FOX GEOLOGICAL CONSULTANTS LTD.


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Gold Commissioner's Office
PROJECT 205 VANCOUVER, B.C.


AIRBORNE GEOPHYSICAL SURVEY CONDUCTED ON THE BAEZ GOLD PROSPECT $52^{\circ} 45^{\prime} \mathrm{N} 124^{\circ} 15^{\prime} \mathrm{W}$ CARIBOO MINING DIVISION BRITISH COLUMBIA NTS 93C/9 \& 16

ANNUAL WORK APPROVAL \# PRG-1993-1101250-4-5549
by

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Work Paid for by
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Toronto, Ontario M5H 1T1
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November 8, 1994

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& \text { ASSESSMENT REPORT }
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## SUMMARY

Details of an airborne geophysical survey conducted on the Baez property, central British Columbia are presented in this report. The survey, conducted on November 12 and 13, 1994, covers 862 line kilometres over the north-central portion of the Baez claims.

The survey detailed areas of high magnetic response, high resistivity and VLF-EM anomalies which may reflect conductive bedrock.

## INTRODUCTION

This report summarizes the results of an airborne geophysical survey conducted on the Baez property, central British Columbia. On November 12 and 13, 1994, 862 kilometres of helicopter supported geophysical surveys were conducted. The survey was designed to detect zones of conductive mineralization, siliceous alteration and provide information on the geology and structure of the area. Dighem, of Mississauga, Ontario, was contracted to conduct the helicopter supported airborne survey.

## LOCATION AND ACCESS

The Baez claims cover 10,369 hectares ( $103.7 \mathrm{~km}^{2}$ ) in the Interior Plateau region of central British Columbia. The area is located 125 kilometres west of Quesnel, B.C. and 50 kilometres southwest of the locality of Nazko, B.C. (Figure 1). Claims cover several broad marshy drainages which flow north into the Baezaeko River, south into the Clusko River and east into the Clisbako River. Broad ridges with 50 to 100 metres relief form watershed divides between drainages. Vegetation varies from grassy meadows in the lowlands to spruce and pine on the eskers and uplands. Silviculture is active on the eastern margin of the claims.

The south half of the property is accessed via paved highway from Williams Lake, B.C. to Redstone, then by the Clusko-Thunder Mountain Forest Service Road 80 kilometres to the property. The northern portion of the property is accessed by paved highway from Quesnel, B.C. to Nazko then by the Michelle Creek Forest Service Road 70 kilometres west to the property. Several northwest and northeast seismic lines cross the property and provide access for all-terrain vehicles to remote areas of the claim block.

## CLAIM INFORMATION

The Baez property consists of 24 mineral claims totalling 459 units located in the Cariboo Mining Division of central British Columbia (Figure 2). The Baez 1 to 15 claims were staked in November, 1992. The Baez 16 to 24 claims were staked in September, 1993. A list of current data for the Baez 16 to 24 claims is given below.


| Claim Name | Units | Tenure \# | Expiry Date |
| :--- | :---: | :---: | :---: |
| Baez 16 | 20 | 321079 | September 20, 1996 |
| Baez 17 | 20 | 321080 | September 22, 1996 |
| Baez 18 | 20 | 321081 | September 20, 1996 |
| Baez 19 | 20 | 321082 | September 22, 1996 |
| Baez 20 | 15 | 321083 | September 19, 1996 |
| Baez 21 | 20 | 321084 | September 19, 1996 |
| Baez 22 | 20 | 321085 | September 22, 1996 |
| Baez 23 | 12 | 321086 | September 21, 1996 |
| Baez 24 | 20 | 321087 | September 21, 1996 |

## HISTORY

The Chilcotin region has undergone various levels of exploration since the 1880's. More recently, the Black Dome Mine was discovered by Barrier Reef Resources in 1979. In 1980 the B.C. Geological Survey released Regional Geochemical Survey data for mapsheet 92O. Also in 1980 E \& B Exploration was actively searching the belt for epithermal-style deposits concentrating on the Watson Bar property. From 1980 to 1988, Dome Exploration conducted regional reconnaissance throughout several mapsheets in the region. A major oil and gas exploration program was conducted by Canadian Hunter Exploration Ltd. from 1979 to 1983. Several deep (+10,000 feet) holes were drilled to test the underlying stratigraphy.

In the Clisbako-Mount Dent area, the first recorded exploration was conducted in 1985 by Rio Algom on the O'Boy claims. Property exploration focussed on a local area culminating in a drill program in 1987. Eighty-Eight Resources Ltd. staked the Clisbako claims in 1989 and optioned the property to Minnova Inc. in 1991. Over their two-year option period, Minnova spent more than one million dollars conducting geological and geophysical surveys, trenching and diamond drilling. The B.C.G.S. is presently mapping in the north portion of the Chilcotin Plateau.

## PERMITS AND RECLAMATION

All work conducted on the Baez claims in 1993 was performed under B.C. Ministry of Energy, Mines and Petroleum Resources Annual Work Approval Number PRG-1993-1101250-4-5549 dated May 19, 1993. An amendment to the permit was granted September 17, 1993 to allow a follow-up sampling program. Reclamation is not required as no surface disturbance was performed.

## REGIONAL GEOLOGY

The Baez property is centrally located in the Interior Plateau of British Columbia. The plateau covers some 120,000 square kilometres of area between the Coast Mountains to the west and the Quesnel Highlands to the east.

The oldest rocks (Figure 3) exposed in the Chilcotin Reconnaissance project are Pennsylvanian to Permian age Cache Creek Group sedimentary rocks. These are overlain by Upper Triassic to Lower Jurassic Takla Group andesite and basalt flows, tuffs and breccia and associated clastic rocks. Argillite and conglomerate sedimentary rock and andesite flows and breccia of the Middle Jurassic Hazelton Group occur predominantly in the northern portion of the Chilcotin Plateau. This sequence is unconformably overlain by Upper Cretaceous, Paleocene, Eocene and possibly Oligocene rocks of the Ootsa Lake Group. This group is comprised of rhyolitic to dacitic tuff, flows and breccias with minor amounts of andesite, basalt, conglomerate and tuffaceous shale. A sequence of Eocene to Miocene andesite, dacite and rhyolite volcanic rocks of the Endako Group and Pliocene to Pleistocene Chilcotin group vesicular andesite and basalt flows, breccias and cinder cones conformably overlie the Ootsa Lake Group. Pleistocene to recent till, gravel and sand infill drainage basins and locally form eskers and moraines up to 100 metres thick.

## PROPERTY GEOLOGY

The Baez claim group is underlain predominantly by a sequence of subaerial basaltic to rhyolitic tuffs, flows and breccias of probable Ootsa Lake Group equivalent. Outcrop exposure is less than $5 \%$ of the property and is limited to ridge crests and local creek bed and road cut showings. Four discernable units have been recognized from the preliminary geological mapping conducted on the Baez claims. These are, in a younging sequence, rhyolite, dacite, andesite and basalt.

Homogenous rhyolitic flows outcrop in deeply incised creek beds along Grids A and B. These outcrops are generally massive with rusty weathered cliff faces up to 25 metres high. Bedding planes, flow banding and brecciation are noted locally. The very fine to fine grained $\tan$ brown to grey coloured matrix commonly has a pilotaxitic texture with mariolitic cavities locally. The breccias are composed entirely of rhyolite fragments and are probably flow related.

Outcrops of dacite lie along the lower portions of the main north-south ridge on the Baez claims. The unit has a fine to medium grained, light grey coloured matrix with rare augite and hornblende phenocrysts throughout.

Andesite is observed at the top of the ridge crests, stratigraphically above the dacite unit. The unit is very fine to fine grained mauve to grey coloured with minor biotite phenocrysts.

The rock varies from well laminated 3 cm to 5 cm thick beds to massive tuff beds. Local open space cavities occur within the tuff.

Vesicular basalt occurs sporadically along the ridge crest and as float throughout all drainages. The dark green, maroon and brick red coloured unit is fine to medium grained with $5 \%$ to $15 \%$ vesicles. Hornblende and augite phenocrysts occur throughout to $5 \%$.

## 1993 WORK PROGRAM

On November 12 and 13, 1994, Dighem conducted an airborne geophysical survey on the Baez property located in central B.C. Survey lines were flown at 200-metre spacing in an east-west direction over the north and central portions of the property. A total of 862 kilometres, including tie lines, was flown. An Aerospatiable AS350B helicopter equipped with a Sercel real time differential GPS navigation system was used to perform the survey. Accommodations were provided at Fishpot Lake Resort. Details of the equipment used, handling of the data and interpretation of results are provided in Appendix I.

## RESULTS

The airborne geophysical survey highlighted areas of high magnetic response, EM anomalies and resistive features. The magnetometer survey was useful in mapping geological units. The young, Miocene age, vesicular basalts are shown as strongly magnetic, moderate to highly resistive units and tend to occur on ridge crests and hill tops.

Several resistivity highs occur both at topographic high features as well as on flanks of hillsides and topographic low areas. These resistive features may reflect zones of siliceous alteration.

## CONCLUSIONS AND RECOMMENDATIONS

The airborne geophysical survey was effective in defining geological parameters on the Baez property. Of particular interest are the numerous zones of high resistivity. A program of detailed mapping and rock sampling should be conducted over anomalous areas of the airborne geophysical survey.

## EXPENDITURES

Contract Geophysical Survey ..... \$ 63,480
Supervision - G. Goodall-5 days @ \$295/day ..... 1,475
Report Writing ..... 1,275
Publications, Maps, Copies ..... 400
Drafting ..... 350
Total ..... \$ 66,980
Prepared by:
FOX GEDLOGICAL CONSULTANTS LTD.Geoffrey N. Goodali,November 8, 1994

## CERTIFICATE

I, Geoffrey N. Goodall, of the City of North Vancouver, British Columbia, do hereby certify that:

1. I am a Professional Geoscientist registered in the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
2. I graduated from the University of British Columbia in 1984 with a Bachelor of Science degree in geology.
3. I have been practising my profession as a geologist since 1984.
4. I am a Fellow of the Geological Association of Canada.


## APPENDIXI

## Dighem Survey Report

# DIGHEMV SURVEY FOR PHELPS DODGE CORPORATION OF CANADA LTD. MT. DENT PROPERTY BRITISH COLUMBIA 

Dighem, A division of CGG Canada Ltd. Mississauga, Ontario January 28, 1994

A1157JAN.94R

Paul A. Smith Geophysicist

## SUMMARY

This report describes the logistics and results of a DIGHEM ${ }^{\text {V }}$ airborne geophysical survey carried out for Phelps Dodge Corporation of Canada, Ltd. over a property located in the Mt. Dent area, British Columbia. Total coverage of the survey block amounted to 862 km . The survey was flown from November 12 to November 13, 1993.

The purpose of the survey was to detect zones of conductive mineralization, resistivity highs which might reflect zones of siliceous alteration, and to provide information that could be used to map the geology and structure of the survey area. This was accomplished by using a DIGHEM ${ }^{V}$ multi-coil, multi-frequency electromagnetic system, supplemented by a high sensitivity Cesium magnetometer and a four-channel VLF receiver. The information from these sensors was processed to produce maps which display the magnetic and conductive properties of the survey area. A real time differential GPS navigation system, utilizing a UHF link, ensured accurate positioning of the geophysical data with respect to the base maps. Visual flight path recovery techniques were used to confirm the location of the helicopter where visible topographic features could be identified on the ground.

The survey property contains several anomalous features, many of which are considered to be of moderate to high priority as exploration targets. Most of the inferred bedrock conductors appear to warrant further investigation using appropriate surface exploration techniques. Areas of interest may be assigned priorities on the basis of
supporting geophysical, geochemical and/or geological information. After initial investigations have been carried out, it may be necessary to re-evaluate the remaining anomalies based on information acquired from the follow-up program.


FIGURE 1
PHELPS DODGE CORPORATION OF CANADA LTD.
MT. DENT PROOPERTY, BRITISH COLUMBIA - 1157

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## INTRODUCTION

A DIGHEM ${ }^{\mathbf{V}}$ electromagnetic/resistivity/magnetic/VLF survey was flown for Phelps Dodge Corportation of Canada, Ltd., from November 12 to November 13, 1993, over a survey block located near Mt. Dent, British Columbia. The survey area can be located on NTS map sheets 93C/9 and 93C/16 (see Figure 1).

Survey coverage consisted of approximately 862 line- km , including tie lines. Flight lines were flown in an azimuthal direction of $90^{\circ}$ with a line separation of 200 metres.

The survey employed the DIGHEM ${ }^{V}$ electromagnetic system. Ancillary equipment consisted of a magnetometer, radar altimeter, video camera, analog and digital recorders, a VLF receiver and a GPS (real time differential) navigation system. Details on the survey equipment are given in Section 2.

The instrumentation was installed in an Aerospatiale AS350B turbine helicopter (Registration C-FCFM) which was provided by Northern Air Support, Ltd. The helicopter flew at an average airspeed of $100 \mathrm{~km} / \mathrm{h}$ with an EM bird height of approximately 30 m .

Section 2 also provides details on the data channels, their respective sensitivities, and the navigation/flight path recovery procedure. Noise levels of less than 2 ppm are generally maintained for wind speeds up to $35 \mathrm{~km} / \mathrm{h}$. Higher winds may cause the system to be grounded because excessive bird swinging produces difficulties in flying the helicopter. The swinging results from the $5 \mathrm{~m}^{2}$ of area which is presented by the bird to broadside gusts.

## SURVEY EQUIPMENT

This section provides a brief description of the geophysical instruments used to acquire the survey data:

## Electromagnetic System

Model: DIGHEM ${ }^{V}$

Type: $\quad$ Towed bird, symmetric dipole configuration operated at a nominal survey altitude of 30 metres. Coil separation is 8 metres for 900 Hz and 7200 Hz , and 6.3 metres for the $56,000 \mathrm{~Hz}$ coil-pair.

Coil orientations/frequencies:

Channels recorded:

Sensitivity:

Sample rate:

| coaxial | $/$ | 900 Hz |
| :--- | :--- | ---: |
| coplanar | $/$ | 900 Hz |
| coaxial | $/$ | $5,000 \mathrm{~Hz}$ |
| coplanar | $/$ | $7,200 \mathrm{~Hz}$ |
| coplanar | $/$ | $56,000 \mathrm{~Hz}$ |

5 inphase channels 5 quadrature channels 2 monitor channels
0.1 ppm at $\quad 900 \mathrm{~Hz}$ 0.2 ppm at $\quad 7,200 \mathrm{~Hz}$ 0.5 ppm at $\quad 56,000 \mathrm{~Hz}$ 10 per second

The electromagnetic system utilizes a multi-coil coaxial/coplanar technique to energize conductors in different directions. The coaxial coils are vertical with their axes
in the flight direction. The coplanar coils are horizontal. The secondary fields are sensed simultaneously by means of receiver coils which are maximum coupled to their respective transmitter coils. The system yields an inphase and a quadrature channel from each transmitter-receiver coil-pair.

## Magnetometer

Model:
Picodas 3340
Type:
Optically pumped Cesium vapour
Sensitivity: $\quad 0.01 \mathrm{nT}$
Sample rate:
10 per second

The magnetometer sensor is towed in a bird 20 m below the helicopter.

## Magnetic Base Station

| Model: | Scintrex MEP-710 |
| :--- | :--- |
| Type: | Digital recording Cesium vapour |
| Sensitivity: | 0.01 nT |
| Sample rate: | 1.0 per second |

A digital recorder is operated in conjunction with the base station magnetometer to record the diurnal variations of the earth's magnetic field. The clock of the base station is synchronized with that of the airbome system to permit subsequent removal of diurnal drift.

## VLF System

Manufacturer: Herz Industries Ltd.

