.60 | 4.69 | 4.50 | 4.09 |
| 11 | 16.00 | 4.58 | 4.45 | 2.93 |
| 12 | 20.00 | 4.58 | 4.42 | 3.52 |
| 13 | 25.00 | 4.48 | 4.40 | 1.58 |
| 14 | 32.00 | 4.37 | 4.39 | -0.576 |
| 15 | 40.00 | 4.37 | 4.39 | -0.479 |
| 16 | 50.00 | 4.16 | 4.39 | -5.63 |
| 17 | 63.00 | 3.94 | 4.40 | -11.49 |
| 18 | 80.00 | 4.05 | 4.41 | -8.91 |
| 19 | 100.0 | 4.37 | 4.43 | -1.46 |
| 20 | 126.0 | 4.58 | 4.47 | 2.49 |
| 21 | 160.0 | 4.90 | 4.51 | 7.91 |
| 22 | 200.0 | 4.80 | 4.56 | 4.94 |
| 23 | 250.0 | 4.30 | 4.59 | -6.89 |
| 24 | 320.0 | 4.40 | 4.61 | -4.85 |
| 25 | 400.0 | 4.80 | 4.61 | 3.93 |



DATA SET: IZ41B

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 920.00
 SOUNDING COORDINATES: X: 442300.0000 Y: 4144700.0000

DATE: 15-2-90
 SOUNDING: 41B
 AZIMUTH: 52
 EQUIPMENT: GEOTRON

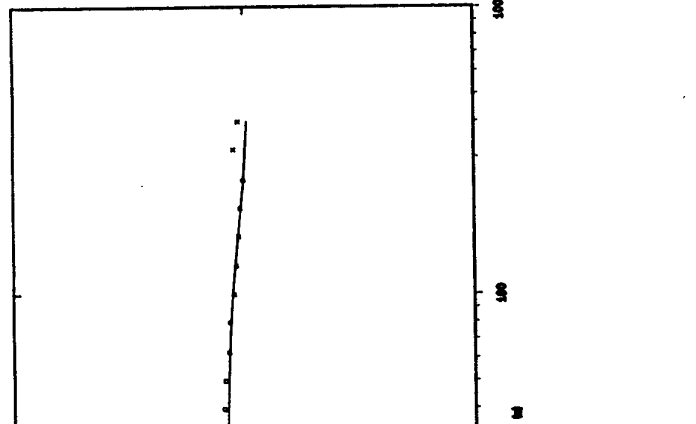
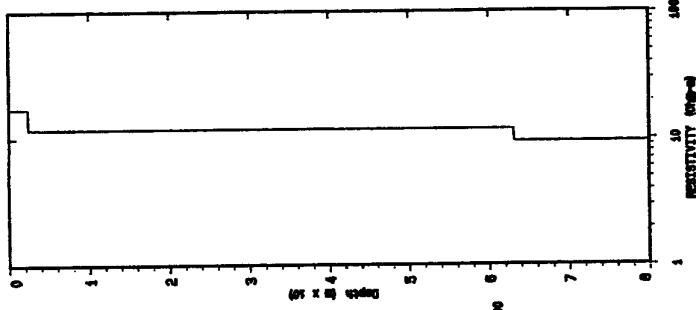
Schlumberger Configuration

FITTING ERROR: 2.524 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 17.38 | | 2.36 | 920.0 | |
| 2 | 11.92 | | 60.74 | 917.6 | 0.136 |
| 3 | 9.47 | | | 856.8 | 5.09 |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 19.20 | 17.17 | 10.53 |
| 2 | 2.00 | 17.50 | 17.01 | 2.81 |
| 3 | 2.50 | 16.26 | 16.74 | -2.95 |
| 4 | 3.20 | 15.92 | 16.28 | -2.26 |
| 5 | 4.00 | 15.58 | 15.71 | -0.804 |
| 6 | 5.00 | 15.24 | 15.02 | 1.48 |
| 7 | 6.30 | 14.91 | 14.26 | 4.29 |
| 8 | 8.00 | 14.00 | 13.55 | 3.19 |
| 9 | 10.00 | 12.53 | 13.02 | -3.90 |
| 10 | 12.60 | 12.08 | 12.62 | -4.49 |
| 11 | 16.00 | 11.87 | 12.35 | -4.08 |
| 12 | 20.00 | 12.08 | 12.19 | -0.875 |
| 13 | 25.00 | 12.08 | 12.08 | 0.0380 |
| 14 | 32.00 | 12.08 | 11.99 | 0.776 |
| 15 | 40.00 | 12.40 | 11.91 | 3.93 |
| 16 | 50.00 | 12.19 | 11.83 | 2.95 |
| 17 | 63.00 | 11.74 | 11.70 | 0.303 |
| 18 | 80.00 | 11.65 | 11.52 | 1.13 |
| 19 | 100.0 | 11.11 | 11.28 | -1.51 |
| 20 | 126.0 | 10.84 | 10.98 | -1.22 |
| 21 | 160.0 | 10.57 | 10.63 | -0.552 |
| 22 | 200.0 | 10.40 | 10.33 | 0.645 |
| 23 | 250.0 | 10.10 | 10.07 | 0.245 |
| 24 | 320.0 | 11.10 | 9.86 | 11.16 |
| 25 | 400.0 | 10.60 | 9.72 | 8.23 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 52

for: ITGE

by: I.T.G.E.

Data Set: IZ41B Date: 15-2-90

Equipment: 6EOTRON Sounding: 41B

DATA SET: IZ42

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 900.00
 SOUNDING COORDINATES: X: 443400.0000 Y: 4145700.0000

DATE: 14-2-90
 SOUNDING: 42
 AZIMUTH: N
 EQUIPMENT: GEOTRON

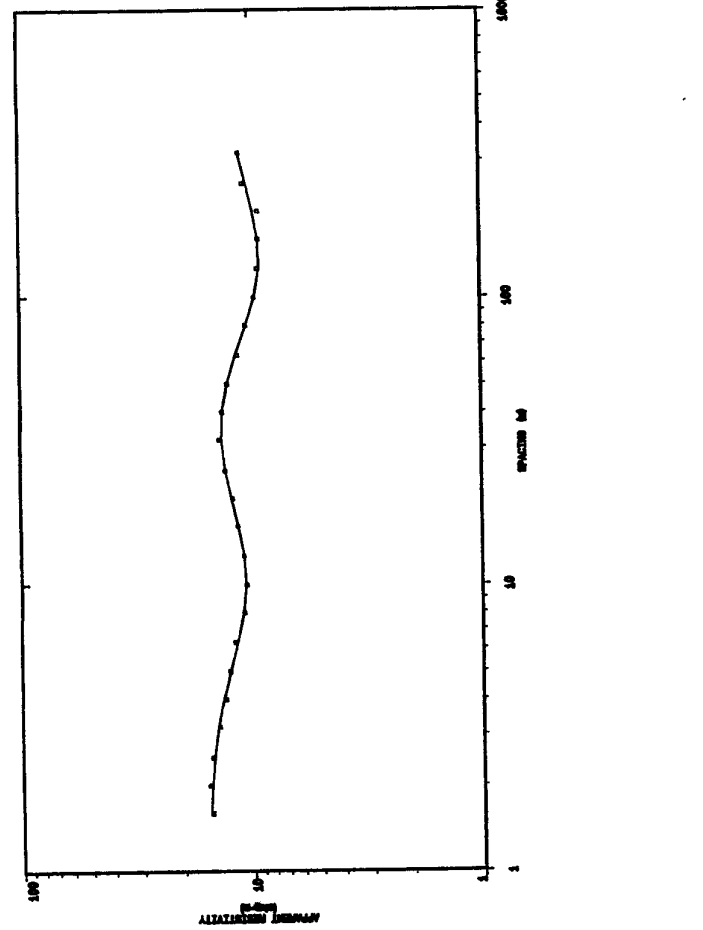
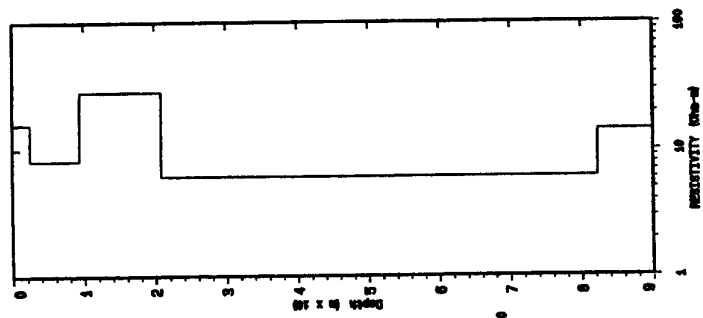
Schlumberger Configuration

FITTING ERROR: 1.842 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 900.0 | |
| 1 | 15.88 | | 2.42 | 897.5 | 0.152 |
| 2 | 8.17 | | 6.93 | 890.6 | 0.848 |
| 3 | 28.46 | | 11.44 | 879.1 | 0.402 |
| 4 | 6.13 | | 61.40 | 817.7 | 10.00 |
| 5 | 14.38 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 15.30 | 15.58 | -1.84 |
| 2 | 2.00 | 15.70 | 15.35 | 2.19 |
| 3 | 2.50 | 15.20 | 14.97 | 1.50 |
| 4 | 3.20 | 14.12 | 14.33 | -1.49 |
| 5 | 4.00 | 13.23 | 13.53 | -2.26 |
| 6 | 5.00 | 12.63 | 12.59 | 0.325 |
| 7 | 6.30 | 11.94 | 11.65 | 2.43 |
| 8 | 8.00 | 10.86 | 10.93 | -0.702 |
| 9 | 10.00 | 10.56 | 10.66 | -0.954 |
| 10 | 12.60 | 10.86 | 10.85 | 0.0218 |
| 11 | 16.00 | 11.55 | 11.49 | 0.513 |
| 12 | 20.00 | 12.14 | 12.29 | -1.23 |
| 13 | 25.00 | 13.03 | 13.04 | -0.0634 |
| 14 | 32.00 | 13.82 | 13.50 | 2.31 |
| 15 | 40.00 | 13.42 | 13.40 | 0.208 |
| 16 | 50.00 | 12.73 | 12.76 | -0.244 |
| 17 | 63.00 | 11.42 | 11.70 | -2.41 |
| 18 | 80.00 | 10.51 | 10.47 | 0.373 |
| 19 | 100.0 | 9.60 | 9.56 | 0.423 |
| 20 | 126.0 | 9.30 | 9.10 | 2.10 |
| 21 | 160.0 | 9.20 | 9.19 | 0.0259 |
| 22 | 200.0 | 9.20 | 9.67 | -5.17 |
| 23 | 250.0 | 10.70 | 10.34 | 3.27 |
| 24 | 320.0 | 11.10 | 11.14 | -0.430 |



| | | | |
|----------------|--------------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ42 | | ANDALUCIA | |
| Date: 14-2-90 | Equipment: GEOTRON | Azimuth: N | |
| Sounding: 42 | | | |

DATA SET: IZ43

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 930.00
 SOUNDING COORDINATES: X: 443050.0000 Y: 4144850.0000

DATE: 14-2-90
 SOUNDING: 43
 AZIMUTH: 65
 EQUIPMENT: GEOTRON

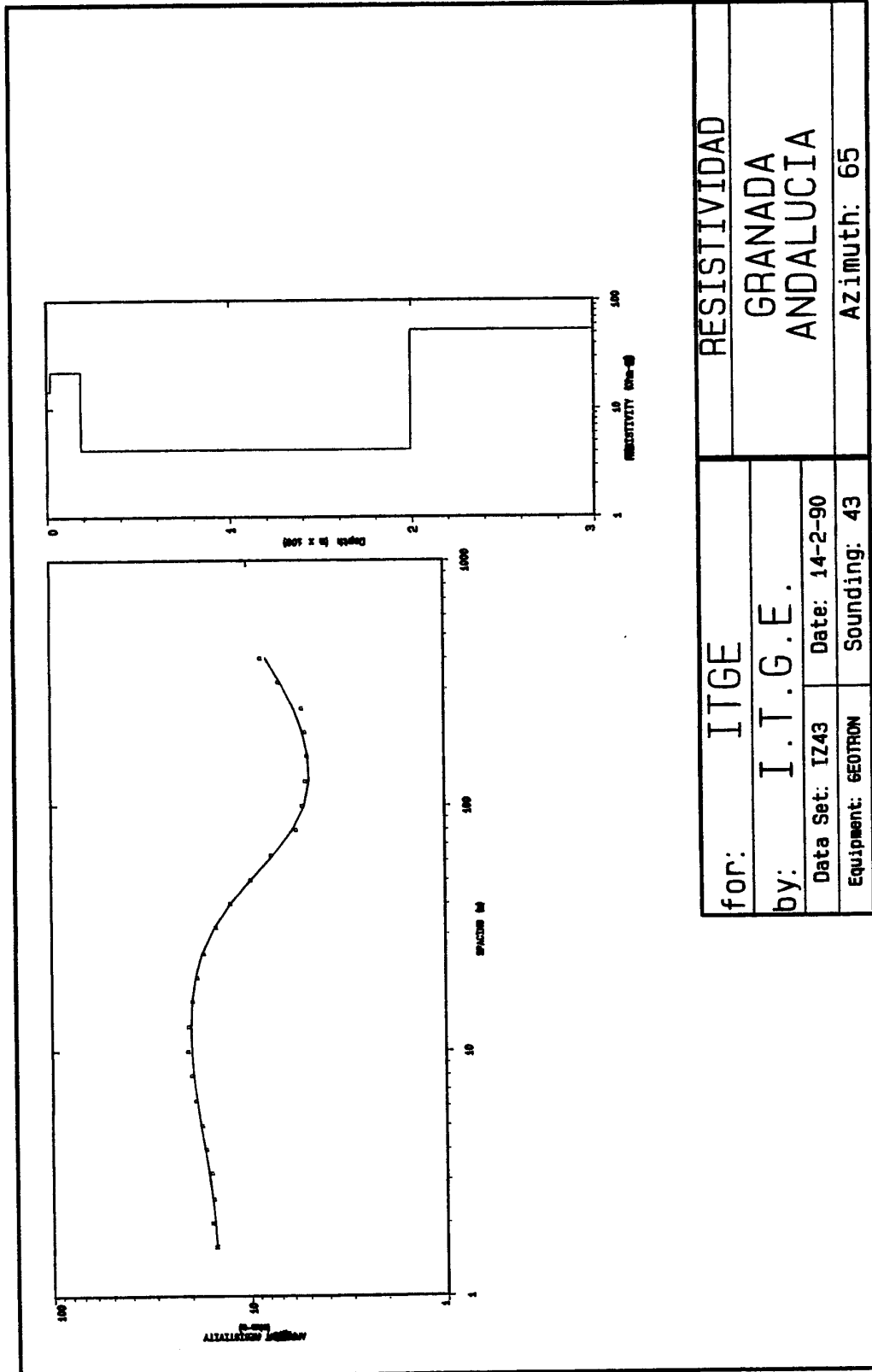
Schlumberger Configuration

FITTING ERROR: 3.294 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 930.0 | |
| 1 | 14.65 | | 1.86 | 928.1 | 0.127 |
| 2 | 22.22 | | 16.53 | 911.5 | 0.744 |
| 3 | 4.21 | | 180.9 | 730.6 | 42.95 |
| 4 | 53.69 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 15.10 | 15.03 | 0.475 |
| 2 | 2.00 | 15.81 | 15.31 | 3.21 |
| 3 | 2.50 | 15.51 | 15.73 | -1.41 |
| 4 | 3.20 | 15.81 | 16.38 | -3.58 |
| 5 | 4.00 | 16.83 | 17.12 | -1.67 |
| 6 | 5.00 | 17.65 | 17.92 | -1.52 |
| 7 | 6.30 | 18.98 | 18.73 | 1.31 |
| 8 | 8.00 | 19.90 | 19.43 | 2.32 |
| 9 | 10.00 | 20.71 | 19.88 | 4.01 |
| 10 | 12.60 | 20.51 | 20.03 | 2.35 |
| 11 | 16.00 | 19.56 | 19.72 | -0.790 |
| 12 | 20.00 | 18.41 | 18.88 | -2.55 |
| 13 | 25.00 | 17.04 | 17.39 | -2.08 |
| 14 | 32.00 | 14.72 | 15.00 | -1.88 |
| 15 | 40.00 | 12.41 | 12.38 | 0.225 |
| 16 | 50.00 | 9.78 | 9.75 | 0.298 |
| 17 | 63.00 | 7.70 | 7.49 | 2.74 |
| 18 | 80.00 | 5.72 | 5.93 | -3.66 |
| 19 | 100.0 | 5.30 | 5.17 | 2.53 |
| 20 | 126.0 | 5.10 | 4.89 | 4.07 |
| 21 | 160.0 | 4.99 | 4.95 | 0.912 |
| 22 | 200.0 | 5.10 | 5.25 | -3.13 |
| 23 | 250.0 | 5.30 | 5.83 | -10.14 |
| 24 | 320.0 | 7.00 | 6.84 | 2.23 |
| 25 | 400.0 | 8.60 | 8.11 | 5.67 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 65

for: ITGE

by: I.T.G.E.

