52.1
52.2

OPEN FILE

RELINQUISHMENT REPORT ON

EXPLORATION LICENCE 4179

23rd MARCH 1987 - 22nd MARCH 1988

LICENCEES : Peko Wallsend Operations Limited.

OPERATOR : Geopeko - A Division of Peko Wallsend Operations Limited (Incorporated in New South Wales).

MAY, 1988

Compiled by : H. S. Horvath

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ILLUSTRATIONS

APPENDICES

1. INTRODUCTION

Exploration Licence 4179 is located approximately 30 kms north-west of the township of Tennant Creek (TF 3760). The licence was granted on the 23rd March, 1983 and originally covered an area of 113 blocks. This area was reduced to 56 blocks in 1985, then 28 blocks in 1986, and then 14 blocks in 1987.

This report outlines exploration undertaken by Geopeko from 23rd March, 1987 to 22nd March, 1988 in that part of EL 4179 that has now been relinquished (7 blocks) pursuant to the Mining Act, 1980.

The area held under licence and the relinquished area are indicated on TF 3760.

2. EXPLORATION HISTORY / PHILOSOPHY

The area covered by EL 4179 has been extensively investigated in the past leading to the discovery of two major mines, namely Orlando and Gecko. As a consequence of these successes a considerable portion of the E.L. is covered with otehr forms of mining tenure.

Lodes commonly found within the Tennant Creek locality have been discrete bodies of iron-oxide (magnetite/hematite) together with lesser quantities of quartz, chlorite, and/or talc, sericite, and carbonate. The exploration technique adopted to identify these bodies (which do not always outcrop) has continued to be the evaluation of magnetic data both in the form of low level aeromagnetics as well as ground traverses.

3. WORK UNDERTAKEN

Geological outcrop is variable, but generally poor in the relinquished blocks. As a consequence, exploration activity concentrated on reconnaissance magnetics and the defining of the magnetic anomalies. If the interpretation of the magnetic anomaly appeared to be consistant with that of a typical Magnetic Lode, it is then drilled. Results of this work has led to other forms of tenure arrangements over small areas within the relinquished blocks.

3.1 Reconnaissance Magnetics

During the first year of tenure, magnetic anomalies (such as Explorer 198 - Appendix I) were identified from an airborne survey, and then were located on the ground by traversing the anomaly area with a Geometrics G856 Magnetometer.

3.2 Grid Magnetics

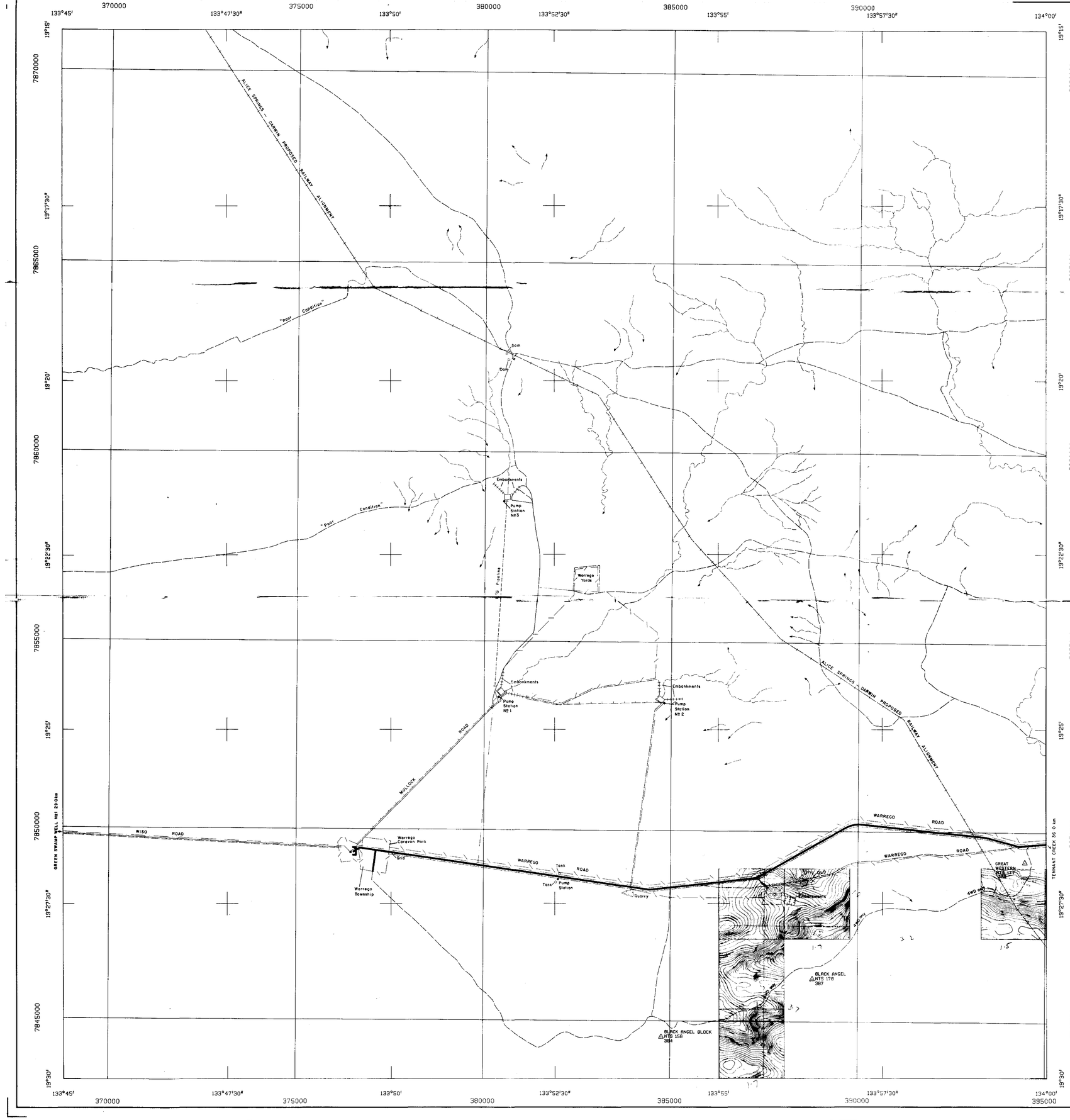
If the magnetic data gathered from the reconnaissance traverses suggested the presence of a buried Magnetite-type Lode then a formal grid was established. Following this, a more accurate magnetic survey is undertaken along the grid using a G856 Magnetometer (Appendix I).

3.3 Drilling, Assays, & Downhole Magnetics

Geophysical modelling of the magnetic data is then undertaken to provide a drilling target, and subsequently drilling is aimed at the interpreted magnetic target. Following completion of a hole, the core is geologically investigated; via petrology and magnetic susceptibility to ascertain if the magnetic anomaly is explained. In addition, assays are undertaken of any relevant lode intervals intersected. Furthermore, a downhole magnetometer survey is undertaken to determine body parameters and provide information with respect to the next drill hole target.

3.4 Explorer 198 Prospect

Explorer 198 (Appendix I) followed this procedure leading to the drilling of two holes; DDH:1 in 1984 and DDH:2 in 1985. Assays, and later Lead Isotope studies in 1987 did not show encouragement. Consequently a decision was made not to pursue this prospect any further.



GEOLOGICAL LEGEND

			Descriptions
CAINOZOIC-TERTIARY		t	laterite (lat) ferricrete (fcr)
MESOZOIC-CRETACEOUS?		k	sandstone (ss), siltstone (sst) conglomerate (cgl)
PALAEOZOIC — CAMBRIAN-MIDDLE	Point Wakefield Beds	Cmp	sandstone (ss), claystone (cst)
	Gum Ridge Formation	Cmg	calcareous siltstone (ch sst), chert (cht) bedded limestone (ls) to sandstone (ss)
CAMBRIAN-EARLY	Heavitree Quartzite	Cmh	quartzite (qzte)
	Heavitree Quartzite	Chb	basalts (bas), basal sandstone (bss) breccia (bca)
	Heavitree Quartzite	Chs	sandstone (ss), claystone (cst)
	Heavitree Quartzite	Chc	conglomerate (cgl), sandstone (ss) quartzite (qzte)
	Heavitree Quartzite	Chv	basalts (bas), basal sandstone (bss) breccia (bca)
PRE-CAMBRIAN — ADELAIDEAN?	Rising Sun Formation	Ars	conglomerate (cgl), sandstone (ss) quartzite (qzte)
CARPENTARIAN — CAMOOWEAL CREEK BLOCK	Matches Creek Group	Ams	sandstone (sst), pebble conglomerate (pcgl) siltstone (cst), shale (sh)
	Undifferentiated	Ams	
	Attack Creek Formation	Amsl	siltstone (slst), limestone (ls) minor mudstone (mst), sandstone (ss)
	Short Range Sandstone	Ams	quartzite (qzte), minor conglomerate (cgl)
	Murphett Creek Formation	Amm	subgreywacke, sandstone (ss), siltstone (sst) shale (sh), conglomerate (cgl)
	Hayward Creek Formation	Amh	sandstone (ss), basalt (bas) basal conglomerate (bcg)
	Undifferentiated	Ama	
LOWER PROTEROZOIC — WARRAMUNGA GROUP	Undivided	Wau	greywacke, siltstone, shale (gwke, slt, sh)
		Wau	greywacke, grit (gwke, gt)
		Wau	chert (cht), cherty sediments (chts)
		Was	siltstone, shale (slst, sh)
		Wah	haematite shale (hmsh)
		Wac	calcareous and (cas), calcareous (cs) dolomite (dol), mudflow conglomerate (mdc)
		Wap	quartz porphyroid (qzpo)
		Wap	quartz feldspar porphyroid (qfpo)
		Wap	undifferentiated porphyroid (upo)
	Bernborough Formation	Wab	crystal tuff (ctf), gritty tuff (gtf), rhyolite (rhy)
	Whippet Formation	Wwa	sandstone (ss), quartzite (qzte)
	Undifferentiated Acid	Pg	granite (gmte)
	Undifferentiated Basic	Pd	dolerite (do), diorite (dio), basic intrusives (bx), lamprophyre (lamp)
INTRUSIVES	Iliam	Pg	granite (gmte)
	Carpentarian	Pg	granite (gmte)
	Lower Proterozoic	Pg	granite (gmte)

- Geological Boundary
- Plunge of minor anticline
- Plunge of minor syncline
- Plunge of fold
- Fault showing relative horizontal movement
- Thrust fault
- Shear zone
- Fault or vertical boundaries (m)
- Unconformity
- Strike and dip of bedding
- Prevailing strike and dip of bedding
- Pitch of lineation in cleavage plane
- Vertical cleavage
- Fault breccia
- Water bore
- Auger hole
- Diamond percussion drillhole
- Trench

Where location of boundaries, folds and faults is approximate, line is broken. Where covered, queried, or uncertain, magnetic interpretation. 'P' denotes photographic interpretation. Where concealed, boundaries and folds are dotted, faults are shown by short dashes.

- Strike and dip of strata
- Vertical strata
- Horizontal strata
- Overturned strata
- Dip: 15°
- Dip: 15°-45°
- Dip: >45°
- Horizontal strata

Air photo interpretation

AEROMAGNETICS SPECIFICATIONS

AREA A
Contour Interval: 10 nT
Shading on low side: 5 nT
Datum: Arbitrary
Flight Line Spacing: 660 ft (1/8 mile)
Flight Altitude: 300 ft MTC
Flown and Compiled: 1973, Geometrics
Instrument: Geometrics G-803 Proton Magnetometer

AREA B
Contour Interval: 10 nT
Shading on low side: 5 nT
Datum: Arbitrary
Flight Line Spacing: 660 ft (1/8 mile)
Flight Altitude: 300 ft MTC
Flown and Compiled: 1974, Geometrics
Instrument: Geometrics G-803 Proton Magnetometer

AREA C
Contour Interval: 10 nT
Shading on low side: 5 nT
Datum: Arbitrary
Flight Line Spacing: 660 ft (1/8 mile)
Flight Altitude: 300 ft
Flown and Compiled: 1974, Geometrics
Instrument: Geometrics G-803 Proton Magnetometer

AREA D
Contour Intervals: 20 nT, 10 nT
Flight Line Spacing: 660 ft
Flight Altitude: 300 MTC
Flown and Compiled: 1969, Geophysical Resources Development Co
Horizontal control based on photo assembly compiled by Geophysical Resources Development Co., Ramsgate N.S.W.

