

PERMIT TO PRACTICE
Dahrouge Geological Consulting Ltd. (762137 Alberta Ltd.)
Signature [Signature]
Date 2000-06-22
PERMIT NUMBER: P 6793
The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

RECEIVED
JUN 26 2000
Gold Commissioner's Office
VANCOUVER, B.C.

COMMERCE RESOURCES CORP.
1999 EXPLORATION OF THE
COMMERCE CLAIMS

SOUTH OF FERNIE, BRITISH COLUMBIA
(FORT STEELE MINING DIVISION)

CLAIMS COMMERCE 1 to 4

Geographic Co-ordinates
49° 11' N
114° 25' W
NTS Sheet 82 G/1 W

Owner of Claims: Commerce 1 to Commerce 4
Heyman, David
6488 Telford Street
Burnaby, BC, V5H 2Z2

Operator: Commerce Resources Corp.
600 - 789 West Pender Street
Vancouver, B.C., V6C 1H2

Consultant: Dahrouge Geological Consulting Ltd.
18, 10509 - 81 Avenue
Edmonton, AB, T6E 1X7

Authors: T. Faragher, B.Sc. and J. Dahrouge, P.Geol.

Date Submitted: 2000 06 22

STONEY BRANCH
REPORT

26,277

TABLE OF CONTENTS

	<u>Page</u>
1. Introduction	1
1.1 Geographic Setting	1
1.1.1 Location and Access	1
1.1.2 Topography, Vegetation, and Climate	1
1.2 Property	2
1.3 History and Previous Investigations	2
1.4 Purpose of Survey	3
1.5 Summary of Work	3
1.6 Field Operations	4
2. Regional Geology	4
3. Property Geology	5
4. Airborne Geophysical Survey	6
5. Conclusions and Recommendations	6
6. References	8

LIST OF TABLES

		<u>Page</u>
Table 1.1	List of Mineral Claims	2
Table 2.1	Table of Formations	5

LIST OF ILLUSTRATIONS

Figure 1.1	Location Map	F1
Figure 1.2	Property Map	F2
Figure 3.1	Property Geology	F3
Figure 4.1	Total Magnetic Field	In Pocket
Figure 4.2	Calculated Vertical Magnetic Gradient	In Pocket
Figure 4.3	Apparent Resistivity 7,200 Hz Coplanar	In Pocket
Figure 4.4	Apparent Resistivity 56,000 Hz Coplanar	In Pocket
Figure 4.5	Electromagnetic Anomalies	In Pocket

LIST OF APPENDICIES

Appendix 1	Itemized Cost Statement	A1
Appendix 2	Statement of Qualifications	A2

INTRODUCTION

The Commerce Property is located in Flathead River Valley of southeastern British Columbia, about 60 km southeast of the Town of Fernie. The claims were staked to cover Proterozoic sedimentary and volcanic rocks and associated alkalic intrusives on Commerce Peak. Previous exploration in the vicinity of the Commerce claims identified several styles of mineralization including stratabound sedimentary copper-silver, intrusive related gold (syenite and intrusive breccia) and mineralized quartz-carbonate veins.

During December, 1999, Geotrex-Dighe completed a high-resolution heli-borne magnetic/resistivity/electromagnetic geophysical survey totaling 9.3 line kilometers. Interpretation of airborne data identified a weak magnetic feature coincident with a large conductive body and several small electromagnetic conductors. The geophysical anomalies may represent near surface altered and/or mineralized sediments, intrusives or geologic structures.

1.1 GEOGRAPHIC SETTING

1.1.1 Location and Access

The Commerce Property is within Clark Range of Rocky Mountains in southeast British Columbia. The property is about 60 km southeast of Fernie, about 20 km north of the Montana border, and 30 km west of the Alberta border. It is within National Topographic System (NTS) map area 82 G/1 W and centered about 49° 11' north latitude and 114° 25' west longitude (Fig. 1.1).

Access to the property is via a gravel logging road which branches off Provincial Highway 3 about 6 km east of the Town of Natal and extends southeast along Flathead River to the International Border (Corbin Road). Alternately, an all-weather gravel logging road branches off Highway 3 south of Fernie, along Bighorn Creek Valley and joins Corbin Road 15 km southwest of the property. A dry-weather gravel road spurs northerly from Corbin Road along Commerce Creek which passes within 1 km of the western property boundary. Remote areas of the property are accessible either by ATV, foot, or at higher elevations by helicopter.