Type: Totem-2A
Sensitivity: $\quad 0.1 \%$
Stations: Seattle, Washington; NLK, 24.8 kHz Cutler, Maine; NAA, 24.0 kHz

The VLF receiver measures the total field and vertical quadrature components of the secondary VLF field. Signals from two separate transmitters can be measured simultaneously. The VLF sensor is housed in the same bird as the magnetic sensor, and is towed 20 m below the helicopter.

## Radar Altimeter

Manufacturer: Honeywell/Sperry
Type:
AA 220
Sensitivity:
1 ft

The radar altimeter measures the vertical distance between the helicopter and the ground. This information is used in the processing algorithm which determines conductor depth.

## Analog Recorder

Manufacturer: RMS Instruments
Type:
DGR33 dot-matrix graphics recorder
Resolution: $\quad 4 \times 4$ dots $/ \mathrm{mm}$
Speed:
$1.5 \mathrm{~mm} / \mathrm{sec}$

The analog profiles are recorded on chart paper in the aircraft during the survey.
Table 2-1 lists the geophysical data channels and the vertical scale of each profile.

Table 2-1. The Analog Profiles

| Channel <br> Name | Parameter | Scale units/mu | Designation on digital profile |
| :---: | :---: | :---: | :---: |
| $1 \mathrm{X9I}$ | coaxial imphase ( 900 Hz ) | 2.5 ppma | CXI ( 900 Hz ) |
| 1890 | coaxial quad ( 900 Hz ) | 2.5 ppm | CXQ ( 900 Hz ) |
| 3P9I | coplanar imphase ( 900 Hz ) | 2.5 ppm | CPI ( 900 Hz ) |
| 3P90 | coplanar quad ( 900 Hz ) | 2.5 ppm | CPQ ( 900 Hz ) |
| 2 P 7 I | coplanar imphase ( 7200 Hz ) | 5 ppm | CPI ( 7200 Hz ) |
| 2P7Q | coplanar quad ( 7200 Hz ) | 5 ppm | CPQ ( $7200 \mathrm{~Hz} \mathrm{)}$ |
| 4X71 | coaxial inphase ( 5000 Hz ) | 5 ppm | CXI ( 5000 Hz ) |
| 4X7Q | coaxial quad ( 5000 Hz ) | 5 ppm | CXQ ( 5000 Hz ) |
| 5P5I | coplanar imphase ( 56000 Hz ) | 10 ppm | CPI ( 56 kHz ) |
| 5P5Q | coplanar quad ( 56000 Hz ) | 10 ppm | CPQ ( 56 kHz ) |
| ALIR | altimeter | 3 m | ALT |
| CMGC | magnetics, coarse | 20 nT | MAG |
| GMGF | magnetics, fine | 2.0 nT |  |
| VF1T | VLF-total: primary stn. | 2\% |  |
| VF1Q | VLF-quad: primary stn. | 2\% |  |
| VF2T | VLF-total: secondary stn. | 2\% |  |
| VF2Q | VLF-quad: secondary stn. | 2\% |  |
| 4XSP | coaxial sferics monitor |  | CXS |
| CXPL | coaxial powerline monitor |  |  |
| CPPL | ooplanar powerline monitor |  | CPP |

Table 2-2. The Digital Profiles

| Channel <br> Name (Freg) | Observed parameters | Scale units/mm |
| :---: | :---: | :---: |
| MAG | magnetics | 10 nT |
| ALT | bird height | 6 m |
| CXI ( 900 Hz ) | vertical coaxial coil-pair imphase | 2 ppm |
| CXQ ( 900 Hz ) | vertical coaxial coil-pair quadrature | 2 ppm |
| CPI ( 900 Hz ) | horizontal coplanar coil-pair imphase | 2 ppm |
| CPQ ( 900 Hz ) | horizontal coplanar coil-pair quadrature | 2 ppm |
| CXI ( 5000 Hz ) | vertical coaxial coil-pair imphase | 4 ppm |
| CXQ ( 5000 Hz ) | vertical coaxial coil-pair quadrature | 4 ppm |
| CPI ( $7200 \mathrm{Hz)}$ | horizontal coplanar coil-pair imphase | 4 ppm |
| CPQ ( $7200 \mathrm{~Hz} \mathrm{)}$ | horizontal coplanar coil-pair quadrature | 4 ppm |
| CPI ( 56 kHz ) | horizontal coplanar coil-pair imphase | 20 ppm |
| CPQ ( 56 kHz ) | horizontal coplanar coil-pair quadrature | 20 ppm |
| $\begin{aligned} & \text { CXS } \\ & \mathrm{CXP} \end{aligned}$ | coaxial sferics monitor coaxial powerline monitor |  |
|  | Computed Parameters |  |
| DFI ( 900 Hz ) | difference function inphase from CXI and CPI | 2 ppm |
| DFQ ( 900 Hz ) | difference function quadrature from CXQ and CPQ | 2 ppm |
| RES ( 900 Hz ) | log resistivity | . 06 decade |
| RES ( 7200 Hz ) | log resistivity | . 06 decade |
| RES ( 56 kHz ) | log resistivity | . 06 decade |
| DP ( 900 Hz ) | apparent depth | 6 m |
| DP $\quad(7200 \mathrm{~Hz})$ | apparent depth | 6 m |
| DP $(56 \mathrm{kHz})$ | apparent depth | 6 m |
| CDT | conductance | 1 grade |

# Digital Data Acquisition System 

| Manufacturer: | RMS Instruments |
| :--- | :--- |
| Type: | DGR 33 |
| Tape Deck: | RMS TCR-12, 6400 bpi, tape cartridge recorder |

The digital data are used to generate several computed parameters. Both measured and computed parameters are plotted as "multi-channel stacked profiles" during data processing. These parameters are shown in Table 2-2. In Table 2-2, the log resistivity scale of 0.06 decade $/ \mathrm{mm}$ means that the resistivity changes by an order of magnitude in 16.6 mm . The resistivities at 0,33 and 67 mm up from the bottom of the digital profile are respectively 1,100 and 10,000 ohm-m.

## Tracking Camera

## Type: Panasonic Video

Model: AG 2400/WVCD132

Fiducial numbers are recorded continuously and are displayed on the margin of each image. This procedure ensures accurate correlation of analog and digital data with respect to visible features on the ground.

# Navigation System (RT-DGPS) 

| Model: | Sercel NR106, Real-time differential positioning |
| :--- | :--- |
| Type: | SPS (L1 band), 10-channel, C/A code, 1575.42 MHz. |
| Sensitivity: | $-132 \mathrm{dBm}, 0.5$ second update |
| Accuracy: | $<5$ metres in differential mode, <br> $\quad \pm 50$ metres in S/A (non differential) mode |

The Global Positioning System (GPS) is a line of sight, satellite navigation system which utilizes time-coded signals from at least four of the twenty-four NAVSTAR satellites. In the differential mode, two GPS receivers are used. The base station unit is used as a reference which transmits real-time corrections to the mobile unit in the aircraft, via a UHF radio datalink. The on-board system calculates the flight path of the helicopter while providing real-time guidance. The raw XYZ data are recorded for both receivers, thereby permitting post-survey processing for accuracies of approximately 2 metres.

Although the base station receiver is able to calculate its own latitude and longitude, a higher degree of accuracy can be obtained if the reference unit is established on a known benchmark or triangulation point. The GPS records data relative to the WGS84 ellipsoid, which is the basis of the revised North American Datum (NAD83).

Conversion software is used to transform the WGS84 coordinates to the system displayed on the base maps.

## Field Workstation

Manufacturer: Dighem
Model:
FWS: V2.41

Type:
80386 based P.C.

A portable PC-based field workstation is used at the survey base to verify data quality and completeness. Flight tapes are dumped to a hard drive to permit the creation of a database. This process allows the field operators to display both the positional (flight path) and geophysical data on a screen or printer.

## PRODUCTS AND PROCESSING TECHNIQUES

The following products are available from the survey data. Those which are not part of the survey contract may be acquired later. Refer to Table 3-1 for a summary of the maps which accompany this report, some of which may be sent under separate cover. Most parameters can be displayed as contours, profiles, or in colour.

## Base Maps

Base maps of the survey area have been produced from published topographic maps. These provide a relatively accurate, distortion-free base which facilitates correlation of the navigation data to the UTM grid. Photomosaics are useful for visual reference and for subsequent flight path recovery, but usually contain scale distortions. Orthophotos are ideal, but their cost and the time required to produce them, usually precludes their use as base maps.

## Electromagnetic Anomalies

Anomalous electromagnetic responses are selected and analysed by computer to provide a preliminary electromagnetic anomaly map. This preliminary map is used, by the geophysicist, in conjunction with the computer-generated digital profiles, to produce

## Table 3-1 Survey Products

## Preliminary Maps @ 1:25,000 (1 map sheet)

- Coaxial EM profiles

Final Transparencies ( +5 prints x 4 map sheets @ $1: 10,000$ )

- DIGHEM EM anomalies with interpretation
- Resistivity contours ( 900 Hz )
- Resistivity contours ( 7200 Hz )
- Resistivity contours ( $56,000 \mathrm{~Hz}$ )
- Total field magnetic contours ( 5 nT interval)
- Calculated vertical magnetic gradient contours
- Filtered total field VLF contours
- VLF map profiles
- Apparent magnetic susceptibility map

Colour Plots (1 laminated copy @ $1: 10,000$ )

- All contoured parameters listed above
- Shadowed magnetic maps


## Other Products

- Multi-parameter stacked profiles
- Analog chart records
- Flight path video cassettes
- Digital profile archive (Backpack)
- Digital grid archive (31/2" floppy)
- Survey Report (5 copies)
- I-POWER DIGRES software


## Optional Parameters

- Enhanced magnetic maps
- Magnetite maps
- Sengpiel or differential sections
- Upward or downward continuations

Note: Final transparencies consist of geophysical parameters combined with EM, flight lines and the topographic base. Clear overlays of the geophysical parameters are also supplied.
the final interpreted EM anomaly map. This map includes bedrock surficial and cultural conductors. A map containing only bedrock conductors can be generated, if desired.

## Resistivity

The apparent resistivity in ohm-m may be generated from the inphase and quadrature EM components for any of the frequencies, using a pseudo-layer halfspace model. A resistivity map portrays all the EM information for that frequency over the entire survey area. This contrasts with the electromagnetic anomaly map which provides information only over interpreted conductors. The large dynamic range makes the resistivity parameter an excellent mapping tool.

## EM Magnetite

The apparent percent magnetite by weight is computed wherever magnetite produces a negative inphase EM response.

## Total Field Magnetics

The aeromagnetic data are corrected for diumal variation using the magnetic base station data. The regional IGRF can be removed from the data, if requested.

## Enhanced Magnetics

The total field magnetic data are subjected to a processing algorithm. This algorithm enhances the response of magnetic bodies in the upper 500 m and attenuates the response of deeper bodies. The resulting enhanced magnetic map provides better definition and resolution of near-surface magnetic units. It also identifies weak magnetic features which may not be evident on the total field magnetic map. However, regional magnetic variations, and magnetic lows caused by remanence, are better defined on the total field magnetic map. The technique is described in more detail in Section 5.

## Magnetic Derivatives

The total field magnetic data may be subjected to a variety of filtering techniques to yield maps of the following:
first vertical derivative (vertical gradient) second vertical derivative magnetic susceptibility with reduction to the pole upward/downward continuations

All of these filtering techniques improve the recognition of near-surface magnetic bodies, with the exception of upward continuation. Any of these parameters can be produced on request. Dighem's proprietary enhanced magnetic technique is designed to provide a general "all-purpose" map, combining the more useful features of the above parameters.

## VLF

The VLF data are digitally filtered to remove long wavelengths such as those caused by variations in the transmitted field strength.

## Multi-channel Stacked Profiles

Distance-based profiles of the digitally recorded geophysical data are generated and plotted by computer. These profiles also contain the calculated parameters which are used in the interpretation process. These are produced as worksheets prior to interpretation, and can also be presented in the final corrected form after interpretation. The profiles display electromagnetic anomalies with their respective interpretive symbols. The differences between the worksheets and the final corrected form occur only with respect to the EM anomaly identifier.

## Contour, Colour and Shadow Map Displays

The geophysical data are interpolated onto a regular grid using a modified Akima spline technique. The resulting grid is suitable for generating contour maps of excellent quality.

Colour maps are produced by interpolating the grid down to the pixel size. The parameter is then incremented with respect to specific amplitude ranges to provide colour "contour" maps. Colour maps of the total magnetic field are particularly useful in defining the lithology of the survey area.

Monochromatic shadow maps are generated by employing an artificial sun to cast shadows on a surface defined by the geophysical grid. There are many variations in the shadowing technique. These techniques may be applied to total field or enhanced magnetic data, magnetic derivatives, VLF, resistivity, etc. Of the various magnetic products, the shadow of the enhanced magnetic parameter is particularly suited for defining geological structures with crisper images and improved resolution.

## Conductivity-depth Sections

The apparent resistivities for all frequencies can be displayed simultaneously as coloured conductivity-depth sections. Usually, only the coplanar data are displayed as the quality tends to be higher than that of the coaxial data.

Conductivity-depth sections can be generated in two formats:
(1) Sengpiel resistivity sections, where the apparent resistivity for each frequency is plotted at the depth of the centroid of the inphase current flow ${ }^{*}$; and,
(2) Differential resistivity sections, where the differential resistivity is plotted at the differential depth**.

Both the Sengpiel and differential methods are derived from the pseudo-layer halfspace model. Both yield a coloured conductivity-depth section which attempts to portray a smoothed approximation of the true resistivity distribution with depth. The Sengpiel method is most useful in conductive layered situations, but may be unreliable in areas of

- Approximate Inversion of Airborne EM Data from Multilayered Ground: Sengpiel, K.P., Geophysical Prospecting 36, 446-459, 1988.
* The Differential Resistivity Method for Multi-frequency Airborne EM Sounding: Huang, H. and Fraser, D.C., presented at Intern. Airb. EM Workshop, Tucson, Ariz., 1993.
moderate to high resistivity where signal amplitudes are weak. In areas where inphase responses have been suppressed by the effects of magnetite, the computed resistivities shown on the sections may be unreliable. The differential technique was developed by Dighem to overcome problems in the Sengpiel technique. The differential resistivity section is more sensitive than the Sengpiel section to changes in the earth's resistivity and it reaches deeper.


## SURVEY RESULTS

## GENERAL DISCUSSION

The survey results are presented on four separate map sheets for each parameter at a scale of $1: 10,000$. Table 4-1 summarizes the EM responses in the survey area, with respect to conductance grade and interpretation.

The anomalies shown on the electromagnetic anomaly maps are based on a nearvertical, half plane model. This model best reflects "discrete" bedrock conductors. Wide bedrock conductors or flat-lying conductive units, whether from surficial or bedrock sources, may give rise to very broad anomalous responses on the EM profiles. These may not appear on the electromagnetic anomaly map if they have a regional character rather than a locally anomalous character. These broad conductors, which more closely approximate a half space model, will be maximum coupled to the horizontal (coplanar) coil-pair and should be more evident on the resistivity parameter. Resistivity maps, therefore, may be more valuable than the electromagnetic anomaly maps, in areas where broad or flat-lying conductors are considered to be of importance. Contoured resistivity maps, based on the $900 \mathrm{~Hz}, 7200 \mathrm{~Hz}$ and $56,000 \mathrm{~Hz}$ coplanar data are included with this report.