AREA E
Contour Interval: 10 nT
Flight Line Spacing: 200 metres
Tie Line Spacing: 1000 metres
Detector Height: 240 ft
Flown and Compiled: 1975, Geosearch Pty Ltd
Positron Control: Mini-Ranger Radar Transponders

AREA F
Contour Interval: 50 gammas
Flight Line Spacing: 1.5 mile
Flight Altitude: 400 ft
Flown and Compiled: BMR 1956, 1960
Instrument: MFS-4 Fluxgate Magnetometer

AREA G
Contour Interval: 10 nT
Shading on low side: 5 nT
Datum: 1965 IGRF, updated to 1974
Flight Line Spacing: 333 metres
Flight Altitude: 90 metres AMT
Flown and Compiled: 1974, Geometrics
Instrument: Geometrics G-803 Proton Magnetometer

AREA H
Contour Interval: 20 gammas, 10 gammas
Flight Line Spacing: 1.8 mile
Flight Altitude: 400 MTC
[illegible]

AREA I
Contour Interval: 20 gammas
Flight Line Spacing: 1.5 mile
Flight Altitude: 300 MTC
Datum: Arbitrary
Flown and Compiled: Geophysical Resources Development Co
Horizontal Control based on photo assembly

AREA J
Contour Interval: 1 and 10 gammas
Flight Line Spacing: 400 metres (approx)
Flight Altitude: 250 ft
Datum: Corrected for Regional Gradient
West-East 0.686 gamma
South-North 8.128 gammas
Flown: 1972 Geophysical Resources Development Co
Compiled: 1973 Compagnie Generale de Geophysique
Instrument: Magnetometer - Geometrics Digital

AREA K
Contour Interval: 10 and 20 gammas
Flight Line Spacing: 1.5 mile
Flight Altitude: 300 MTC
Datum: Arbitrary
Flown and Compiled: 1970-1971 Geophysical Resources Development Co
Horizontal Control based on government supplied base compilation sheets

AREA L
Contour Interval: 10 and 20 gammas
Flight Line Spacing: 1.6 mile
Flight Altitude: 300 MTC
Flown and Compiled: 1970 Geophysical Resources Development Co
Horizontal Control based on Universal Transverse Mercator Projection

AREA M
Contour Interval: 10 gammas
Shading on low side: 5 gammas
Datum: 1975 IGRF updated to 1977
Flight Line Spacing: 500 metres
Flight Altitude: 90 metres MTC
Flown and Compiled: 1977-1978 Geometrics instrument: Geometrics G-803 Proton Magnetometer

AREA N
Contour Interval: 10 gammas
Flight Line Spacing: 1:10 mile
Flight Altitude: 250 ft
Flown and Compiled: BMR 1964, 1966, 1967
Instrument: MFS-4 Fluxgate Magnetometer

TENURE LEGEND

- Municipal Boundary
- Town Planning Boundary
- Pastoral Lease
- Aboriginal Land Claim Boundary
- Mineral Reserve (M.R.) or Policy Reserve
- Exploration Licence Boundary

MCC 23 — Leasing: ERL No. — Exploration Retention Lease; MCC No. — Mineral Claim; ML No. — Mineral Lease; GML No. — Gold Mining Lease; EMP No. — Extractive Mineral Permit; EML No. — Extractive Mineral Lease; TL No. — Tailings Licence

W.R. — Water Rights (refer Mining Act 1980, Section 191, Sub-section 20)

TOPOGRAPHICAL LEGEND

- Sealed Road — two lanes
- Sealed Road — one lane
- Unsealed Road
- Vehicle track
- High Voltage Transmission Line
- Telephone or Telegraph Lines
- Fence
- BATTERY HILL △ Horizontal Control Point (Trigonometrical Station)
- Building — general
- Farm or Homestead Building
- Windmill
- Tank or Small Dam
- Waterhole, Bore or Well
- Watercourse
- Watercourse — indefinite

MINERAL DEPOSITS AND WORKINGS

- *Cu — Mineral occurrence with optional mineral-letter symbol
- Prospect or mine with < 500 tonnes production
- Prospect or mine with > 500 tonnes production
- Major Mine > 100 000 tonnes production
- Open Cut or quarry, minor
- Open Cut or quarry, major
- Alluvial workings, minor
- Alluvial workings, major
- Battery or Smelter

N.B. Abandoned when: [illegible] or / through feature.

PROSPECT CODE NAMES

Ex	Explorer (Geopeko)
Nav	Navigator (Geopeko)
Rov	Rover (Geopeko)
TC	Tennant Creek (Cuprex)
Rior (R)	Australian Dev. Ltd.
C11 (BMR)	BMR Prospect
50-77	BMR survey (Geopeko)

MAGNETIC ANOMALIES

○	Interpreted
●	Drilled
IS	Ironstone
MS	Magnetic Sediments
BI	Basic Intrusive
?	Explanation Unknown

RMG NORTH
TRUE NORTH
MAGNETIC NORTH

NORTH POINT RELATIONSHIPS ARE SHOWN FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS TRUE FOR 1980.

RMG/MAGNETIC ANGLE 4°53'13"
RMG CONVERGENCE 0°-22'23.74"
SECULAR VARIATION 0°0'5" East per year

LOCATION DIAGRAM

5659 IV	5659 I	5759 IV
5659 III	5659 II	5759 III
5658 IV	5658 I	5758 IV

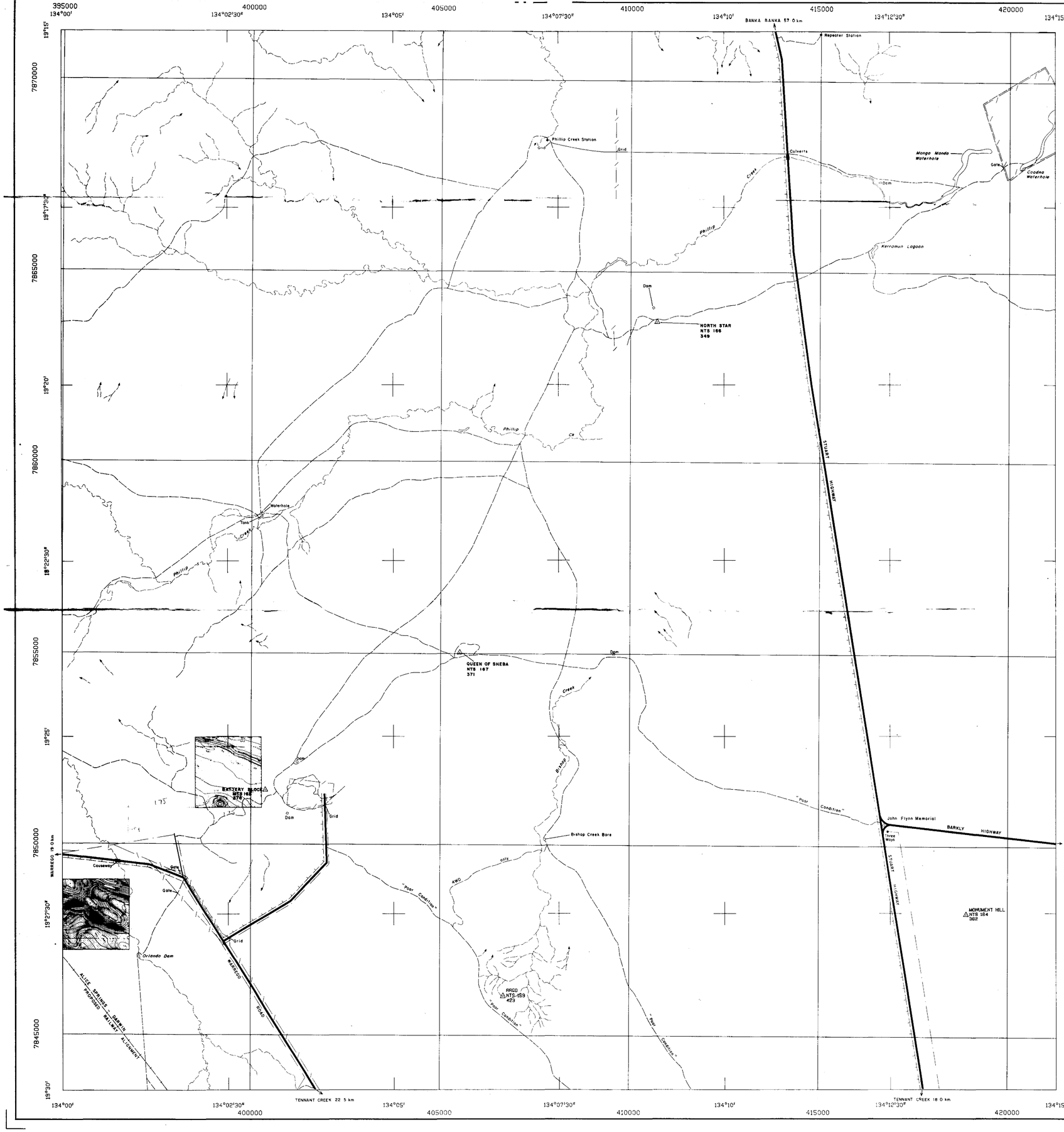
GEOPEKO
A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

1:50 000
1000 0 1000 2000 3000 4000 5000 Metres
AUSTRALIAN MAP GRID

TENNANT CREEK SE53-14
CENTRAL FIELD
EL4179 RELINQUISHED AREA
AEROMAGNETIC CONTOURS

Date: 8 JUN 1988
Geologist:
Checked:
Drawn:
Map Ref: SHORT RANGE-II
Base: TENNANT CREEK N.T.

8871.4



GEOLOGICAL LEGEND

CAINOZOIC TERTIARY			T	ferricrete (cal); ferricrete (fcl)
MESOZOIC CRETACEOUS?			K	sandstone (ss); siltstone (sist); conglomerate (cgl)
PALAEOZOIC — CAMBRIAN MIDDLE	Point Wakefield Beds		Cmp	sandstone (ss); claystone (cls)
	Gum Ridge Formation		Cmg	lossilifer (ls); siltstone (cls); silt; chert; interbedded limestone (ls); fsl; sandstone (ss)
CAMBRIAN-EARLY	Helen Springs Volcanics		Ch	basalts (bas); basal sandstone (bss); breccia (brc)
ADELAIDEAN?	Reynolds Range Group	Rising Sun Formation	Pgr	conglomerate (cgl); sandstone (ss); quartzite (qte)
		Hatches Creek Group	Pgh	sandstone (ss); pebble conglomerate (pcgl); siltstone (sist); shale (sha)
CARPENTARIAN	MANGOOLOOMBRI BEDS	Undifferentiated	Pol	
		Attack Creek Formation	Pota	siltstone (sist); whaleback (ms); minor mudstone (mst); sandstone (ss);
		Snort Range Sandstone	Pots	quartzite (qzte); minor conglomerate (cgl)
		Morgan Creek Formation	Pom	feldspathic sandstone (fss); siltstone (sist); shale (sh); conglomerate (cgl)
		Whistle Creek Basalt	Pop	sandstone (ss); basalt (bas); basal conglomerate (bcgl);
PRE-CAMBRIAN — LOWER PROTEROZOIC	WARRAMUNGA GROUP	Undifferentiated	Pw	
		Undivided	Pwt	greywacke; siltstone; shale (gwke sist sh)
			Pwg	greywacke; grit (gwke gt)
			Pwc	chert (ch); cherty sediments (cherts)
			Pwsi	siltstone; shale (sist sh)
			Pwh	haematite shale (hmsh)
			Pwr	hydrothermal and brecciated sediments (qtz-feldspar rich); matrix supported conglomerate (mtrx)
			Pwqp	quartz porphyroid (qzpo)
			Pwqs	quartz-feldspar porphyroid (qfpo)
			Pwp	undifferentiated porphyroid (upo)
		Bemborough Formation	Pwh	crystal tuff (crtf); grits; tuff (gft); rhyolite (rhy)
		Whopper Formation	Pww	sandstone (ss); quartzite (qzte)
INTRUSIVES	Undifferentiated Acid		Pg	granite (grnt)
	Basic		Pd	dolerite (dol); diorite (dior); basic intrusives (bi); lamprophyre (lamp)
	Carpentarian		Pcg	granite (grnt)
	Lower Proterozoic		Pig	granite (grnt)