Data Set: IZ43 Date: 14-2-90

Equipment: GEOTRON Sounding: 43

DATA SET: IZ43B

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 860.00
 SOUNDING COORDINATES: X: 442800.0000 Y: 4144400.0000

DATE: 15-2-90
 SOUNDING: 43b
 AZIMUTH: 58
 EQUIPMENT: GEOTRON

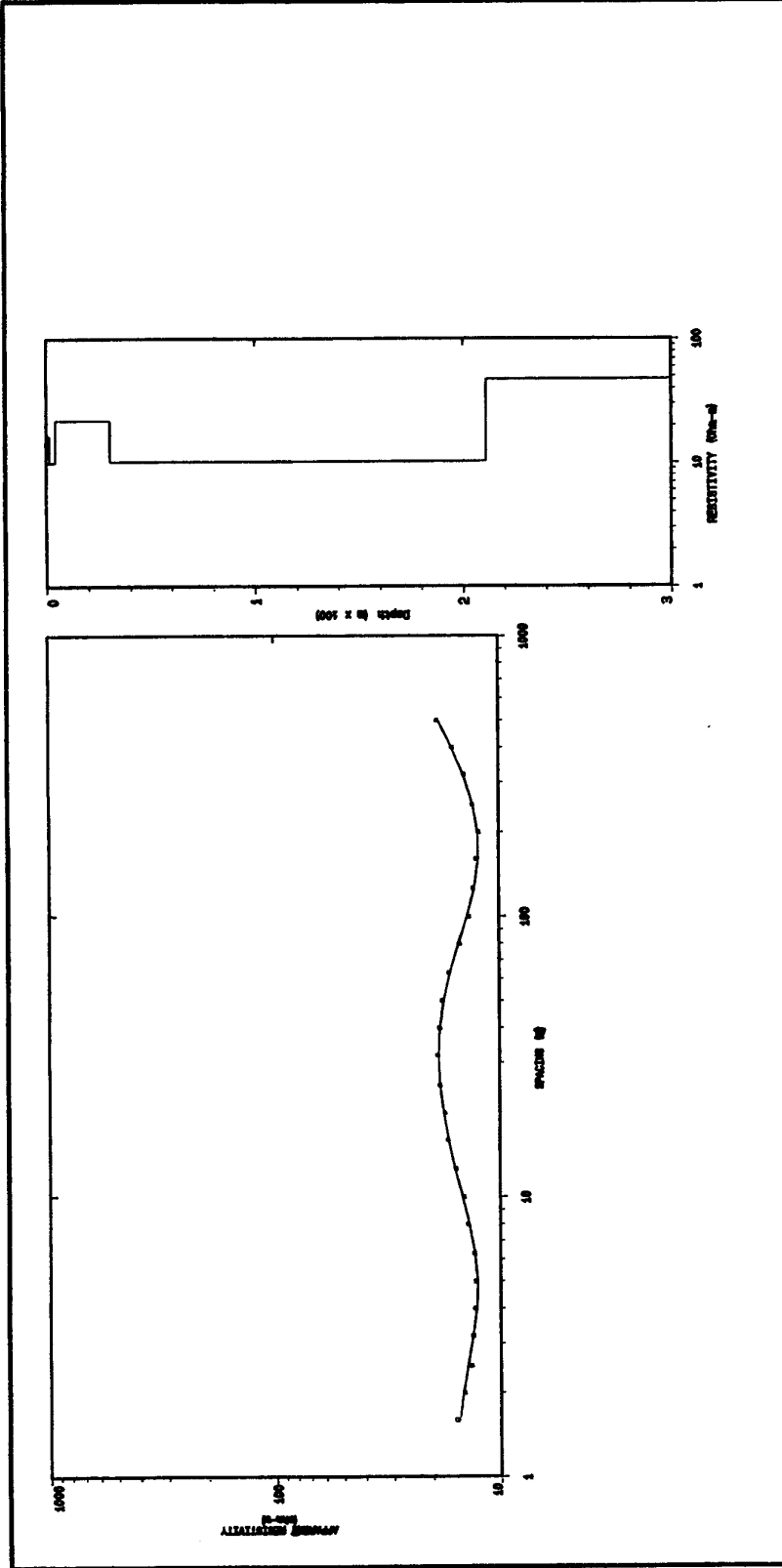
Schlumberger Configuration

FITTING ERROR: 1.397 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 860.0 | |
| 1 | 16.46 | | 1.25 | 858.7 | 0.0760 |
| 2 | 10.*0 | | 2.89 | 855.8 | 0.289 |
| 3 | 22.08 | | 26.01 | 829.8 | 1.17 |
| 4 | 10.26 | | 180.7 | 649.0 | 17.60 |
| 5 | 47.54 | | | | |

"*" INDICATES FIXED PARAMETER

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 15.71 | 15.33 | 2.43 |
| 2 | 2.00 | 14.59 | 14.73 | -0.975 |
| 3 | 2.50 | 13.56 | 14.03 | -3.46 |
| 4 | 3.20 | 13.28 | 13.28 | -0.0292 |
| 5 | 4.00 | 13.00 | 12.81 | 1.40 |
| 6 | 5.00 | 12.90 | 12.69 | 1.61 |
| 7 | 6.30 | 13.09 | 13.01 | 0.586 |
| 8 | 8.00 | 13.93 | 13.77 | 1.12 |
| 9 | 10.00 | 14.49 | 14.76 | -1.81 |
| 10 | 12.60 | 15.71 | 15.88 | -1.10 |
| 11 | 16.00 | 17.10 | 16.99 | 0.625 |
| 12 | 20.00 | 17.60 | 17.86 | -1.50 |
| 13 | 25.00 | 18.49 | 18.47 | 0.138 |
| 14 | 32.00 | 18.89 | 18.72 | 0.899 |
| 15 | 40.00 | 18.49 | 18.49 | 0.0163 |
| 16 | 50.00 | 18.00 | 17.79 | 1.16 |
| 17 | 63.00 | 16.80 | 16.63 | 1.00 |
| 18 | 80.00 | 15.00 | 15.18 | -1.23 |
| 19 | 100.0 | 13.60 | 13.89 | -2.14 |
| 20 | 126.0 | 13.00 | 12.87 | 0.943 |
| 21 | 160.0 | 12.60 | 12.35 | 1.94 |
| 22 | 200.0 | 12.30 | 12.41 | -0.949 |
| 23 | 250.0 | 13.10 | 13.03 | 0.459 |
| 24 | 320.0 | 14.30 | 14.40 | -0.745 |
| 25 | 400.0 | 16.10 | 16.23 | -0.862 |
| 26 | 500.0 | 18.80 | 18.55 | 1.28 |



| | | | |
|-----------------|--------------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ43B | | ANDALUCIA | |
| Date: 15-2-90 | Equipment: GEOTRON | Azimuth: 58 | |
| Sounding: 43b | | | |

DATA SET: IZ44

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 860.00
 SOUNDING COORDINATES: X: 443800.0000 Y: 4145200.0000

DATE: 14-2-90
 SOUNDING: 44
 AZIMUTH: 38
 EQUIPMENT: GEOTRON

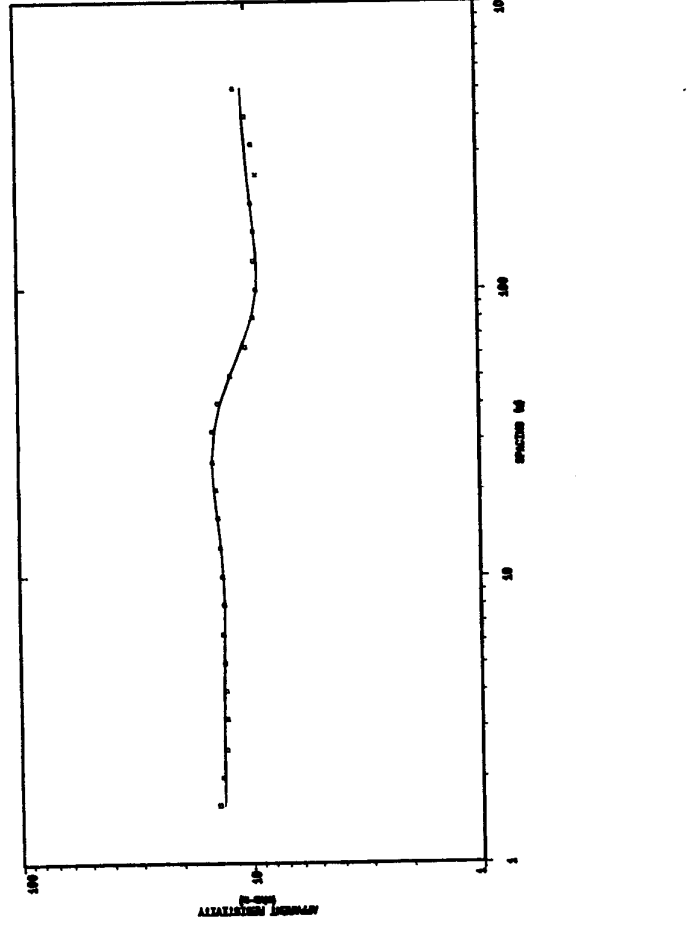
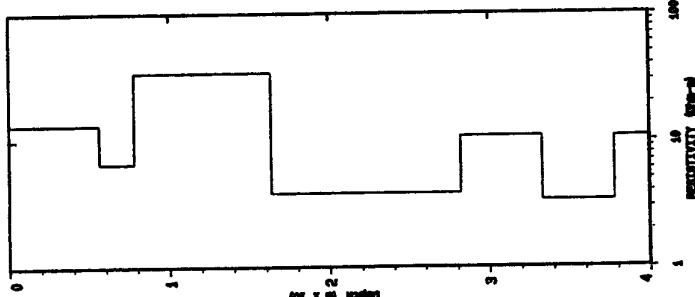
Schlumberger Configuration

FITTING ERROR: 2.909 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 860.0 | |
| 1 | 13.35 | | 5.59 | 854.4 | 0.418 |
| 2 | 6.58 | | 2.20 | 852.1 | 0.335 |
| 3 | 34.31 | | 8.54 | 843.6 | 0.249 |
| 4 | 3.84 | | 11.86 | 831.7 | 3.08 |
| 5 | 10.84 | | 5.08 | 826.7 | 0.468 |
| 6 | 3.38 | | 4.52 | 822.1 | 1.33 |
| 7 | 10.77 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 14.05 | 13.34 | 5.05 |
| 2 | 2.00 | 13.53 | 13.34 | 1.37 |
| 3 | 2.50 | 13.00 | 13.33 | -2.55 |
| 4 | 3.20 | 12.89 | 13.30 | -3.18 |
| 5 | 4.00 | 13.00 | 13.26 | -2.00 |
| 6 | 5.00 | 13.10 | 13.20 | -0.719 |
| 7 | 6.30 | 13.31 | 13.13 | 1.38 |
| 8 | 8.00 | 13.10 | 13.10 | 0.0484 |
| 9 | 10.00 | 13.31 | 13.18 | 1.03 |
| 10 | 12.60 | 13.53 | 13.45 | 0.531 |
| 11 | 16.00 | 13.84 | 13.94 | -0.723 |
| 12 | 20.00 | 14.05 | 14.42 | -2.58 |
| 13 | 25.00 | 14.58 | 14.63 | -0.354 |
| 14 | 32.00 | 14.58 | 14.28 | 2.06 |
| 15 | 40.00 | 13.74 | 13.36 | 2.74 |
| 16 | 50.00 | 12.05 | 12.05 | -0.0146 |
| 17 | 63.00 | 10.31 | 10.65 | -3.33 |
| 18 | 80.00 | 9.49 | 9.59 | -0.986 |
| 19 | 100.0 | 9.19 | 9.11 | 0.790 |
| 20 | 126.0 | 9.39 | 9.09 | 3.21 |
| 21 | 160.0 | 9.39 | 9.34 | 0.560 |
| 22 | 200.0 | 9.60 | 9.64 | -0.498 |
| 23 | 250.0 | 9.10 | 9.93 | -9.13 |
| 24 | 320.0 | 9.50 | 10.18 | -7.22 |
| 25 | 400.0 | 10.10 | 10.36 | -2.60 |
| 26 | 500.0 | 11.30 | 10.49 | 7.12 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 38

for: ITGE

by: I.T.G.E.

Data Set: IZ44 Date: 14-2-90

Equipment: GEOTRON Sounding: 44

DATA SET: I245

| | |
|--|--------------------|
| CLIENT: ITGE | DATE: 13-2-90 |
| LOCATION: GRANADA | SOUNDING: 45 |
| COUNTY: ANDALUCIA | AZIMUTH: N |
| PROJECT: RESISTIVIDAD | EQUIPMENT: GEOTRON |
| ELEVATION: 930.00 | |
| SOUNDING COORDINATES: X: 445050.0000 Y: 4148850.0000 | |

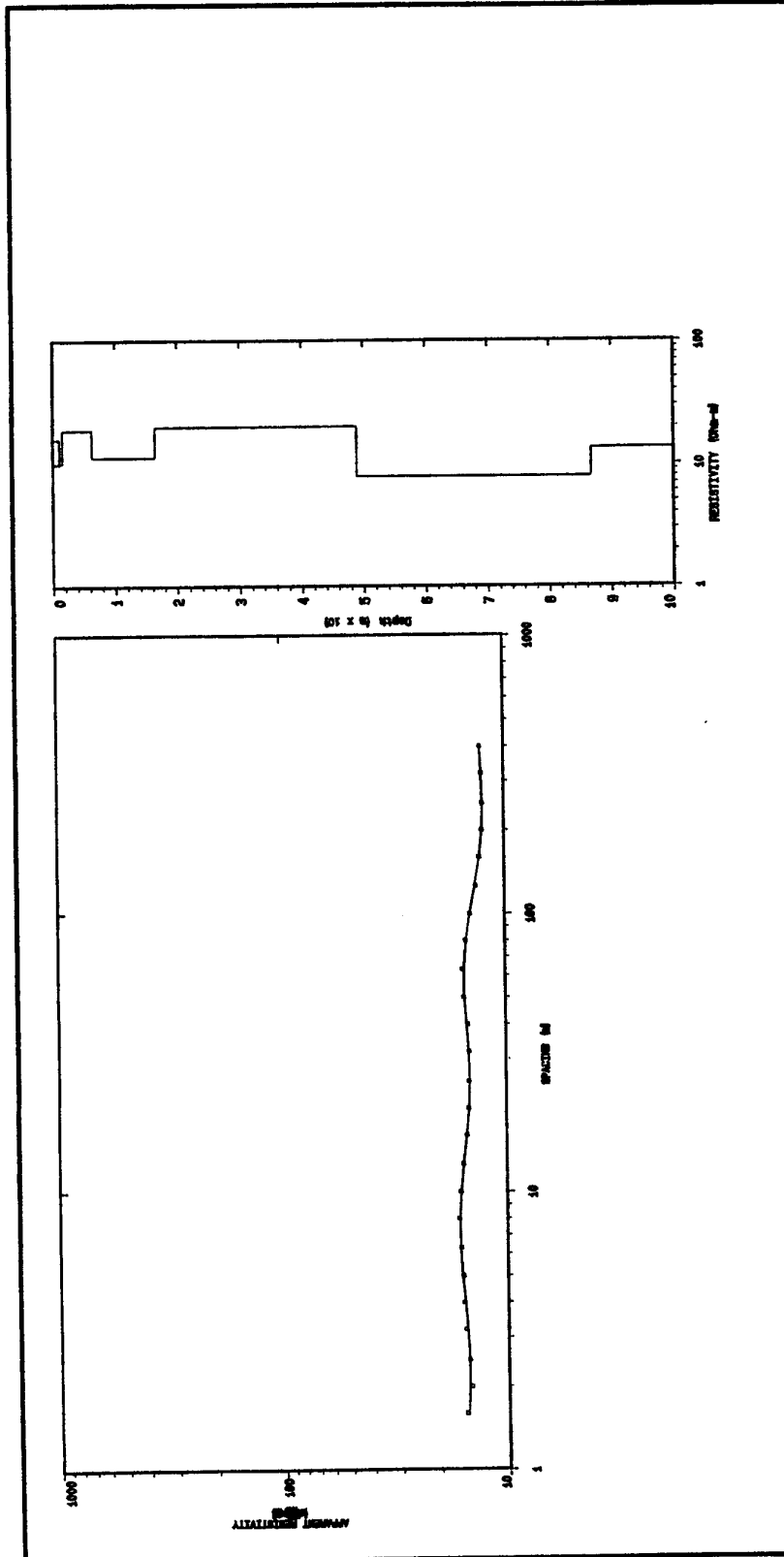
Schlumberger Configuration

FITTING ERROR: 0.989 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 930.0 | |
| 1 | 15.89 | | 1.01 | 928.9 | 0.0638 |
| 2 | 10.15 | | 0.479 | 928.5 | 0.0472 |
| 3 | 18.92 | | 4.79 | 923.7 | 0.253 |
| 4 | 11.32 | | 10.04 | 913.6 | 0.887 |
| 5 | 20.02 | | 32.58 | 881.0 | 1.62 |
| 6 | 7.86 | | 37.77 | 843.3 | 4.79 |
| 7 | 13.53 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 15.48 | 15.21 | 1.75 |
| 2 | 2.00 | 14.70 | 15.07 | -2.51 |
| 3 | 2.50 | 14.99 | 15.07 | -0.527 |
| 4 | 3.20 | 15.58 | 15.29 | 1.83 |
| 5 | 4.00 | 15.77 | 15.64 | 0.821 |
| 6 | 5.00 | 15.87 | 16.03 | -0.969 |
| 7 | 6.30 | 16.16 | 16.31 | -0.890 |
| 8 | 8.00 | 16.46 | 16.36 | 0.583 |
| 9 | 10.00 | 16.16 | 16.14 | 0.125 |
| 10 | 12.60 | 15.68 | 15.69 | -0.108 |
| 11 | 16.00 | 15.09 | 15.14 | -0.303 |
| 12 | 20.00 | 14.80 | 14.73 | 0.495 |
| 13 | 25.00 | 14.70 | 14.57 | 0.919 |
| 14 | 32.00 | 14.61 | 14.72 | -0.753 |
| 15 | 40.00 | 14.80 | 15.02 | -1.49 |
| 16 | 50.00 | 15.38 | 15.29 | 0.616 |
| 17 | 63.00 | 15.58 | 15.33 | 1.59 |
| 18 | 80.00 | 15.00 | 14.99 | 0.0332 |
| 19 | 100.0 | 14.33 | 14.37 | -0.326 |
| 20 | 126.0 | 13.46 | 13.60 | -1.01 |
| 21 | 160.0 | 12.98 | 12.92 | 0.481 |
| 22 | 200.0 | 12.60 | 12.56 | 0.293 |
| 23 | 250.0 | 12.50 | 12.48 | 0.109 |
| 24 | 320.0 | 12.60 | 12.61 | -0.140 |
| 25 | 400.0 | 12.80 | 12.81 | -0.0786 |



| | |
|--------------------|---------------|
| RESISTIVIDAD | |
| for: ITGE | |
| by: I.T.G.E. | |
| Data Set: IZ45 | Date: 13-2-90 |
| Equipment: 6EOTRON | Sounding: 45 |
| Azimuth: N | |