## TABLE 4-1

## EM ANOMALY STATISTICS

## MT. DENT AREA

CONDUCTOR GRADE

7
6
5
4
3
2
1
*
TOTAL

CONDUCTOR
MODEL
D
B
S
H
E
TOTAL

CONDUCTANCE RANGE
NUMBER OF

SIEMENS (MHOS)
RESPONSES

\[

\]

MOST LIKELY SOURCE

DISCRETE BEDROCK CONDUCTOR
NUMBER OF RESPONSES

DISCRETE BEDROCK CONDUCTOR
50
CONDUCTIVE COVER
193
ROCK UNIT OR THICK COVER 287
ROCK UNIT OR THICK COVER 109
EDGE OF WIDE CONDUCTOR 15
654

Excellent resolution and discrimination of conductors was accomplished by using a fast sampling rate of 0.1 sec and by employing a common frequency $(900 \mathrm{~Hz})$ on two orthogonal coil-pairs (coaxial and coplanar). The resulting "difference channel" parameters often permit differentiation of bedrock and surficial conductors, even though they may exhibit similar conductance values.

Anomalies which occur near the ends of the survey lines (i.e., outside the survey area), should be viewed with caution. Some of the weaker anomalies could be due to aerodynamic noise, i.e., bird bending, which is created by abnormal stresses to which the bird is subjected during the climb and turn of the aircraft between lines. Such aerodynamic noise is usually manifested by an anomaly on the coaxial inphase channel only, although severe stresses can affect the coplanar inphase channels as well.

## Magnetics

A Scintrex MEP 710 Cesium Vapour magnetometer was operated at the survey base to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to permit subsequent removal of diurnal drift.

The background magnetic level has been adjusted to match the International Geomagnetic Reference Field (IGRF) for the survey area. The IGRF gradient across the
survey block is left intact. This procedure ensures that the magnetic contours will match contours from any adjacent surveys which have been processed in a similar manner.

The total field magnetic data have been presented as contours on the base maps using a contour interval of 5 nT where gradients permit. The maps show the magnetic properties of the rock units underlying the survey area.

The total field magnetic data have been subjected to a processing algorithm to produce calculated vertical magnetic gradient maps. This procedure enhances nearsurface magnetic units and suppresses regional gradients. It also provides better definition and resolution of magnetic units and displays weak magnetic features which may not be clearly evident on the total field maps. Maps of the second vertical magnetic derivative can also be prepared from existing survey data, if requested. Maps of the apparent magnetic susceptibility were also produced.

There is some evidence on the magnetic maps which suggests that the survey area has been subjected to deformation and/or alteration. These structural complexities are evident on the contour maps as variations in magnetic intensity, irregular patterns, and as offsets or changes in strike direction.

Magnetic relief in the Mt. Dent project area is moderate, ranging from a low of less than $56,080 \mathrm{nT}$ to a high of more than $59,600 \mathrm{nT}$ in the northwestern corner of the
property. Magnetic amplitudes are generally higher, but somewhat smoother in the central portion of the property. Most major magnetic trends in the area exhibit an azimuthal strike of approximately $350^{\circ}$, although there are linear features which strike east, northeast and northwest.
«.

The extreme western portion of the survey area exhibits the strongest gradients. Two weakly conductive trends are coincident with strong linear north/south magnetic trends in the southwestern quadrant of the property.

In the west-central portion of the property, there is an oval-shaped magnetic low with a small, highly magnetic core. This interesting structure is associated with a moderately resistive unit near the eastern contact of a conductive zone, shown on the EM map as Zone A.

Although approximately $30 \%$ of the interpreted bedrock conductors yield magnetic correlation, there is no consistent relationship between conductance and magnetic amplitudes. Therefore, the conductors on the property are likely due to different causative sources.

If a specific magnetic intensity could be assigned to the rock type which is believed to host the target mineralization, it might be possible to select areas of higher priority on the basis of the total field magnetic data. This is based on the assumption
that the magnetite content of the host rocks will give rise to a limited range of contour values which would then permit differentiation of various lithological units.

The magnetic results, in conjunction with the other geophysical parameters, should provide valuable information which can be used to effectively map the geology and structure in the survey area.

## VLF

VLF results were obtained from the transmitting stations at Seattle, Washington (NLK - 24.8 kHz ) and Annapolis, Maryland (NSS -21.4 kHz ). The VLF maps show the contoured results of the filtered total field from Seattle.

The VLF method is quite sensitive to the angle of coupling between the conductor and the propagated EM field. Consequently, conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it. The general north strike in the survey area provides good coupling with the VLF field from Seattle, but moderately poor coupling with Annapolis.

The VLF parameter does not normally provide the same degree of resolution available from the EM data. Closely-spaced conductors, conductors of short strike length or conductors which are poorly coupled to the VLF field, may escape detection with this
method. Erratic signals from the VLF transmitters can also give rise to strong, isolated anomalies which should be viewed with caution. Regardless of these limitations, however, the VLF results have provided some additional information, particularly within the more resistive portions of the survey area. The VLF method could probably be used as a follow-up tool in most areas, although its effectiveness will be limited in areas of moderate to high conductivity. The filtered total field VLF contours are presented on the base maps with a contour interval of one percent.

## Resistivity

Resistivity maps, which display the conductive properties of the survey area, were produced from the $900 \mathrm{~Hz}, 7200 \mathrm{~Hz}$ and $56,000 \mathrm{~Hz}$ coplanar data. The maximum resistivity values, which are calculated for each frequency, are 1000,8000 and 20,000 ohm-m, respectively. This cutoff eliminates the meaningless higher resistivities which would result from very small EM amplitudes. In general, the resistivity patterns show very little agreement with the magnetic trends. This suggests that many of the resistivity lows are probably related to surficial features, rather than bedrock sources. Note, for example, the close correlation between resistivity lows and topographic lows over most of the area. There are some areas, however, where resistivity highs are coincident with magnetic highs, and resistivity lows appear to be related to magnetic lows. In the former case, magnetite content is considered to be a contributing factor.

There are several resistivity lows in the area. Some of these are quite extensive and often reflect "formational" conductors which may be of minor interest as direct exploration targets. However, attention may be focused on areas where these zones appear to be faulted or folded or where anomaly characteristics differ along strike. Most of the hills in the area yield relatively higher resistivities.

## Electromagnetics

The EM anomalies resulting from this survey appear to fall within one of two general categories. The first type consists of discrete, well-defined anomalies which yield marked inflections on the difference channels. These anomalies are usually attributed to conductive sulphides or graphite and are generally given a "B" or "D" interpretive symbol, denoting a bedrock source.

It should be noted that the picking of anomaly types in this category was based partially on good line-to-line correlation. Some of these features lacked the typically marked inflections on the difference channels yet displayed strong amplitude and good anomaly shape.

The second class of anomalies comprises moderately broad responses which exhibit the characteristics of a half space and do not yield well-defined inflections on the difference channels. Anomalies in this category are usually given an "S" or "H"
interpretive symbol. The lack of a difference channel response usually implies a broad or flat-lying conductive source such as overburden. Some of these anomalies may reflect conductive rock units or zones of deep weathering.

The effects of conductive overburden are evident over portions of the survey area. Although the difference channels (DFI and DFQ) are extremely valuable in detecting bedrock conductors which are partially masked by conductive overburden, sharp undulations in the bedrock/overburden interface can yield anomalies in the difference channels which may be interpreted as possible bedrock conductors. Such anomalies usually fall into the " S ?" or " B ?" classification but may also be given an " E " interpretive symbol, denoting a resistivity contrast at the edge of a conductive unit.

In areas where EM responses are evident primarily on the quadrature components, zones of poor conductivity are indicated. Where these responses are coincident with magnetic anomalies, it is possible that the inphase component amplitudes have been suppressed by the effects of magnetite. Most of these poorly-conductive magnetic features give rise to resistivity anomalies which are only slightly below background. If it is expected that poorly-conductive economic mineralization may be associated with magnetite-rich units, most of these weakly anomalous features will be of interest. In areas where magnetite causes the inphase components to become negative, the apparent conductance and depth of EM anomalies may be unreliable.

As economic mineralization within the area may be associated with massive to weakly disseminated sulphides, which may or may not be hosted by magnetite-rich rocks, it is difficult to assess the relative merits of EM anomalies on the basis of conductance. It is recommended that an attempt be made to compile a suite of geophysical "signatures" over areas of interest. Anomaly characteristics are clearly defined on the computerprocessed geophysical data profiles which are supplied as one of the survey products.

A complete assessment and evaluation of the survey data should be carried out by one or more qualified professionals who have access to, and can provide a meaningful compilation of, all available geophysical, geological and geochemical data.

## CONDUCTORS IN THE SURVEY AREA

The electromagnetic anomaly maps show the anomaly locations with the interpreted conductor type, dip, conductance and depth being indicated by symbols. Direct magnetic correlation is also shown if it exists. The strike direction and length of the conductors are indicated when anomalies can be correlated from line to line. When studying the map sheets, consult the anomaly listings appended to this report.

In areas where several conductors or conductive trends appear to be related to a common geological unit, these have been outlined as "zones" on the EM anomaly maps. The zone outlines usually approximate the limits of conductive units defined by the 7200

Hz resistivity contours, but may also be related to distinct rock units which have been inferred from the magnetic data.

Most of the anomalous responses in the area are moderate to strong. The moderately conductive background of about 500 ohm-m tends to make the discrete anomalies appear wider than they are, making estimates of dip uncertain. The resistivity profiles suggest that the uppermost layer is quite resistive. This is likely due to a frozen upper layer. This is underlain by a moderately conductive layer over more resistive layers at depth.

A few of the indicated bedrock conductors within the property appear to be related to streams, possibly indicating the presence of mineralized shear structures. A strong north/south trend is seen both in stream patterns and conductor axes.

The effects of magnetite are evident on most survey lines in the southern portion of the grid, particularly in the area south of line 10480, to the west of Zone B. On lines 10480-10500, this magnetite-rich unit gives rise to higher resistivities, as expected. It is interesting to note the sharp negative excursions near the east and west contacts of this unit, denoting the presence of remanently polarized magnetic material. The complex magnetic signature in this area may reflect zones of alteration.

Remanent magnetism is evident on several other lines within the survey area. In some cases, such as anomaly 10040B, the background conductivity is sufficiently strong to keep the inphase component positive, even though there is a well-defined, sharp low on the magnetic profile. In other instances, such as on lines 10530, 10560 and 10590, at fiducials 2620,1590 and 284 , respectively, the magnetic lows are coincident with negative inphase responses, confirming the presence of remanently magnetized material.

The conductive zones shown on the EM anomaly map exhibit resistivity values of less than 150 ohm-m and contain two or more separate conductors. Zone A and Zone B, for example, each host at least five conductive segments. Magnetic variations suggest that the causative sources also vary in composition along strike.

Zone C , in the north central portion of the property, contains three poorly defined conductors of possible bedrock origin. Two anomalies coincide with isolated magnetic highs, but the conductors otherwise appear to be non-magnetic. The moderately strong resistivity low of less than 100 ohm-m may be partially due to conductive cover.

In the eastern half of the property, east of tie line 19020, there are five areas which yield resistivity lows of less than 60 ohm-m. These occur in the vicinity of 10150I, 10200D, 10290K, 10310E and 10310H (Zone D). Even though most responses are quite broad and poorly defined, these areas may warrant further investigation.

Zone D is an interesting resistivity low which hosts four or more separate conductors. The central axis of this zone is associated with a weak magnetic depression. The westernmost conductor in this group, 10310G-10320F, is associated with a weak magnetic high. Conductors in this zone should also be subjected to further work.

Northeast of Zone D, there is a group of anomalies which are also considered to be potential targets. These include conductor 10190G-10250G, 10190H-10200G, and the five conductor segments which are located between 10190 I and 10330 N.

The foregoing paragraphs mention only a few of the more obvious conductive targets in the survey block. No attempt has been made to discuss the numerous anomalous responses within the Mt. Dent property. Many of the short bedrock conductors are considered to be high priority targets, in addition to some of the broad ' H ' type responses. A complete and detailed analysis of the airborne survey results should be carried out by a qualified and competent person who has access to all pertinent geoscientific data for the area.

One potential target in this area could be auriferous mineralization associated with siliceous alteration. Such targets are usually resistive, rather than conductive, and are clearly defined on the colour resistivity maps. EM anomalies are not usually evident, as broad siliceous caps do not yield 'discrete' signatures. A comparison of the various
resistivity plots should be carried out in order to find zones which might be more resistive on surface than at depth.

The resistivity maps outline several 'plug-like' highs which exhibit values of more than $500 \mathrm{ohm}-\mathrm{m}$. At least some of these could represent potential targets although many may be due to a lack of conductive cover on the tops of hills. Those which are are associated with similarly shaped magnetic anomalies, either positive or negative, are considered to be of higher priority. Most of the more pronounced highs occur in the southwest quadrant, on line 10350 at fiducial 4602, line 10420 at 1770,10430 at 1520 , 10490 at 4298 and 10530 at fiducial 2917.

## BACKGROUND INFORMATION

This section provides background information on parameters which are available from the survey data. Those which have not been supplied as survey products may be generated later from raw data on the digital archive tape.

## ELECTROMAGNETICS

DIGHEM electromagnetic responses fall into two general classes, discrete and broad. The discrete class consists of sharp, well-defined anomalies from discrete conductors such as sulfide lenses and steeply dipping sheets of graphite and sulfides. The broad class consists of wide anomalies from conductors having a large horizontal surface such as flatly dipping graphite or sulfide sheets, saline water-saturated sedimentary formations, conductive overburden and rock, and geothermal zones. A vertical conductive slab with a width of 200 m would straddle these two classes.

The vertical sheet (half plane) is the most common model used for the analysis of discrete conductors. All anomalies plotted on the electromagnetic map are analyzed according to this model. The following section entitled Discrete Conductor Analysis describes this model in detail, including the effect of using it on anomalies caused by broad conductors such as conductive overburden.

The conductive earth (half space) model is suitable for broad conductors. Resistivity contour maps result from the use of this model. A later section entitled Resistivity Mapping describes the method further, including the effect of using it on anomalies caused by discrete conductors such as sulfide bodies.

## Geometric interpretation

The geophysical interpreter attempts to determine the geometric shape and dip of the conductor. Figure 5-1 shows typical DIGHEM anomaly shapes which are used to guide the geometric interpretation.

## Discrete conductor analysis

The EM anomalies appearing on the electromagnetic map are analyzed by computer to give the conductance (i.e., conductivity-thickness product) in Siemens (mhos) of a vertical sheet model. This is done regardless of the interpreted geometric shape of the conductor. This is not an unreasonable procedure, because the computed conductance increases as the electrical quality of the conductor increases, regardless of its true shape. DIGHEM anomalies are divided into seven grades of conductance, as shown in Table 5-1 below. The conductance in Siemens (mhos) is the reciprocal of resistance in ohms.
Conductor
locotion
Channel DIFI
Conductor
amplitudes
CXI/ CPI

Fig. 5-1 Typical DIGHEM anomaly shapes

## Table 5-1. EM Anomaly Grades

| Anomaly Grade | Siemens |
| :---: | :---: |
| 7 | $50-100$ |
| 6 | $20-100$ |
| 5 | $10-50$ |
| 4 | $5-20$ |
| 3 | $1-10$ |
| 2 | $<$ |
| 1 |  |

The conductance value is a geological parameter because it is a characteristic of the conductor alone. It generally is independent of frequency, flying height or depth of burial, apart from the averaging over a greater portion of the conductor as height increases. Small anomalies from deeply buried strong conductors are not confused with small anomalies from shallow weak conductors because the former will have larger conductance values.

Conductive overburden generally produces broad EM responses which may not be shown as anomalies on the EM maps. However, patchy conductive overburden in otherwise resistive areas can yield discrete anomalies with a conductance grade (cf. Table 5-1) of 1, 2 or even 3 for conducting clays which have resistivities as low as 50 ohm-m. In areas where ground resistivities are below 10 ohm-m, anomalies caused by weathering variations and similar causes can have any conductance grade. The anomaly shapes from the multiple coils often allow such conductors to be recognized, and these are indicated by the letters $\mathrm{S}, \mathrm{H}$, and sometimes E on the electromagnetic anomaly map (see EM map legend).