- Geological Boundary
- Plunge of minor anticline
- Plunge of minor syncline
- Plunge of fold
- Fault showing relative horizontal movement
- Thrust fault
- Shear zone
- Quartz veins (qz) / sediments (sed)
- Unconformity
- Where location of boundaries, faults and facies is approximate use is broken. Where inferred (queried) in denotes magnetic interpretation. P denotes photographic interpretation. Where concealed boundaries and faults are plotted faults are shown by short dashes.
- 70 Strike and dip of strata
- Vertical strata
- Horizontal strata
- Overturned strata
- Dip 15 - 45
- Dip 15 - 45
- Dip > 45
- Horizontal strata
- Trend lines

air photo interpretation

- 80 Strike and dip of cleavage
- Prevailing strike and dip of cleavage
- 70 / 50 Direction of dip of cleavage plane
- Vertical cleavage
- Fault breccia
- Water bore
- Auger hole
- Diamond drill hole (drillhole)
- Trench

AEROMAGNETICS SPECIFICATIONS

AREA A
Contour Interval 10 nT
Shading on low side 5 nT
Datum Arbitrary
Flight Line Spacing 660 ft (1/8 mile)
Flight Altitude 300 ft MTC
Flown and Compiled 1973 Geometrics
Instrument Geometrics G-803 Proton Magnetometer

AREA B
Contour Interval 10 nT
Shading on low side 5 nT
Datum Arbitrary
Flight Line Spacing 660 ft (1/8 mile)
Flight Altitude 300 ft MTC
Flown and Compiled 1974 Geometrics
Instrument Geometrics G-803 Proton Magnetometer

AREA C
Contour Interval 10 nT
Shading on low side 5 nT
Datum Arbitrary
Flight Line Spacing 660 ft (1/8 mile)
Flight Altitude 300 ft
Flown and Compiled 1974 Geometrics
Instrument Geometrics G-851 Proton Magnetometer

AREA D
Contour Intervals 20 nT 10 nT
Flight Line Spacing 660 ft
Flight Altitude 300 MTC
Flown and Compiled 1969 Geophysical Resources Development Co
Horizontal control based on photo assembly
Compiled by Geophysical Resources Development Co Ramsgate N S W

AREA E
Contour Interval 10 nT
Flight Line Spacing 500 metres
Flight Line Height 150 metres
Datum 1st Airport 200 ft
Flown and Compiled MEL Surveys Pty Ltd
Positional Control Mini Ranger Radar Geometrics

AREA F
Contour Interval 50 gammas
Flight Line Spacing 1/2 mile
Flight Altitude 500 ft
Flown and Compiled BMR 1956 1960
Instrument MFS-4 Fluxgate Magnetometer

AREA G
Contour Interval 10 nT
Shading on low side 5 nT
Datum 1965 IGRF updated to 1974
Flight Line Spacing 333 metres
Flight Altitude 182 metres AMT
Flown and Compiled 1974 Geometrics
Instrument Geometrics G-803 Proton Magnetometer

AREA H
Contour Interval 20 gammas 10 gammas
Flight Line Spacing 1/8 mile
Flight Altitude 400 MTC
Flown and Compiled 1969 Geophysical
Horizontal Control based on photo assembly

AREA I
Contour Interval 20 gammas
Flight Line Spacing 1/5 mile
Flight Altitude 300 MTC
Datum Arbitrary
Flown and Compiled Geophysical Resources Development Co
Horizontal Control based on photo assembly

AREA J
Contour Interval 1 and 10 gammas
Flight Line Spacing 400 metres (approx)
Flight Altitude 250 ft
Datum Corrected for Regional Gradient
West-East 0.686 gamma
South-North 6.126 gammas
Flown 1972 Geophysical Resources Development Co
Compiled 1973 Compagnie Generale de Geophysique
Instrument Magnetometer Geometrics Digital

AREA K
Contour Interval 10 and 20 gammas
Flight Line Spacing 1/5 mile
Flight Altitude 300 MTC
Datum Arbitrary
Flown and Compiled 1970-1971 Geophysical Resources Development Co
Horizontal Control based on government supplied base compilation sheets

AREA L
Contour Interval 10 and 20 gammas
Flight Line Spacing 1/6 mile
Flight Altitude 300 MTC
Flown and Compiled 1970 Geophysical Resources Development Co
Horizontal Control based on Universal Transverse Mercator Projection

AREA M
Contour Interval 10 gammas
Shading on low side 5 gammas
Datum 1975 IGRF updated to 1977
Flight Line Spacing 500 metres
Flight Altitude 90 metres MTC
Flown and Compiled 1977-1978 Geometrics
Instrument Geometrics G-803 Proton Magnetometer

AREA N
Contour Interval 10 gammas
Flight Line Spacing 1 10 mile
Flight Altitude 250 ft
Flown and Compiled BMR 1964 1966, 1967
Instrument MFS-4 Fluxgate Magnetometer

TENURE LEGEND

- Municipal Boundary
- Town Planning Boundary
- Pastoral Lease
- Aboriginal Land Claim Boundary
- Mineral Reserve (M.R.) or Policy Reserve
- Exploration Licence Boundary

MCC 23 — Leasing: ERL No. — Exploration Retention Lease; MCC No. — Mineral Claim; ML No. — Mineral Lease; GML No. — Gold Mining Lease; EMP No. — Extractive Mineral Permit; EML No. — Extractive Mineral Lease; TL No. — Tailings Licence

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- Building — general
- Farm or Homestead Building
- Windmill
- Tank or Small Dam
- Waterhole, Bore or Well
- Watercourse
- Watercourse — indefinite

MINERAL DEPOSITS AND WORKINGS

- Cu Mineral occurrence with optional mineral letter symbol
- Prospect or mine with < 500 tonnes production
- Prospect or mine with > 500 tonnes production
- Major Mine > 100 000 tonnes production
- Open Cut or quarry, minor
- Open Cut or quarry, major
- Alluvial workings, minor
- Alluvial workings, major
- Battery or Smelter

N.B. Abandoned where or through feature

PROSPECT CODE NAMES

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Nav	Navigator (Geopeko)
Rov	Rover (Geopeko)
TC	Tennant Creek (Cuprex)
Ron (R)	Australian Dev. Ltd.
C11(BMR)	BMR Prospect
50-77	BMR survey (Geopeko)

MAGNETIC ANOMALIES

	Interpreted
	Drilled
IS	Ironstone
MS	Magnetic Sediments
BI	Basic Intrusive
?	Explanation Unknown

RMG NORTH
TRUE NORTH
MAGNETIC NORTH

NORTH POINT RELATIONSHIPS ARE SHOWN FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS TRUE FOR 1980.

RMG/MAGNETIC ANGLE 4°51'32"
RMG CONVERGENCE 0°-17'25.08"
SECULAR VARIATION 0°07'2" East per year

LOCATION DIAGRAM

5659 I	5759 IV	5759 I
5659 II	5759 III	5759 II
5658 I	5758 IV	5758 I

GEOPEKO
A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

1:50 000
1000 0 1000 2000 3000 4000 5000 Metres
AUSTRALIAN MAP GRID

TENNANT CREEK SE53-14

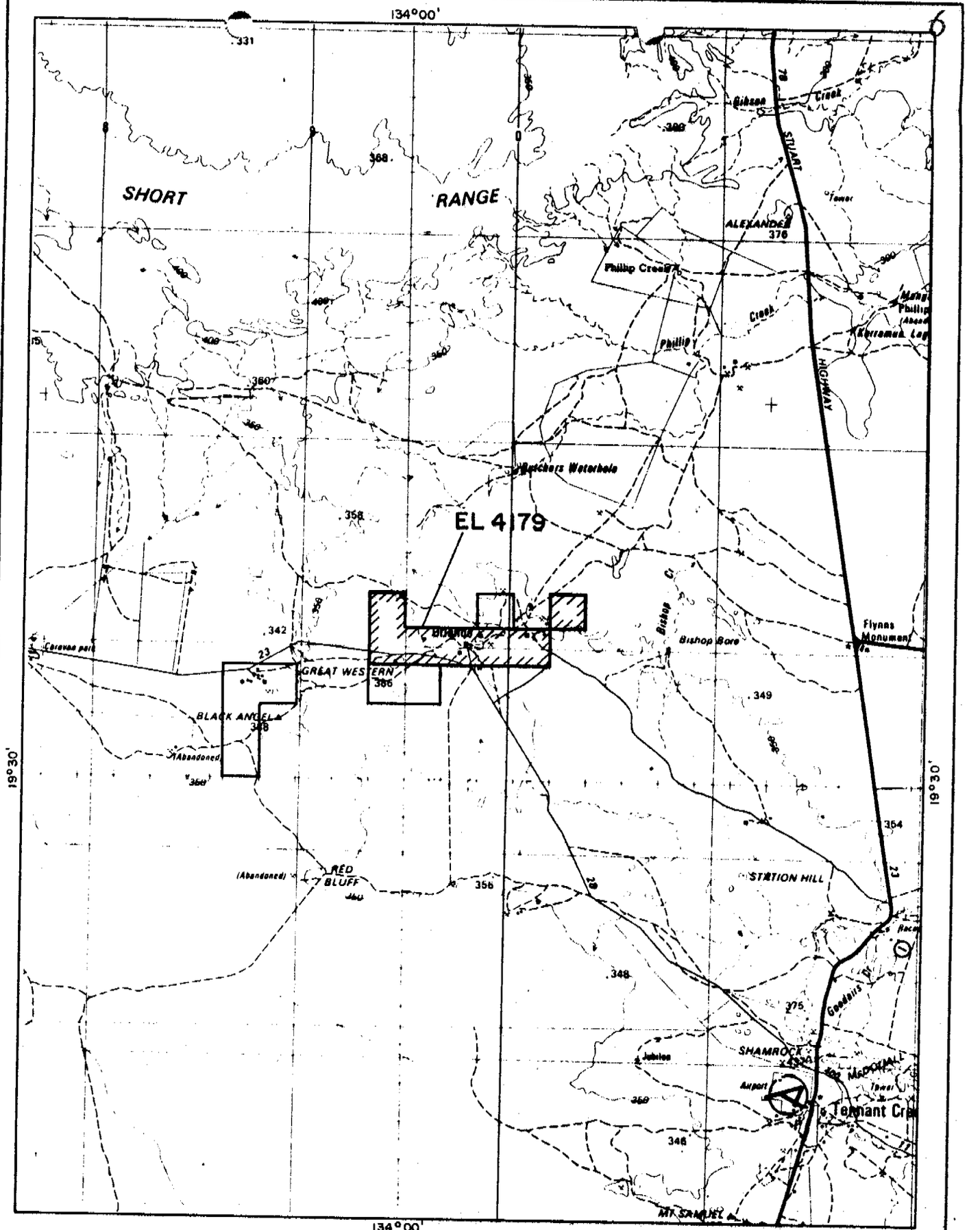
CENTRAL FIELD

EL4179 RELINQUISHED AREA

AEROMAGNETIC CONTOURS

Date: 8 JUN 1988
Geologist:
Checked:
Drawn:

Map Ref: FLYNN-III
Base: TENNANT CREEK N.T.