DATA SET: IZ46

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 940.00
 SOUNDING COORDINATES: X: 445500.0000 Y: 4149000.0000

DATE: 13-2-90
 SOUNDING: 46
 AZIMUTH: 48
 EQUIPMENT: GEOTRON

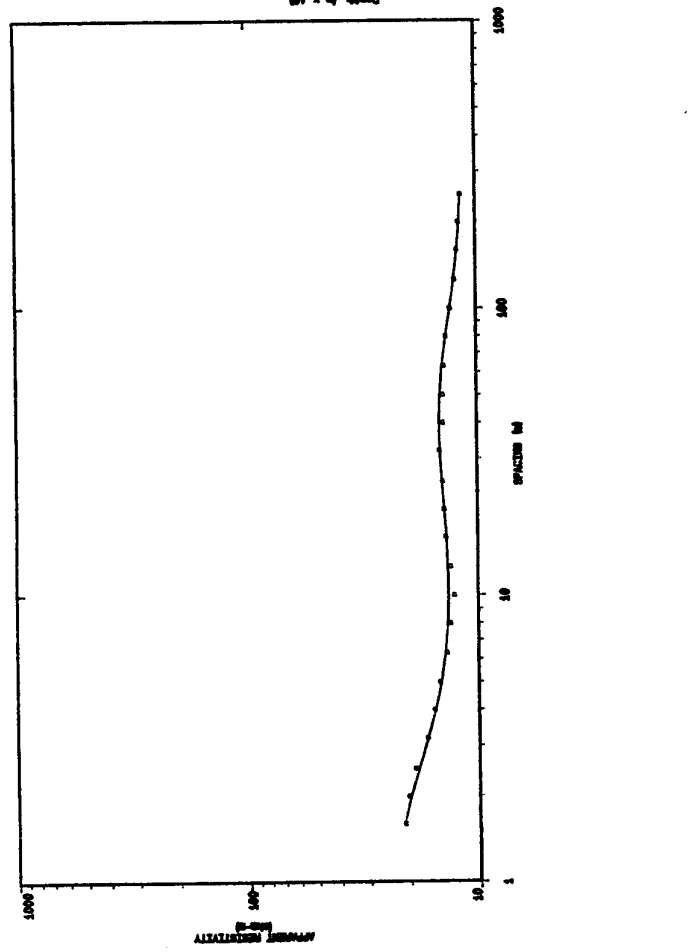
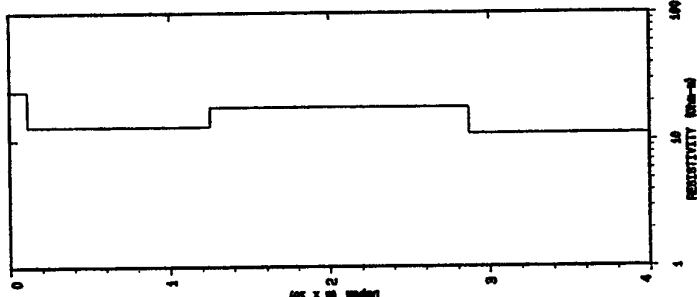
Schlumberger Configuration

FITTING ERROR: 1.990 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 940.0 | |
| 1 | 24.35 | | 1.07 | 938.9 | 0.0442 |
| 2 | 12.90 | | 11.42 | 927.4 | 0.885 |
| 3 | 18.26 | | 16.17 | 911.3 | 0.885 |
| 4 | 11.32 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 21.19 | 21.36 | -0.798 |
| 2 | 2.00 | 20.32 | 19.96 | 1.81 |
| 3 | 2.50 | 18.98 | 18.38 | 3.15 |
| 4 | 3.20 | 16.76 | 16.69 | 0.421 |
| 5 | 4.00 | 15.60 | 15.43 | 1.12 |
| 6 | 5.00 | 14.74 | 14.52 | 1.50 |
| 7 | 6.30 | 13.77 | 13.92 | -1.04 |
| 8 | 8.00 | 13.29 | 13.58 | -2.20 |
| 9 | 10.00 | 12.71 | 13.47 | -5.92 |
| 10 | 12.60 | 13.20 | 13.50 | -2.30 |
| 11 | 16.00 | 13.80 | 13.67 | 0.877 |
| 12 | 20.00 | 14.00 | 13.94 | 0.378 |
| 13 | 25.00 | 14.20 | 14.25 | -0.419 |
| 14 | 32.00 | 14.60 | 14.54 | 0.367 |
| 15 | 40.00 | 14.10 | 14.63 | -3.82 |
| 16 | 50.00 | 14.10 | 14.50 | -2.85 |
| 17 | 63.00 | 13.90 | 14.12 | -1.58 |
| 18 | 80.00 | 13.60 | 13.55 | 0.329 |
| 19 | 100.0 | 13.00 | 12.98 | 0.0795 |
| 20 | 126.0 | 12.40 | 12.47 | -0.567 |
| 21 | 160.0 | 12.10 | 12.06 | 0.323 |
| 22 | 200.0 | 11.90 | 11.79 | 0.865 |
| 23 | 250.0 | 11.60 | 11.62 | -0.205 |



| | | | |
|----------------|--------------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ46 | | ANDALUCIA | |
| Date: 13-2-90 | Equipment: GEOTRON | Azimuth: 48 | |
| Sounding: 46 | | | |

DATA SET: 1Z47

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 920.00
 SOUNDING COORDINATES: X: 445300.0000 Y: 4148200.0000

DATE: 13-2-90
 SOUNDING: 47
 AZIMUTH: 57
 EQUIPMENT: GEOTRON

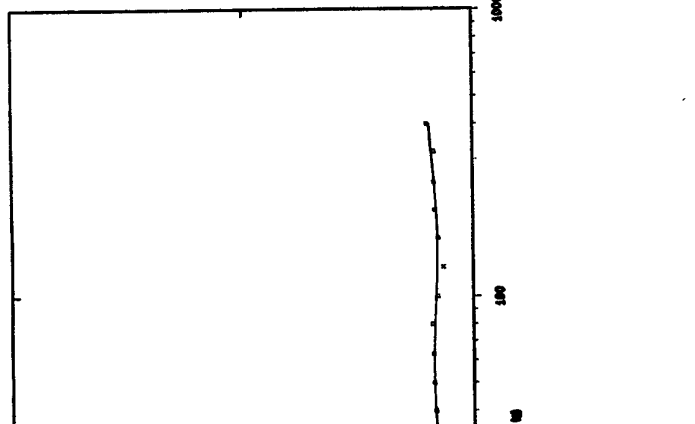
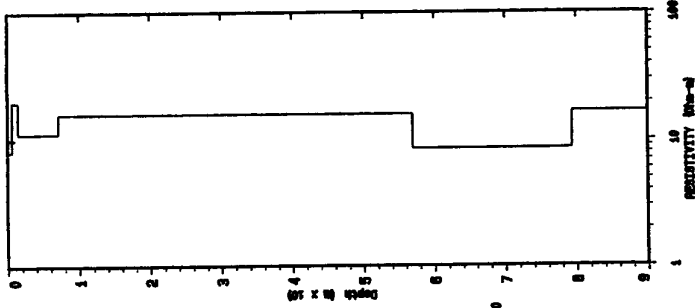
Schlumberger Configuration

FITTING ERROR: 1.941 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 920.0 | |
| 1 | 8.*0 | | 0.578 | 919.4 | 0.0722 |
| 2 | 20.*0 | | 0.860 | 918.5 | 0.0430 |
| 3 | 11.12 | | 5.62 | 912.9 | 0.505 |
| 4 | 15.93 | | 49.86 | 863.0 | 3.12 |
| 5 | 8.46 | | 22.35 | 840.7 | 2.64 |
| 6 | 16.70 | | | | |

"*" INDICATES FIXED PARAMETER

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 12.24 | 11.66 | 4.75 |
| 2 | 2.00 | 12.24 | 12.39 | -1.22 |
| 3 | 2.50 | 12.54 | 12.91 | -2.97 |
| 4 | 3.20 | 12.84 | 13.18 | -2.64 |
| 5 | 4.00 | 13.24 | 13.16 | 0.641 |
| 6 | 5.00 | 13.34 | 12.97 | 2.82 |
| 7 | 6.30 | 12.54 | 12.72 | -1.40 |
| 8 | 8.00 | 12.34 | 12.54 | -1.66 |
| 9 | 10.00 | 12.74 | 12.55 | 1.48 |
| 10 | 12.60 | 12.74 | 12.76 | -0.122 |
| 11 | 16.00 | 13.25 | 13.14 | 0.829 |
| 12 | 20.00 | 13.25 | 13.60 | -2.56 |
| 13 | 25.00 | 13.87 | 14.05 | -1.29 |
| 14 | 32.00 | 14.69 | 14.48 | 1.44 |
| 15 | 40.00 | 14.69 | 14.76 | -0.450 |
| 16 | 50.00 | 14.90 | 14.91 | -0.0617 |
| 17 | 63.00 | 15.00 | 14.91 | 0.576 |
| 18 | 80.00 | 15.10 | 14.77 | 2.17 |
| 19 | 100.0 | 14.29 | 14.56 | -1.92 |
| 20 | 126.0 | 13.47 | 14.37 | -6.65 |
| 21 | 160.0 | 14.18 | 14.32 | -0.932 |
| 22 | 200.0 | 14.70 | 14.46 | 1.57 |
| 23 | 250.0 | 14.80 | 14.77 | 0.194 |
| 24 | 320.0 | 14.80 | 15.18 | -2.61 |
| 25 | 400.0 | 15.80 | 15.55 | 1.56 |



| | | | |
|----------------|--------------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ47 | | ANDALUCIA | |
| Date: 13-2-90 | Equipment: GEOTRON | Azimuth: 57 | |
| Sounding: 47 | | | |

DATA SET: IZ48

CLIENT: ITGE DATE: 13-2-90
 LOCATION: GRANADA SOUNDING: 48
 COUNTY: ANDALUCIA AZIMUTH: 30
 PROJECT: RESISTIVIDAD EQUIPMENT: GEOTRON
 ELEVATION: 910.00
 SOUNDING COORDINATES: X: 445050.0000 Y: 4148050.0000

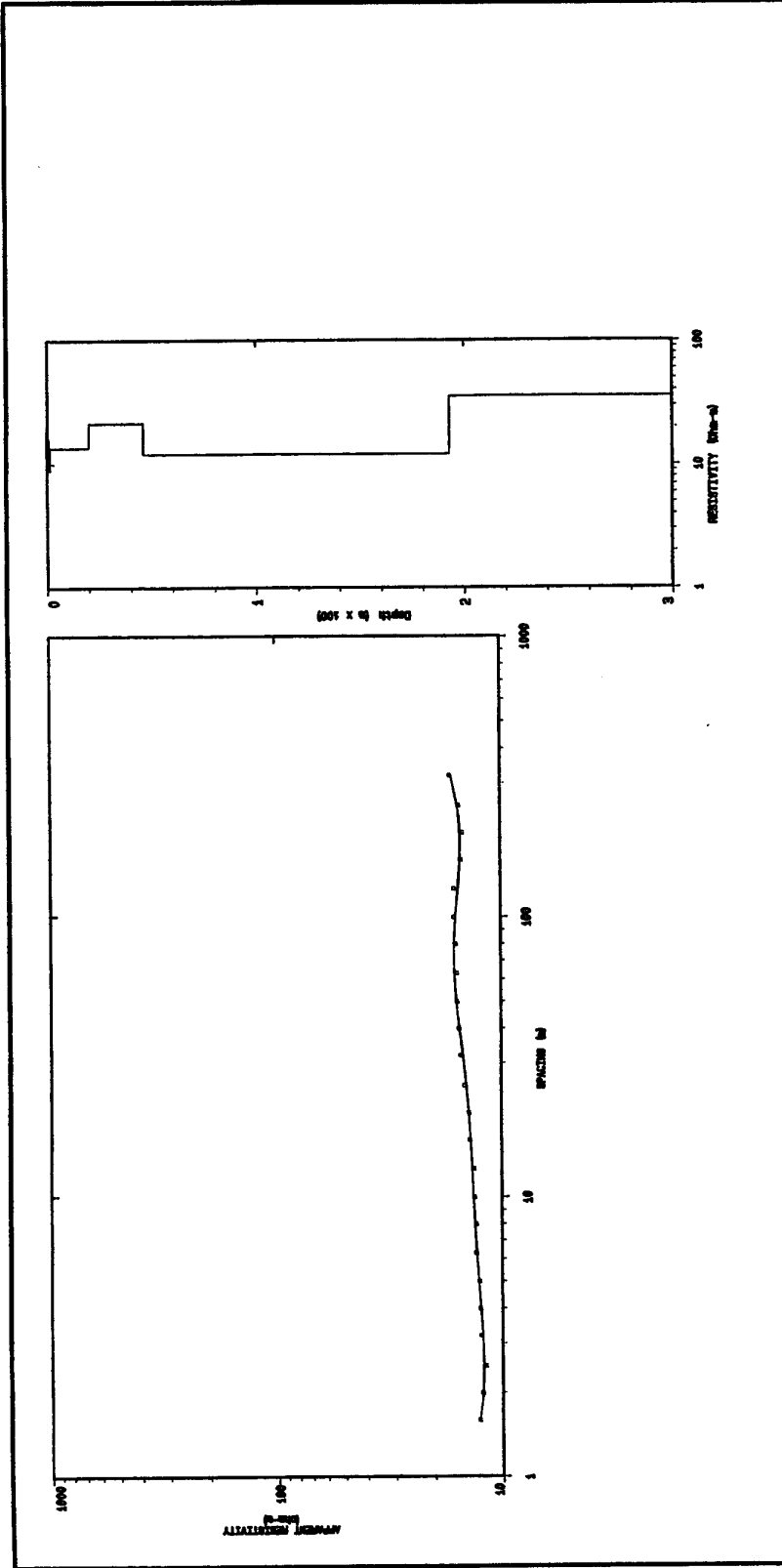
Schlumberger Configuration

FITTING ERROR: 1.548 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 910.0 | |
| 1 | 16.*0 | | 0.592 | 909.4 | 0.0370 |
| 2 | 9.*0 | | 0.597 | 908.8 | 0.0663 |
| 3 | 13.61 | | 18.85 | 889.9 | 1.38 |
| 4 | 21.59 | | 26.09 | 863.8 | 1.20 |
| 5 | 12.03 | | 147.4 | 716.4 | 12.25 |
| 6 | 35.99 | | | | |