For bedrock conductors, the higher anomaly grades indicate increasingly higher conductances. Examples: DIGHEM's New Insco copper discovery (Noranda, Canada) yielded a grade 5 anomaly, as did the neighbouring copper-zinc Magusi River ore body; Mattabi (copper-zinc, Sturgeon Lake, Canada) and Whistle (nickel, Sudbury, Canada) gave grade 6; and DIGHEM's Montcalm nickel-copper discovery (Timmins, Canada) yielded a grade 7 anomaly. Graphite and sulfides can span all grades but, in any particular survey area, field work may show that the different grades indicate different types of conductors.

Strong conductors (i.e., grades 6 and 7 ) are characteristic of massive sulfides or graphite. Moderate conductors (grades 4 and 5) typically reflect graphite or sulfides of a less massive character, while weak bedrock conductors (grades 1 to 3 ) can signify poorly connected graphite or heavily disseminated sulfides. Grades 1 and 2 conductors may not respond to ground EM equipment using frequencies less than 2000 Hz .

The presence of sphalerite or gangue can result in ore deposits having weak to moderate conductances. As an example, the three million ton lead-zinc deposit of Restigouche Mining Corporation near Bathurst, Canada, yielded a well-defined grade 2 conductor. The 10 percent by volume of sphalerite occurs as a coating around the fine grained massive pyrite, thereby inhibiting electrical conduction.

Faults, fractures and shear zones may produce anomalies which typically have low conductances (e.g., grades 1 to 3 ). Conductive rock formations can yield anomalies of any
conductance grade. The conductive materials in such rock formations can be salt water, weathered products such as clays, original depositional clays, and carbonaceous material.

On the interpreted electromagnetic map, a letter identifier and an interpretive symbol are plotted beside the EM grade symbol. The horizontal rows of dots, under the interpretive symbol, indicate the anomaly amplitude on the flight record. The vertical column of dots, under the anomaly letter, gives the estimated depth. In areas where anomalies are crowded, the letter identifiers, interpretive symbols and dots may be obliterated. The EM grade symbols, however, will always be discernible, and the obliterated information can be obtained from the anomaly listing appended to this report.

The purpose of indicating the anomaly amplitude by dots is to provide an estimate of the reliability of the conductance calculation. Thus, a conductance value obtained from a large ppm anomaly (3 or 4 dots) will tend to be accurate whereas one obtained from a small ppm anomaly (no dots) could be quite inaccurate. The absence of amplitude dots indicates that the anomaly from the coaxial coil-pair is 5 ppm or less on both the inphase and quadrature channels. Such small anomalies could reflect a weak conductor at the surface or a stronger conductor at depth. The conductance grade and depth estimate illustrates which of these possibilities fits the recorded data best.

Flight line deviations occasionally yield cases where two anomalies, having similar conductance values but dramatically different depth estimates, occur close together on the same
conductor. Such examples illustrate the reliability of the conductance measurement while showing that the depth estimate can be unreliable. There are a number of factors which can produce an error in the depth estimate, including the averaging of topographic variations by the altimeter, overlying conductive overburden, and the location and attitude of the conductor relative to the flight line. Conductor location and attitude can provide an erroneous depth estimate because the stronger part of the conductor may be deeper or to one side of the flight line, or because it has a shallow dip. A heavy tree cover can also produce errors in depth estimates. This is because the depth estimate is computed as the distance of bird from conductor, minus the altimeter reading. The altimeter can lock onto the top of a dense forest canopy. This situation yields an erroneously large depth estimate but does not affect the conductance estimate.

Dip symbols are used to indicate the direction of dip of conductors. These symbols are used only when the anomaly shapes are unambiguous, which usually requires a fairly resistive environment.

A further interpretation is presented on the EM map by means of the line-to-line correlation of anomalies, which is based on a comparison of anomaly shapes on adjacent lines. This provides conductor axes which may define the geological structure over portions of the survey area. The absence of conductor axes in an area implies that anomalies could not be correlated from line to line with reasonable confidence.

DIGHEM electromagnetic maps are designed to provide a correct impression of conductor quality by means of the conductance grade symbols. The symbols can stand alone with geology when planning a follow-up program. The actual conductance values are printed in the attached anomaly list for those who wish quantitative data. The anomaly ppm and depth are indicated by inconspicuous dots which should not distract from the conductor patterns, while being helpful to those who wish this information. The map provides an interpretation of conductors in terms of length, strike and dip, geometric shape, conductance, depth, and thickness. The accuracy is comparable to an interpretation from a high quality ground EM survey having the same line spacing.

The attached EM anomaly list provides a tabulation of anomalies in ppm, conductance, and depth for the vertical sheet model. The EM anomaly list also shows the conductance and depth for a thin horizontal sheet (whole plane) model, but only the vertical sheet parameters appear on the EM map. The horizontal sheet model is suitable for a flatly dipping thin bedrock conductor such as a sulfide sheet having a thickness less than 10 m . The list also shows the resistivity and depth for a conductive earth (half space) model, which is suitable for thicker slabs such as thick conductive overburden. In the EM anomaly list, a depth value of zero for the conductive earth model, in an area of thick cover, warns that the anomaly may be caused by conductive overburden.

Since discrete bodies normally are the targets of EM surveys, local base (or zero) levels are used to compute local anomaly amplitudes. This contrasts with the use of true zero levels
which are used to compute true EM amplitudes. Local anomaly amplitudes are shown in the EM anomaly list and these are used to compute the vertical sheet parameters of conductance and depth. Not shown in the EM anomaly list are the true amplitudes which are used to compute the horizontal sheet and conductive earth parameters.

## Questionable Anomalies

DIGHEM maps may contain EM responses which are displayed as asterisks (*). These responses denote weak anomalies of indeterminate conductance, which may reflect one of the following: a weak conductor near the surface, a strong conductor at depth (e.g., 100 to 120 m below surface) or to one side of the flight line, or aerodynamic noise. Those responses that have the appearance of valid bedrock anomalies on the flight profiles are indicated by appropriate interpretive symbols (see EM map legend). The others probably do not warrant further investigation unless their locations are of considerable geological interest.

## The thickness parameter

DIGHEM can provide an indication of the thickness of a steeply dipping conductor. The amplitude of the coplanar anomaly (e.g., CPI channel on the digital profile) increases relative to the coaxial anomaly (e.g., CXI) as the apparent thickness increases, i.e., the thickness in the horizontal plane. (The thickness is equal to the conductor width if the conductor dips at 90
degrees and strikes at right angles to the flight line.) This report refers to a conductor as thin when the thickness is likely to be less than 3 m , and thick when in excess of 10 m . Thick conductors are indicated on the EM map by parentheses "( )". For base metal exploration in steeply dipping geology, thick conductors can be high priority targets because many massive sulfide ore bodies are thick, whereas non-economic bedrock conductors are often thin. The system cannot sense the thickness when the strike of the conductor is subparallel to the flight line, when the conductor has a shallow dip, when the anomaly amplitudes are small, or when the resistivity of the environment is below 100 ohm-m.

## Resistivity mapping

Areas of widespread conductivity are commonly encountered during surveys. In such areas, anomalies can be generated by decreases of only 5 m in survey altitude as well as by increases in conductivity. The typical flight record in conductive areas is characterized by inphase and quadrature channels which are continuously active. Local EM peaks reflect either increases in conductivity of the earth or decreases in survey altitude. For such conductive areas, apparent resistivity profiles and contour maps are necessary for the correct interpretation of the airborne data. The advantage of the resistivity parameter is that anomalies caused by altitude changes are virtually eliminated, so the resistivity data reflect only those anomalies caused by conductivity changes. The resistivity analysis also helps the interpreter to differentiate between conductive trends in the bedrock and those patterns typical of conductive overburden. For
example, discrete conductors will generally appear as narrow lows on the contour map and broad conductors (e.g., overburden) will appear as wide lows.

The resistivity profiles and the resistivity contour maps present the apparent resistivity using the so-called pseudo-layer (or buried) half space model defined by Fraser (1978) ${ }^{1}$. This model consists of a resistive layer overlying a conductive half space. The depth channels give the apparent depth below surface of the conductive material. The apparent depth is simply the apparent thickness of the overlying resistive layer. The apparent depth (or thickness) parameter will be positive when the upper layer is more resistive than the underlying material, in which case the apparent depth may be quite close to the true depth.

The apparent depth will be negative when the upper layer is more conductive than the underlying material, and will be zero when a homogeneous half space exists. The apparent depth parameter must be interpreted cautiously because it will contain any errors which may exist in the measured altitude of the EM bird (e.g., as caused by a dense tree cover). The inputs to the resistivity algorithm are the inphase and quadrature components of the coplanar coil-pair. The outputs are the apparent resistivity of the conductive half space (the source) and the sensorsource distance. The flying height is not an input variable, and the output resistivity and sensorsource distance are independent of the flying height. The apparent depth, discussed above, is

[^0]simply the sensor-source distance minus the measured altitude or flying height. Consequently, errors in the measured altitude will affect the apparent depth parameter but not the apparent resistivity parameter.

The apparent depth parameter is a useful indicator of simple layering in areas lacking a heavy tree cover. The DIGHEM system has been flown for purposes of permafrost mapping, where positive apparent depths were used as a measure of permafrost thickness. However, little quantitative use has been made of negative apparent depths because the absolute value of the negative depth is not a measure of the thickness of the conductive upper layer and, therefore, is not meaningful physically. Qualitatively, a negative apparent depth estimate usually shows that the EM anomaly is caused by conductive overburden. Consequently, the apparent depth channel can be of significant help in distinguishing between overburden and bedrock conductors.

The resistivity map often yields more useful information on conductivity distributions than the EM map. In comparing the EM and resistivity maps, keep in mind the following:
(a) The resistivity map portrays the apparent value of the earth's resistivity, where resistivity $=1$ /conductivity.
(b) The EM map portrays anomalies in the earth's resistivity. An anomaly by definition is a change from the norm and so the EM map displays anomalies, (i)
over narrow, conductive bodies and (ii) over the boundary zone between two wide formations of differing conductivity.

The resistivity map might be likened to a total field map and the EM map to a horizontal gradient in the direction of flight ${ }^{2}$. Because gradient maps are usually more sensitive than total field maps, the EM map therefore is to be preferred in resistive areas. However, in conductive areas, the absolute character of the resistivity map usually causes it to be more useful than the EM map.

## Interpretation in conductive environments

Environments having background resistivities below 30 ohm-m cause all airborne EM systems to yield very large responses from the conductive ground. This usually prohibits the recognition of discrete bedrock conductors. However, DIGHEM data processing techniques produce three parameters which contribute significantly to the recognition of bedrock conductors. These are the inphase and quadrature difference channels (DFI and DFQ), and the resistivity and depth channels (RES and DP) for each coplanar frequency.

[^1]The EM difference channels (DFI and DFQ) eliminate most of the responses from conductive ground, leaving responses from bedrock conductors, cultural features (e.g., telephone lines, fences, etc.) and edge effects. Edge effects often occur near the perimeter of broad conductive zones. This can be a source of geologic noise. While edge effects yield anomalies on the EM difference channels, they do not produce resistivity anomalies. Consequently, the resistivity channel aids in eliminating anomalies due to edge effects. On the other hand, resistivity anomalies will coincide with the most highly conductive sections of conductive ground, and this is another source of geologic noise. The recognition of a bedrock conductor in a conductive environment therefore is based on the anomalous responses of the two difference channels (DFI and DFQ) and the resistivity channels (RES). The most favourable situation is where anomalies coincide on all channels.

The DP channels, which give the apparent depth to the conductive material, also help to determine whether a conductive response arises from surficial material or from a conductive zone in the bedrock. When these channels ride above the zero level on the digital profiles (i.e., depth is negative), it implies that the EM and resistivity profiles are responding primarily to a conductive upper layer, i.e., conductive overburden. If the DP channels are below the zero level, it indicates that a resistive upper layer exists, and this usually implies the existence of a bedrock conductor. If the low frequency DP channel is below the zero level and the high frequency DP is above, this suggests that a bedrock conductor occurs beneath conductive cover.

The conductance channel CDT identifies discrete conductors which have been selected by computer for appraisal by the geophysicist. Some of these automatically selected anomalies on channel CDT are discarded by the geophysicist. The automatic selection algorithm is intentionally oversensitive to assure that no meaningful responses are missed. The interpreter then classifies the anomalies according to their source and eliminates those that are not substantiated by the data, such as those arising from geologic or aerodynamic noise.

## Reduction of geologic noise

Geologic noise refers to unwanted geophysical responses. For purposes of airborne EM surveying, geologic noise refers to EM responses caused by conductive overburden and magnetic permeability. It was mentioned previously that the EM difference channels (i.e., channel DFI for inphase and DFQ for quadrature) tend to eliminate the response of conductive overburden. This marked a unique development in airborne EM technology, as DIGHEM is the only EM system which yields channels having an exceptionally high degree of immunity to conductive overburden.

Magnetite produces a form of geological noise on the inphase channels of all EM systems. Rocks containing less than $1 \%$ magnetite can yield negative inphase anomalies caused by magnetic permeability. When magnetite is widely distributed throughout a survey area, the inphase EM channels may continuously rise and fall, reflecting variations in the magnetite percentage, flying height, and overburden thickness. This can lead to difficulties in recognizing
deeply buried bedrock conductors, particularly if conductive overburden also exists. However, the response of broadly distributed magnetite generally vanishes on the inphase difference channel DFI. This feature can be a significant aid in the recognition of conductors which occur in rocks containing accessory magnetite.

## EM magnetite mapping

The information content of DIGHEM data consists of a combination of conductive eddy current responses and magnetic permeability responses. The secondary field resulting from conductive eddy current flow is frequency-dependent and consists of both inphase and quadrature components, which are positive in sign. On the other hand, the secondary field resulting from magnetic permeability is independent of frequency and consists of only an inphase component which is negative in sign. When magnetic permeability manifests itself by decreasing the measured amount of positive inphase, its presence may be difficult to recognize. However, when it manifests itself by yielding a negative inphase anomaly (e.g., in the absence of eddy current flow), its presence is assured. In this latter case, the negative component can be used to estimate the percent magnetite content.

A magnetite mapping technique was developed for the coplanar coil-pair of DIGHEM. The technique yields a channel (designated FEO) which displays apparent weight percent
magnetite according to a homogeneous half space model. ${ }^{3}$ The method can be complementary to magnetometer mapping in certain cases. Compared to magnetometry, it is far less sensitive but is more able to resolve closely spaced magnetite zones, as well as providing an estimate of the amount of magnetite in the rock. The method is sensitive to $1 / 4 \%$ magnetite by weight when the EM sensor is at a height of 30 m above a magnetitic half space. It can individually resolve steep dipping narrow magnetite-rich bands which are separated by 60 m . Unlike magnetometry, the EM magnetite method is unaffected by remanent magnetism or magnetic latitude.

The EM magnetite mapping technique provides estimates of magnetite content which are usually correct within a factor of 2 when the magnetite is fairly uniformly distributed. EM magnetite maps can be generated when magnetic permeability is evident as negative inphase responses on the data profiles.

Like magnetometry, the EM magnetite method maps only bedrock features, provided that the overburden is characterized by a general lack of magnetite. This contrasts with resistivity mapping which portrays the combined effect of bedrock and overburden.

3 Refer to Fraser, 1981, Magnetite mapping with a multi-coil airborne electromagnetic system: Geophysics, v. 46, p. 1579-1594.

