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MICROFILMED

GEOPEKO LIMITED

KING ISLAND GROUP

PROGRESS REPORT

INVESTIGATOR 1 AREA

by

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KING ISLAND

AUGUST, 1969.

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1. RECOMMENDATION

Detailed auger drilling is recommended to obtain additional information about several anomalies indicated by previous geochemical survey, and to provide a suitable basis for the siting of future diamond drill holes.

The programme amounts to 180 auger holes for 180 chip samples which will be assayed for tungsten, molybdenum and nickel.

L. Szabo,
SENIOR GEOLOGIST.

August, 1969.

2. SUMMARY

Regional exploration for tungsten mineralisation, comprising geochemical and surface magnetic survey and diamond drilling, has been carried out over the Investigator 1 Area.

The programme indicated a number of promising anomalies of which the most promising was diamond drilled and the No. 3 Orebody encountered.

The region is still one of great potential, as some five other areas yielded geochemical anomalies similar to the one drilled.

In the centre of the most promising anomalies an intrusive igneous body has been inferred on the basis of geophysical indications. This body might have provided a source of tungsten mineralisation.

Three drill holes intersected minor tungsten mineralisation, but the potential anomalies have not yet been tested.

Additional auger drilling is required to further delineate the anomalies and to provide greater control for the siting of future diamond drill holes.

3. PROPOSAL

It is proposed that additional auger drilling be carried out, and chip samples be assayed for tungsten, molybdenum and nickel, to further delineate the geochemical anomalies indicated by the previous survey, and to provide a suitable basis for the siting of future diamond drill holes.

Anomaly No. 1

Previously covered by Lines BH 8, BH 20, BH 7, BH 19, BH 17 and BH 5. A total of 64 primary holes are proposed to be drilled to close the grid to 100 feet by 100 feet and to fill in between previous lines. 16 secondary holes are to be drilled if the results obtained during the first phase require it.

Anomaly No. 2

Previously covered by Lines BH 24 and BH 25. 20 holes are required to be drilled on 100 feet by 100 feet grid filling in between the previous lines.

Anomaly No. 3

Previously covered by Line BH 28 and BH 29. 31 holes are required on a 200 feet by 200 feet grid. If the first phase warrants, three additional lines comprising 27 holes will be drilled between the previous lines narrowing the grid to approximately 150 feet by 150 feet.

Anomaly No. 4

Previously covered by Lines BH 26 and BH 27. 22 holes are proposed on a grid 100 feet by 100 feet filling in between the previous lines.

Anomaly No. 5

Auger drilling is not required since it will be covered in drilling of the Southern extension of the No. 3 Orebody.

The location of the anomalies and the proposed drill holes are shown on Plan GI 1 - 7 appended.

4. INTRODUCTION

The result of exploratory work commenced in 1967 is documented and evaluated in this report.

Although basic documentation comprising core logs and geochemical assays and auger holes plotted on plans was available, a comprehensive evaluation of the area had not been made.

The geochemical survey constitutes the basis of exploration which was completed with a magnetic survey in 1969. Meantime a rather unco-ordinated drilling programme was carried out.

In the present evaluation, a sub-outcrop map and structural interpretation have been constructed on the basis of geochemical and magnetic contours. This map was correlated with the sporadically sited diamond drill holes.

On the basis of inferred regional geology potential areas have been delineated for further exploration.

5. REGIONAL EXPLORATION

(i) Geochemistry

A regional geochemical auger drilling programme was carried out in the area. Auger holes were put down at 100 feet intervals along lines located each 200 feet, approximately. Some lines spaced at 400 feet were also drilled, particularly in the East of the area. The samples were assayed for tungsten, nickel and molybdenum by McPhar Geophysics Pty. Ltd. Results were plotted and contoured and are shown on Plans GI 1 - 4, GI 1 - 5, and GI 1 - 6.

Determinations for bismuth, copper and lead were made on samples from part of the area. These were considered to be of no assistance and were discontinued. Further work is required to determine if these or other elements can be used as pathfinder elements in geochemical exploration.

Six anomalies were indicated. Two of these are situated in the area of the No. 3 Orebody where detailed drilling has now taken place.

The source of anomalies were established on the basis of practical observation obtained in the No. 3 Orebody Area, as follows:-

Tungsten anomalies are derived from mineralised limy formations,

Nickel anomalies are derived from volcanics, and

Molybdenum anomalies are most probably derived from mineralisation developed along faults and crush zones.