"*" INDICATES FIXED PARAMETER

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 12.67 | 12.64 | 0.250 |
| 2 | 2.00 | 12.28 | 12.25 | 0.290 |
| 3 | 2.50 | 11.89 | 12.13 | -1.96 |
| 4 | 3.20 | 12.48 | 12.25 | 1.81 |
| 5 | 4.00 | 12.58 | 12.49 | 0.688 |
| 6 | 5.00 | 12.67 | 12.75 | -0.614 |
| 7 | 6.30 | 13.06 | 13.00 | 0.499 |
| 8 | 8.00 | 13.06 | 13.21 | -1.13 |
| 9 | 10.00 | 13.26 | 13.38 | -0.936 |
| 10 | 12.60 | 13.36 | 13.55 | -1.46 |
| 11 | 16.00 | 13.87 | 13.75 | 0.858 |
| 12 | 20.00 | 13.97 | 14.00 | -0.177 |
| 13 | 25.00 | 14.59 | 14.34 | 1.74 |
| 14 | 32.00 | 15.10 | 14.83 | 1.82 |
| 15 | 40.00 | 15.41 | 15.34 | 0.477 |
| 16 | 50.00 | 15.72 | 15.81 | -0.588 |
| 17 | 63.00 | 15.72 | 16.13 | -2.60 |
| 18 | 80.00 | 15.82 | 16.16 | -2.13 |
| 19 | 100.0 | 16.13 | 15.91 | 1.37 |
| 20 | 126.0 | 16.13 | 15.49 | 3.98 |
| 21 | 160.0 | 15.00 | 15.11 | -0.743 |
| 22 | 200.0 | 14.80 | 15.05 | -1.74 |
| 23 | 250.0 | 15.30 | 15.46 | -1.09 |
| 24 | 320.0 | 16.80 | 16.56 | 1.37 |



| | | | |
|----------------|--------------------|--------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ48 | | ANDALUCIA | |
| Date: 13-2-90 | Equipment: 6EOTRON | Azimuth: 30 | |
| Sounding: 48 | | | |

DATA SET: I278

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 920.00
 SOUNDING COORDINATES: X: 457900.0000 Y: 4147700.0000

DATE: 12-2-90
 SOUNDING: 78
 AZIMUTH: 326
 EQUIPMENT: GEOTRON

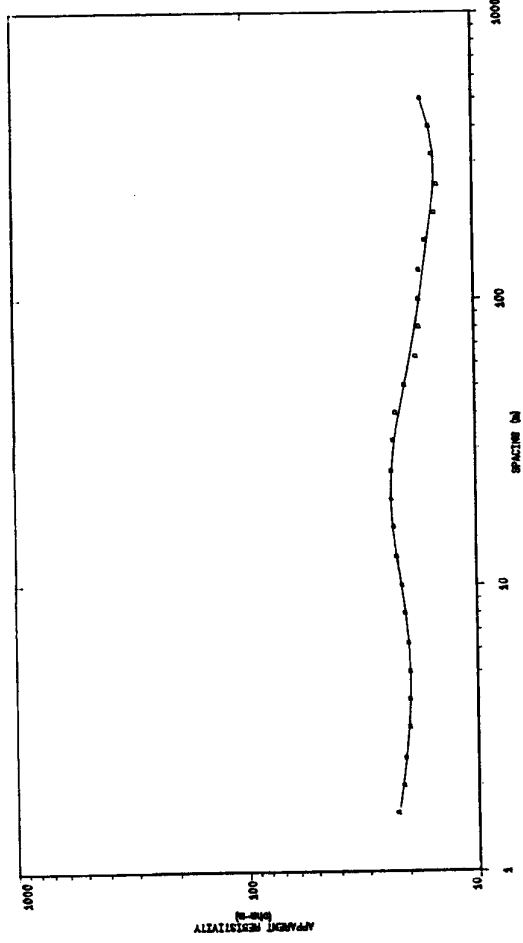
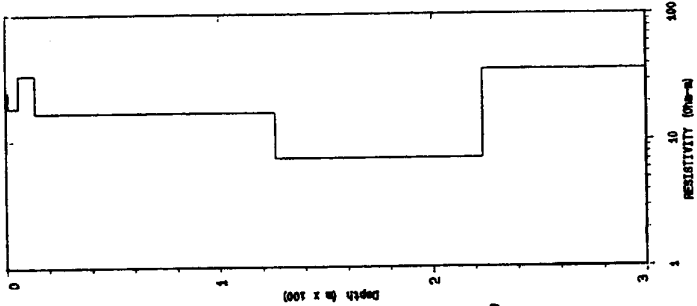
Schlumberger Configuration

FITTING ERROR: 2.105 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 920.0 | |
| 1 | 25.46 | | 0.734 | 919.2 | 0.0288 |
| 2 | 18.38 | | 5.08 | 914.1 | 0.276 |
| 3 | 33.57 | | 7.89 | 906.2 | 0.235 |
| 4 | 16.66 | | 112.3 | 793.9 | 6.74 |
| 5 | 7.28 | | 97.26 | 696.6 | 13.34 |
| 6 | 36.56 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 22.52 | 22.34 | 0.820 |
| 2 | 2.00 | 21.19 | 21.43 | -1.16 |
| 3 | 2.50 | 20.71 | 20.63 | 0.377 |
| 4 | 3.20 | 19.85 | 19.98 | -0.666 |
| 5 | 4.00 | 19.76 | 19.67 | 0.442 |
| 6 | 5.00 | 19.66 | 19.63 | 0.152 |
| 7 | 6.30 | 19.95 | 19.90 | 0.254 |
| 8 | 8.00 | 20.61 | 20.50 | 0.562 |
| 9 | 10.00 | 21.19 | 21.31 | -0.596 |
| 10 | 12.60 | 22.33 | 22.27 | 0.300 |
| 11 | 16.00 | 22.84 | 23.10 | -1.17 |
| 12 | 20.00 | 23.34 | 23.50 | -0.676 |
| 13 | 25.00 | 23.34 | 23.35 | -0.0332 |
| 14 | 32.00 | 22.84 | 22.55 | 1.26 |
| 15 | 40.00 | 22.23 | 21.42 | 3.64 |
| 16 | 50.00 | 20.22 | 20.17 | 0.242 |
| 17 | 63.00 | 17.95 | 18.97 | -5.65 |
| 20 | 126.0 | 8.65 | 8.27 | 4.37 |
| 21 | 160.0 | 7.60 | 7.83 | -2.98 |
| 22 | 200.0 | 7.40 | 7.67 | -3.64 |
| 23 | 250.0 | 7.50 | 7.66 | -2.17 |
| 24 | 320.0 | 7.80 | 7.81 | -0.181 |
| 25 | 400.0 | 8.30 | 8.10 | 2.38 |
| 26 | 500.0 | 8.50 | 8.53 | -0.432 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 326

for: ITGE

by: I.T.G.E.

Data Set: IZ78 Date: 12-2-90

Equipment: GEOTRON Sounding: 78

DATA SET: IZ80

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 860.00
 SOUNDING COORDINATES: X: 457750.0000 Y: 4145350.0000

DATE: 6-10-89
 SOUNDING: 80
 AZIMUTH: N-3-0
 EQUIPMENT: GEOTRON

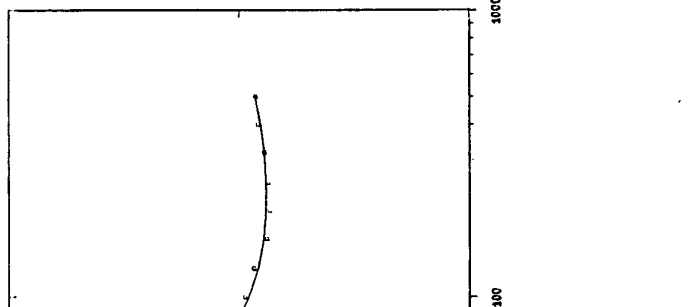
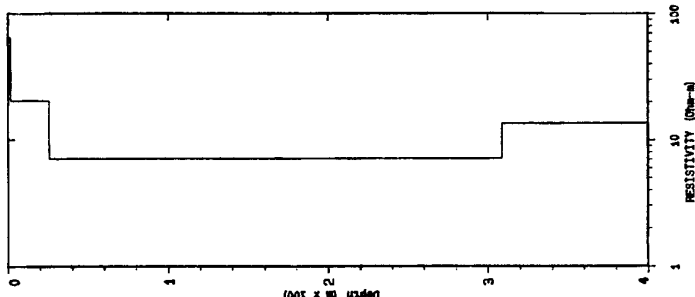
Schlumberger Configuration

FITTING ERROR: 3.312 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 860.0 | |
| 1 | 65.24 | | 1.35 | 858.6 | 0.0208 |
| 2 | 20.55 | | 24.23 | 834.4 | 1.17 |
| 3 | 7.17 | | 282.9 | 551.4 | 39.42 |
| 4 | 13.59 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 61.50 | 57.04 | 7.25 |
| 2 | 2.00 | 50.73 | 52.32 | -3.13 |
| 3 | 2.50 | 43.19 | 46.33 | -7.26 |
| 4 | 3.20 | 38.02 | 39.00 | -2.59 |
| 5 | 4.00 | 34.14 | 32.85 | 3.78 |
| 6 | 5.00 | 28.97 | 28.00 | 3.34 |
| 7 | 6.30 | 24.77 | 24.65 | 0.476 |
| 8 | 8.00 | 22.62 | 22.67 | -0.225 |
| 9 | 10.00 | 21.11 | 21.65 | -2.56 |
| 10 | 12.60 | 21.11 | 20.99 | 0.539 |
| 11 | 16.00 | 21.11 | 20.43 | 3.18 |
| 12 | 20.00 | 19.93 | 19.84 | 0.498 |
| 13 | 25.00 | 19.30 | 19.02 | 1.43 |
| 14 | 32.00 | 17.38 | 17.71 | -1.92 |
| 15 | 40.00 | 15.46 | 16.11 | -4.23 |
| 16 | 50.00 | 13.86 | 14.20 | -2.50 |
| 17 | 63.00 | 11.98 | 12.17 | -1.55 |
| 18 | 80.00 | 10.63 | 10.33 | 2.73 |
| 19 | 100.0 | 9.48 | 9.08 | 4.21 |
| 18 | 80.00 | 17.36 | 17.94 | -3.33 |
| 19 | 100.0 | 17.36 | 17.16 | 1.14 |
| 20 | 126.0 | 17.26 | 16.46 | 4.66 |
| 21 | 160.0 | 16.17 | 15.75 | 2.61 |
| 22 | 200.0 | 14.70 | 15.13 | -2.93 |
| 23 | 250.0 | 14.30 | 14.68 | -2.68 |
| 24 | 320.0 | 15.00 | 14.69 | 2.06 |
| 25 | 400.0 | 15.40 | 15.37 | 0.131 |
| 26 | 500.0 | 16.70 | 16.74 | -0.292 |



| | | | |
|----------------|--------------------|----------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ80 | | ANDALUCIA | |
| Date: 6-10-89 | Equipment: GEOTRON | Azimuth: N-3-0 | |
| Sounding: 80 | | | |

DATA SET: IZ81

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 850.00
 SOUNDING COORDINATES: X: 457750.0000 Y: 4144850.0000

DATE: 6-10-89
 SOUNDING: 81
 AZIMUTH: N
 EQUIPMENT: GEOTRON

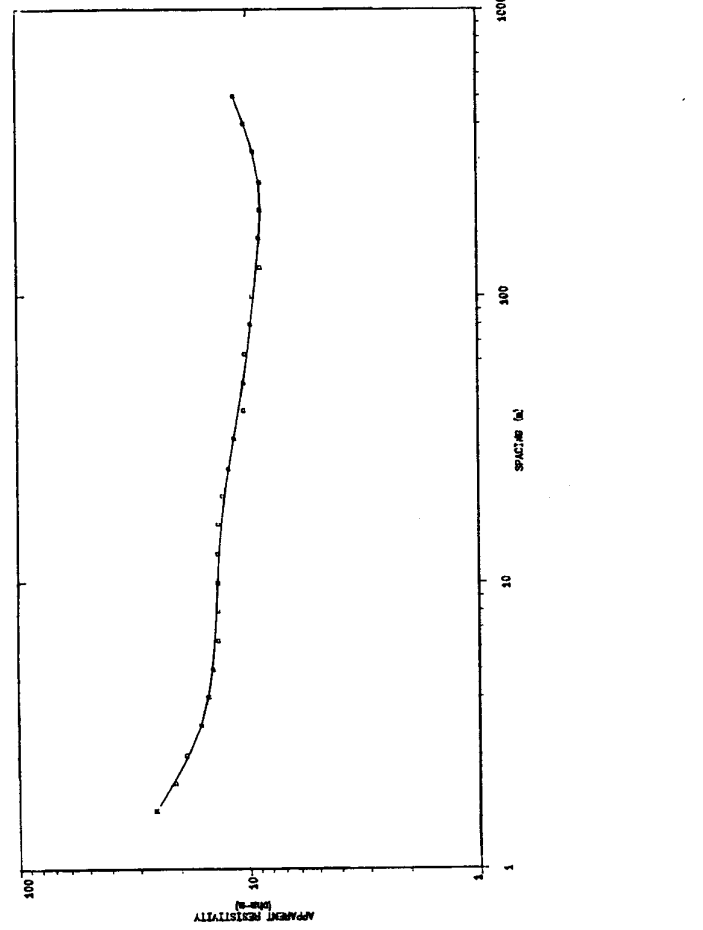
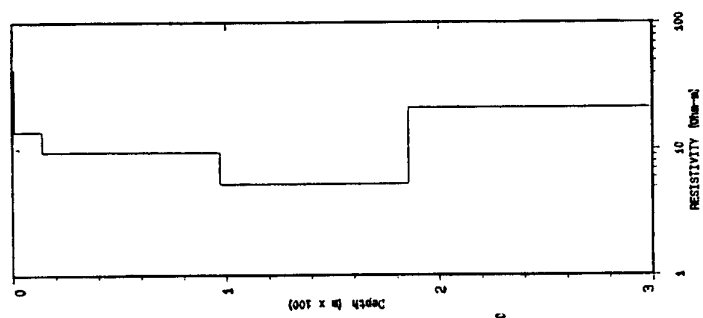
Schlumberger Configuration

FITTING ERROR: 1.887 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 850.0 | |
| 1 | 42.98 | | 0.667 | 849.3 | 0.0155 |
| 2 | 13.77 | | 13.09 | 836.2 | 0.950 |
| 3 | 9.44 | | 83.18 | 753.0 | 8.81 |
| 4 | 5.31 | | 88.63 | 664.4 | 16.67 |
| 5 | 21.44 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 25.70 | 25.55 | 0.592 |
| 2 | 2.00 | 21.17 | 21.58 | -1.96 |
| 3 | 2.50 | 18.90 | 18.49 | 2.13 |
| 4 | 3.20 | 16.30 | 16.28 | 0.165 |
| 5 | 4.00 | 15.12 | 15.15 | -0.228 |
| 6 | 5.00 | 14.47 | 14.54 | -0.472 |
| 7 | 6.30 | 13.71 | 14.18 | -3.37 |
| 8 | 8.00 | 13.71 | 13.93 | -1.57 |
| 9 | 10.00 | 13.71 | 13.73 | -0.103 |
| 10 | 12.60 | 13.71 | 13.49 | 1.63 |
| 11 | 16.00 | 13.61 | 13.16 | 3.35 |
| 12 | 20.00 | 13.02 | 12.73 | 2.16 |
| 13 | 25.00 | 12.22 | 12.21 | 0.114 |
| 14 | 32.00 | 11.53 | 11.55 | -0.241 |
| 15 | 40.00 | 10.43 | 10.97 | -5.17 |
| 16 | 50.00 | 10.43 | 10.46 | -0.280 |
| 17 | 63.00 | 10.33 | 10.03 | 2.91 |
| 18 | 80.00 | 9.72 | 9.67 | 0.521 |
| 19 | 100.0 | 9.51 | 9.37 | 1.49 |
| 20 | 126.0 | 8.80 | 9.08 | -3.26 |
| 21 | 160.0 | 8.90 | 8.83 | 0.762 |
| 22 | 200.0 | 8.80 | 8.72 | 0.884 |
| 23 | 250.0 | 8.80 | 8.85 | -0.614 |
| 24 | 320.0 | 9.40 | 9.40 | -0.0238 |
| 25 | 400.0 | 10.30 | 10.27 | 0.282 |
| 26 | 500.0 | 11.40 | 11.40 | -0.0655 |



RESISTIVIDAD
 GRANADA
 ANDALUCIA

for: ITGE
 by: I.T.G.E.
 Data Set: IZ81 Date: 6-10-89
 Equipment: GECTRON Sounding: 81

Azimuth: N

DATA SET: IZ82

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 840.00
 SOUNDING COORDINATES: X: 457875.0000 Y: 4144050.0000