EXPLORATION LICENCE AREA TO BE RETAINED

EXPLORATION LICENCE AREA TO BE RELINQUISHED

TENNANT CREEK

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

2.5 0 2.5 5 7.5 10 kilometres

SCALE 1 : 250 000

GEOLOGIST R J LOVE	MAP REF. SE 53-14 (part) TENNANT CREEK
DATE 2/88	EL 4179 - AREA TO BE RETAINED FOR 6th LICENCE YEAR
DRAWN RMN	
CHECKED RJL	PROJECT CENTRAL FIELD — DWG NO. TF 3760

APPENDIX I

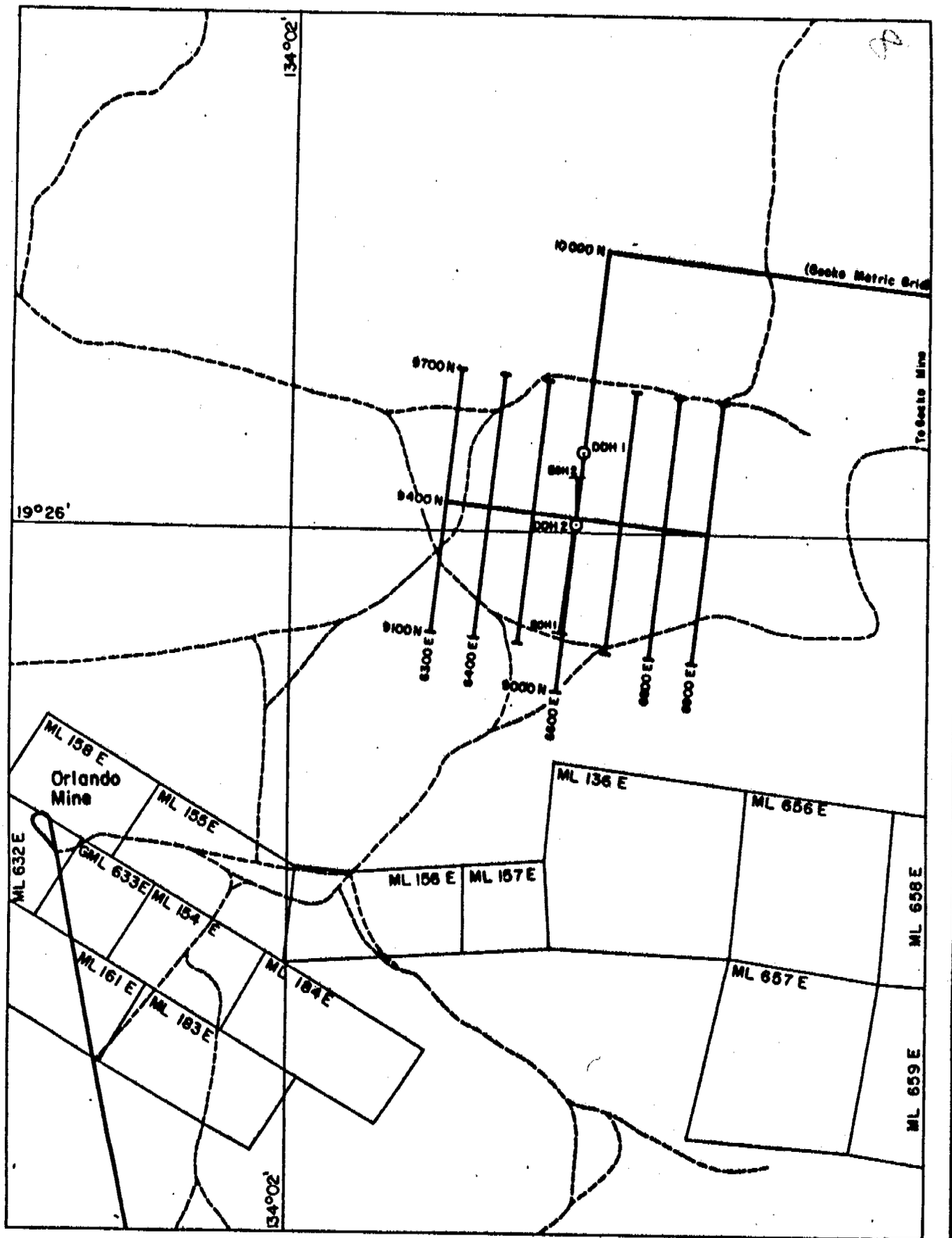
Explorer 198 Prospect

Grid

Grid Magnetics

Downhole Magnetics Surveys

Core Logs DDH:1 and DDH:2



9400 N GRID CO-ORDINATES

PLAN OF DRILLHOLE

GEOLOGY - PART SHEET 400 928 (1:12000)

TENNANT CREEK

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

metres

SCALE 100' = 1" 1:12000

GEOLOGIST R.J. LOVE

MAP REF. SE 53-14-6759-III-SW

DATE SEPT. 1984

DRAWN TLW 9/84

CHECKED RJL

LOCATION OF PROSPECT GRID - EXPLORER 198

PROJECT CENTRAL FIELD - EL 4179

DWG NO. TF 3210

9000N
9300N
9600N
9900N

6300E
6400E
6500E
6600E
6700E
6800E
6900E

BASE VALUE 51200 nT

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

GORDON

50 0 100 200 300 metres

SCALE 1:5000

GEOLOGIST

MAP REF.

DATE October 1984

DRAWN E.N.

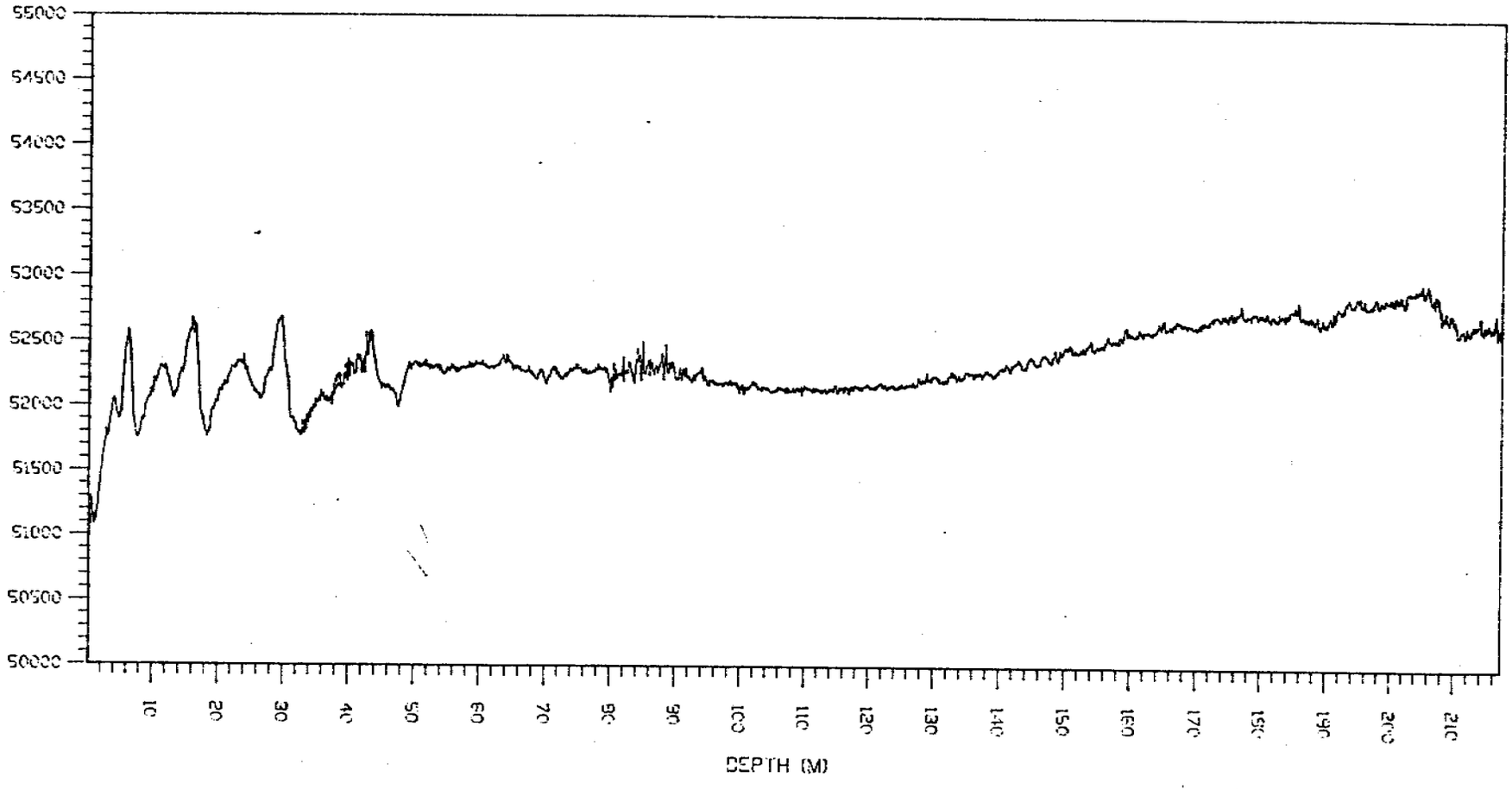
CHECKED

TENNANT CREEK - EXPLORER 198

T.M.I Profiles

PROJECT

DWG NO. 706LS/C



GEOPEKO DRILL HOLE MAGNETOMETER RAW DATA

TITLE : EXPLORER 198 DDH2 UP.

DATE : 19- 9-85 REEL # : 0 SCAN MODE : 3

TIME IN 1/20-TH SEC. : 20 DEPTH INTERVAL IN CM : 10

DATE PLOTTED - 14/Apr/87

*** GEOPEKO DRILL HOLE MAGNETOMETER ***

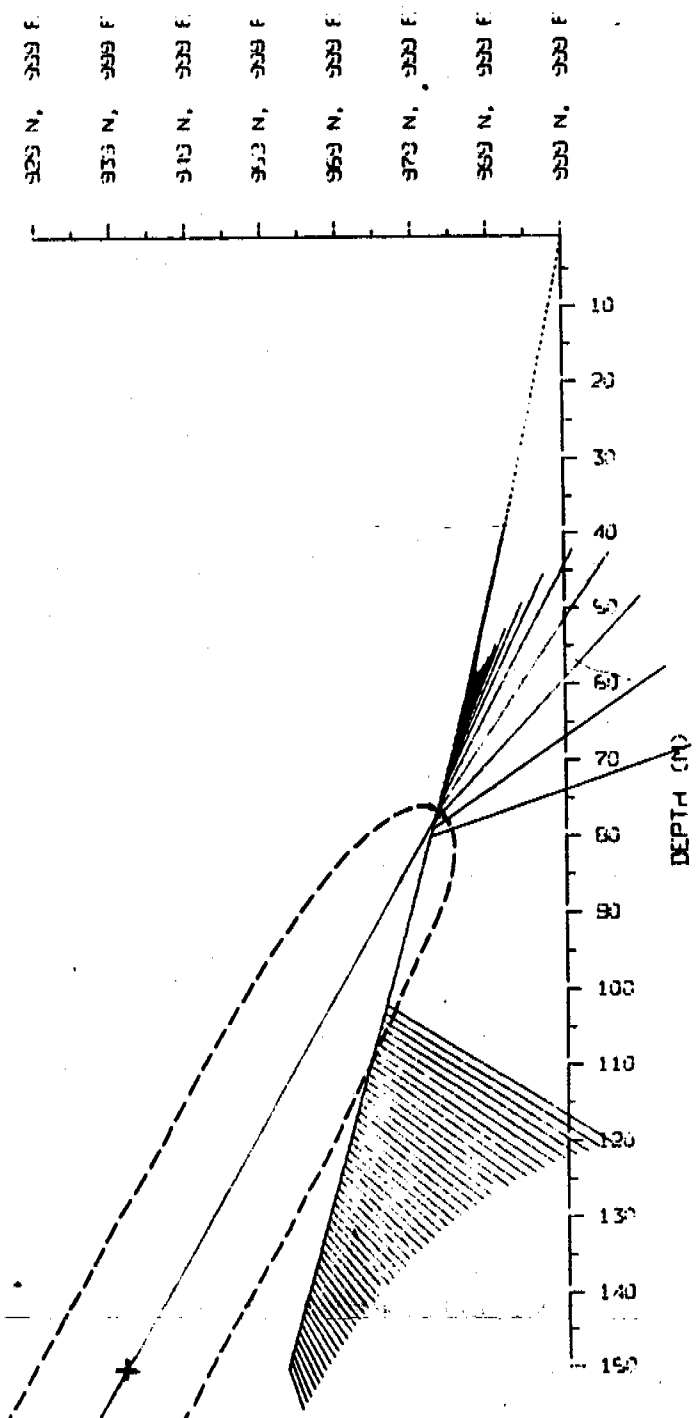
TITLE : EXPLORER 198 DDH1 DOWN.