## Recognition of culture

Cultural responses include all EM anomalies caused by man-made metallic objects. Such anomalies may be caused by inductive coupling or current gathering. The concern of the interpreter is to recognize when an EM response is due to culture. Points of consideration used by the interpreter, when coaxial and coplanar coil-pairs are operated at a common frequency, are as follows:

1. Channels CXP and CPP monitor 60 Hz radiation. An anomaly on these channels shows that the conductor is radiating power. Such an indication is normally a guarantee that the conductor is cultural. However, care must be taken to ensure that the conductor is not a geologic body which strikes across a power line, carrying leakage currents.
2. A flight which crosses a "line" (e.g., fence, telephone line, etc.) yields a center-peaked coaxial anomaly and an m-shaped coplanar anomaly. ${ }^{4}$. When the flight crosses the cultural line at a high angle of intersection, the amplitude ratio of coaxial/coplanar response is 4 . Such an EM anomaly can only be caused by a line. The geologic body which yields anomalies most closely resembling a line is the vertically dipping thin dike. Such a body, however, yields an amplitude ratio of 2 rather than 4 . Consequently, an

[^2]m-shaped coplanar anomaly with a CXI/CPI amplitude ratio of 4 is virtually a guarantee that the source is a cultural line.
3. A flight which crosses a sphere or horizontal disk yields center-peaked coaxial and coplanar anomalies with a CXI/CPI amplitude ratio (i.e., coaxial/coplanar) of $1 / 4$. In the absence of geologic bodies of this geometry, the most likely conductor is a metal roof or small fenced yard. ${ }^{5}$ Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.
4. A flight which crosses a horizontal rectangular body or wide ribbon yields an m-shaped coaxial anomaly and a center-peaked coplanar anomaly. In the absence of geologic bodies of this geometry, the most likely conductor is a large fenced area. ${ }^{5}$ Anomalies of this type are virtually certain to be cultural if they occur in an area of culture.
5. EM anomalies which coincide with culture, as seen on the camera film or video display, are usually caused by culture. However, care is taken with such coincidences because a geologic conductor could occur beneath a fence, for example. In this example, the fence would be expected to yield an m-shaped coplanar anomaly as in case \#2 above.

5 It is a characteristic of EM that geometrically similar anomalies are obtained from: (1) a planar conductor, and (2) a wire which forms a loop having dimensions identical to the perimeter of the equivalent planar conductor.

If, instead, a center-peaked coplanar anomaly occurred, there would be concern that a thick geologic conductor coincided with the cultural line.
6. The above description of anomaly shapes is valid when the culture is not conductively coupled to the environment. In this case, the anomalies arise from inductive coupling to the EM transmitter. However, when the environment is quite conductive (e.g., less than 100 ohm-m at 900 Hz ), the cultural conductor may be conductively coupled to the environment. In this latter case, the anomaly shapes tend to be governed by current gathering. Current gathering can completely distort the anomaly shapes, thereby complicating the identification of cultural anomalies. In such circumstances, the interpreter can only rely on the radiation channels and on the camera film or video records.

## MAGNETICS

The existence of a magnetic correlation with an EM anomaly is indicated directly on the EM map. In some geological environments, an EM anomaly with magnetic correlation has a greater likelihood of being produced by sulfides than one that is non-magnetic. However, sulfide ore bodies may be non-magnetic (e.g., the Kidd Creek deposit near Timmins, Canada) as well as magnetic (e.g., the Mattabi deposit near Sturgeon Lake, Canada).

The magnetometer data are digitally recorded in the aircraft to an accuracy of 0.01 nT for cesium magnetometers. The digital tape is processed by computer to yield a total field magnetic contour map. When warranted, the magnetic data may also be treated mathematically to enhance the magnetic response of the near-surface geology, and an enhanced magnetic contour map is then produced. The response of the enhancement operator in the frequency domain is illustrated in Figure 5-2. This figure shows that the passband components of the airborne data are amplified 20 times by the enhancement operator. This means, for example, that a 100 nT anomaly on the enhanced map reflects a 5 nT anomaly for the passband components of the airborne data.

The enhanced map, which bears a resemblance to a downward continuation map, is produced by the digital bandpass filtering of the total field data. The enhancement is equivalent to continuing the field downward to a level (above the source) which is $1 / 20$ th of the actual sensor-source distance.

Because the enhanced magnetic map bears a resemblance to a ground magnetic map, it simplifies the recognition of trends in the rock strata and the interpretation of geological structure. It defines the near-surface local geology while de-emphasizing deep-seated regional features. It primarily has application when the magnetic rock units are steeply dipping and the earth's field dips in excess of 60 degrees.


Fig. 5-2 Frequency response of magnetic enhancement operator.

Any of a number of filter operators may be applied to the magnetic data, to yield vertical derivatives, continuations, magnetic susceptibility, etc. These may be displayed in contour, colour or shadow.

## VLF

VLF transmitters produce high frequency uniform electromagnetic fields. However, VLF anomalies are not EM anomalies in the conventional sense. EM anomalies primarily reflect eddy currents flowing in conductors which have been energized inductively by the primary field. In contrast, VLF anomalies primarily reflect current gathering, which is a non-inductive phenomenon. The primary field sets up currents which flow weakly in rock and overburden, and these tend to collect in low resistivity zones. Such zones may be due to massive sulfides, shears, river valleys and even unconformities.

The VLF field is horizontal. Because of this, the method is quite sensitive to the angle of coupling between the conductor and the transmitted VLF field. Conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it.


CYCLES/METRE

Fig. 5-3 Frequency response of VLF operator.

The Herz Industries Ltd. Totem VLF-electromagnetometer measures the total field and vertical quadrature components. Both of these components are digitally recorded in the aircraft with a sensitivity of 0.1 percent. The total field yields peaks over VLF current concentrations whereas the quadrature component tends to yield crossovers. Both appear as traces on the profile records. The total field data are filtered digitally and displayed as contours to facilitate the recognition of trends in the rock strata and the interpretation of geologic structure.

The response of the VLF total field filter operator in the frequency domain (Figure 5-3) is basically similar to that used to produce the enhanced magnetic map (Figure 5-2). The two filters are identical along the abscissa but different along the ordinant. The VLF filter removes long wavelengths such as those which reflect regional and wave transmission variations. The filter sharpens short wavelength responses such as those which reflect local geological variations.

## CONCLUSIONS AND RECOMMENDATIONS

This report provides a very brief description of the survey results and describes the equipment, procedures and logistics of the survey.

There are several anomalies in the survey block which are typical of massive sulphide responses. The various maps included with this report display the magnetic and conductive properties of the survey area. It is recommended that the survey results be reviewed in detail, in conjunction with all available geophysical, geological and geochemical information. Particular reference should be made to the computer generated data profiles which clearly define the characteristics of the individual anomalies.

Most anomalies in the area are moderately strong, but poorly-defined. Some may be attributed to conductive overburden or deep weathering, although a few appear to be associated with magnetite-rich rock units. Others coincide with VLF anomalies, or magnetic gradients which may reflect faults or shears. Such structural breaks are considered to be of particular interest as they may have influenced mineral deposition within the survey area.

There are several resistivity highs on the property which are also considered to be of interest. Some of these could reflect zones of siliceous alteration which could host
auriferous mineralization. However, frozen surface material could produce similar results.

The interpreted bedrock conductors defined by the survey should be subjected to further investigation, using appropriate surface exploration techniques. Anomalies which are currently considered to be of moderately low priority may require upgrading if follow-up results are favourable.

It is also recommended that image processing of existing geophysical data be considered, in order to extract the maximum amount of information from the survey results. Current software and imaging techniques often provide valuable information on structure and lithology, which may not be clearly evident on the contour and colour maps. These techniques can yield images which define subtle, but significant, structural details.

Respectfully submitted,

## DIGHEM



Paul A. Smith
Geophysicist
PAS/sdp

## APPENDIX A

## LIST OF PERSONNEL

The following personnel were involved in the acquisition, processing, interpretation and presentation of data, relating to a DIGHEM ${ }^{\mathbf{V}}$ airborne geophysical survey carried out for Phelps Dodge Corporation, near Mt. Dent, British Columbia.

Steve Kilty
Greg Paleolog
Dave Miles
Kathy Miles
Del Rokosh
Gordon Smith
Robert Gordon
Robert Gordon
Paul A. Smith
Len Vanderstarren
Steve Mast
Susan Pothiah
Albina Tonello

Vice President, Operations
Survey Operations Supervisor
Senior Geophysical Operator
Data Processor (Field)
Pilot (Northern Air Support, Ltd.)
Data Processing Supervisor
Computer-Processor
Interpretation Geophysicist
Interpretation Supervisor
Drafting Supervisor
Draftsperson (CAD)
Word Processing Operator
Secretary/Expeditor

The survey consisted of 862 km of coverage, flown from November 12 to November 13, 1994.

All personnel are employees of Dighem, except for the pilot who is an employee of Northern Air Support, Ltd.


Paul A. Smith
Geophysicist
PAS/sdp
A1157JAN.94R

## APPENDIX B

## STATEMENT OF COST

## IN ACCOUNT WITH DIGHEM

To: Dighem flying of Agreement dated November 1, 1993, pertaining to an Airborne Geophysical Survey in the Mt. Dent area, British Columbia.

## Survey Charges

$$
\begin{aligned}
& 840 \mathrm{~km} \text { of flying @ } \$ 72.00 / \mathrm{km} \\
& \text { plus mobilization costs of } \\
& \$ 3,000.00
\end{aligned}
$$

## Allocation of Costs

- Data Acquisition (60\%)
- Data Processing
- Interpretation, Report and Maps
(20\%)

DIGHEM
anctastict
Paul A. Smith
Geophysicist
PAS/sdp
A1157JAN.94R

## APPENDIX C

## EM ANOMALY LIST



ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPTH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT LINE 10010 (FLTGHT 1)

| A | 5459B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 120 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | 5482S? | 0 | 9 | 2 | 12 | 31 | 47 | 0.4 | 0 | 1 | 32 | 218 | 0 | 0 |
| C | 5538S? | 0 | 5 | 0 | 6 | 19 | 23 | 0.4 | 0 | 1 | 45 | 239 | 3 | 0 |
| D | 5704B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| E | 5734B | 5 | 12 | 9 | 14 | 41 | 43 | 2.5 | 15 | 1 | 43 | 132 | 8 | 0 |
| F | 5800B? | 5 | 8 | 5 | 11 | 35 | 17 | 3.3 | 27 | 1 | 35 | 203 | 0 | 0 |
| LINE 10020 |  | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 6312B? | 6 | 6 | 6 | 7 | 27 | 26 | 5.9 | 30 | 1 | 32 | 164 | 0 | 0 |
| B | 6258B? | 0 | 11 | 1 | 12 | 15 | 62 | 0.4 | 8 | 1 | 39 | 590 | 0 | 0 |
| C | 6176B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D | 6094S? | 0 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 140 |
| E | 5976B? | 5 | 3 | 7 | 4 | 22 | 30 | 0.9 | 0 | 1 | 42 | 91 | 24 | 0 |
| F | 5900B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 90 |

LINE 10030 (FITGHT 1)


| B | 6531S? | 1 | 2 | 1 | 2 | 2 | 4. | - | - | - | - | - | - | - |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| C | 6587S? | 1 | 2 | 1 | 2 | 2 | 4. | - | .- | - | - | - | - | 0 |
| D | $6785 S ?$ | 1 | 2 | 1 | 2 | 2 | 4. | - | .- | - | - | - | - | 0 |

LINE 10040 (FLIGHT 1)

| A | 1298S? | 0 | 2 | 0 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | 1258B? | 6 | 15 | 10 | 22 | 52 | 73 | 2.5 | 9 | 1 | 40 | 86 | 9 | 90 |
| C | 1256S | 6 | 15 | 10 | 22 | 52 | 73 | 2.5 | 0 | 1 | 37 | 75 | 5 | 90 |
| D | 1243B | 2 | 17 | 6 | 25 | 65 | 92 | 0.6 | 0 | 1 | 33 | 125 | 0 | 0 |
| E | 1203B | 3 | 14 | 5 | 19 | 55 | 76 | 0.9 | 4 | 1 | 50 | 184 | 12 | 0 |
| F | 1180S | 0 | 11 | 3 | 12 | 38 | 65 | 0.4 | 0 | 1 | 34 | 200 | 0 | 10 |
| G | 1158B? | 3 | 23 | 6 | 29 | 75 | 114 | 0.8 | 4 | 1 | 41 | 106 | 11 | 0 |
| H | 1148B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| I | 1134B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| J | 957H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 40 |
| K | 940B? | 6 | 20 | 4 | 23 | 62 | 106 | 1.8 | 13 | 1 | 45 | 161 | 11 | 0 |
| L | 862H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |

LINE 10050 (FLIGHT 1)

| A | 1394B? | 2 | 13 | 1 | 20 | 41 | 100. | 0.7 | 3. | 1 | 28 | 182 | 0 | 0 |
| :--- | :--- | :--- | ---: | :--- | ---: | ---: | ---: | ---: | :--- | :--- | :--- | :--- | ---: | ---: |
| B | $1414 \mathrm{~B} ?$ | 2 | 21 | 6 | 28 | 48 | 92. | 0.6 | 0. | 1 | 22 | 248 | 0 | 50 |
| C | 1449 H | 1 | 4 | 3 | 6 | 19 | 14. | 1.1 | 7. | 1 | 49 | 120 | 10 | 0 |
| D | 1460 D | 2 | 12 | 3 | 12 | 31 | 64. | 0.9 | 0. | 0 |  |  |  |  |
| E | 1467S | 4 | 21 | 5 | 33 | 103 | 100. | 1.0 | 0. | 1 | 44 | 114 | 9 | 0 |
| 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

.* ESTIMATED DEPIH MAY BE UNREJTABLE BECAUSE THE STRONGER PART

- OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.