DATE: 9-11-89
 SOUNDING: 82
 AZIMUTH: N-12-O
 EQUIPMENT: GEOTRON

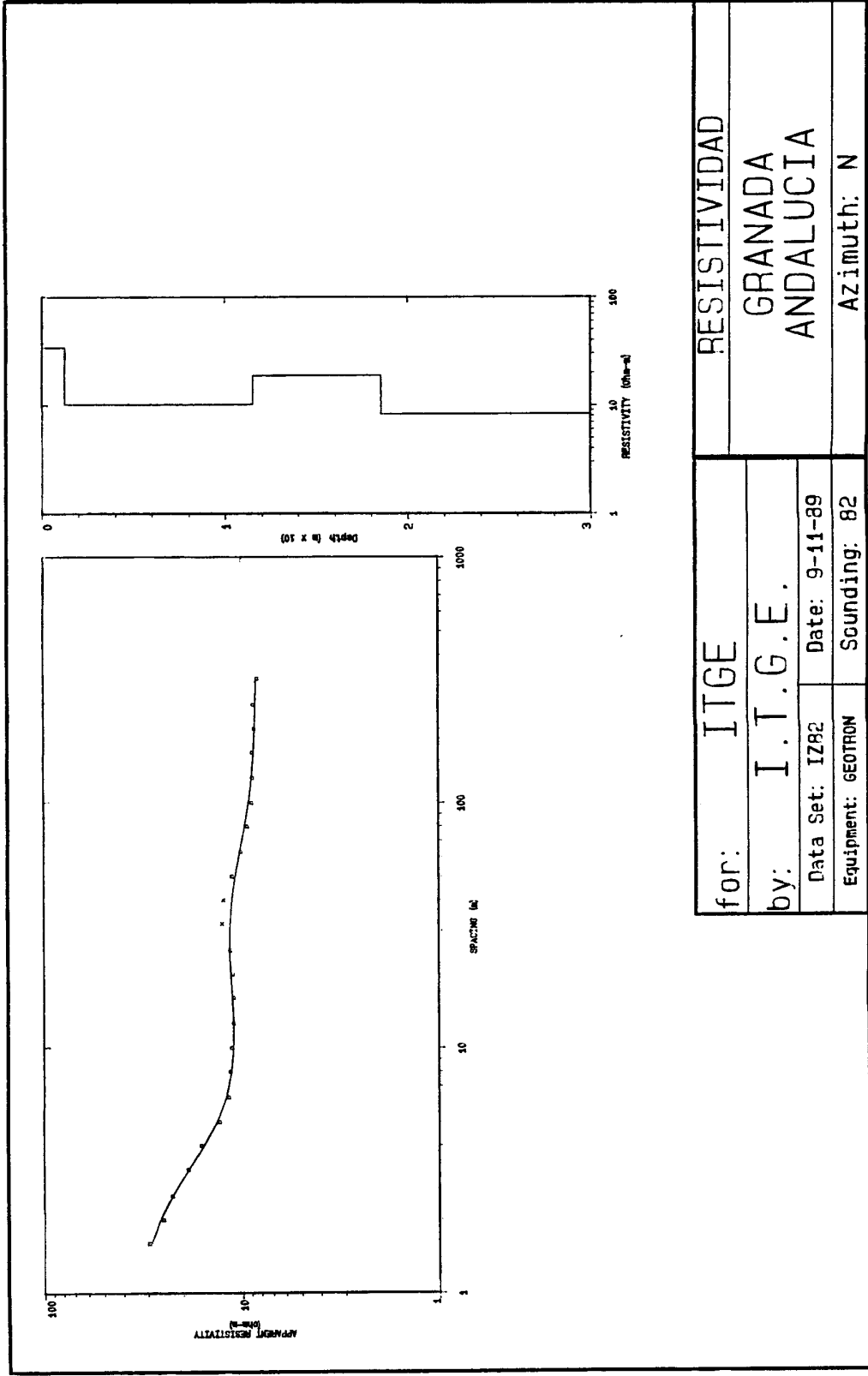
Schlumberger Configuration

FITTING ERROR: 2.276 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 840.0 | |
| 1 | 34.24 | | 1.24 | 838.7 | 0.0364 |
| 2 | 10.20 | | 10.27 | 828.4 | 1.00 |
| 3 | 18.83 | | 7.03 | 821.4 | 0.373 |
| 4 | 8.34 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 29.67 | 28.90 | 2.58 |
| 2 | 2.00 | 25.11 | 26.06 | -3.78 |
| 3 | 2.50 | 22.62 | 22.63 | -0.0413 |
| 4 | 3.20 | 18.89 | 18.71 | 0.974 |
| 5 | 4.00 | 16.16 | 15.64 | 3.19 |
| 6 | 5.00 | 13.01 | 13.40 | -3.02 |
| 7 | 6.30 | 11.68 | 11.99 | -2.65 |
| 8 | 8.00 | 11.43 | 11.27 | 1.40 |
| 9 | 10.00 | 11.27 | 11.02 | 2.18 |
| 10 | 12.60 | 11.02 | 11.01 | 0.0494 |
| 11 | 16.00 | 11.02 | 11.17 | -1.35 |
| 12 | 20.00 | 11.10 | 11.37 | -2.44 |
| 13 | 25.00 | 11.43 | 11.52 | -0.793 |
| 14 | 32.00 | 12.58 | 11.49 | 8.72 |
| 15 | 40.00 | 12.42 | 11.21 | 9.71 |
| 16 | 50.00 | 11.18 | 10.74 | 3.93 |
| 17 | 63.00 | 10.07 | 10.17 | -0.904 |
| 18 | 80.00 | 9.33 | 9.60 | -2.81 |
| 19 | 100.0 | 8.87 | 9.17 | -3.38 |
| 20 | 126.0 | 8.78 | 8.86 | -0.928 |
| 21 | 160.0 | 8.78 | 8.66 | 1.41 |
| 22 | 200.0 | 8.60 | 8.54 | 0.680 |
| 23 | 250.0 | 8.70 | 8.46 | 2.66 |
| 24 | 320.0 | 8.30 | 8.41 | -1.42 |



DATA SET: I283

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 820.00
 SOUNDING COORDINATES: X: 457750.0000 Y: 4143250.0000

DATE: 9-11-89
 SOUNDING: 83
 AZIMUTH: N-34-E
 EQUIPMENT: GEOTRON

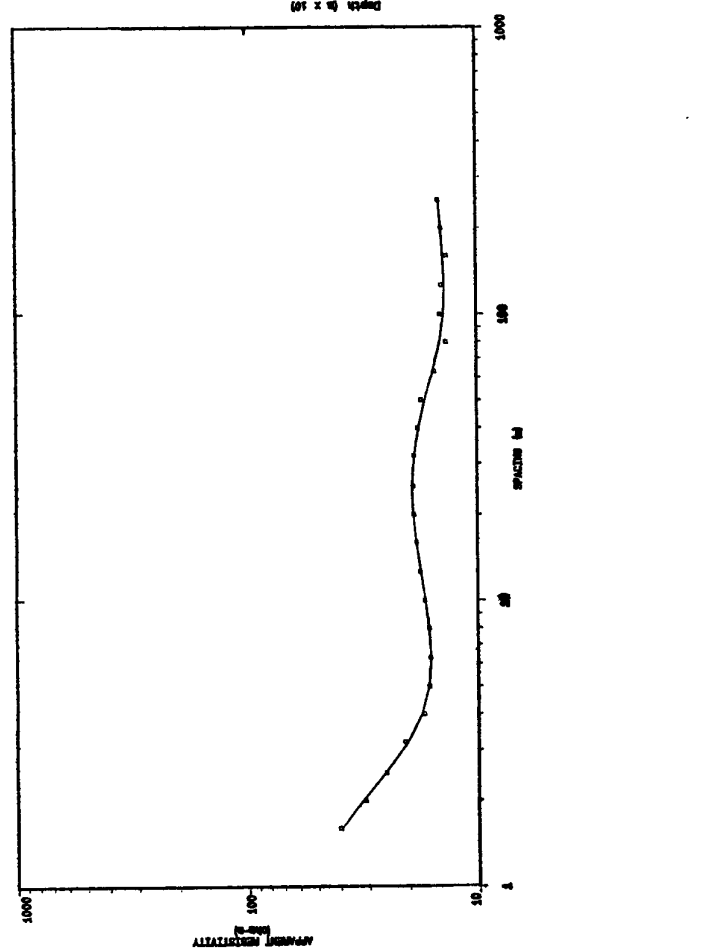
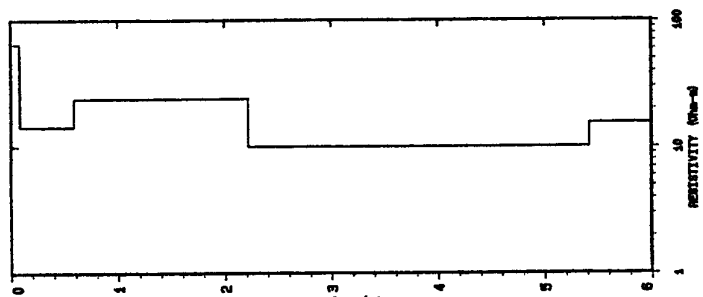
Schlumberger Configuration

FITTING ERROR: 2.355 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 820.0 | |
| 1 | 64.55 | | 0.806 | 819.1 | 0.0124 |
| 2 | 14.26 | | 5.06 | 814.1 | 0.354 |
| 3 | 23.98 | | 16.32 | 797.8 | 0.680 |
| 4 | 10.06 | | 31.98 | 765.8 | 3.17 |
| 5 | 15.44 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|----------------------------|-------------------------|
| 1 | 1.60 | 40.13 | 39.58 | 1.36 |
| 2 | 2.00 | 31.18 | 31.96 | -2.52 |
| 3 | 2.50 | 25.24 | 25.34 | -0.381 |
| 4 | 3.20 | 20.93 | 20.17 | 3.60 |
| 5 | 4.00 | 17.15 | 17.54 | -2.26 |
| 6 | 5.00 | 16.29 | 16.35 | -0.365 |
| 7 | 6.30 | 16.07 | 16.04 | 0.175 |
| 8 | 8.00 | 16.29 | 16.31 | -0.140 |
| 9 | 10.00 | 17.04 | 16.89 | 0.866 |
| 10 | 12.60 | 17.80 | 17.68 | 0.652 |
| 11 | 16.00 | 18.43 | 18.49 | -0.279 |
| 12 | 20.00 | 18.86 | 19.03 | -0.904 |
| 13 | 25.00 | 18.96 | 19.20 | -1.26 |
| 14 | 32.00 | 18.86 | 18.84 | 0.0901 |
| 15 | 40.00 | 18.12 | 18.00 | 0.657 |
| 16 | 50.00 | 17.48 | 16.80 | 3.86 |
| 17 | 63.00 | 15.25 | 15.49 | -1.55 |
| 18 | 80.00 | 13.56 | 14.41 | -6.26 |
| 19 | 100.0 | 14.41 | 13.85 | 3.87 |
| 20 | 126.0 | 14.20 | 13.72 | 3.32 |
| 21 | 160.0 | 13.45 | 13.91 | -3.42 |
| 22 | 200.0 | 14.20 | 14.21 | -0.112 |
| 23 | 250.0 | 14.60 | 14.51 | 0.581 |



RESISTIVIDAD
 GRANADA
 ANDALUCIA
 Azimuth: N-34-E

for: ITGE
 by: I.T.G.E.
 Data Set: IZ83 Date: 9-11-89
 Equipment: GEOTRON Sounding: 83

DATA SET: IZ84

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 820.00
 SOUNDING COORDINATES: X: 457000.0000 Y: 4141700.0000

DATE: 9-11-89
 SOUNDING: 84
 AZIMUTH: N-20-E
 EQUIPMENT: GEOTRON

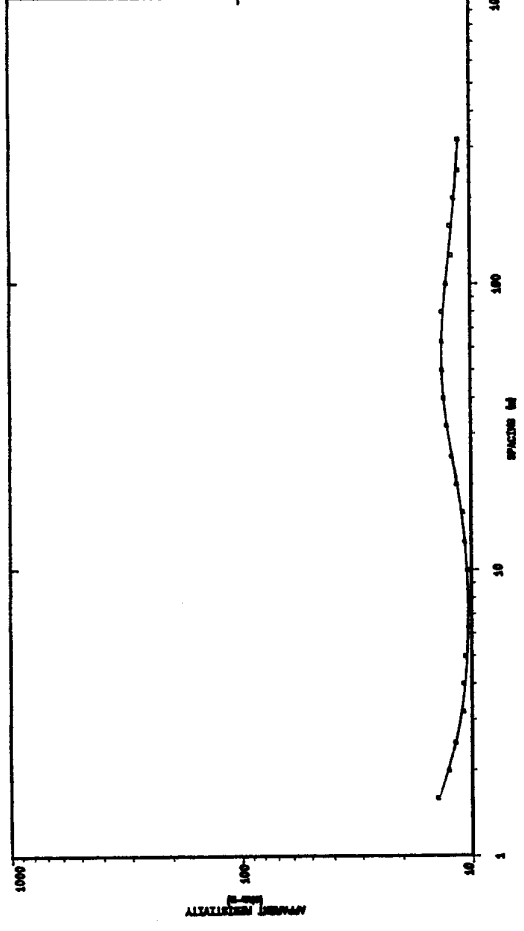
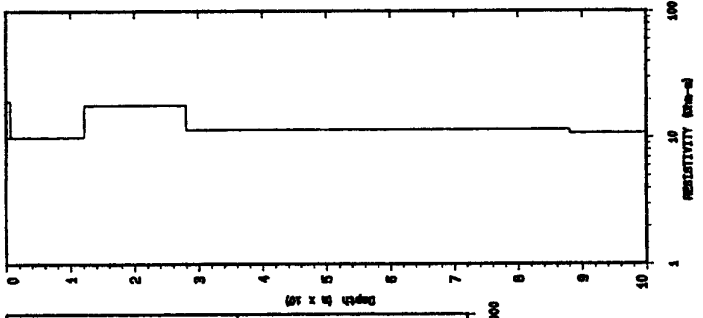
Schlumberger Configuration

FITTING ERROR: 1.239 PERCENT

| L-# | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| 1 | 19.57 | | 0.625 | 820.0 | |
| 2 | 10.04 | | 11.47 | 819.3 | 0.0319 |
| 3 | 18.18 | | 15.88 | 807.8 | 1.14 |
| 4 | 11.60 | | 59.99 | 792.0 | 0.873 |
| 5 | 10.87 | | | 732.0 | 5.17 |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 14.12 | 13.98 | 0.992 |
| 2 | 2.00 | 12.62 | 12.77 | -1.19 |
| 3 | 2.50 | 11.82 | 11.81 | 0.0406 |
| 4 | 3.20 | 10.91 | 11.09 | -1.62 |
| 5 | 4.00 | 10.91 | 10.70 | 1.97 |
| 6 | 5.00 | 10.71 | 10.48 | 2.20 |
| 7 | 6.30 | 10.31 | 10.37 | -0.569 |
| 8 | 8.00 | 10.21 | 10.37 | -1.51 |
| 9 | 10.00 | 10.41 | 10.46 | -0.469 |
| 10 | 12.60 | 10.71 | 10.68 | 0.335 |
| 11 | 16.00 | 10.91 | 11.05 | -1.28 |
| 12 | 20.00 | 11.60 | 11.54 | 0.525 |
| 13 | 25.00 | 12.19 | 12.11 | 0.611 |
| 14 | 32.00 | 12.78 | 12.75 | 0.253 |
| 15 | 40.00 | 13.17 | 13.19 | -0.146 |
| 16 | 50.00 | 13.37 | 13.43 | -0.424 |
| 17 | 63.00 | 13.37 | 13.41 | -0.341 |
| 18 | 80.00 | 13.37 | 13.17 | 1.46 |
| 19 | 100.0 | 12.78 | 12.82 | -0.304 |
| 20 | 126.0 | 12.09 | 12.41 | -2.63 |
| 21 | 160.0 | 12.29 | 12.01 | 2.21 |
| 22 | 200.0 | 11.80 | 11.70 | 0.769 |
| 23 | 250.0 | 11.30 | 11.46 | -1.44 |
| 24 | 320.0 | 11.30 | 11.26 | 0.349 |



RESISTIVIDAD
 GRANADA
 ANDALUCIA

for: ITGE
 by: I.T.G.E.
 Data Set: IZ84 Date: 9-11-89
 Equipment: GEOTRON Sounding: 84

Azimuth: N-20-E

DATA SET: IZ85

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 890.00
 SOUNDING COORDINATES: X: 457750.0000 Y: 4141700.0000