A close correlation has also been obtained between a tungsten anomaly and the sub-outcrop of the orebody. Approximately 50 feet East of the anomaly the outcropping of A Lens was delineated by the diamond drilling.

Further potential anomalies as yet not investigated are:-

Anomaly No. 1 is located approx. 1000 feet East of the No. 3 Orebody. The anomaly appears to be similar to those of the No. 3 Orebody, suggesting the presence of a granite body (sharp magnetic low), a fault with molybdenum mineralisation (along the fault mineralising solutions might spread), and

5. Regional Exploration (Cohtd.)

(i) Geochemistry (Contd.)

tungsten mineralisation (considerable anomalies located on both sides of the inferred granite body).

Anomaly No. 2 is located approx. 500 feet North-West of the No. 3 Orebody. A sharp tungsten peak, slight molybdenum anomaly, and low magnetic and nickel values indicate similar conditions to those observed in the area of the No. 3 Orebody. This anomaly is situated adjacent to the granite body associated with the No. 3 Orebody mineralisation.

Anomaly No. 3 is located approximately 5000 feet North of the No. 3 Orebody. A slight tungsten anomaly with two peaks and several slight molybdenum anomalies are indicated on the margin of the original drilled grid. The magnetic and nickel contours are inconclusive.

Anomaly No. 4 is located approximately 3500 feet North-East of the No. 3 Orebody. The anomaly is characterised by a sharp tungsten peak.

Anomaly No. 5 is located on the Southern edge of the No. 3 Orebody. The anomaly is characterised by a slight tungsten peak and a magnetic low.

(ii) Geophysics

A surface magnetic survey on a 100 feet by 200 feet grid was carried out by R. Large. A magnetic contour map was prepared. No detailed geophysical analysis is available although the broard contour has been used in delineating the volcanics and the possible granite intrusions. Plan GI 1 - 8 shows the magnetic contour.

(iii) Diamond Drilling

Nine drill holes totalling 4567 feet were drilled at various positions over the Investigator 1 Area to obtain stratigraphic information and randomly test possible geochemical anomalies.

Four drill holes intersected Mine Series formation, three of them encountered tungsten mineralisatio

Drill hole sections and correlation are shown on Plan GI 1 - 3.

6. GEOLOGY

The regional geology has been inferred from the correlation of drill hole sections shown on Plan GI 1 - 3, and surface magnetic and geochemical contours.

The regional interpretation is shown on Plans GI 1 - 1 and GI 1 - 2.

(i) Stratigraphy

The area is made up of five major stratigraphic units. Table I shows details and chronology of the units.

TABLE I STRATIGRAPHY OF INVESTIGATOR 1 AREA

Unit	Thickness
5. Upper Volcanics	±1000 feet (Thinning out to North)
4. Mine Series comprise clastic and calcareous rocks, as well as their contact altered and metasomatised products (hornfels and skarn), with some tungsten mineralisation.	0 - 250 feet
3. Upper Clastic Sediments comprise quartzite, mudstone and shale.	0 - 60 feet
2. Lower Volcanics	0 - 100 feet
1. Lower Clastic Sediments consist of quartzite, slate and spotted shale.	Unknown

The Mine Series and Upper Clastic Sediments (Units 2 and 3) appear to be contemporary formations, as Unit 3 is the lime free variety of the Mine Series which thin out to the East.

The age of sequence cannot be determined at our present state of knowledge. It has been allotted both pre-Cambrian and Cambrian ages by previous workers.

The units can be broadly correlated with the sequence of the No. 3 Orebody. The correlation is set out in Table II.

6. Geology (Contd.)

(i) Stratigraphy (Contd.)

TABLE II CORRELATION OF ROCK UNITS

Investigator 1 Regional	Investigator 1 No. 3 Orebody	
5. Upper Volcanics	8. Volcanics	MINE SERIES
4. Mine Series with tungsten mineralisation	7. Biotite-Muscovite Hornfels, limestone, A Lens Mineralisation	
3. Upper Clastic Sediments	6. Dolerite Sill	
2. Lower Volcanics	5. Impure Limestone, B Lens Mineralisation	
1. Upper portion of Lower Clastic Sediments	4. Biotite Hornfels	
	3. Fragmental Limtestone, Skarn, C Lens Mineralisation	
	2. Bedded Series	
1. Lower part of Lower Clastic Sediments	1. Quartzite	

(ii) Structure

The sedimentary and volcanic sequence, including a mineralised horizon, strikes North-East and South-West and dips South-East at shallow and intermediate angles. The Mine Series reaches the pre-Quaternary surface forming a sub-outcrop to the North of Line 10,000N.