## COAXIAL COPLANAR COPIANAR . VERTICAL . HORIZONIAL CONDUCIIVE MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARIH CORR

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- ITNE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

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| LTN | 10070 | (FTTGHT 1) |  | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| H | 2714B? | 4 | 7 | 2 | 6 | 21 | 20 | 2.7 | 25 | 1 | 49 | 234 | 6 | 0 |
| I | 2728B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| J | 2732E | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| K | 2800S? | 3 | 6 | 4 | 8 | 6 | 16 | 2.2 | 20 | 1 | 39 | 184 | 0 | 0 |
| LINE 10080 |  | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 3386H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| B | 3332S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| C | 3321s? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D | 3297S | 2 | 9 | 4 | 14 | 43 | 43 | 0.8 | 0 | 1 | 35 | 106 | 2 | 20 |
| E | 3287B? | 5 | 16 | 8 | 28 | 78 | 74 | 2.0 | 4 | 1 | 38 | 99 | 6 | 0 |
| F | 3283B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 3258B? | 6 | 13 | 5 | 19 | 56 | 66 | 2.8 | 13 | 1 | 31 | 116 | 0 | 0 |
| H | 3147B? | 2 | 17 | 1 | 21 | 47 | 88 | 0.6 | 0 | 1 | 8 | 460 | 0 | 0 |
| I | 3100S? | 4 | 4 | 6 | 7 | 30 | 48 | 4.5 | 39 | 1 | 20 | 288 | 0 | 0 |
| J | 3032B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| K | 3010B? | 2 | 5 | 2 | 7 | 13 | 20 | 1.8 | 39 | 1 | 35 | 432 | 0 | 0 |
| L | 2993S | 1 | 4 | 2 | 4 | 18 | 18 | 1.0 | 0 | 1 | 39 | 236 | 15 | 0 |
| M | 2962S | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |


| LTN | 10090 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 3495D | 1 | 4 | 2 | 5 | 16 | 23 | 0.5 | 0 | 1 | 50 | 165 | 10 | 390 |
| B | 3542B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| C | 3579S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 30 |
| D | 3606B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| E | 3610H | 7 | 6 | 8 | 13 | 33 | 9 | 7.4 | 27 | 1 | 36 | 61 | 6 | 0 |
| F | 3673B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 3719H | 7 | 7 | 7 | 10 | 34 | 4 | 5.3 | 24 | 1 | 42 | 133 | 5 | 0 |
| H | 3739H | 6 | 11 | 5 | 17 | 43 | 33 | 2.8 | 13 | 1 | 37 | 169 | 0 | 0 |
| I | 3755S | 1 | 4 | 1 | 5 | 9 | 13 | 0.6 | 0 | 1 | 41 | 309 | 15 | 120 |
| J | 3786S | 3 | 5 | 4 | 12 | 30 | 49 | 2.9 | 53 | 1 | 28 | 513 | 0 | 0 |
| K | 3796B? | 0 | 2 | 0 | 1 | 0 | 4 | - | - | - | - | - | - | 0 |
| L | 3835S | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |


| LINE 10100 |  | GHP | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A 4352B? | 6 | 14 | 5 | 19 | 44 | 68 | 2.5 | 9 | 1 | 30 | 134 | 0 | 0 |
| B 4345B? | 5 | 11 | 0 | 18 | 32 | 52 | 2.7 | 20 | 1 | 26 | 205 | 0 | 280 |
| C 4337B? | 6 | 12 | 3 | 9 | 43 | 50 | 2.9 | 16 | 1 | 37 | 132 | 3 | 0 |
| D 4296D | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 30 |
| E 4295D | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 30 |
| F 4251S? | 2 | 6 | 1 | 10 | 30 | 25 | 1.3 | 17 | 1 | 36 | 241 | 0 |  |

.* ESTIMATED DEPTH MAY BE UNRETIABLE BECAUSE THE STRONGER PART - OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT

- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

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COAXIAL COPIANAR COPLANAR . VERTICAL . HORIZONIAL CONDUCIIVE MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARIH CORR
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.* ESTIMATED DEPTH MAY BE UNRELTABLE BECAUSE THE STRONGER PART

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- LINE, OR BECAUSE OF A SHALIOW DIP OR OVERBURDEN EFFFCCTS.

$$
\begin{array}{ccccccc}
\text { COAXIAL COPLANAR } & \text { COPLANAR . VERTICAL } & \text { - HORIZONTAL CONDUCIIVE } & \text { MAG } \\
1074 \mathrm{HZ} & 865 \mathrm{HZ} & 7258 \mathrm{HZ} \cdot & \text { DIKE } & \text { SHEET } & \text { EARTH } & \text { CORR }
\end{array}
$$

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIENEN M OHM-M M NT

| LINE 10130 |  | IGHP | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A 9987S? | 3 | 5 | 5 | 8 | 30 | 32 | 2.6 | 21 | 1 | 33 | 187 | 0 | 0 |
| B 10171H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| C 10191B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D 10255H? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| E 10278S? | 2 | 3 | 2 | 6 | 14 | 25 | 2.5 | 42 | 1 | 60 | 204 | 16 | 0 |
| LINE 10140 |  | cht | 1) |  |  |  |  |  |  |  |  |  |  |
| A 9939S? | 3 | 6 | 4 | 8 | 25 | 34 | 2.0 | 10 | 1 | 22 | 210 | 0 | 0 |
| B 9828H | 2 | 10 | 4 | 15 | 27 | 20 | 0.9 | 1 | 1 | 39 | 184 | 2 | 40 |
| C 9795S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D 9789S? | 4 | 10 | 7 | 16 | 50 | 26 | 2.2 | 20 | 1 | 43 | 103 | 11 | 0 |
| E 9786S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| F 9742B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G 9723S? | 3 | 9 | 3 | 9 | 5 | 7 | 1.9 | 20 | 1 | 57 | 113 | 20 | 0 |
| H 9706B? | 1 | 2 | 1 | 2 | 2 | 4. | - | - | - | - | - | - | 0 |
| I 9657B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| Ј 9649S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| K 9598H | 3 | 5 | 4 | 9 | 21 | 19 | 2.2 | 32 | 1 | 57 | 88 | 22 | 0 |
| L 9582S | 1 | 7 | 4 | 6 | 22 | 14 | 0.8 | 14 | 1 | 43 | 221 | 5 | 140 |
| M 9544S? | 1 | 6 | 2 | 10 | 29 | 36 | 0.9 | 0 | 1 | 27 | 286 | 0 | 0 |
| N 9514S? | 1 | 5 | 1 | 6 | 18 | 23 | 0.8 | 10 | 1 | 21 | 333 | 0 | 0 |
| - 9470S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| P 9467S? | 5 | 7 | 5 | 17 | 45 | 52 | 3.2 | 27 | 1 | 22 | 187 | 0 | 0 |


| LTN | 10150 |  | GHT | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 8962H? | 4 | 8 | 4 | 11 | 30 | 31 | 2.5 | 16 | 1 | 24 | 280 | 0 | 0 |
| B | 9074S? | 3 | 9 | 4 | 12 | 27 | 29 | 1.6 | 0 | 1 | 34 | 169 | 0 | 0 |
| C | 9132S | 5 | 8 | 2 | 11 | 35 | 36 | 3.2 | 20 | 1 | 39 | 145 | 3 | 0 |
| D | 9155S? | 3 | 6 | 3 | 5 | 14 | 15 | 1.0 | 0 | 1 | 45 | 123 | 24 | 0 |
| E | 9175s? | 5 | 12 | 5 | 14 | 34 | 35 | 2.5 | 17 | 1 | 47 | 114 | 13 | 0 |
| F | 9182B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 9216H? | 5 | 5 | 3 | 7 | 19 | 17 | 4.8 | 31 | 1 | 59 | 119 | 19 | 0 |
| H | 9254H | 2 | 4 | 1 | 5 | 17 | 9 | 1.9 | 36 | 1 | 56 | 323 | 9 | 0 |
| I | 9272H | 8 | 12 | 17 | 21 | 50 | 6 | 4.3 | 16 | 2 | 57 | 37 | 29 | 0 |
| J | 9323S | 1 | 6 | 3 | 8 | 21 | 23 | 0.7 | 0 | 1 | 33 | 215 | 0 | 0 |
| K | 9356 S | 1 | 3 | 3 | 6 | 18 | 21 | 0.9 | 13 | 1 | 32 | 250 | 0 | 0 |


| LINE 10160 | (FLIGHP | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A 8914S? | 12 | 1 | 2 | 2 | 4 | - | - | - | - | - | - |  |
| B 8834S? | 27 | 2 | 8 | 27 | 30 | 0.8 | 2 | 1 | 17 | 309 | 0 | 50 |
| C 8761D | 12 | 1 | 2 | 2 | 4 | - |  | - | - | - |  |  |

.* ESTIMATED DEPIH MAY BE UNREJIABLE BECAUSE THE STRONGER PART

- OF THE CONDUCTIOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

$$
\begin{array}{ccccccc}
\text { COAXIAL COPLANAR } & \text { COPLANAR . VERIICAL } & \text {. HORIZONTAL CONDUCTIVE } & \text { MAG } \\
1074 \mathrm{HZ} & 865 \mathrm{HZ} & 7258 \mathrm{HZ} \cdot & \text { DIKE } & \text { SHEET } & \text { EARIH } & \text { CORR }
\end{array}
$$

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. OOND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M

NT

.* ESTITMATED DEPIH MAY BE UNRELTABLE BECAUSE THE STRONGER PART

- OF THE CONDUCIOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHI .
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.


ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

| LTN | 10200 | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | 6593H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 13 |
| D | 6552H | 6 | 8 | 12 | 14 | 54 | 8 | 4.0 | 36 | 2 | 50 | 39 | 24 | 11 |
| E | 6550H | 5 | 15 | 14 | 14 | 54 | 8 | 2.0 | 9 | 2 | 45 | 37 | 20 | 20 |
| F | 6448B? | 4 | 12 | 6 | 15 | 32 | 40 | 1.9 | 0 | 1 | 35 | 124 | 0 | 40 |
| G | 6441B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 16 |
| H | 6430B | 6 | 11 | 3 | 13 | 34 | 27 | 2.9 | 21 | 1 | 40 | 149 | 5 | 220 |
| LTN | 10210 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 5888B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| B | 5935s | 1 | 10 | 1 | 13 | 38 | 53 | 0.6 | 0 | 1 | 12 | 329 | 0 | 150 |
| C | 60875 | 0 | 5 | 2 | 8 | 25 | 30 | 0.4 | 0 | 1 | 40 | 336 | 0 | 0 |
| D | 6145H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| E | 6228D | 10 | 14 | 7 | 8 | 48 | 32 | 4.9 | 7 | 1 | 33 | 125 | 0 | 0 |
| F | 6239B? | 2 | 7 | 2 | 6 | 18 | 21 | 0.8 | 16 | 1 | 49 | 260 | 9 | 40 |
| G | 6251B? | 6 | 23 | 7 | 33 | 89 | 82 | 1.5 | 0 | 1 | 18 | 138 | 0 | 160 |
| LTN | 10220 |  | IGHP | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 5819H? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| B | 5759S? | 1 | 10 | 2 | 14 | 36 | 61 | 0.6 | 0 | 1 | 7 | 463 | 0 | 130 |
| C | 5743H | 6 | 11 | 7 | 28 | 81 | 60 | 2.7 | 27 | 1 | 35 | 125 | 6 | 0 |
| D | 5724S? | 4 | 14 | 3 | 20 | 56 | 40 | 1.5 | 8 | 1 | 26 | 274 | 0 | 0 |
| E | 5723D? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| F | 5617S? | 3 | 10 | 2 | 13 | 38 | 64 | 1.4 | 17 | 1 | 31 | 285 | 0 | 0 |
| G | 5593S? | 3 | 16 | 2 | 20 | 60 | 97 | 1.2 | 8 | 1 | 25 | 312 | 0 | 12 |
| H | 5554H? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| I | 5529H? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| J | 5518H? | 8 | 7 | 8 | 25 | 65 | 38 | 7.8 | 38 | 2 | 53 | 50 | 24 | 0 |
| K | 5458S? | 4 | 9 | 6 | 12 | 35 | 21 | 2.0 | 19 | 1 | 48 | 133 | 12 | 0 |
| L | 5447S? | 2 | 4 | 1 | 8 | 18 | 18 | 2.6 | 33 | 1 | 20 | 393 | 0 | 0 |
| M | 5425D? | 8 | 10 | 3 | 13 | 15 | 30 | 4.8 | 9 | 1 | 29 | 169 | 0 | 0 |
| N | 5399S? | 4 | 12 | 6 | 22 | 43 | 37 | 1.7 | 2 | 1 | 30 | 142 | 0 | 80 |
| 0 | 5379S? | 0 | 7 | 2 | 15 | 45 | 66 | 0.4 | 0 | 1 | 11 | 349 | 0 | 0 |
| P | 5362S | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 180 |
| Q | 5349B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| LN | 10230 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 4893s? | 2 | 8 | 2 | 12 | 42 | 44 | 1.2 | 9 | 1 | 16 | 456 | 0 | 0 |
| B | 4905S? | 0 | 7 | 2 | 7 | 19 | 26 | 0.4 | 0 | 1 | 28 | 438 | 0 | 0 |
| C | 4962S? | 2 | 4 | 1 | 5 | 17 | 8 | 2.0 | 31 | 1 | 38 | 208 | 0 | 0 |
| D | 4976B | 4 | 9 | 4 | 12 | 35 | 29 | 2.4 | 7 | 1 | 33 | 312 | 0 | 0 |
| E | 5004S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |

.* ESTIMATED DEPIH MAY BE UNRELIABLE BECAUSE THE SIRONGER PART
OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT

- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

| COAXIAL | COPLANAR | COPLANAR | VERIICAL | HORIZONTAL CONDUCIIVE | MAG |  |
| :--- | ---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1074 HZ | 865 HZ | 7258 HZ | DIKE | SHEET | EARIH | CORR |

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPTH FID/INTERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

| LIN | 10230 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| F | 5014S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 5060S? | 1 | 4 | 1 | 5 | 15 | 24 | 1.2 | 18 | 1 | 29 | 347 | 0 | 0 |
| H | 5083S | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| I | 51185 | 2 | 4 | 3 | 13 | 42 | 39 | 1.5 | 31 | 1 | 39 | 181 | 1 | 0 |
| J | 5145B? | 9 | 16 | 11 | 22 | 44 | 31 | 3.6 | 15 | 2 | 49 | 50 | 21 | 0 |
| K | 5207B? | 5 | 11 | 11 | 14 | 40 | 35 | 2.4 | 11 | 1 | 56 | 110 | 18 | 0 |
| L | 5225S? | 3 | 5 | 6 | 19 | 53 | 45 | 3.1 | 23 | 1 | 27 | 163 | 0 | 0 |
| M | 5240B? | 8 | 14 | 5 | 16 | 47 | 41 | 3.7 | 3 | 1 | 27 | 129 | 0 | 0 |
| N | 5274B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| 0 | 5276S | 3 | 16 | 7 | 24 | 67 | 68 | 1.1 | 0 | 1 | 15 | 223 | 0 | 0 |
| P | 5293S | 4 | 10 | 3 | 15 | 53 | 49 | 1.8 | 4 | 1 | 17 | 249 | 0 | 120 |
| Q | 5303S? | 3 | 7 | 2 | 7 | 26 | 42 | 1.8 | 14 | 1 | 16 | 434 | 0 | 0 |
| LTN | 10240 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 4786H | 3 | 12 | 3 | 19 | 59 | 59 | 1.0 | 6 | 1 | 14 | 396 | 0 | 0 |
| B | 4773S? | 0 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| C | 4703B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D | 4692S? | 5 | 8 | 3 | 14 | 43 | 28 | 3.3 | 20 | 1 | 28 | 240 | 0 | 0 |
| E | 4644S? | 2 | 6 | 2 | 6 | 22 | 24 | 1.3 | 14 | 1 | 33 | 408 | 0 | 0 |
| F | 4630S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 4591S? | 2 | 8 | 1 | 10 | 20 | 29 | 0.8 | 12 | 1 | 30 | 497 | 0 | 30 |
| H | 4569S | 2 | 8 | 2 | 3 | 35 | 41 | 1.0 | 0 | 1 | 31 | 143 | 12 | 0 |
| I | 4537H | 2 | 11 | 4 | 14 | 45 | 17 | 1.1 | 8 | 1 | 42 | 169 | 6 | 0 |
| J | 4450H | 7 | 11 | 11 | 17 | 41 | 14 | 3.6 | 16 | 2 | 51 | 45 | 23 | 0 |
| K | 4409B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| L | 4406B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| M | 4384S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| N | 4373B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 280 |
| 0 | 4367D | 8 | 29 | 4 | 36 | 106 | 142 | 1.9 | 0 | 1 | 4 | 307 | 0 | 0 |
| P | 4349H | 2 | 11 | 4 | 16 | 39 | 55 | 1.0 | 0 | 1 | 14 | 226 | 0 | 430 |
| LTN | 10250 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 3884S | 2 | 6 | 1 | 9 | 29 | 28 | 1.7 | 17 | 1 | 29 | 374 | 0 | 0 |
| B | 3932S? | 3 | 7 | 2 | 8 | 20 | 23 | 2.2 | 26 | 1 | 38 | 320 | 0 | 0 |
| C | 3954S? | 5 | 6 | 5 | 11 | 6 | 13 | 3.7 | 28 | 1 | 39 | 115 | 5 | 0 |
| D | 3967S? | 4 | 8 | 3 | 11 | 34 | 28 | 2.5 | 19 | 1 | 39 | 224 | 0 | 0 |
| E | 4050S | 2 | 7 | 2 | 9 | 31 | 27 | 1.3 | 10 | 1 | 31 | 347 | 0 | 12 |
| F | 4123H | 10 | 9 | 10 | 16 | 42 | 10 | 7.1 | 21 | 1 | 54 | 67 | 21 | 0 |
| G | 4216B? | 6 | 6 | 7 | 15 | 39 | 35 | 4.8 | 23 | 1 | 35 | 82 | 3 | 0 |
| H | 4231B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| I | 4245B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |

.* ESTIMATED DEPIH MAY BE UNRELTABLE BECAUSE THE SIRONGER PART

- OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FITGHT
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

```
COAXIAL COPLANAR COPLANAR . VERTICAL . HORIZONIAL CONDUCTIVE : MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARTH CORR
```

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

| LINE 10250 |  | (FLIGHT |  | 1) | 2 |  | 4 | - | - | - | - | - | - | 100 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| J | 4253B? | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |
| K | 4272B? | 4 | 11 | 2 | 14 | 44 | 52 | 1.6 | 4 | 1 | 18 | 236 | 0 | 0 |
| LTN | 10260 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 3758B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| B | 3753B? | 10 | 17 | 10 | 35 | 50 | 70 | 3.7 | 8 | 1 | 30 | 91 | 0 | 0 |
| C | 3743B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D | 3736S? | 2 | 5 | 2 | 10 | 20 | 33 | 1.6 | 18 | 1 | 25 | 282 | 0 | 0 |
| E | 3641S | 5 | 11 | 3 | 15 | 45 | 60 | 2.2 | 17 | 1 | 31 | 282 | 0 | 0 |
| F | 3623S | 4 | 9 | 2 | 14 | 41 | 62 | 1.9 | 23 | 1 | 32 | 357 | 0 | 7 |
| G | 3587S? | 1 | 6 | 2 | 8 | 25 | 33 | 0.5 | 0 | 1 | 50 | 239 | 8 | 11 |
| H | 3559B? | 11 | 17 | 14 | 31 | 82 | 26 | 4.3 | 14 | 1 | 42 | 58 | 14 | 0 |
| I | 3501S | 8 | 4 | 12 | 21 | 49 | 19 | 14.7 | 34 | 1 | 40 | 72 | 8 | 0 |
| J | 3458S? | 4 | 4 | 5 | 8 | 19 | 10 | 4.6 | 33 | 1 | 35 | 74 | 3 | 0 |
| K | 3425S? | 6 | 11 | 9 | 13 | 15 | 26 | 2.9 | 13 | 1 | 24 | 80 | 0 | 120 |
| L | 3418B? | 3 | 15 | 7 | 20 | 47 | 64 | 0.8 | 0 | 1 | 26 | 120 | 0 | 0 |
| M | 3405B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 250 |
|  | 10270 |  | IGHP | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 2952H | 4 | 15 | 5 | 21 | 61 | 69 | 1.5 | 2 | 1 | 26 | 98 | 0 | 0 |
| B | 2960H? | 5 | 8 | 5 | 4 | 36 | 25 | 1.0 | 0 | 1 | 35 | 61 | 19 | 0 |
| C | 3056S? | 1 | 8 | 4 | 13 | 35 | 21 | 0.4 | 0 | 1 | 26 | 216 | 0 | 0 |
| D | 3127B? | 4 | 8 | 5 | 11 | 20 | 34 | 2.2 | 11 | 1 | 62 | 96 | 24 | 0 |
| E | 3221S | 1 | 0 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| F | 3253S? | 1 | 12 | 6 | 15 | 41 | 46 | 0.5 | 0 | 1 | 26 | 81 | 0 | 70 |
| G | 3274H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |


| LINE 10280 |  | (FITGHT |  | 1) | 2 |  | 4 |  | - | - | - | - | - |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 2695S | 0 | 2 |  |  |  |  |  |  |  |  |  |  | 8 |
| B | 2661S | 1 | 7 | 2 | 6 | 22 | 30 | 0.4 | 0 | 1 | 31 | 225 | 0 | 0 |
| C | 26395 | 2 | 10 | 4 | 14 | 52 | 35 | 0.9 | 0 | 1 | 27 | 175 | 0 | 0 |
| D | 2601H | 0 | 10 | 1 | 13 | 21 | 66 | 0.4 | 1 | 1 | 33 | 471 | 0 | 0 |
| E | 2567H | 2 | 8 | 2 | 8 | 18 | 48 | 1.2 | 20 | 1 | 67 | 162 | 26 | 0 |
| F | 2542B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 2513H | 1 | 2 | 1 | 2 | 2 | 0 | - | - | - | - | - | - | 0 |
| H | 2499B? | 8 | 6 | 7 | 10 | 26 | 7 | 9.8 | 13 | 2 | 39 | 51 | 8 | 0 |
| I | 2456H | 5 | 11 | 5 | 17 | 7 | 55 | 2.7 | 13 | 1 | 30 | 82 | 0 | 0 |
| J | 2436S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| K | 2423S? | 7 | 12 | 2 | 15 | 53 | 43 | 3.3 | 18 | 1 | 23 | 125 | 0 | 0 |
| L | 2422S? | 7 | 12 | 2 | 15 | 53 | 35 | 3.2 | 16 | 1 | 18 | 127 | 0 | 0 |
| M | 2414B? | 7 | 12 | 4 | 13 | 52 | 52 | 3.2 | 16 | 1 | 21 | 130 | 0 | 0 |

.* ESTIMATED DEPIH MAY BE UNREUTABLE BECAUSE THE SIRONGER PART - OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT

- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

| COAXIAL | COPLANAR | COPLANAR . VERTICAL | HORIZONIAL CONDUCIIVE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1074 HZ | 865 HZ | 7258 HZ | DIKE | MAG |
| SHEET | EARTH | CORR |  |  |

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPTH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

| LTN | 10280 | (FLIGHI |  | 1) |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| N | 2403S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - |  | - | - | - | - | 14 |
| 0 | 2394S? | 0 | 2 | 0 | 2 | 2 | 4 | - | - |  | - | - | - | - | 120 |
| LIN | 10290 | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |  |
| A | 1973S? | 1 | 13 | 0 | 17 | 45 | 88 | 0.4 | 0 |  | 1 | 11 | 519 | 0 | 0 |
| B | 2090S? | 0 | 5 | 1 | 6 | 20 | 22 | 0.4 | 0 |  | 1 | 39 | 287 | 0 | 0 |
| C | 2144H | 0 | 7 | 2 | 10 | 37 | 26 | 0.4 | 0 |  | 1 | 36 | 218 | 0 | 0 |
| D | 21675 | 0 | 7 | 1 | 8 | 29 | 36 | 0.4 | 0 |  | 1 | 43 | 279 | 1 | 0 |
| E | 2240H | 5 | 5 | 15 | 19 | 44 | 14 | 4.7 | 36 |  | 2 | 50 | 27 | 26 | 0 |
| F | 2258H | 7 | 8 | 7 | 13 | 35 | 35 | 5.4 | 22 |  | 2 | 42 | 42 | 14 | 0 |
| G | 2290B? | 3 | 16 | 4 | 20 | 59 | 116 | 0.9 | 0 |  | 1 | 24 | 111 | 0 | 0 |
| H | 2297B? | 6 | 15 | 9 | 41 | 108 | 55 | 2.3 | 12 |  | 1 | 28 | 106 | 0 | 0 |
| I | 2301D | 11 | 33 | 12 | 27 | 80 | 129 | 2.4 | 2 |  | 1 | 22 | 82 | 0 | 0 |
| J | 2303B? | 11 | 33 | 12 | 27 | 80 | 129 | 2.4 | 2 |  | 1 | 22 | 68 | 0 | 0 |
| K | 2310B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - |  | - | - | - | - | 7 |
| L | 2339D | 5 | 10 | 2 | 10 | 27 | 15 | 2.9 | 7 |  | 1 | 29 | 116 | 0 | 170 |
| M | 2349H | 1 | 2 | 1 | 2 | 2 | 4 | - | - |  | - | - | - | - | 0 |
| LTN | 10300 | (FLIGHP |  | 1) |  |  |  |  |  |  |  |  |  |  |  |
| A | 1839B? | 0 | 2 | 1 | 2 | 2 | 4 | - | - |  | - | - | - | - | 520 |
| B | 1788E | 5 | 10 | 6 | 15 | 45 | 34 | 2.4 | 21 |  | 1 | 49 | 117 | 14 | 0 |
| C | 1778H | 4 | 8 | 7 | 12 | 33 | 37 | 2.5 | 17 |  | 1 | 36 | 73 | 6 | 70 |
| D | 1597S? | 1 | 2 | 1 | 2 | 2 | 2 | - | - |  | - | - | - | - | 0 |
| E | 1588B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - |  | - | - | - | - | 0 |
| F | 1557H | 11 | 25 | 31 | 41 | 17 | 48 | 2.9 | 0 |  | 3 | 30 | 20 | 10 | 0 |
| G | 1541H | 8 | 23 | 11 | 34 | 89 | 112 | 2.2 | 2 |  | 1 | 32 | 54 | 6 | 0 |
| H | 1518H? | 7 | 18 | 11 | 24 | 67 | 57 | 2.5 | 0 |  | 1 | 25 | 67 | 0 | 0 |
| I | 1498E | 6 | 18 | 15 | 27 | 79 | 64 | 2.1 | 0 |  | 1. | 29 | 89 | 0 | 0 |
| J | 1492H | 8 | 16 | 4 | 30 | 63 | 28 | 3.0 | 4 |  | 1 | 21 | 55 | 0 | 0 |
| K | 1438H? | 6 | 13 | 10 | 20 | 75 | 58 | 2.4 | 12 |  | 1 | 24 | 128 | 0 | 0 |
| LIN | 10310 | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |  |
| A | 1013B? | 2 | 4 | 3 | 6 | 29 | 16 | 1.7 | 24 |  | 1 | 14 | 251 | 0 | 0 |
| B | 1087S? | 3 | 5 | 3 | 9 | 24. | 13 | 2.3 | 32 |  | 1 | 35 | 124 | 2 | 150 |
| C | 1139S? | 0 | 2 | 1 | 2 | 2 | 4 | - | - |  | - | - | - | - | 0 |
| D | 1217S | 0 | 13 | 1 | 17 | 46 | 88 | 0.4 | 0 |  | 1 | 14 | 258 | 0 | 0 |
| E | 1253B? | 12 | 11 | 15 | 36 | 96 | 68 | 8.1 | 34 |  | 1 | 40 | 56 | 14 | 40 |
| F | 1260H? | 4 | 9 | 8 | 14 | 38 | 56 | 2.2 | 27 |  | 1 | 44 | 75 | 15 | 0 |
| G | 1279D | 8 | 7 | 3 | 6 | 13 | 22 | 6.8 | 29 |  | 1 | 45 | 80 | 13 | 0 |
| H | 1289B | 28 | 35 | 43 | 57 | 139 | 75 | 7.5 | 14 |  | 3 | 41 | 18 | 22 | 0 |
| I | 1310B? | 3 | 8 | 1 | 12 | 37 | 2 | 1.9 | 21 |  | 1 | 37 | 95 | 7 | 0 |

.* ESTITMATED DEPTH MAY BE UNRELTABLE BECAUSE THE STRONGER PART

- OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT
- LTNE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

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COAXIAL COPLANAR COPLANAR . VERTITCAL . HORIZONIAL CONDUCTIVE MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARTH CORR
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ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP. PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

.* ESITIMATED DEPIH MAY BE UNRETITABLE BECAUSE THE STRONGER PART

- OF THE CONDUCIOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFFECTS.


## COAXIAL COPLANAR COPLANAR . VERTICAL . HORIZONIAL CONDUCTIVE MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARTH CORR

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT


$$
\begin{array}{ccccccc}
\text { COAXIAL COPLANAR } & \text { COPIANAR • VERTICAL } & \text { HORIZONIAL CONDUCIIVE } & \text { MAG } \\
1074 \mathrm{HZ} & 865 \mathrm{HZ} & 7258 \mathrm{HZ} & \text { DIKE } & \text { - SHEET } & \text { EARIH } & \text { CORR }
\end{array}
$$

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INTERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M


| LTNE 10390 |  | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 2634E | 6 | 2 | 9 | 21 | 63 | 35 | 28.6 | 64 | 1 | 30 | 170 | 0 | 20 |
| B | 2659S? | 0 | 4 | 1 | 6 | 17 | 25 | 0.4 | 0 | 1 | 29 | 544 | 0 | 0 |
| C | 2669S? | 0 | 4 | 1 | 6 | 15 | 21 | 0.4 | 0 | 1 | 30 | 477 | 0 | 0 |
| D | 2691D | 9 | 11 | 7 | 9 | 9 | 18 | 5.4 | 4 | 1 | 35 | 88 | 1 | 0 |
| E | 2699B | 16 | 15 | 19 | 25 | 53 | 26 | 8.5 | 4 | 2 | 29 | 39 | 3 | 0 |
| F | 2878E | 5 | 11 | 7 | 19 | 56 | 51 | 2.4 | 11 | 1 | 39 | 69 | 9 | 0 |
| G | 2920H | 10 | 13 | 12 | 32 | 70 | 53 | 5.3 | 19 | 2 | 25 | 39 | 3 | 0 |
| H | 2954H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| I | 2974H | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |


| LIN | 10400 | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 2495S? | 3 | 4 |  | 6 | 12 | 31 | 3.3 | 44 | 1 | 22 | 544 | 0 | 60 |
| B | 2461B? | 5 | 10 | 15 | 35 | 70 | 26 | 2.6 | 14 | 1 | 29 | 51 | 3 | 0 |
| C | 2459B | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| D | 2454D | 10 | 27 | 26 | 45 | 76 | 54 | 2.6 | 0 | 2 | 33 | 38 | 8 | 0 |
| E | 2451B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| F | 2359E | 2 | 5 | 0 | 17 | 48 | 54 | 1.7 | 34 | 1 | 30 | 605 | 0 | 0 |
| G | 2340E | 3 | 6 | 1 | 11 | 43 | 27 | 2.0 | 24 | 1 | 6 | 465 | 0 | 0 |
| H | 2283B? | 4 | 12 | 3 | 17 | 50 | 56 | 1.7 | 14 | 1 | 27 | 343 | 0 | 0 |


| ITN | 10410 | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 1976S? | 4 | 7 | 2 | 8 | 28 | 27 | 2.4 | 16 | 1 | 37 | 168 | 0 | 0 |
| B | 2039D | 7 | 10 | 10 | 18 | 30 | 4 | 3.8 | 1 | 2 | 52 | 36 | 22 | 0 |
| C | 2042D | 6 | 5 | 9 | 19 | 31 | 35 | 6.6 | 18 | 2 | 38 | 38 | 10 | 40 |
| D | 2056B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 18 |
| E | 2095S? | 3 | 10 | 1 | 13 | 19 | 59 | 1.3 | 3 | 1 | 14 | 395 | 0 | 40 |
| F | 2108S | 2 | 7 | 2 | 8 | 12 | 31 | 0.9 | 16 | 1 | 41 | 494 | 0 | 0 |
| G | 2130E | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| H | 2138H | 3 | 7 | 2 | 10 | 2 | 38 | 1.7 | 17 | 1 | 19 | 353 | 0 | 0 |
| I | 2182S? | 3 | 8 | 0 | 11 | 24 | 48 | 1.6 | 8 | 1 | 31 | 698 | 0 | 0 |
| J | 2197S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| K | 2210S? | 3 | 7 | 5 | 10 | 21 | 15 | 1.9 | 11 | 1 | 49 | 133 | 10 | 0 |

LTNE 10420 (FLIGHT 1)

| A |  |
| :---: | :---: |
|  |  |

.* ESTIMATED DEPIH MAY BE UNREITABLE BECAUSE THE SIRONGER PART

- OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLITGHT
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