DATE: 15-11-89
 SOUNDING: 85
 AZIMUTH: 65
 EQUIPMENT: GEOTRON

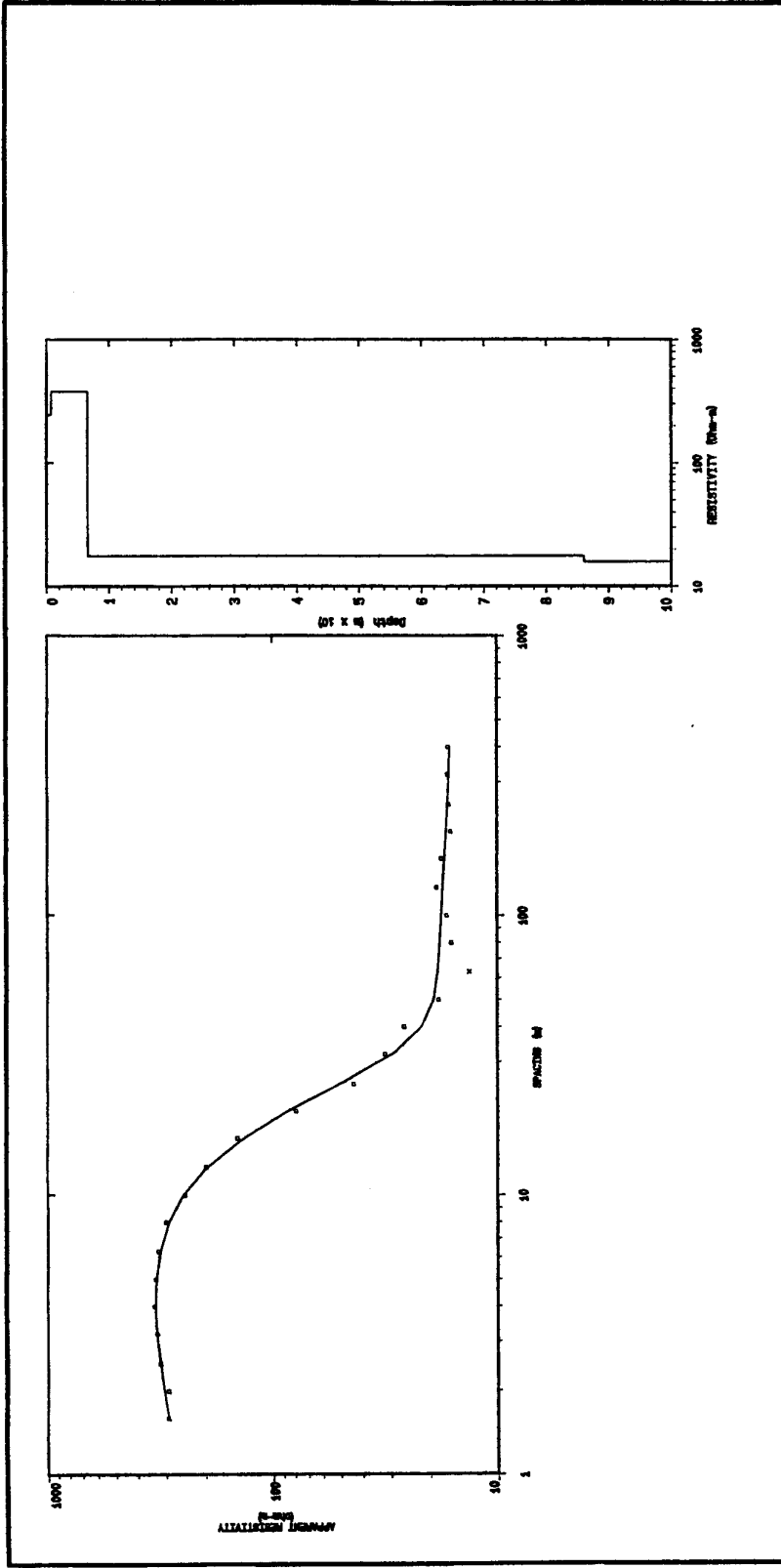
Schlumberger Configuration

FITTING ERROR: 6.588 PERCENT

| L# | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 890.0 | |
| 1 | 231.5 | | 0.625 | 889.3 | 0.00270 |
| 2 | 380.5 | | 5.84 | 883.5 | 0.0153 |
| 3 | 17.80 | | 71.74 | 811.7 | 4.02 |
| 4 | 15.98 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) | SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|---------------|-----------|-------------------------|
| 1 | 1.60 | 293.3 | 290.3 | 290.3 | 1.02 |
| 2 | 2.00 | 293.5 | 305.6 | 305.6 | -4.09 |
| 3 | 2.50 | 319.7 | 319.3 | 319.3 | 0.133 |
| 4 | 3.20 | 328.8 | 330.6 | 330.6 | -0.543 |
| 5 | 4.00 | 338.5 | 335.3 | 335.3 | 0.947 |
| 6 | 5.00 | 334.0 | 332.7 | 332.7 | 0.399 |
| 7 | 6.30 | 324.5 | 319.4 | 319.4 | 1.58 |
| 8 | 8.00 | 300.0 | 291.3 | 291.3 | 2.89 |
| 9 | 10.00 | 246.6 | 250.4 | 250.4 | -1.55 |
| 10 | 12.60 | 198.4 | 195.8 | 195.8 | 1.33 |
| 11 | 16.00 | 144.3 | 134.9 | 134.9 | 6.50 |
| 12 | 20.00 | 79.18 | 85.12 | 85.12 | -7.50 |
| 13 | 25.00 | 43.78 | 50.00 | 50.00 | -14.20 |
| 14 | 32.00 | 31.69 | 29.20 | 29.20 | 7.85 |
| 15 | 40.00 | 26.02 | 21.72 | 21.72 | 16.51 |
| 16 | 50.00 | 18.25 | 19.27 | 19.27 | -5.58 |
| 17 | 63.00 | 13.26 | 18.43 | 18.43 | -39.00 |
| 18 | 80.00 | 15.98 | 17.99 | 17.99 | -12.57 |
| 19 | 100.0 | 16.78 | 17.70 | 17.70 | -5.50 |
| 20 | 126.0 | 18.59 | 17.43 | 17.43 | 6.22 |
| 21 | 160.0 | 17.68 | 17.14 | 17.14 | 3.07 |
| 22 | 200.0 | 16.10 | 16.86 | 16.86 | -4.72 |
| 23 | 250.0 | 16.40 | 16.61 | 16.61 | -1.29 |
| 24 | 320.0 | 16.60 | 16.40 | 16.40 | 1.18 |
| 25 | 400.0 | 16.50 | 16.27 | 16.27 | 1.36 |



| | | | |
|--------------------|----------------|----------------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA ANDALUCIA | |
| Data Set: IZ85 | Date: 15-11-89 | Azimuth: 65 | |
| Equipment: GEOTRON | Sounding: 85 | | |

DATA SET: IZ86

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 870.00
 SOUNDING COORDINATES: X: 456950.0000 Y: 4140800.0000

DATE: 15-11-89
 SOUNDING: 86
 AZIMUTH: E-40-N
 EQUIPMENT: GEOTRON

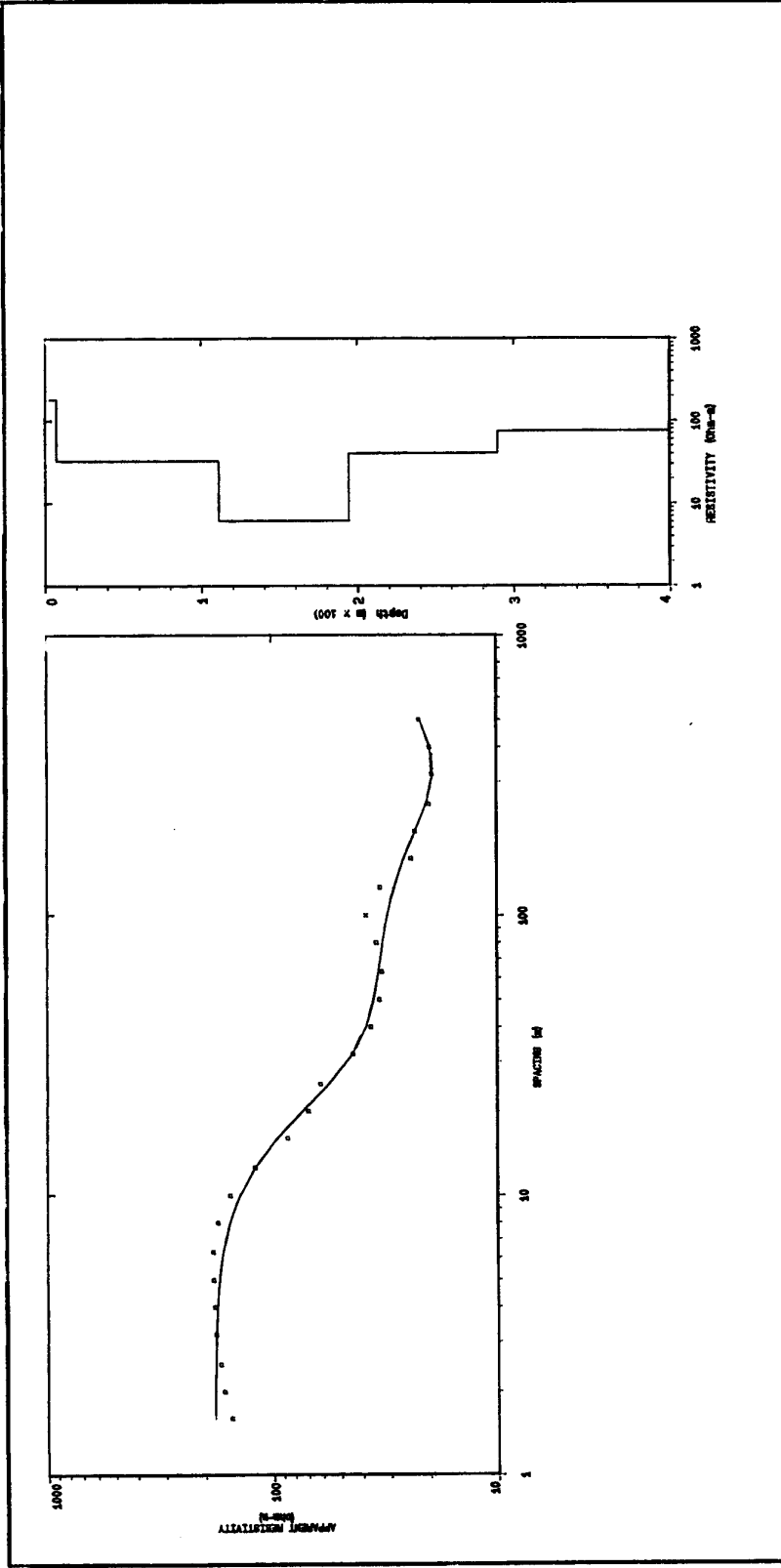
Schlumberger Configuration

FITTING ERROR: 7.698 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 870.0 | |
| 1 | 182.1 | | 7.27 | 862.7 | 0.0399 |
| 2 | 33.09 | | 103.6 | 759.1 | 3.13 |
| 3 | 6.40 | | 84.54 | 674.5 | 13.19 |
| 4 | 40.51 | | 96.50 | 578.0 | 2.38 |
| 5 | 71.19 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA (ohm-m) | | DIFFERENCE (percent) |
|-----|----------------|------------|-----------|-------------------------|
| | | DATA | SYNTHETIC | |
| 1 | 1.60 | 153.8 | 181.8 | -18.24 |
| 2 | 2.00 | 166.0 | 181.5 | -9.34 |
| 3 | 2.50 | 171.6 | 181.0 | -5.42 |
| 4 | 3.20 | 180.7 | 179.8 | 0.475 |
| 5 | 4.00 | 182.3 | 177.8 | 2.46 |
| 6 | 5.00 | 184.8 | 174.2 | 5.72 |
| 7 | 6.30 | 185.9 | 167.7 | 9.79 |
| 8 | 8.00 | 176.1 | 156.6 | 11.08 |
| 9 | 10.00 | 155.4 | 141.2 | 9.12 |
| 10 | 12.60 | 120.4 | 120.3 | 0.125 |
| 11 | 16.00 | 85.93 | 95.71 | -11.38 |
| 12 | 20.00 | 69.54 | 73.80 | -6.12 |
| 13 | 25.00 | 61.47 | 56.43 | 8.20 |
| 14 | 32.00 | 43.89 | 44.15 | -0.573 |
| 15 | 40.00 | 36.51 | 38.31 | -4.92 |
| 16 | 50.00 | 33.45 | 35.42 | -5.88 |
| 17 | 63.00 | 32.61 | 33.76 | -3.51 |
| 18 | 80.00 | 34.46 | 32.35 | 6.12 |
| 19 | 100.0 | 38.41 | 30.83 | 19.73 |
| 20 | 126.0 | 33.28 | 28.77 | 13.56 |
| 21 | 160.0 | 24.20 | 26.03 | -7.53 |
| 22 | 200.0 | 23.20 | 23.18 | 0.0522 |
| 23 | 250.0 | 20.10 | 20.72 | -3.09 |
| 24 | 320.0 | 19.50 | 19.36 | 0.681 |
| 25 | 400.0 | 19.90 | 19.87 | 0.114 |
| 26 | 500.0 | 22.20 | 21.94 | 1.14 |



| | | | |
|---------------------|----------------|-----------------|--|
| for: I I G E | | RESISTIVIDAD | |
| by: I . T . G . E . | | GRANADA | |
| Data Set: IZ86 | Date: 15-11-89 | ANDALUCIA | |
| Equipment: GEOTRON | Sounding: 86 | Azimuth: E-40-N | |

DATA SET: IZ87

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 800.00
 SOUNDING COORDINATES: X: 456100.0000 Y: 4140850.0000

DATE: 8-11-89
 SOUNDING: 87
 AZIMUTH: 0-20-S
 EQUIPMENT: GEOTRON

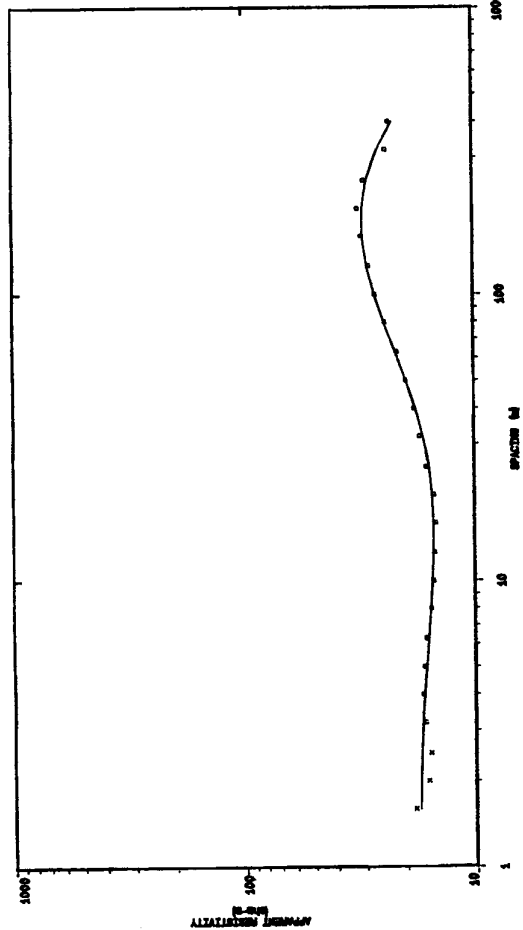
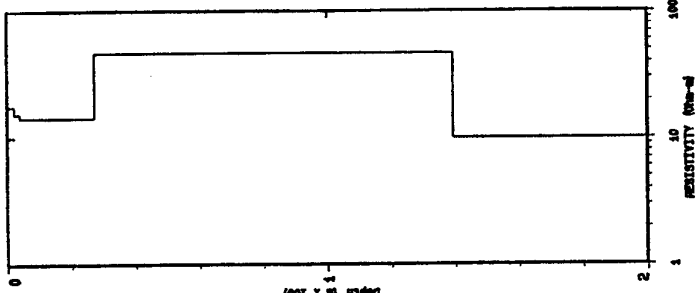
Schlumberger Configuration

FITTING ERROR: 2.822 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 800.0 | |
| 1 | 17.40 | | 1.38 | 798.6 | 0.0790 |
| 2 | 16.99 | | 1.62 | 796.9 | 0.0954 |
| 3 | 14.25 | | 24.17 | 772.8 | 1.69 |
| 4 | 47.72 | | 103.8 | 668.9 | 2.17 |
| 5 | 11.05 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 18.35 | 17.30 | 5.70 |
| 2 | 2.00 | 16.09 | 17.23 | -7.05 |
| 3 | 2.50 | 15.70 | 17.11 | -8.99 |
| 4 | 3.20 | 16.58 | 16.92 | -2.02 |
| 5 | 4.00 | 16.88 | 16.67 | 1.19 |
| 6 | 5.00 | 16.68 | 16.37 | 1.88 |
| 7 | 6.30 | 16.29 | 16.00 | 1.76 |
| 8 | 8.00 | 15.50 | 15.62 | -0.755 |
| 9 | 10.00 | 15.11 | 15.32 | -1.37 |
| 10 | 12.60 | 14.91 | 15.11 | -1.34 |
| 11 | 16.00 | 14.72 | 15.08 | -2.41 |
| 12 | 20.00 | 15.01 | 15.25 | -1.63 |
| 13 | 25.00 | 16.16 | 15.71 | 2.81 |
| 14 | 32.00 | 17.32 | 16.64 | 3.89 |
| 15 | 40.00 | 18.28 | 17.98 | 1.63 |
| 16 | 50.00 | 19.82 | 19.82 | 0.0213 |
| 17 | 63.00 | 21.69 | 22.15 | -2.13 |
| 18 | 80.00 | 24.43 | 24.79 | -1.44 |
| 19 | 100.0 | 26.89 | 27.16 | -1.02 |
| 20 | 126.0 | 28.56 | 29.18 | -2.19 |
| 21 | 160.0 | 30.72 | 30.39 | 1.06 |
| 22 | 200.0 | 31.80 | 30.35 | 4.53 |
| 23 | 250.0 | 29.90 | 28.98 | 3.06 |
| 24 | 320.0 | 24.00 | 26.00 | -8.35 |
| 25 | 400.0 | 23.20 | 22.48 | 3.07 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 0-20-S

for: ITGE

by: I.T.G.E.