COLLAR COORDINATES : 1000.00 N 1000.00 E
SCALE 1 : 1000
PLOTTED : 22/JUL/85

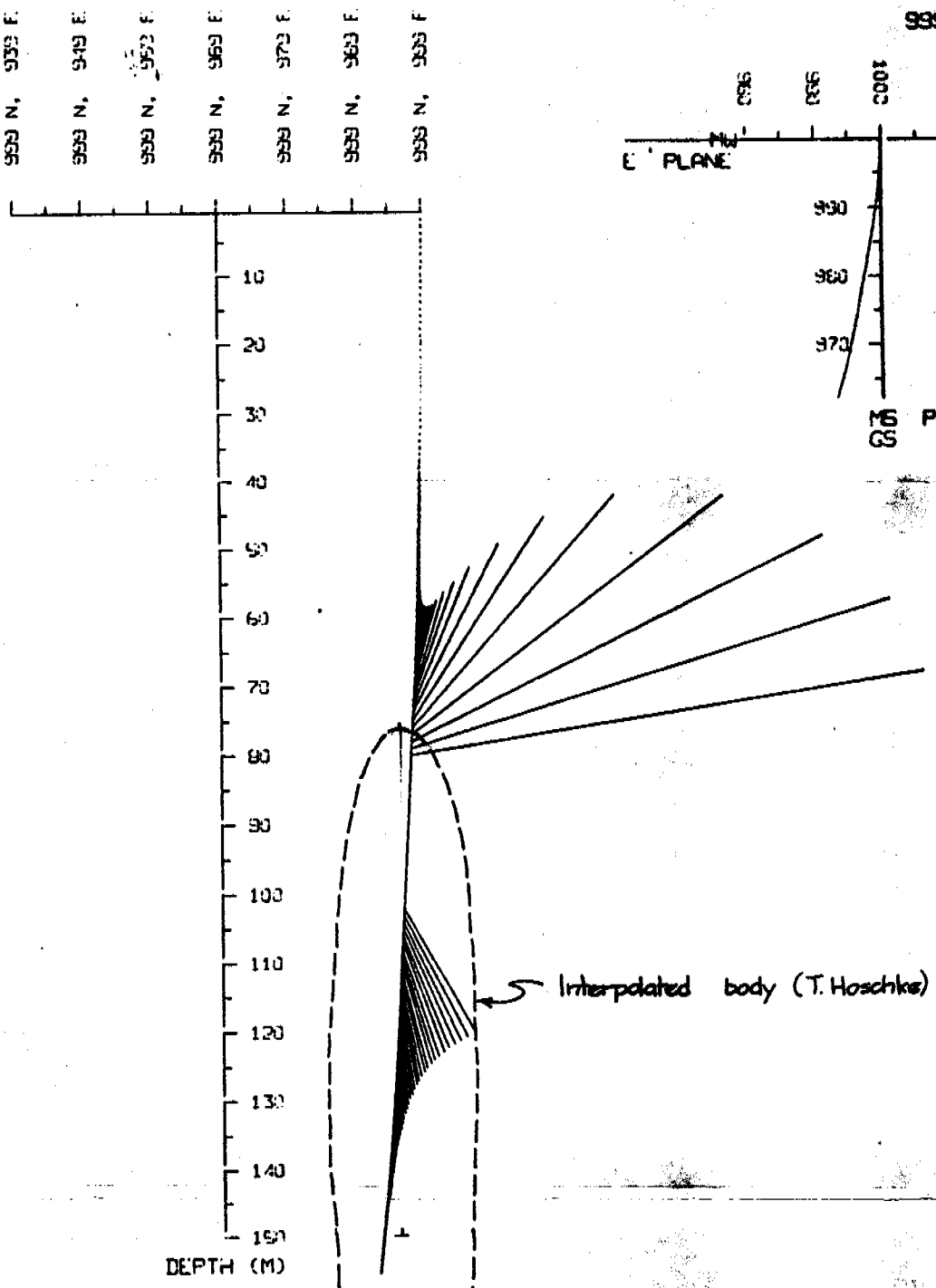
DRILL HOLE SURVEY PROFILES
VECTOR PROFILES (ACTUAL)
SCALE 1 CM = 5000 NT

PROJECTION ONTO E PLANE
AZIMUTH OF E = 180.0 °M

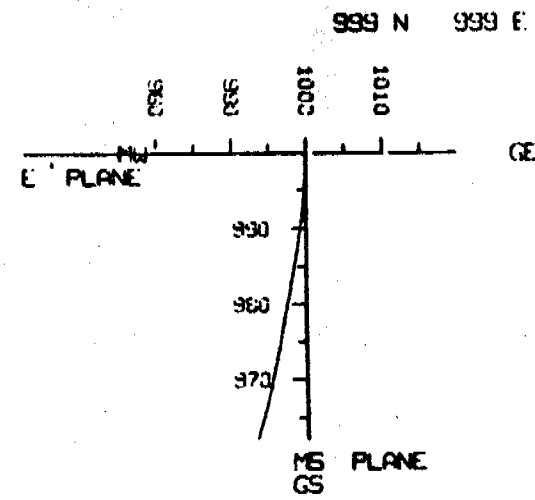
PROJECTION ONTO E' PLANE
AZIMUTH OF E' = 270.0 °M



Interpolated body (T. Haschke)



Interpolated body (T. Haschke)



a = 85
b = 10
Sus = .2 cgs

*** GEOPEKO DRILL HOLE MAGNETOMETER ***

TITLE : EXPLORER 198 DDH1 DOWN.

COLLAR COORDINATES : 1000.00 N 1000.00 E
SCALE 1 : 1000
PLOTTED : 19/JUL/85

DRILL HOLE SURVEY PROFILES
VECTOR PROFILES (RESIDUAL)

SCALE 1 CM = 5000 NT

BASE VALUES : HX = 34000 NT, HY = 0 NT, HZ = 41500 NT, HX_E = 34000 NT, HY_E = 0 NT

PROJECTION ONTO E PLANE
AZIMUTH OF E = 180.0 °M

PROJECTION ONTO E PLANE
AZIMUTH OF E = 270.0 °M

DEPTH (M)

DEPTH (M)

COLLAR COORDINATES : 8430. N, 6913. E
SCALE 1 : 2000
PLOTTED : 14/Apr/87

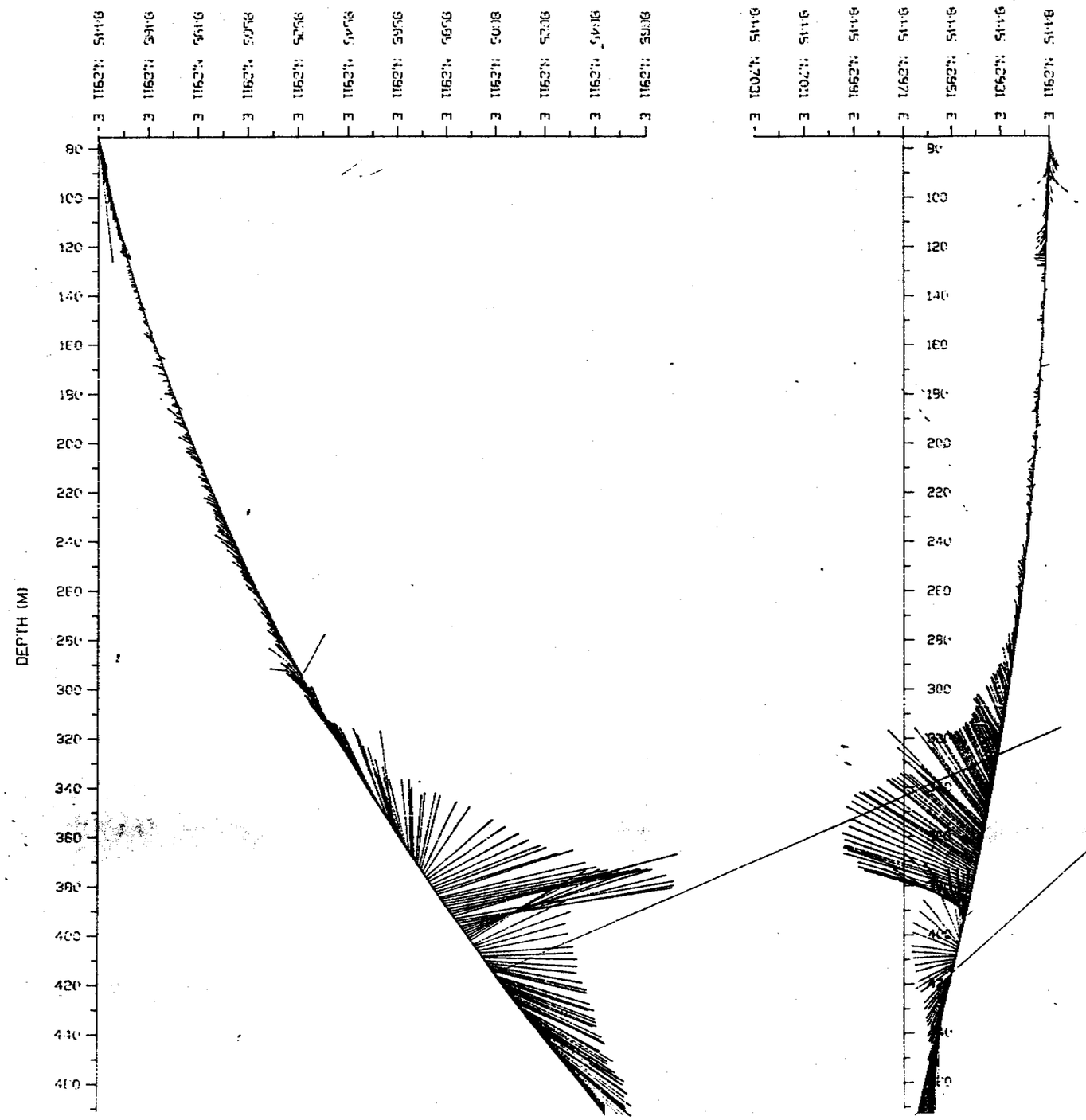
DRILL HOLE SURVEY PROFILES
VECTOR PROFILES (RESIDUAL)