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COAXIAL OOPLANAR COPLANAR . VERIICAL . HORIZONIAL CONDUCIIVE MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARTH OORR
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ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

| LTNE | 10420 |  | rght | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | 1856B | 7 | 9 | 13 | 11 | 20 | 8 | 4.9 | 20 | 2 | 43 | 40 | 15 | 70 |
| C | 1848B? | 11 | 4 | 4 | 4 | 14 | 69 | 0.2 | 0 | 1 | 33 | 59 | 18 | 0 |
| D | 1801S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | . - | - | - | - | 0 |
| E | 1752S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - - | - | - | - | 0 |
| F | 1743H | 3 | 8 | 1 | 11 | 17 | 33 | 1.6 | 7 | - 1 | 7 | 487 | 0 | 0 |
| G | 1691D | 1 | 2 | 0 | 2 | 2 | 4 | - | - | - - | - | - | - | 0 |
| H | 1689B? | 2 | 16 | 0 | 8 | 13 | 49 | 0.8 | 8 | 1 | 23 | 474 | 0 | 30 |
| I | 1675B? | 3 | 8 | 3 | 11 | 30 | 69 | 1.7 | 8 | 1 | 21 | 299 | 0 | 0 |
| J | 1658B? | 5 | 10 | 5 | 9 | 11 | 28 | 2.7 | 8 | 1 | 30 | 106 | 0 | 0 |
| K | 1641D | 9 | 15 | 8 | 17 | 57 | 38 | 4.1 | 15 | 1 | 42 | 128 | 8 | 120 |
| LTNE | 10430 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 13635 | 2 | 5 | 2 | 7 | 26 | 21 | 1.4 | 13 | 1 | 33 | 234 | 0 | 0 |
| B | 1402B | 8 | 4 | 21 | 4 | 19 | 53 | 0.4 | 0 | 1 | 29 | 59 | 15 | 0 |
| C | 1407B | 14 | 20 | 22 | 36 | 85 | 35 | 5.3 | 8 | 2 | 37 | 31 | 13 | 60 |
| D | 1417S | 8 | 9 | 4 | 10 | 17 | 20 | 5.4 | 2 | 1 | 43 | 98 | 5 | 0 |
| E | 14935 | 2 | 7 | 2 | 9 | 26 | 14 | 1.1 | 9 | - 1 | 34 | 355 | 0 | 0 |
| F | 1544B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 1547B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | . - | - | - | - | 0 |
| H | 1550B? | 1 | 2 | 1 | 2 | 1 | 4 | - | - | - - | - | - | - | 0 |
| I | 1559S | 4 | 16 | 4 | 25 | 65 | 111 | 1.2 | 2 | - 1 | 26 | 198 | 0 | 0 |
| J | 1570H | 8 | 13 | 7 | 21 | 57 | 49 | 3.8 | 21 | 1 | 50 | 80 | 18 | 0 |
| K | 1583B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | . - | - | - | - | 0 |
| LTNE | 10440 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 1134S | 0 | 9 | 1 | 13 | 37 | 54 | 0.4 | 0 | 1 | 20 | 449 | 0 | 0 |
| B | 1106D | 5 | 11 | 9 | 15 | 27 | 35 | 2.4 | 11 | 1 | 44 | 128 | 8 | 13 |
| C | 1094B | 6 | 10 | 11 | 17 | 36 | 17 | 3.6 | 15 | 2 | 48 | 40 | 20 | 0 |
| D | 1081B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - - | - | - | - | 0 |
| E | 988S | 4 | 6 | 1 | 6 | 20 | 21 | 3.1 | 25 | 1 | 28 | 460 | 0 | 0 |
| F | 935S | 3 | 7 | 1 | 8 | 9 | 33 | 1.8 | 25 | 1 | 28 | 459 | 0 | 0 |
| G | 924S | 2 | 13 | 2 | 17 | 39 | 94 | 0.7 | 4 | 1 | 22 | 335 | 0 | 9 |
| H | 916S | 1 | 7 | 1 | 8 | 13 | 59 | 0.5 | 9 | 1 | 27 | 281 | 0 | 0 |
| I | 906S | 4 | 18 | 3 | 27 | 59 | 122 | 1.3 | 7 | 1 | 21 | 242 | 0 | 0 |
| J | 893B? | 6 | 10 | 6 | 16 | 42 | 31 | 3.2 | 21 | 1 | 45 | 77 | 14 | 0 |
| K | 885B | 7 | 4 | 0 | 8 | 21 | 19 | 12.5 | 31 | 1 | 36 | 75 | 4 | 0 |
| L | 8785? | 9 | 10 | 6 | 17 | 38 | 18 | 6.0 | 11 | 1 | 31 | 76 | 0 | 0 |
| M | 875S? | 9 | 10 | 6 | 17 | 38 | 18 | 6.0 | 22 | 1 | 55 | 95 | 19 | 160 |
| LTNE | 10450 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 615S? | 2 | 5 | 2 | 6 | 24 | 23 | 1.9 | 25 | 1 | 29 | 383 | 0 | 0 |
| .* ESTIMATED DEPIH MAY BE UNRETIABLE BECAUSE THE STRONGER PART <br> - OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLTGHT <br> . LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFFCCIS. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

$$
\begin{array}{lrccccccc}
\text { COAXIAL } & \text { COPLANAR } & \text { COPLANAR • VERIICAL } & \text { • HORIZONIAL CONDUCIIVE } & \text { MAG } \\
1074 \mathrm{HZ} & 865 \mathrm{HZ} & 7258 \mathrm{HZ} & \text { DIKE } & \text { • SHEET } & \text { EARIH } & \text { CORR }
\end{array}
$$

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPTH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

.* ESTIMATED DEPIH MAY BE UNRELTABLE BECAUSE THE STRONGER PART

- OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGGHT
- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

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COAXIAL COPLANAR COPLANAR . VERIICAL . HORIZONIAL CONDUCIIVE MAG 1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARIH CORR
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ANOMALY/ REAL QLAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIENEN M OHM-M M NT


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COAXIAL COPLANAR COPLANAR . VERTICAL . HORIZONIAL CONDUCTIVE MAG
1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARTH CORR
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ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPTH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT


| COAXIAL | COPLANAR | COPLANAR . VERIICAL | . HORIZONTAL CONDUCIIVE | MAG |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| 1074 HZ | 865 HZ | 7258 HZ. | DIKE | SHEET | EARIH | CORR |

ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PPM PPM PPM PPM PPM .SIEMEN M .SIEMEN M OHM-M M NT

| LINE 10560 |  | (FLIGHP |  | 1) |  |  |  |  |  |  | 32 | 78 | 2 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| H | 1644B? | 12 | 6 | 13 | 27 | 35 | 67 | 16.8 | 28 | 1 |  |  |  |  |
| I | 1654B? | 6 | 18 | 9 | 24 | 42 | 89 | 2.1 | 4 | 1 | 23 | 149 | 0 | 80 |
| J | 1690S? | 1 | 2 | 0 | 2 | 2 | 4 | - | - | - | - | - | - | 140 |
| K | 1709s? | 4 | 17 | 3 | 22 | 48 | 125 | 1.4 | 18 | 1 | 22 | 424 | 0 | 13 |
| L | 1718S | 4 | 8 | 1 | 12 | 29 | 57 | 2.1 | 24 | 1 | 26 | 296 | 0 | 50 |
| M | 1761S? | 4 | 10 | 0 | 11 | 28 | 47 | 1.8 | 14 | 1 | 14 | 510 | 0 | 0 |
| N | 1793S | 4 | 5 | 0 | 5 | 18 | 38 | 3.0 | 36 | 1 | 37 | 693 | 0 | 0 |
| 0 | 1803S | 4 | 7 | 3 | 12 | 38 | 30 | 2.6 | 20 | 1 | 23 | 373 | 0 | 0 |
| LTINT | 10570 | (FLIGHT |  | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 1498D? | 10 | 11 | 8 | 9 | 23 | 46 | 5.8 | 22 | 1 | 25 | 125 | 0 | 0 |
| B | 1495D? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| C | 1466B? | 6 | 11 | 2 | 13 | 39 | 61 | 3.2 | 24 | 1 | 18 | 443 | 0 | 0 |
| D | 1456S? | 2 | 12 | 0 | 13 | 21 | 88 | 0.8 | 13 | 1 | 23 | 466 | 0 | 60 |
| E | 1424S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| F | 1408S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 1365H | 6 | 12 | 8 | 14 | 49 | 18 | 2.9 | 21 | 1 | 21 | 152 | 0 | 0 |
| H | 1354H | 6 | 11 | 3 | 9 | 30 | 29 | 3.0 | 22 | 1 | 34 | 86 | 5 | 0 |
| I | 1313B? | 1 | 2 | 1 | 1 | 2 | 4 | - | - | - | - | - | - | 0 |
| J | 1289B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 20 |
| K | 1273S? | 2 | 5 | 1 | 7 | 21 | 26 | 1.9 | 18 | 1 | 32 | 206 | 0 | 0 |
| L | 1215S | 4 | 15 | 2 | 9 | 40 | 115 | 1.5 | 10 | 1 | 7 | 382 | 0 | 0 |
| M | 1171s? | 1 | 2 | 0 | 2 | 2 | 4 | - | - | - | - | - | - | 20 |
| N | 1158B? | 7 | 21 | 4 | 18 | 67 | 73 | 2.3 | 12 | 1 | 28 | 277 | 0 | 0 |
| LIN | 10580 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 762H? | 2 | 6 | 2 | 10 | 22 | 15 | 1.7 | 16 | 1 | 30 | 109 | 0 | 0 |
| B | 7995 | 0 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| C | 821S? | 3 | 13 | 2 | 14 | 34 | 86 | 1.2 | 8 | 1 | 17 | 490 | 0 | 110 |
| D | 831H? | 5 | 6 | 1 | 7 | 19 | 11 | 3.9 | 44 | 1 | 47 | 605 | 0 | 70 |
| E | 863B? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| F | 874D | 17 | 8 | 13 | 6 | 35 | 7 | 20.9 | 33 | 1 | 29 | 96 | 1 | 0 |
| G | 879D | 1 | 11 | 14 | 52 | 152 | 167 | 0.5 | 2 | 1 | 28 | 76 | 1 | 30 |
| H | 882H? | 15 | 37 | 14 | 52 | 152 | 167 | 3.3 | 8 | 1 | 25 | 79 | 1 | 0 |
| I | 893H? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| J | 895H? | 5 | 14 | 5 | 19 | 45 | 71 | 2.0 | 7 | 1 | 29 | 126 | 0 | 0 |
| K | 919B? | 5 | 10 | 2 | 7 | 17 | 30 | 2.8 | 18 | 1 | 35 | 201 | 0 | 20 |
| L | 946S? | 4 | 8 | 4 | 13 | 34 | 36 | 2.6 | 23 | 1 | 47 | 105 | 12 | 0 |
| M | 976S? | 4 | 10 | 1 | 13 | 25 | 36 | 1.9 | 4 | 1 | 11 | 519 | 0 | 0 |
| N | 1021D | 6 | 17 | 4 | 22 | 58 | 71 | 1.9 | 9 | 1 | 14 | 397 | 0 | 0 |
| 0 | 1026D | 7 | 23 | 4 | 22 | 58 | 117 | 2.0 | 4 | 1 | 8 | 412 | 0 | 0 |

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. OF THE CONDUCIOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT .

- LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

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COAXIAL COPLANAR COPLANAR . VERIICAL . HORIZONIAL CONDUCTIVE
1074 HZ 865 HZ 7258 HZ . DIKE . SHEET EARIH CORR
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ANOMALY/ REAL QUAD REAL QUAD REAL QUAD . COND DEPIH*. COND DEPIH RESIS DEPIH FID/INIERP PPM PFM PFM PFM PFM PFM .SIEMEN M .SIEMEN M OHM-M M NT

| LINE | 10590 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | 511D? | 18 | 22 | 19 | 35 | 107 | 62 | 6.7 | 19 | 1 | 25 | 64 | 1 | 0 |
| B | 508B? | 8 | 24 | 19 | 35 | 107 | 62 | 2.2 | 8 | 1 | 27 | 64 | 3 | 0 |
| C | 503B? | 7 | 14 | 5 | 14 | 30 | 94 | 2.7 | 23 | 1 | 23 | 86 | 0 | 0 |
| D | 496B? | 12 | 48 | 15 | 63 | 75 | 197 | 2.0 | 3 | 1 | 20 | 89 | 0 | 0 |
| E | 486B? | 6 | 3 | 10 | 25 | 52 | 106 | 13.3 | 54 | 1 | 40 | 115 | 7 | 0 |
| F | 476H? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| G | 438H | 3 | 5 | 3 | 14 | 41 | 26 | 2.0 | 29 | 1 | 37 | 118 | 4 | 50 |
| H | 378S? | 0 | 29 | 1 | 36 | 51 | 206 | 0.4 | 9 | 1 | 10 | 331 | 0 | 40 |
| I | 364S? | 1 | 2 | 0 | 1 | 2 | 4 | - | - | - | - | - | - | 0 |
| $J$ | 351S? | 0 | 2 | 0 | 2 | 2 | 4 | - | - | - | - | - | - | 200 |
| K | 344S? | 0 | 2 | 0 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| L | 299B? | 0 | 27 | 1 | 38 | 77 | 206 | 0.4 | 6 | 1 | 7 | 334 | 0 | 30 |
| M | 293D | 0 | 21 | 1 | 15 | 38 | 79 | 0.4 | 6 | 1 | 5 | 316 | 0 | 0 |
| N | 287B | 2 | 20 | 3 | 15 | 38 | 132 | 0.5 | 0 | 1 | 8 | 464 | 0 | 50 |
| LITNE | 10591 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 1856S | 4 | 14 | 3 | 28 | 77 | 83 | 1.6 | 8 | 1 | 20 | 147 | 0 | 0 |
| B | 1860S | 7 | 10 | 9 | 19 | 53 | 52 | 4.2 | 23 | 1 | 27 | 105 | 0 | 0 |
| C | 1874S | 3 | 8 | 4 | 13 | 38 | 39 | 1.7 | 18 | 1 | 40 | 171 | 4 | 0 |
| D | 1909S? | 0 | 10 | 1 | 13 | 31 | 13 | 0.4 | 0 | 1 | 28 | 575 | 0 | 90 |
| E | 1940S? | 4 | 10 | 1 | 15 | 28 | 69 | 2.2 | 12 | 1 | 26 | 269 | 0 | 0 |
| LINE | 19010 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 2160S? | 4 | 9 | 3 | 10 | 30 | 42 | 2.4 | 8 | 1 | 33 | 120 | 0 | 190 |
| B | 2288S? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| LINE | 19020 |  | IGHT | 1) |  |  |  |  |  |  |  |  |  |  |
| A | 29368? | 1 | 2 | 1 | 2 | 2 | 4 | - | - | - | - | - | - | 0 |
| B | 2931S | 7 | 14 | 7 | 44 | 127 | 162 | 3.0 | 18 | 1 | 14 | 193 | 0 | 110 |
| C | 2930B? | 7 | 14 | 7 | 44 | 127 | 163 | 2.9 | 17 | 1 | 13 | 193 | 0 | 0 |
| D | 2857S? | 7 | 18 | 7 | 25 | 69 | 66 | 2.6 | 0 | 1 | 22 | 145 | 0 | 0 |
| E | 2847H | 3 | 8 | 4 | 11 | 35 | 25 | 2.1 | 4 | 1 | 23 | 214 | 0 | 0 |
| F | 2827S? | 1 | 4 | 0 | 4 | 12 | 20 | 0.6 | 0 | 1 | 37 | 278 | 13 | 0 |

[^3]
[^0]:    ${ }^{1}$ Resistivity mapping with an airborne multicoil electromagnetic system: Geophysics, v. 43, p.144-172

[^1]:    2 The gradient analogy is only valid with regard to the identification of anomalous locations.

[^2]:    ${ }^{4}$ See Figure 5-1 presented earlier.

[^3]:    .* ESTTMATED DEPIH MAY BE UNRELTABLE BECAUSE THE STRONGER PART
    . OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLITGTT - LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