The intrusion of a granite body into the strata has been postulated on the basis of the magnetic contour.

Despite the intensive tectonism, the main trend of strike has not changed considerably, but between No. 1 and No. 3 Faults the dip steepens due to the faulting.

The faults delineated, more or less, on the basis of drill hole information and magnetic contour,

6. Geology (Contd.)

(ii) Structure (Contd.)

are as follows:-

Fault No. 1 was observed in some drill holes at a shallow depth. This fault cuts off the No. 3 Orebody by an East block up movement. The vertical dislocation might be about 500 feet.

Fault No. 2 has been inferred on the basis of magnetic contour and appears to divide the block upthrust on Fault No. 1.

Fault No. 3 seems to be closely related to a probable granite intrusion which is indicated by a magnetic low. The location of this fault has been inferred on the basis of magnetic contour and a molybdenum anomaly.

Fault No. 4 is poorly defined. It might have resulted in minor displacement only.

The strike of the faults is nearly perpendicular to the strike of the sequence. The faulting was probably in response to the intrusion of the major granite to the West.

(iii) Mineralisation

The presence of tungsten mineralisation in the Investigator 1 Area has been indicated by geochemical anomalies, which are in size similar and larger than those recorded over the No. 3 Orebody.

Drill holes located 600 to 1200 feet South and South-West of the anomalies, encountered low grade tungsten mineralisation, similar to the No. 3 Orebody mineralisation consisting of scheelite disseminated in an altered limy formation. Assay results are set out in Table III.

Drill holes proved the presence of the Mine Series the sub-outcrop of which has been inferred and is a potential area for further exploration.

An intrusive granite body has also been postulated in the area. This will almost certainly be associated with tungsten mineralisation, however, the grade may or may not be economic.

6. Geology (Contd.)

(iii) Mineralisation (Contd.)

TABLE III DRILL CORE ASSAYS

No.	Footage			Assay
	From	To	Length	WO_3 %
	D.D.H. 242			
1	434	438	4	0.01
2	438	442	4	0.36
3	442	445	3	0.03
4	445	448	3	0.03
5	448	452	4	0.40
	Total		18	0.18
	D.D.H. 262			
1	289	292	3	0.04
2	292	296	4	0.01
3	296	300	4	0.05
4	300	304	4	0.10
5	304	308	4	0.04
6	308	311.5	3.5	0.06
	Total		22.5	0.06
	D.D.H. 263			
1	238	242	4	Trace

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Tungsten.
American Chemical Society Monograph No. 94.
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8000W 4000W DATUM 4000E 8000E 12000E 16000E 20000E 24000E 28000E 32000E 36000E 40000E 44000E 48000E 52000E 56000E

12200N 11800N 11400N 11000N 10600N 10200N 9800N 9400N 9000N 8600N 8200N 7800N 7400N

726 P/M 727 P/M 728 P/M

730 P/M 731 P/M 732 P/M

FAULT N°1 FAULT N°2 FAULT N°3 FAULT N°4

LEGEND

- VOLCANICS
- MINE SERIES
- CLASTIC SEDIMENTS
- GRANITE
- INFERRED GRANITE
- ESTABLISHED BOUNDARY
- INFERRED BOUNDARY
- POSSIBLE BOUNDARY
- ESTABLISHED FAULT
- INFERRED FAULT
- POSSIBLE FAULT
- BOUNDARY MINERAL LEASE APPLICATION