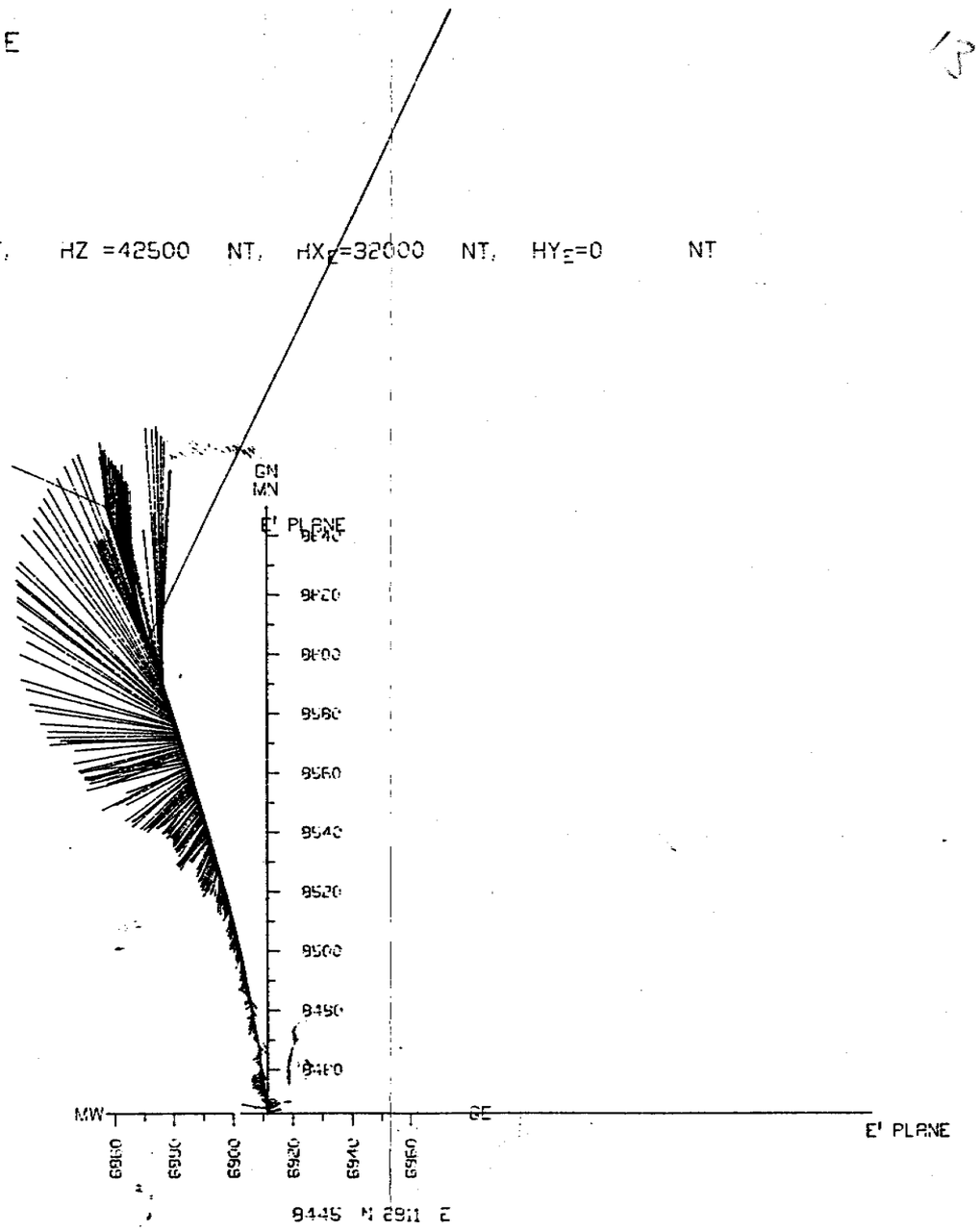
SCALE 1 CM = 5000 NT

BASE VALUES : HX =32000 NT, HY =0 NT, HZ =42500 NT, HX_E=32000 NT, HY_E=0 NT

PROJECTION ONTO E PLANE
AZIMUTH OF E = 0. ° M

PROJECTION ONTO E' PLANE
AZIMUTH OF E' = 90. ° M





CR88/174

GEOPEKO

TENNANT CREEK - NORTHERN TERRITORY

DRILLHOLE SURVEYS

PROJECT: EXPLORER 198	AREA: EL 4179	DRILLHOLE TYPE
MINE: -	LEVEL: SURFACE	DIAMOND

CO-ORDS:	BEARING:	DIP:	R.L.:	DRILLHOLE No.
9550 N 6600 E	180° GRID	-80°	1000	DDH:1

DOWN HOLE SURVEY						PLOTTING DATA		
DEPTH (metres)	DIP		BEARING		REMARKS	NORTH/SOUTH	EAST/WEST	R.L.
	READ	CORR.	MAG.	GRID				
0		80		180		9550	6600	1000
20		80		182		9546.5	6599.3	980.3
40		78		185	Read 188° Affected/Assume 185°	9542.7	6599.7	960.7
159		73.5		195	EOH 159.4m	9513.9	6594.6	845.3

GEOPEKO

TENNANT CREEK NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT: EX 198 LOGGED BY: DRB

MINE:

LOCATION: ELVANILL RL: 30/10/84

PAGE: 1 of 8

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Hem	Chlor/Talc	Quartz	Carb	Pyrite	Clay	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_0) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)		S.G.
0	NO REC.				vein 2						So= S1=	0 - 6M NO RECOVERY						
6	STRONGLY OXIDISED SEDIMENTS (SHALE, SILTSTONE)										39° /LCA	6.00 - 48.9 STRONGLY OXIDISED SEDIMENTS A dominantly red-brown grey red coloured unit consisting of interbedded shales and siltstones. The shales are frequently well laminated with cleavage paralled to bedding. Shale units range from < 1cm to 5m in width and are the dominant lithotype less common are granular extremely fine to very fine grained siltstone/ arkose units ranging up to 3m in thickness and often merging into the shale units. The rock is only moderately to poorly consolidated down to 21m(like weathered " C horizon" material) and is very strongly oxidised down to 26.10m Below 26.1m the rock is moderately indurated (a part from occasional broken zones) and moderate to strongly oxidised. The unit is generally ,stronglybroken. Quartz veins are found sporadically throughout the unit. They vary in thickness from 2mm to 30 cm. Their, orientation is parallel to cleavage Large veins or vein systems are found at 16.35 - 16.60m, 29.30 - 29.70m 39.5 - 40.95m and 44.85 - 47.5m. No mineralisation is observed in the unit.						
13											So= 27 °/ LCA							
21											So = 28 ° /LCA							
25																		

TF 3224

GEOPEKO
TENNANT CREEK NORTHERN TERRITORY
DIAMOND DRILL LOG

PROSPECT: EX 198
MINE:
LOCATION: FLYNN 111
LOGGED BY: P.R.B.
DATE: 30/10/84

HOLE No.: 1
PAGE: 2 of 8

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Haem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (S_o) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS ppm Au	ppm Cu	ppm Bi	Ag	S.G.
25	INTERBEDDED AND OXIDISED SHALE AND SILTSTONE				10						So=43° /LCA							
26					5													
27					vein													
28																		
29					30													
30					3													
31					1													
32																		
33					vein													
34																		
35					2-5													
36																		
37					vein													
38																		
39					30						So=25° /LCA							
40					vein							40.10 - 40.95m Zone containing numerous <5mm wide quartz veins orientated parallel to cleavage (ie parallel to bedding)						
41					1													
42																		
43					vein													
44																		
45														0.02	19.8	36.8	4.6	

GEOPEKO
TENNANT CREEK - NORTHERN TERRITORY
DIAMOND DRILL LOG

PROSPECT: EX 198
MINE: FLYNN III
LOCATION:
LOGGED BY: P.R.B.
DATE: 31/10/84

HOLE No.: 1
PAGE: 3 of 8

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Mag?	Hem?	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (S_o) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu ppm	Bi ppm	Ag	S.G.
45	INTERBEDDED SHALE & SILTSTONE				5-30						So=215° /LCA	Common variable width irregular quartz veins.						
46														0.03	7.8	27.4	4.00	
47														0.02	8.8	16.8	2.2	
48					2.5						So=27° /LCA			0.02	6.0	14.4	2.8	
49					5							Base of Oxidation, Base of Strong Weathering. 48.9-77.5m FRESH TO MODERATELY OXIDISED SEDIMENTS		0.06	10.0	11.0	3.6	
50					30						SoAD=28° /320(TD)	Acontinuation of the above sedimentary unit consisting of interbedded shale siltstone and very fine arkose, but differing from the above in being fresh to locally moderately oxidised. The rock when fresh is grey to dark green grey colour and well indurated. Shale beds tend to be less abundant then the siltstone and arkosic beds, and individual bed's rarely exceed 1.5m in thickness. Bedding is well developed in many sections however the presence of slip shearing (common), slump and minor fiamé structures indicate syn-or post-depositional disturbance. Grading is poorly defined but appears to be upwards towards collar.		0.01	9.6	23.8	35.4	
51														0.02	15.4	11.0	6.2	
52					5-10						TD Dirn= 71°/328			0.01	11.8	9.8	4.6	
53														0.01	12.4	9.8	6.4	
54											So 77°/328			0.03	8.8	11.0	8.0	
55														0.02	11.8	26.2	14.8	
56											So 81°/328							2.8
57												Quartz veins are found throughout the unit. They are generally straight and vary from 1mm to 30 cm in width. Mode width is 5mm to 10mm. The veins are unmineralised and contain only minor specular hematité inclusion and stringers.						
58																		
59												Weak to moderately oxidised zones are found below 65m (just overlying the lower ironstone unit) Their distribution is patchy and tend to be centred around broken zones.						
60																		
61											So 66°/348	Quartz veining and clea vage tend to be parallel to bedding.						
62																		
63																		
64											So 60°/357							
65																		

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE							% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (S_o) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS ppm ppm				
		Magt	Haem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy						Au (g/t)	Cu	Bi	Ag	S.G.
65	INTERBEDDED SHALE, SILTSTONE AND ARKOSE											52.0-53.0m: Sediments exhibiting good slip shearing.						
66											So=36° /LCA							
67												51.00-51.25 - 25cm quartz vein						
68																		
69																		2.7
70																		
71											So=33° /LCA							
72					10						So=46° /LCA							
73																		
74											So=35° /LCA							
75																		
76																		
77														0.01	23	26	7	
78	QTZ - CHL - HEM - MAG. (IRONSTONE)	15-40%	10-20%	25-60%	10-25%			Pace				77.5-109.55m QUARTZ - CHLORITE - HEMATITE - MAGNETITE.		0.03	23	34	9	
79												Dark green to black, dense rock consisting of an admixture of hematite/ magnetite, chlorite and relatively lessquartz. The rock is composed of		0.02	12	49	6	
80												approximately 10-25% quartz and 25-60% of each chlorite and combined hematite/magnetite. Magnetite		0.03	58	42	16	
81		1-5%	1-5%	85-90%	<2%							content varies from 10-20%. Quartz content varies irregularly throughout the unit whilst chlorite and		0.02	13	30	7	
82		15	10	25	10							hematite/magnetite vary antipathetically.		0.01	25	6	10	
83		40	20	60	25							The hematite(often specularite)/magnetite occurrs as irregular semicrowded blebs and/or		0.02	14	33	8	
84												semimassively whilst both chlorite and quartz form		0.01	12	33	8	
85														0.01	10	4	12	

GE PEKO

TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT: EX 198

MINE:

LOCATION: FLYNN III

LOGGED BY: P.R.B.

DATE: 31/10/84

HOLE No.: 1

PAGE: 4 of 8

TF 3224 (A4)

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Hemt	Chlor. Tlc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_0) ORIENTN.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu ppm	Bi ppm	Ag	S.G.
85												the surrounding matrix. Resultant texture is		0.03	19	62	4	
86	CHLORITISED SEDIMENT	1-5	1-5	85-90	<2							disrupted and frequently mottled. The upper part of the ironstone unit also		0.01	14	57	3	
87												contains three intervals (79.67-82.03, 85.76-88.30,		0.02	12	32	3	
88												93.61-94.21) of chloritised sediment. The						
89	QUARTZ-CHLORITE-HEMATITE-MAGNETITE	15-40	10-20	25-60	10-25							chloritised sediment is distinguished by its more		0.01	19	69	3	
90												uniform grey-green colour, the abundance of						
91												chlorite with specular hematite and quartz in		0.01	17	31	10	
92												minor proportions (<10%). The pa tchy distribution of quartz within the						
93												ironstone idicate that it is fracture controlled. Veins of quartz are apparent below 104m. The rock is generally fresh and well indurated		0.01	16	47	4	
94	CHL SED	1-5	1-5	85-90	<2							however iron oxides are frequently found upon		0.01	16	53	5	
95	QUARTZ-CHLORITE-HEMATITE-MAGNETITE ("IRONSTONE")	15-40	10-20	25-60	10-25							fracture surface. Sulphide mineralisation is restricted to rare		0.02	15	29	4	
96												pinhead size traces of chalcopyrite mainly		0.01	25	26	3	
97												associated with the quartz gangue. No gold		0.02	22	60	3	
98												mineralisation is observed.		0.02	19	55	2	4.2
99														0.01	29	30	6	
100														0.02	37	37	4	
101														0.01	22	38	4	
102														0.02	32	36	7	
103														0.01	17	37	23	
104														0.01	36	45	3	
105														0.02	19	54	4	
														0.02	24	30	5	4.6

GEOPEKO

TENNANT CRK NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT: X 198 LOGGED BY: P.R.B.