Data Set: IZ87 Date: 8-11-89

Equipment: GEOTRON Sounding: 87

DATA SET: IZ88

CLIENT: ITGE
LOCATION: GRANADA
COUNTY: ANDALUCIA
PROJECT: RESISTIVIDAD
ELEVATION: 800.00
SOUNDING COORDINATES: X: 456100.0000 Y: 4140300.0000

DATE: 8-11-89
SOUNDING: 88
AZIMUTH: 0-8-S
EQUIPMENT: GEOTRON

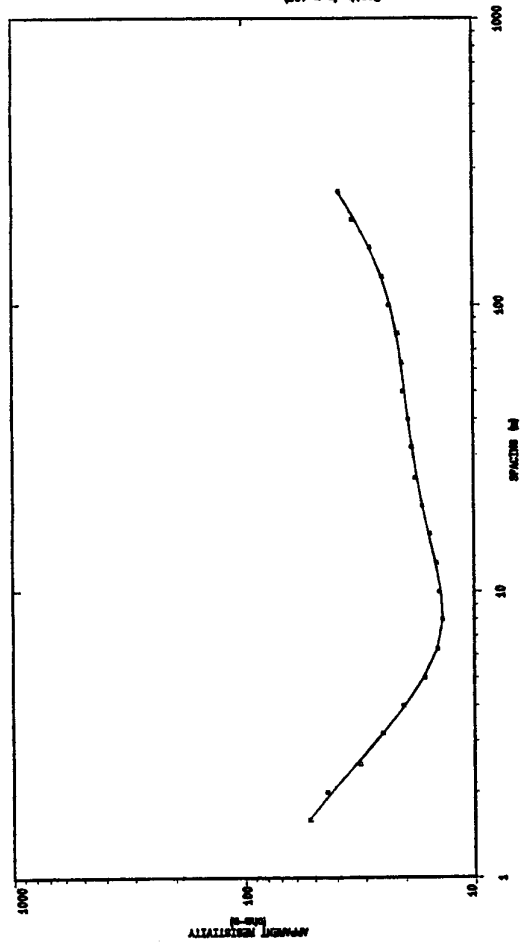
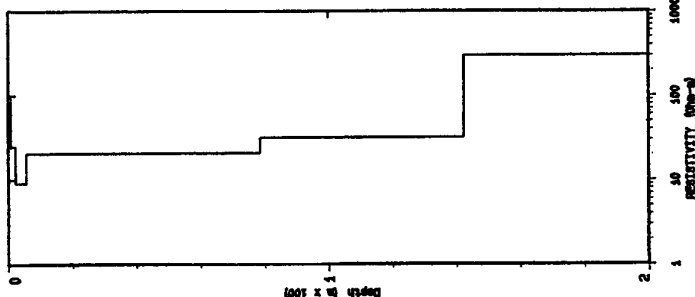
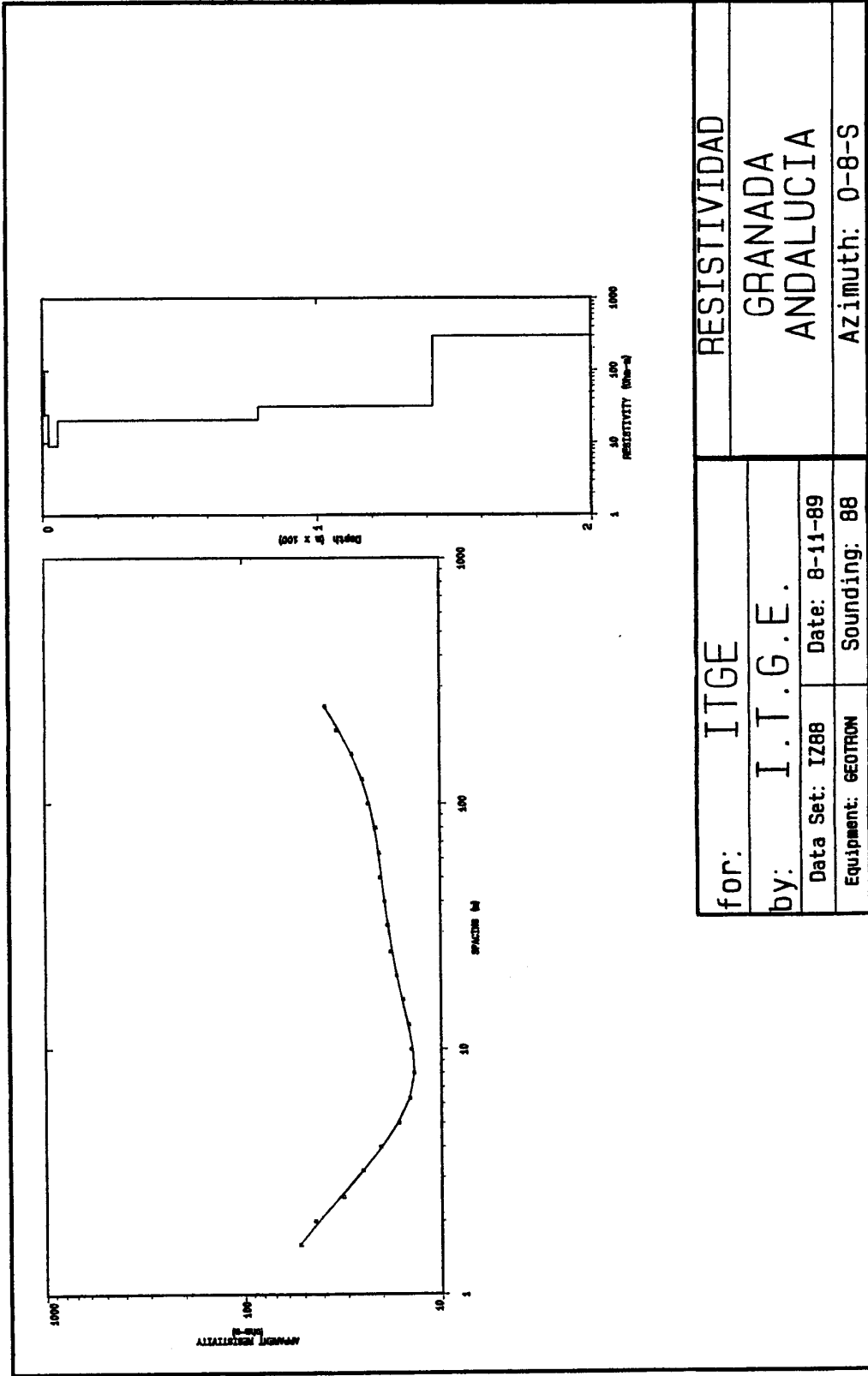
Schlumberger Configuration

FITTING ERROR: 1.721 PERCENT

| # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|---|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 800.0 | |
| 1 | 94.51 | | 0.702 | 799.2 | 0.00744 |
| 2 | 24.89 | | 1.48 | 797.8 | 0.0594 |
| 3 | 9.17 | | 3.34 | 794.4 | 0.364 |
| 4 | 20.61 | | 72.99 | 721.4 | 3.54 |
| 5 | 31.77 | | 64.88 | 656.5 | 2.04 |
| 6 | 314.7 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 52.13 | 52.90 | -1.48 |
| 2 | 2.00 | 43.83 | 42.06 | 4.03 |
| 3 | 2.50 | 31.54 | 32.79 | -3.95 |
| 4 | 3.20 | 25.09 | 24.99 | 0.396 |
| 5 | 4.00 | 20.38 | 19.98 | 1.93 |
| 6 | 5.00 | 16.38 | 16.57 | -1.13 |
| 7 | 6.30 | 14.44 | 14.49 | -0.394 |
| 8 | 8.00 | 13.72 | 13.71 | 0.0395 |
| 9 | 10.00 | 14.13 | 13.93 | 1.38 |
| 10 | 12.60 | 14.54 | 14.72 | -1.24 |
| 11 | 16.00 | 15.55 | 15.76 | -1.33 |
| 12 | 20.00 | 16.76 | 16.73 | 0.165 |
| 13 | 25.00 | 17.97 | 17.63 | 1.88 |
| 14 | 32.00 | 18.58 | 18.51 | 0.346 |
| 15 | 40.00 | 19.19 | 19.22 | -0.178 |
| 16 | 50.00 | 20.20 | 19.88 | 1.54 |
| 17 | 63.00 | 20.40 | 20.62 | -1.09 |
| 18 | 80.00 | 21.20 | 21.60 | -1.89 |
| 19 | 100.0 | 23.20 | 22.92 | 1.16 |
| 20 | 126.0 | 24.80 | 25.00 | -0.842 |
| 21 | 160.0 | 28.00 | 28.25 | -0.921 |
| 22 | 200.0 | 33.50 | 32.62 | 2.60 |
| 23 | 250.0 | 38.10 | 38.54 | -1.15 |



DATA SET: IZB9A

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 820.00
 SOUNDING COORDINATES: X: 454450.0000 Y: 4140050.0000

DATE: 8-11-89
 SOUNDING: 89A
 AZIMUTH: 258
 EQUIPMENT: GEOTRON

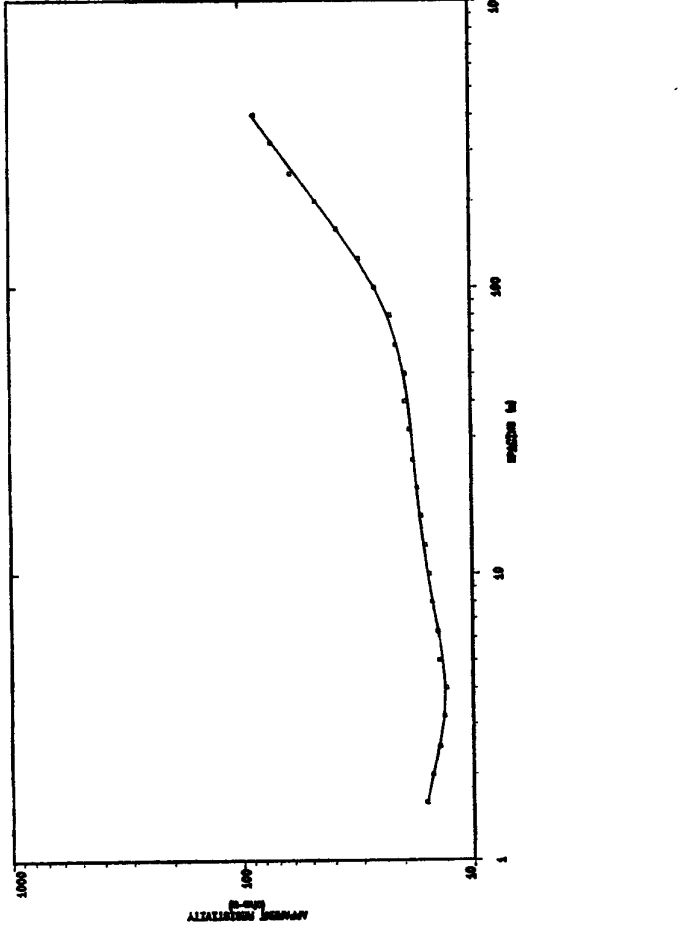
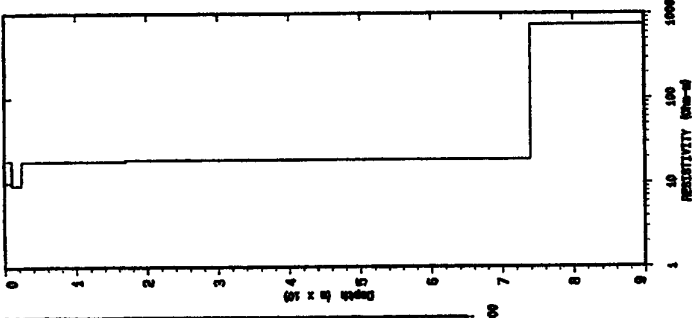
Schlumberger Configuration

FITTING ERROR: 1.767 PERCENT

| # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|---|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 820.0 | |
| 1 | 18.68 | | 0.928 | 819.0 | 0.0496 |
| 2 | 9.92 | | 1.63 | 817.4 | 0.165 |
| 3 | 18.25 | | 17.27 | 800.1 | 0.946 |
| 4 | 18.70 | | 53.58 | 746.5 | 2.86 |
| 5 | 718.8 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 15.95 | 15.91 | 0.238 |
| 2 | 2.00 | 14.94 | 14.91 | 0.204 |
| 3 | 2.50 | 13.93 | 14.00 | -0.484 |
| 4 | 3.20 | 13.33 | 13.35 | -0.148 |
| 5 | 4.00 | 13.02 | 13.21 | -1.45 |
| 6 | 5.00 | 13.93 | 13.50 | 3.09 |
| 7 | 6.30 | 14.13 | 14.11 | 0.184 |
| 8 | 8.00 | 14.94 | 14.88 | 0.426 |
| 9 | 10.00 | 15.35 | 15.60 | -1.63 |
| 10 | 12.60 | 15.95 | 16.27 | -1.99 |
| 11 | 16.00 | 16.63 | 16.87 | -1.43 |
| 12 | 20.00 | 17.21 | 17.34 | -0.780 |
| 13 | 25.00 | 17.98 | 17.77 | 1.18 |
| 14 | 32.00 | 18.56 | 18.25 | 1.69 |
| 15 | 40.00 | 19.34 | 18.79 | 2.83 |
| 16 | 50.00 | 19.34 | 19.57 | -1.22 |
| 17 | 63.00 | 21.14 | 20.86 | 1.31 |
| 18 | 80.00 | 22.44 | 23.04 | -2.67 |
| 19 | 100.0 | 26.15 | 26.25 | -0.382 |
| 20 | 126.0 | 30.66 | 31.16 | -1.62 |
| 21 | 160.0 | 37.98 | 38.24 | -0.687 |
| 22 | 200.0 | 46.80 | 46.87 | -0.155 |
| 23 | 250.0 | 60.40 | 57.61 | 4.61 |
| 24 | 320.0 | 72.90 | 72.24 | 0.903 |
| 25 | 400.0 | 86.20 | 88.30 | -2.44 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 258

for: ITGE

by: I.T.G.E.