5 cm

GEOPEKO LTD

INVESTIGATOR 1

GEOLOGICAL PLAN

REGIONAL INTERPRETATION

067014

Scale: 1in - 200ft

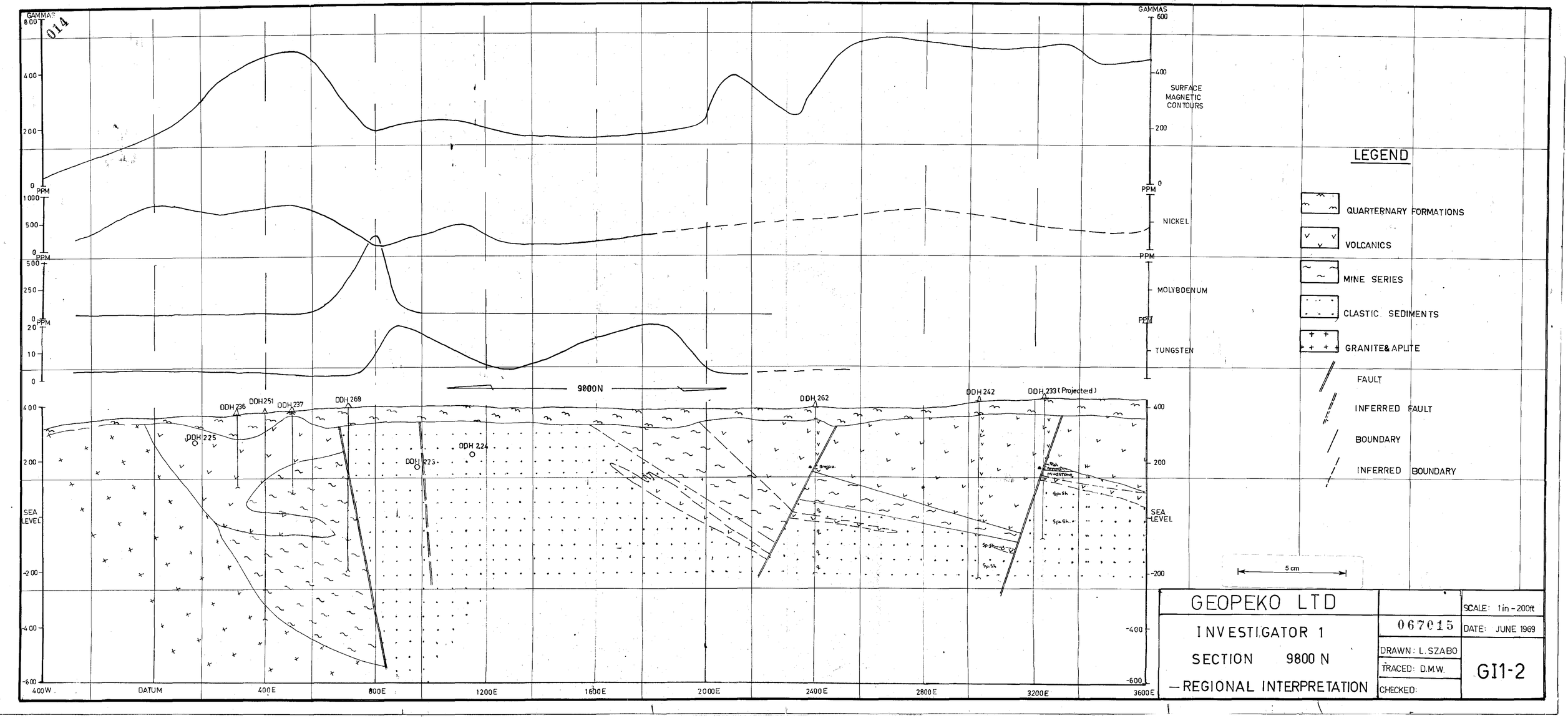
Date: AUGUST 69

Drawn: L Szabo

Traced: A-MT

Checked: PLeM.

GI1-1



GEOPEKO LTD

INVESTIGATOR 1

SECTION 9800 N

— REGIONAL INTERPRETATION

067015

DRAWN: L. SZABO

TRACED: D.M.W.

CHECKED:

SCALE: 1 in – 200ft

DATE: JUNE 1969

GI1-2

015

DDH 224 (PROJECTED) | DDH 263 | DDH 262 | DDH 242 | DDH 233 (PROJECTED) | DDH 257 | DDH 256 | DDH 245 | DDH 267

400'
200'
-200
-400
-600

SEA LEVEL

TRACE 4'

0.06% / 22.5'

0.18% / 18'

NO CORE AVAILABLE
VOLCANICS
MINE SERIES
CLASTIC SEDIMENTS
GRANITE and APLITE
BRECCIA
3 UNIT NUMBER
2-3 TRANSITIONAL FORMATION
0.06% / 22.5' ASSAY WO3% / LENGTH

5 cm

GEOPEKO LTD.	067016	SCALE: 1in ~100ft
INVESTIGATOR 1 CORRELATION OF DRILL HOLE SECTIONS REGIONAL INTERPRETATION		DATE: AUG.'69
	DRAWN: L.S.	GI1-3
	TRACED: D.M.W.	
	CHECKED:	