MINE: DATE: 31/10/84

LOCATION: FLYNN III

PAGE: 5 of 8

DDH 1

TF 3224

GEOPEKO

TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT EX 198

MINE:

LOCATION: FLYNN III

LOGGED BY: PRB

DATE: 31/10/84

HOLE No.: 26

PAGE: 6 of 8

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Haem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S1) BEDDING (So) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu ppm	Bi ppm	Ag	S.G.
105																		
106	"IRONSTONE"													0.01	17	31	3	
107														0.01	11	31	4	
108														0.02	14	41	3	
109														0.01	29	39	4	
110	CHLORITISED SEDIMENT WITH QUARTZ VEINING	MINOR	MINOR	70 - 80%	20-30 VEIN		<1				S1=5-35° /LCA	109.55 - 115.15m CHLORITISED SEDIMENT A grey green coloured unit consisting of intensely chloritisted sediment but also having strong vein quartz. The chlorite is amorphous, soft and has a soapy tactility. No sedimentary structures are apparent. Cross-cutting the unit are highly irregular variable width milky quartz veins resulting in an overall disrupted texture. The quartz vein contain only rare inclusions of hematite/magnetite and chlorite. Vein density is high enough to regard the zone as being a stockwork.		0.03	13	33	2	4.4
111														0.07	27	23	2	
112														0.30	121	52	2	
113																		
114																		
115							<1											
116	INTERBEDDED SHALE, SILTSTONE AND ARKOSE.				10-20							A small (30cm) zone of massive hematite/magnetite - chlorite is found in the interval 114.6-114.9.m The unit is moderately broken with cleavage 5°- 35° to L.C.A.						
117					<5													
118											So 87°/026	Mineralisation in the unit is restricted to traces of leafy pyrite found upon chloritised fracture surfaces.						
119																		
120											So 80°/020	115.15 - 159.40m INTERBEDDED SHALE, SILTSTONE AND ARKOSE A grey coloured sedimentary unit consisting of interbedded shales, siltstones and very fine grained arkoses (?greywacke). The unit is well laminated						
121																		
122											So 51°/348	below 131m but is less well defined (though present) above this level.						
123																		
124																		
125																		

TF 3224 (A

GEKO

TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT: EX 198

MINE:

LOCATION: RILYNN III

LOGGED BY: PRB

DATE:

HOLE No: 1

PAGE: 7 of 8

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE							% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_0) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS				
		Magt	Haem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy						Au (g/t)	Cu (%)	Bi (%)		S.G.
125	INTERBEDDED SHALE, SILTSTONE AND ARKOSE.		2%									Minor cross-bedding and slump features are developed as well as minor slip shearing.						
126											So 75°/016	The top 5m of the unit contains moderate to strong vein quartz whilst the remainder is predominantly only weakly veined. Quartz veins range from 2mm to 20 cm in width are irregular and contorted down to 119m but are relatively straight thereafter. They frequently contain minor inclusions of specular hematite and magnetite. Cleavage and quartz veining is generally parallel to bedding. No sulphide mineralisation is observed.						2.8
127																		
128																		
129																		
130											So 85°/012							
131																		
132											So 85°/012							
133											So 69°/012	129.45 - 134.3m Slightly hematitic sediments and veins found within unit.						
134																		
135											So 80°/ 017							
136																		
137											So 74°/018							
138																		
139											So 78°/018							
140											So 78°/018							
141											So 76°/013							
142											So 83°/022							
143																		
144																		
145																		

GENPEKO

TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT: EX 198

MINE:

LOCATION: FLYNN III

LOGGED BY: PRB

DATE: 31/10/84

HOLE No: 12

PAGE: 8 of 8

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE							% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_0) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS				
		Magn	Haem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy						Au (g/t)	Cu (%)	Bi (%)		S.G.
145	INTERBEDDED SHALE, SILTSTONE AND ARKOSE																	
146											So (83°/350)							
147																		
148											So 61°/250							2.9
149					10%						So 78°/298							
150																		
151												151.05 - 151.40m Quartz vein containing weak hematite stringers and minor chlorite inclusions.						
152			3-5		35													
153											So 86°/032							
154											So 87°/189							
155											So 80°/004							
156											So 71°/006							
157											So 61°/006							
158																		
159												159.4m E.O.H.						

GEOPEKO

TENNANT CREEK - NORTHERN TERRITORY

DRILLHOLE SURVEYS

PAGE of

PROJECT: CENTRAL FIELD | AREA: EXPLORER 198 | DRILLHOLE TYPE:

MINE: | LEVEL:

CO-ORDS:	BEARING:	DIP:	R.L.:	DRILLHOLE No.
9387 N 6600 E	GRID 355°	65	992.5	DDH:2

DOWN HOLE SURVEY						PLOTTING DATA		
DEPTH (metres)	DIP READ	DIP CORR.	BEARING MAG.	BEARING GRID	REMARKS	NORTH/SOUTH	EAST/WEST	R.L.
0	65		355	355		9387	6600	992.5
40	67		360	360		9403.3	6599.3	956.0
80	69.5	69.5	364	364		9418.1	6599.8	918.8
117	60.5	60.5	358	358		9433.7	6600.1	885.3
144	58	58	357	357		9447.5	6599.5	862.1
174	56	56	356	356		9463.8	6598.5	836.9
216	52	52	354	354		9488.4	6596.3	802.9
222		52		354	ASSUMED NOT READ	9492.1	6595.9	798.2
EOH								

GEOPEKO
TENNANT CREEK - NORTHERN TERRITORY
DIAMOND DRILL LOG

PROSPECT/MINE: Ex 198
LOCATION:

HOLE No.: 2
PAGE: 1 of 9

LOGGED BY: P.R. Balind DATE: 4/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Mag?	Hem?	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (S_o) ORIENTN.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)		
0												0 - 12.5m No chips						
2																		
4																		
6																		
8																		
10																		
12																		
14	SEDS	-	-	-	2-10% Vn	-	-	-				12.5 - 81.9m INTERBEDDED SHALE, SILTSTONE AND GREYWACKE Generally grey brown to brown strongly oxidised sediments. They are moderately indurated and well cleaved. The sediments become more red in colour after 44m and fresh green-grey coloured chips are found from 73m (the base of strong weathering). Patchy vein quartz is found throughout most sections of the unit. The veins range up to 5mm in width and towards the base of the unit contain specular hematite inclusions. No mineralisation is apparent.						
16																		
18					-													
20																		
22					1-2% Vn													
24																		
26																		
28																		
30					10% Vn													
32																		
34																		
36					1-2% Vn													
38																		
40																		

TF 3224 (A4)

GEOPEKO

TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT/MINE: Ex 19

LOCATION:

HOLE No.:

PAGE: 2 of 9

LOGGED BY: P.R. BALIND DATE: 4/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Mag	Hem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_0) ORIENTN.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)		
40		1	1	1	1 2% Vn	1	1	1										
42																		
44																		
46																		
48																		
50																		
52																		
54																		
56																		
58																		
60	SEDS		1		15% Vn													
62																		
64			-		1% Vn													
66																		
68																		
70																		
72																		
74																		
76																		
78			2-3		15% Vn													
80																		

TF 3224 (A4)

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magt	Hem†	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_o) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)		
												LOGGED BY: P.R.BALIND DATE: 3/9/85						
80																		
81																		
82												81.90 - 120.63m DISRUPTED SEDIMENTS						
		-	2-3		15% Vn	-	-	-	100	3		Well indurated, grey sediments consisting essentially of shale and slightly coarser silt-						
83										3	Fol'n = 25°/LCA	stone. The sediments are arkosic in composition						
84					5% Vn					2	So = 51°/LCA	and contain only minor hematite. Minor magnetite is also noted from 85 - 90m. A subtle variation						
85		1								6	So = 70°/LCA	exists from 110.4 - 118.7m where alternate beds appear to be slightly bleached and take on a						
86										5		pink grey coloration. They also appear to be partially chertish.						
87										2		Although the sediments are well bedded and occasionally laminated examples of brecciation,						
88										5	Sl = 27°/LCA	slip shearing and micro-faulting are common. The rock fragments are angular to sub-angular,						
89										4	Sl = 27°/LCA	rarely exceed 3cm in size and orientated parallel to bedding. Frequent micro-faults						
90										3		(<1mm in width) have displacements of 1 to 10mm. The rock is moderately broken with main						
91										6	So = 22°/LCA	cleavage directions coplanar with bedding. Orientation analysis indicates the sediments are						
92										4	So = 17°/LCA	dipping to the south-west. Veining in the rock is confined to quartz±						
93					2% Vn					5	So = 52°/LCA	chlorite±hematite. The veins vary in width from 2mm to 5cm and are generally orientated parallel						
94										3		to bedding. Larger vein tend to be more chloritic and may denote major dislocation sites. eg 89.15m.						
95										4	So = 52°/LCA	The rock is fresh to weakly oxidised and limonite is common upon fracture surfaces.						
96										8	So// Si= 45°/LCA	No mineralisation is apparent in the unit.						
97										3	Fol'n = 31°/LCA	83.5m Base of Oxidation.						
98										3	Fol'n = 30°/LCA							
99										5	So = 42°/LCA							
100																		

GEOPEKO
TENNANT CREEK - NORTHERN TERRITORY
DIAMOND DRILL LOG

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GEOTEK
TENNANT CREEK - NORTHERN TERRITORY
DIAMOND DRILL LOG

PROSPECT/MINE: Ex 8
LOCATION:

HOLE No.: 2
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LOGGED BY: P.R. BALIND DATE: 2/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE Magn	Hem	Chlor/Tlc	Quartz	Carb	Pyrite	Clay	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (S_o) ORIENTN.	GEOLOGICAL COMMENTS
100		-	25	55	20		-	-				100.21 - 102.00 A narrow interval of altered
101	QCHT								100	8		brecciated sediment replaced by chlorite -
										8		hematite and veined by quartz. The zone is
102		-			2% Vn	-	-	-				unmineralised and non-magnetic. The altered
			MINOR	MINOR						7	Si = 44°/LCA	fragments are sub-angular.
103												
										14		
104												
										7		87.90 and 92.5 - 95m Micro-faulted laminated
105												sediments. Partially contorted bedding suggest
										5	So = 26°/LCA	the sediments were semi-plastic at the time of
106												faulting.
										6		
107					5-10% Vn							96.5 - 103.5 Common pale yellow chertish
										20		shale laminae.
108												
										8		
109												
										12		
110												
										14	So = * 67°/157	* True Dip/True Dip Direction.
111					1% Vn							
										7	So = 72°/188	Quartz veining 60°/107°
112												
										4	So = 73°/192	Quartz veining 67°/109°
113												
										6	So = 77°/203	
114												
										4		
115												
										3	So = 84°/174	
116												
										3		
117												
										4		
118												
										3		
119												
										6		
120												

METERAGE	ANALYTICAL RESULTS Au (g/t)	Cu (%)	Bi (%)		

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GEOMEKO
TENNANT CREEK - NORTHERN TERRITORY
DIAMOND DRILL LOG

PROSPECT/MINE: Ex
LOCATION:

HOLE No.: 2
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LOGGED BY: P.R. BALIND DATE: 2/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Hemt	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (S_1) BEDDING (S_0) ORIENTN.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)
120																
121		-	5	Variable	5-15	-	-	-	100	3		120.63 - 146.10m CHLORITISED SEDIMENT				
122										6		This unit consists of sediments that have been brecciated and then pervasively chloritised.		0.01	8	<4
123										6	S1 = 31°/341	The rock is generally strong to intensely altered (except the interval 133.9 - 135.9 which		<0.01	7	<4
124										6		is moderately altered and not brecciated) with vague remnant bedding and breccia textures		0.01	10	<4
125										7		retained. The rock is dark green in colour, chlorite rich and also contains 5-15% vein		0.01	7	<4
126										9	S1 = 27°/338	quartz, lesser hematite and minor sericite. The quartz veining is irregular, and patchy and				
127										7		along with the variable alteration and breccia textures the rock has an overall disrupted				
128	CLSD									6		appearance. The rock fragments range from 2mm to 10cm in size and are angular to sub-angular.				
129										7		The hematite occurs as narrow irregular stringers				
130										5		or bleby aggregates and is most obvious in strongly brecciated and chloritised sections.				
131										6	S1 = 27°/LCA	The rock is moderate to strongly broken with cleavages often at 35-45% LCA. The fracture				
132										4		surfaces are coated with red iron oxides, chlorite and below 141m by a white, porcellanous,				
133										2		as yet unidentified mineral (not carbonate). The only sulphide mineralisation in the unit				
134										13		is confined to trace amounts of pyrite which is also found upon fracture surfaces.				
135	SEDS	-	-	WEAK	1-2 Vn					5						
136										8	S1 = 37°/LCA					
137		-	5	STRONG	5					4				<0.01	9	<4
138	CLSD													<0.01	10	<4
139														<0.01	5	<4
140														<0.01	12	6

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GEOLOGICAL COMMENTS

LOGGED BY: P.R. BALIND DATE: 2/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Hem	Chlor. Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (So) ORIENTn.	METERAGE	Au (g/t)	Cu (%)	Bi (%)		
140																	
141	CLSD	-	5	STRONG	5	-	-	-	100	8			<0.01	6	6		
							TR			6			<0.01	6	<4		
142																	
143										14			<0.01	7	<4		
144										16			<0.01	3	<4		
145										18			0.01	16	<4		
146										14							
147	SEDS	-	Minor	Patchy Moderate	2-10% Vn	-	TR	-		6	?So = 87°/028						
										7	Si = 59°/210						
148										9							
149										8	So = 24°/LCA						
150										5							
151										2							
152										5							
153										1	So = 26°/LCA						
154										4							
155										3							
156										1							
157										4	So = 30°/LCA						
158										4							
159																	
160										2							

146.10 - 194.79 DISRUPTED SEDIMENT

Typically grey will bedded shales and siltstones exhibiting sporadic breccia textures, slipshearing and minor dislocations. The sediments are arkosic and non-magnetic. Moderate quartz ± chlorite ± hematite veining is present throughout the unit.

The rock is weakly broken with cleavages generally parallel to bedding.

Orientation analysis suggest the bedding is dipping steeply to the south-west down to 170m and then changes to steeply north east. No "way up" direction can be determined.

Mineralisation is restricted to sporadic traces of pyrite on fracture surfaces.

150.5 - 151.75m Reconsolidated breccia

154.5 - 155.6 m Intervals of pink grey "bleached" sediment.

GEOTEK

TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

PROSPECT/MINE: Ex 1

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GEOTEK
TENNANT CREEK - NORTHERN TERRITORY
DIAMOND DRILL LOG

PROSPECT/MINE: Ex 15
LOCATION:

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LOGGED BY: P.R. BALIND DATE: 2/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Hem	Chlor/Talc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (S_o) ORIENTn.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)
160		1	Patchy Moderate	2-10% Vn	1	Tr	1	100	6						
161		Minor							6	So = 78°/220					
162									2	So = 87°/026					
163									3	So = 82°/226					
164									0						
165									3						
166									3						
167									4	So = 82°/028					
168									3	So = 88°/214					
169	SEDS								2	So = 79°/230	169.5 - 182.5m Laminated shales The shales have an almost amorphous appearance.				
170									3						
171									2	So = 89°/012					
172									2	So = 87°/360					
173									4						
174									6	So Vertical					
175									4	So = 83°/337	Quartz veining 81°/126				
176									8	So = 84°/018					
177									2	So = 89°/021					
178				60% Vn 2-10%					9	So = 87°/022	178.1 - 178.7m Quartz vein with minor chlorite and hematite.				
179									7	So = 86°/192					
180															

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GEOLOGICAL COMMENTS

LOGGED BY: P.R. BALIND DATE: 3/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Hem†	Chlor. Tlc	Quartz	Carb	Pyrite	Cpy	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (So) ORIENTN	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)		
180									100	4	So = 85°/009							
181										4	So = 85°/199							
182										6	So = 82°/009	Quartz veining 77°/325						
183										2	So = 85°/023							
184										5								
185										2								
186										4	So = 87°/013							
187	SEDS									4								
188										7	So Vertical							
189										6								
190										8	So = 88°/030							
191										9								
192										6	So = 42°/LCA							
193										3	So = 39°/LCA	194.79 START OF LODE ZONE						
194										8	Si = 27°/LCA	194.79 - 196.95m QUARTZ-CHLORITE						
195		-	5-10	45-50	45	-	TR	-		7		This narrow zone consists of an irregular mixture of quartz and chlorite and minor		<0.01	9	<4		
196	QZCL									10		specular hematite. Remnant shale fragments are present suggesting that the sediments were first		<0.01	16	<4		
197		-	Minor	Weak	2-5% Vn	-	TR	-		9		chloritised and then intruded by quartz veins. The hematite occurs as small blebs and as		<0.01	14	<4		
198										8		"dog tooth" like crystals on the margins of quartz veins.		<0.01	10	<4		
199	SEDS									5	So = 75°/188	Apart from a trace of pyrite the unit is unmineralised.		<0.01	6	<4		
200																		

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TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

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TENNANT CREEK - NORTHERN TERRITORY

DIAMOND DRILL LOG

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LOGGED BY: P.R. BALIND DATE: 3/9/85

DOWNHOLE METERAGE	ROCK TYPE	ESTIMATED PERCENTAGE: Magn	Hem	Chlor. Talc	Quartz	Carb	Pyrite	Clay	% CORE RECOVERY	BREAKS/m.	CLEAVAGE (Si) BEDDING (So) ORIENTN.	GEOLOGICAL COMMENTS	METERAGE	ANALYTICAL RESULTS: Au (g/t)	Cu (%)	Bi (%)
200	SEDS	-	Minor	Weak	2-5% Vn	-	Tr	-	100	2		196.95 END of LODE ZONE				
201																
202										6		196.95 - 222.00m INTERBEDDED SHALE AND SILTSTONE				
203					<2% Vn					3		Typical grey, well bedded shales and siltstones. Less disrupted than previous unit and not as				
204										4		heterogeneous, (the sediments exhibit less variability in colour and grain size). They are				
205										3	So = 76°/024	well indurated and moderately broken. Cleavage is mainly coplanar with bedding. The proportion				
206										5		of vein quartz is also relatively less. Mineralisation is restricted to rare traces of				
207										5		pyrite. Red hematite is common upon fracture surfaces throughout the unit.				
208					5% Vn					7	So = 88°/218					
209					<2% Vn					5						
210										4		201 - 202 Quartz veining 89°/215				
211										6	So = 88°/228	205 - 206 Quartz veining 89°/235 207 - 208 Si = 75°/139				
212										15						
213					3% Vn					20	So = 13°/LCA	212.80m Strongly broken zone.				
214					<2% Vn					3						
215										6						
216										13	So = 32°/LCA					
217										6						
218										2						
219										4						
220										5						

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BIBLIOGRAPHICAL DATA SHEET

ORGANISATION: GEOPEKO

PROSPECT: E.L. 4179

TITLE: RELINQUISHMENT REPORT ON EXPLORATION LICENCE 4179
WITHIN TENNANT CREEK 1:250,000 SHEET
23 MARCH, 1987 - 22 MARCH, 1988

REPORT NUMBER:

AUTHOR 1: HORVATH INITIALS: H.S.

AUTHOR 2: INITIALS:

IMPRINT: TENNANT CREEK MAY 1988

PAGES:

SUBJECTS: RELINQUISHMENT COMMODITIES: Au, Cu, Bi, Ag

LOCALITY: TENNANT CREEK MAP REF NO: SE 53-14

MAP REF NAME: TENNANT CREEK

ABSTRACT (200 WORDS OR LESS)

RELINQUISHMENT REPORT ON 7 BLOCKS DROPPED FROM EL4179
OVER THE PERIOD 23.3.87 TO 22.3.88.

NORTHERN TERRITORY GEOLOGICAL SURVEY | GEOSYSTEM DATA SHEET | GEOL/GDS

*see over for Explanatory Notes

REPORT TITLE: RELINQUISHMENT REPORT ON EXPLORATION LICENCE 4179 WITHIN TENNANT CREEK 1:250,000 SHEET 23rd MARCH, 1987 TO 22nd MARCH, 1988

AUTHOR(S): H. S. HORVATH

PUBLISHER: GEOPEKO - A DIVISION OF PEKO WALLSEND OPERATIONS LIMITED

PLACE OF PUB'N: TENNANT CREEK | DATE OF PUB'N: MAY, 1988

PAGES OF TEXT: 3 | NO. AND PAGES OF APPENDICES: 1 / 25

* NO.'S OF ACCOMPANIMENTS: (1)PHOTOS ____ (2)DIAGRAMS 4 (3)TABLES 2 (4)PLANS 4 (5)GRAPHS 1 (6)LOGS 2(17pages)

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LICENCEE(S): PEKO WALLSEND OPERATIONS LIMITED

JOINT VENTURE(S): ____

OPERATOR(S): GEOPEKO - A DIVISION OF PEKO WALLSEND OPERATIONS LIMITED

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1: 250 000 map name(s) and No.(s): TENNANT CREEK SE 53-14

1: 100 000 map name(s) and No.(s): TENNANT CREEK

1: 50 000 map name(s) and No.(s): SHORT RANGE II 5659 II

PROSPECT NAME: ____

** SITE LOCATION: LAT: ____ LONG: ____ EAST: ____ NORTH: ____

*** TECTONIC UNIT: TENNANT CREEK BLOCK

MAJOR TERM: [X] METALS [ ] NONMETALS [ ] PETROLEUM ____ OTHER

**** MINOR TERMS

DRILLING	AERIAL/GRND GEOPHYSICS	GEOCHEMISTRY	GENERAL
[X] DIAMOND	[X] [X] MAGNETIC	[ ] DRAINAGE TESTING	[ ] GEOL MAPPING
[X] PERCUSSION	[ ] [ ] RADIOACTIVITY	[X] DRILLCORE ANALYSIS	[ ] PHOTOGEOLOGY
[ ] AUGER	[ ] [ ] E.M. SURVEY	[X] ASSAYING	[X] GRIDDING
[ ] ROTARY	[ ] [ ] IP SURVEY	[ ] GEOCHEMICAL ANOM	[ ] METHODS
COMMODITIES	[ ] [ ] SEISMIC	SAMPLING	[ ] REGIONAL GEOL
[ ] U [X] Au [X] Ag	[ ] [ ] RESISTIVITY	[ ] STREAM SEDIMENT	[ ] LOCAL GEOLOGY
[X] Cu [ ] Pb [ ] Zn	[ ] [ ] GRAVITY	[ ] SOIL	[ ] STRATIGRAPHY
[ ] Sn [ ] W [ ] Dmd	[X] [X] GEOPHYSICAL ANOM	[ ] ROCK CHIP	[X] RECONNAISSANCE
Bi Other		[ ] WATER	[X] LOGGING

OTHER TERMS: DOWNHOLE MAGNETOMETER; MAGNETIC SUSCEPTIBILITY; Pb ISOTOPES

NOTES: ____

ABSTRACT ATTACHED: ____

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REPORT NO: ____ SECURITY: ____

TEXT LOCATION: ____ ENTRY NO: ____

INDEXED BY/DATE: ____ CHECKED BY/DATE: ____