Data Set: IZ89A Date: 8-11-89

Equipment: GEOTRON Sounding: 89A

DATA SET: IZ90

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 870.00
 SOUNDING COORDINATES: X: 454300.0000 Y: 4139200.0000

DATE: 10-11-89
 SOUNDING: 90
 AZIMUTH: 0-25-S
 EQUIPMENT: GEOTRON

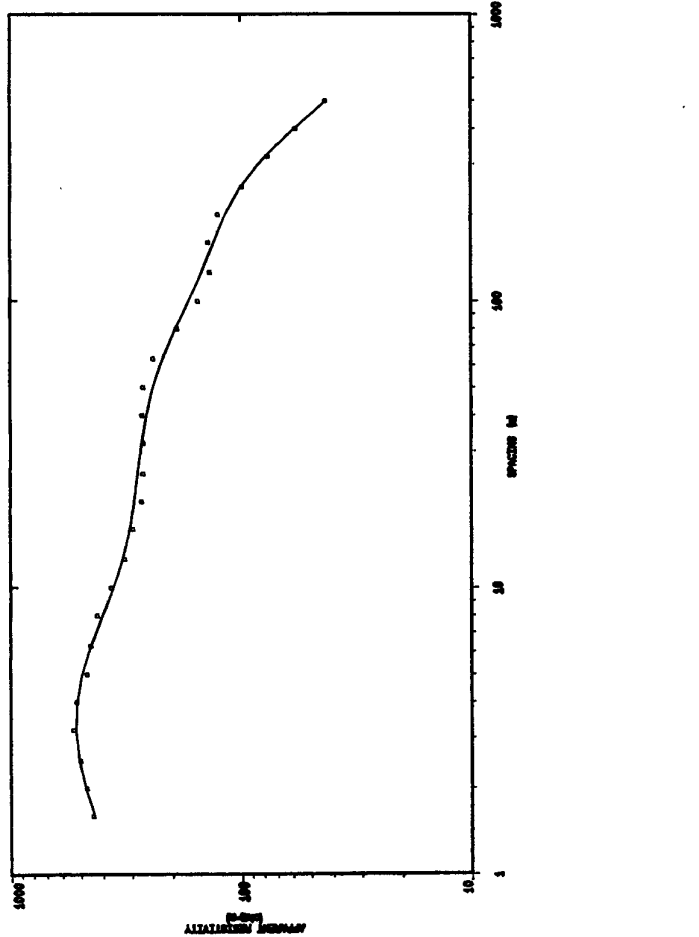
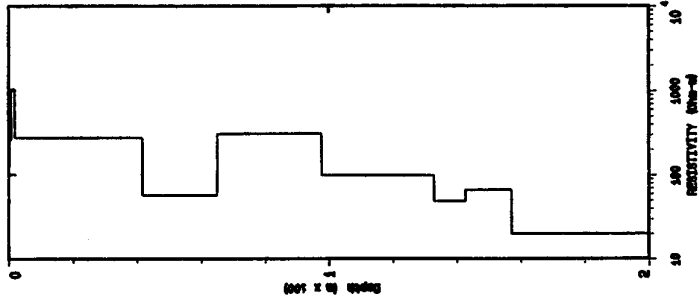
Schlumberger Configuration

FITTING ERROR: 4.978 PERCENT

| L # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|-----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 870.0 | |
| 1 | 258.0 | | 0.593 | 869.4 | 0.00230 |
| 2 | 1052.6 | | 1.16 | 868.2 | 0.00110 |
| 3 | 278.5 | | 39.98 | 828.2 | 0.143 |
| 4 | 57.61 | | 23.26 | 804.9 | 0.403 |
| 5 | 312.1 | | 32.69 | 772.3 | 0.104 |
| 6 | 99.68 | | 35.16 | 737.1 | 0.352 |
| 7 | 49.18 | | 9.82 | 727.3 | 0.199 |
| 8 | 67.06 | | 14.44 | 712.8 | 0.215 |
| 9 | 20.22 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | DATA | PA (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|-------|-------------------------|-------------------------|
| 1 | 1.60 | 443.7 | 436.6 | 1.60 |
| 2 | 2.00 | 472.2 | 478.0 | -1.24 |
| 3 | 2.50 | 503.0 | 509.9 | -1.38 |
| 4 | 3.20 | 537.9 | 526.6 | 2.09 |
| 5 | 4.00 | 521.9 | 520.5 | 0.277 |
| 6 | 5.00 | 469.4 | 494.3 | -5.30 |
| 7 | 6.30 | 452.3 | 451.7 | 0.121 |
| 8 | 8.00 | 424.3 | 401.8 | 5.29 |
| 9 | 10.00 | 369.7 | 359.6 | 2.72 |
| 10 | 12.60 | 320.6 | 326.5 | -1.83 |
| 11 | 16.00 | 295.2 | 304.1 | -3.01 |
| 12 | 20.00 | 270.4 | 290.9 | -7.55 |
| 13 | 25.00 | 266.9 | 281.1 | -5.29 |
| 14 | 32.00 | 266.4 | 270.3 | -1.46 |
| 15 | 40.00 | 269.6 | 258.1 | 4.25 |
| 16 | 50.00 | 266.1 | 241.7 | 9.16 |
| 17 | 63.00 | 241.0 | 219.6 | 8.90 |
| 18 | 80.00 | 190.2 | 193.1 | -1.51 |
| 19 | 100.0 | 154.3 | 168.9 | -9.43 |
| 20 | 126.0 | 136.9 | 148.1 | -8.21 |
| 21 | 160.0 | 139.3 | 131.4 | 5.70 |
| 22 | 200.0 | 125.9 | 116.9 | 7.11 |
| 23 | 250.0 | 98.60 | 100.1 | -1.58 |
| 24 | 320.0 | 76.40 | 78.40 | -2.63 |
| 25 | 400.0 | 57.90 | 58.64 | -1.28 |
| 26 | 500.0 | 42.80 | 42.33 | 1.08 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 0-25-S

for: ITGE

by: I.T.G.E.

Data Set: IZ90 Date: 10-11-89

Equipment: GEOTRON Sounding: 90

DATA SET: I291

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 870.00
 SOUNDING COORDINATES: X: 455000.0000 Y: 4139450.0000

DATE: 10-11-89
 SOUNDING: 91
 AZIMUTH: 0-2-S
 EQUIPMENT: GEOTRON

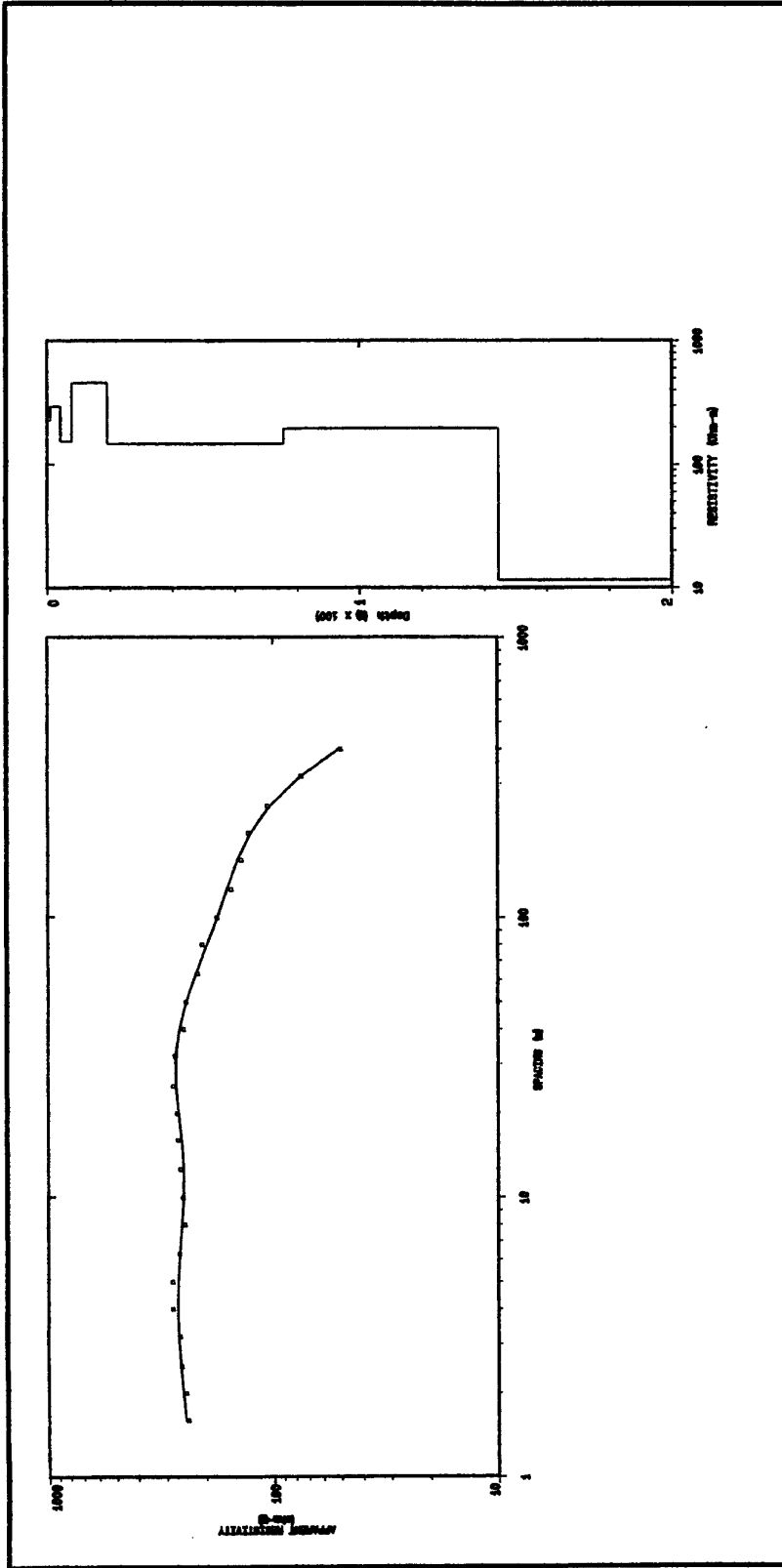
Schlumberger Configuration

FITTING ERROR: 2.898 PERCENT

| L# | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|----|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 870.0 | |
| 1 | 228.9 | | 0.864 | 869.1 | 0.00378 |
| 2 | 296.8 | | 3.31 | 865.8 | 0.0111 |
| 3 | 153.9 | | 3.71 | 862.1 | 0.0241 |
| 4 | 462.6 | | 11.36 | 850.7 | 0.0245 |
| 5 | 147.4 | | 56.36 | 794.3 | 0.382 |
| 6 | 197.0 | | 68.81 | 725.5 | 0.349 |
| 7 | 11.62 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 241.4 | 247.1 | -2.37 |
| 2 | 2.00 | 246.0 | 253.9 | -3.21 |
| 3 | 2.50 | 258.5 | 260.5 | -0.797 |
| 4 | 3.20 | 262.3 | 266.1 | -1.46 |
| 5 | 4.00 | 281.6 | 268.4 | 4.67 |
| 6 | 5.00 | 282.7 | 267.5 | 5.37 |
| 7 | 6.30 | 262.8 | 263.2 | -0.153 |
| 8 | 8.00 | 248.9 | 256.7 | -3.15 |
| 9 | 10.00 | 253.4 | 252.0 | 0.561 |
| 10 | 12.60 | 260.1 | 251.5 | 3.30 |
| 11 | 16.00 | 266.2 | 257.2 | 3.37 |
| 12 | 20.00 | 269.0 | 265.7 | 1.22 |
| 13 | 25.00 | 279.6 | 272.5 | 2.56 |
| 14 | 32.00 | 274.0 | 272.2 | 0.655 |
| 15 | 40.00 | 251.2 | 262.5 | -4.51 |
| 16 | 50.00 | 244.8 | 244.6 | 0.0630 |
| 17 | 63.00 | 217.5 | 221.3 | -1.75 |
| 18 | 80.00 | 206.8 | 197.1 | 4.68 |
| 19 | 100.0 | 178.4 | 177.6 | 0.460 |
| 20 | 126.0 | 154.3 | 160.8 | -4.21 |
| 21 | 160.0 | 138.8 | 144.4 | -3.99 |
| 22 | 200.0 | 129.1 | 126.3 | 2.15 |
| 23 | 250.0 | 105.8 | 103.7 | 1.96 |
| 24 | 320.0 | 75.20 | 75.29 | -0.128 |
| 25 | 400.0 | 50.00 | 50.95 | -1.91 |



| | | | |
|--------------------|--------------------|----------------|--|
| for: ITGE | | RESISTIVIDAD | |
| by: I.T.G.E. | | GRANADA | |
| Data Set: IZ91 | | ANDALUCIA | |
| Date: 10-11-89 | Equipment: GEOTRON | Azimuth: 0-2-S | |
| Equipment: GEOTRON | Sounding: 91 | | |

DATA SET: IZ92

CLIENT: ITGE
 LOCATION: GRANADA
 COUNTY: ANDALUCIA
 PROJECT: RESISTIVIDAD
 ELEVATION: 870.00
 SOUNDING COORDINATES: X: 455750.0000 Y: 4139800.0000

DATE: 13-11-89
 SOUNDING: 92
 AZIMUTH: 0-4-N
 EQUIPMENT: GEOTRON

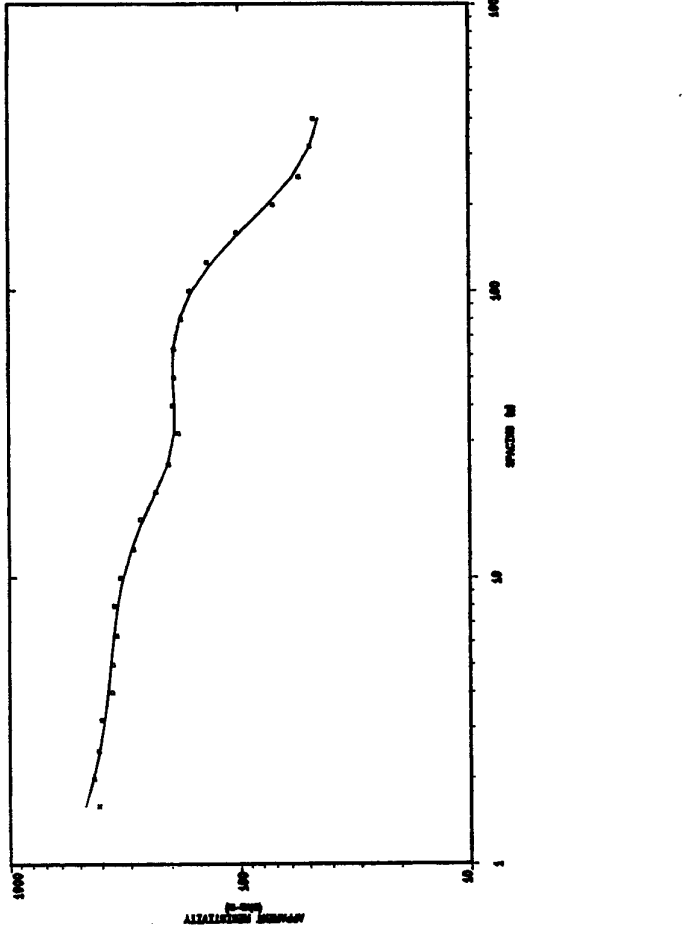
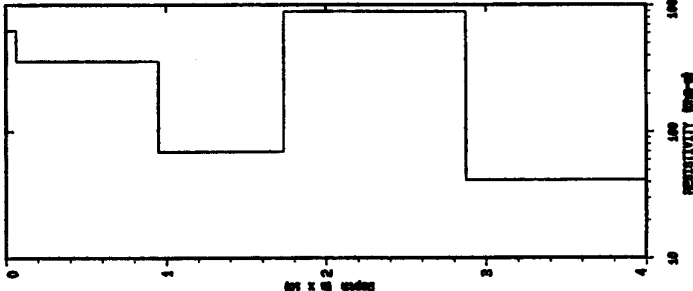
Schlumberger Configuration

FITTING ERROR: 3.360 PERCENT

| # | RESISTIVITY (ohm-m) | CHARGEABILITY (pfe) | THICKNESS (meters) | ELEVATION (meters) | CONDUCTANCE (Siemens) |
|---|------------------------|------------------------|-----------------------|-----------------------|--------------------------|
| | | | | 870.0 | |
| 1 | 457.3 | | 0.973 | 869.0 | 0.00213 |
| | 358.8 | | 8.53 | 860.4 | 0.0237 |
| | 65.31 | | 7.31 | 853.1 | 0.112 |
| 4 | 906.4 | | 11.22 | 841.9 | 0.0123 |
| 5 | 41.66 | | | | |

ALL PARAMETERS ARE FREE

| No. | Spacing (m) | PA DATA | (ohm-m) SYNTHETIC | DIFFERENCE (percent) |
|-----|----------------|------------|----------------------|-------------------------|
| 1 | 1.60 | 412.5 | 429.5 | -4.12 |
| 2 | 2.00 | 434.6 | 417.4 | 3.97 |
| 3 | 2.50 | 413.9 | 404.0 | 2.38 |
| 4 | 3.20 | 401.7 | 389.7 | 2.99 |
| 5 | 4.00 | 361.4 | 378.0 | -4.58 |
| 6 | 5.00 | 358.6 | 367.2 | -2.39 |
| 7 | 6.30 | 343.3 | 355.6 | -3.59 |
| 8 | 8.00 | 352.7 | 340.7 | 3.39 |
| 9 | 10.00 | 329.9 | 321.8 | 2.44 |
| 10 | 12.60 | 288.5 | 295.4 | -2.42 |
| 11 | 16.00 | 269.9 | 262.0 | 2.91 |
| 12 | 20.00 | 230.6 | 230.2 | 0.181 |
| 13 | 25.00 | 203.7 | 205.3 | -0.794 |
| 14 | 32.00 | 184.7 | 191.9 | -3.92 |
| 15 | 40.00 | 195.7 | 191.4 | 2.19 |
| 16 | 50.00 | 192.5 | 194.8 | -1.20 |
| 17 | 63.00 | 192.6 | 193.9 | -0.659 |
| 18 | 80.00 | 179.7 | 182.1 | -1.34 |
| 19 | 100.0 | 164.6 | 160.5 | 2.46 |
| 20 | 126.0 | 137.8 | 130.8 | 5.05 |
| 21 | 160.0 | 102.4 | 99.17 | 3.16 |
| 22 | 200.0 | 71.20 | 74.76 | -5.01 |
| 23 | 250.0 | 54.80 | 58.39 | -6.56 |
| 24 | 320.0 | 49.00 | 48.84 | 0.316 |
| 25 | 400.0 | 47.30 | 45.11 | 4.62 |



RESISTIVIDAD

GRANADA
ANDALUCIA

Azimuth: 0-4-N

for: ITGE

by: I.T.G.E.

Data Set: IZ92 Date: 13-11-89

Equipment: GEOTRON Sounding: 92