016

13000N
12500N
12000N
11800N
11400N
11000N
10600N
10200N
9800N
9400N
9000N
8600N

400W DATUM 400E 800E 1200E 1600E 2000E 2400E 2800E 3200E 3600E 4000E 4400E 4800E

5200E 5600E 6000E

BH1 BH2 BH3 BH4 BH5 BH6 BH7 BH8 BH9 BH10 BH11 BH12 BH13 BH14 BH15 BH16 BH17 BH18 BH19 BH20 BH21 BH22 BH23 BH24 BH25 BH26 BH27 BH28 BH29 BH30

LEGEND

< 2 PPM	
2 - 10 PPM	
10 - 50 PPM	
50 - 100PPM	
>100PPM	

5 cm

GEOPEKO LIMITED

INVESTIGATOR 1. 067017

TUNGSTEN (W) SURVEY VALUES P.P.M.

SCALE: 1 inch = 200 Feet
Drawn: L.SZABO
Traced: D.WILLIAMS
Date: JUNE 1989

GI1-4

017

13000 N
12600 N
12200 N
11800 N
11400 N
11000 N
10600 N
10200 N
9800 N
9400 N
9000 N
8600 N

400 W DATUM 400E 800E 1200E 1600E 2000E 2400E 2800E 3200E 3600E 4000E 4400E 4800E

5200E 5600E 6000E

Legend

- <2 PPM
- 2 - 10 PPM
- 10 - 50 PPM
- 50 - 100 PPM
- 100 - 500 PPM
- >500 PPM

5 cm

GEOPEKO LIMITED

INVESTIGATOR 1. 067018

MOLYBDENUM SURVEY VALUES (P.P.M)

SCALE: 1 inch = 200 Feet		GI1-5
	Drawn: L. SZABO	
	Traced: D. Williams	
	Date: June 1969	

13000N
12600N
12200N
11800N
11400N
11000N
10600N
10200 N
9800N
9400N
9000N
8600 N

4000E
DATUM
4400E
4800E
5200E
5600E
6000E
6400E
6800E
7200E
7600E
8000E
8400E
8800E
9200E
9600E
10000E
10400E
10800E
11200E

LEGEND

<100 PPM
100-250 PPM
250-500 PPM
500-1000 PPM
>1000 PPM

5 cm

GEOPEKO LIMITED

INVESTIGATOR 1

NICKEL SURVEY VALUES (ppm)

067019

SCALE : 1 Inch = 200 Feet		
	Drawn : L.SZABO	GI1-6
	Traced : D.M.W	6533
	Date : JUNE 1969	

400W DATUM 400E 800E 1200E 1600E 2000E 2400E 2800E 3200E 3600E 4000E 4400E 4800E 5200E 5600E 6000E

13000N 12600N 12200N 11800N 11400N 11000N 10600N 10200N 9800N 9400N 9000N 8600N

ANOMALY 1

ANOMALY 2

ANOMALY 3

ANOMALY 4

BH 1 BH 2 BH 3 BH 4 BH 5 BH 6 BH 7 BH 8 BH 9 BH 10 BH 11 BH 12 BH 13 BH 14 BH 15 BH 16 BH 17 BH 18 BH 19 BH 20 BH 21 BH 22 BH 23 BH 24 BH 25 BH 26 BH 27 BH 28 BH 29 BH 30

LEGEND

TUNGSTEN - GEOCHEMICAL CONTOURS

- < 2 PPM
- 2 - 10 PPM
- 10 - 50 PPM
- 50 - 100 PPM
- > 100 PPM
- PREVIOUS DRILL LINES AND HOLES
- 1ST PRIORITY PROPOSED HOLES
- 2ND PRIORITY PROPOSED HOLES

5 cm

GEOPEKO LIMITED		Scale: 1in. - 200ft
INVESTIGATOR 1	067020	Date: JULY '89
PROPOSED AUGER DRILL HOLES	Drawn: L. Szabo Traced: A.M.T. Checked: P.L.M.	GI1-7
		6534



GEOPEKO LIMITED

BOLD HEAD AREA

067021

MAGNETIC CONTOUR MAP

SCALE 1 inch = 200 Feet		GI1 - 8
	Drawn R.R. Large	6535
	Traced A.M. Townsend	
	Date 23 - 5 - 69	