1.1.2 Topography, Vegetation, and Climate

The claims are within Clark Range immediately east of Flathead River Valley. They are within an area of rugged mountains with elevations greater than 2,500 m above sea level (a.s.l.); elevations along valley bottoms are about 1,200 m a.s.l. Much of the

area is characterized by broad river valleys edged by moderate slopes leading upward to steep cliffed mountain tops.

Most of the lower parts of the mountain slopes are heavily timbered with spruce, pine, and lesser deciduous varieties. Treeline is at an elevation of about 1,800 m. In the subalpine zone, vegetation consists of a sparse cover of stunted spruce and pine, and above timberline of alpine shrubs and foliage.

Climate is alpine with average summer temperatures of 20° to 25° C and average winter temperatures of -10° to -15° C. Rainfall averages about 120 cm per year with maximum snowfall in November and December which averages 150 to 165 cm.

1.2 PROPERTY

The Commerce Property consists of four contiguous mineral claims which cover 1 km² within the Fort Steele Mining Division (Fig. 1.2). Commerce 1 to 4 are two-post mineral claims which total 4 units and are registered in the name of Heyman, David (Table 1.1). The property is held under option by Commerce Resources Corp.

TABLE 1.1 LIST OF MINERAL CLAIMS

Claim Name	Tenure Number	Units/Claim	Record Date	Actual or Expected Expiry Date
Commerce 1	319772	1	July 29, 1993	July 29, 2004
Commerce 2	319773	1	July 29, 1993	July 29, 2004
Commerce 3	319774	1	July 29, 1993	July 29, 2003
Commerce 4	319775	<u>1</u>	July 29, 1993	July 29, 2003
		4		

1.3 HISTORY AND PREVIOUS INVESTIGATIONS

Active oil seeps in the Sage Creek watershed attracted the earliest exploration activity in Flathead Valley. In the early part of the century several companies drilled shallow wells in their vicinity and more recently Shell Canada Resources has been exploring the Flathead Valley for oil and carbon dioxide reservoirs. Shell's exploration model depicts volcanic intrusions liberating large volumes of CO₂ from carbonate rocks. During the 1990's Shell completed seismic surveys and test wells in the area.

Coal has been known to occur in Flathead Valley for many years. Early exploration occurred around the abandoned village of Flathead about 15 km north of the Comm Property. More recent exploration activity by the Sage Creek Coal Consortium has occurred south of the property within the Cabin Creek watershed. Fording Coal Ltd. has completed several exploration drill holes within the upper Flathead Valley.

Concentrated exploration for base and precious metals in Clark Range of British Columbia and Alberta was initiated in the late 1960's, prior to that time only scattered reports of copper mineralization had been made.

Although the area has had relatively little exploration activity with regards to metallic mineral exploration, the area around Commerce Peak was identified as having potential for stratiform copper-silver mineralization and the ground was staked by Kennco Explorations (Western) Limited (Kennco) in 1967. Exploration including prospecting, mapping, rock sampling, and diamond drilling encountered chalcocite-bornite mineralization (0.05% Cu, 0.34 g Ag/t across 12 m in drill core) confined to quartzite beds in the upper Grinnell Formation and bornite-chalcocite mineralization in Purcell diorite sills (2.40% Cu, 29.5 g Ag/t across 2.4 m in drill core; Stevenson, 1968). Falconbridge Nickel Mines Ltd. optioned a portion of the property and carried out limited exploration in 1969 and 1970. Kintla Explorations Ltd. (Kintla) carried out exploration in the area of Commerce Peak between 1972 to 1974 which included geochemical sampling, geologic mapping, trenching, and diamond drilling on several showings. Kintla encountered copper mineralization present as chalcopyrite, bornite, chalcocite, and minor covellite in specific Grinnell Formation quartzite beds. On the north flank of Commerce Peak Kintla defined an indicated reserve of 125,000 tons at 1.25% Cu plus 8.57 to 17.14 g Ag/t (Northern Miner, 1974). In addition, Goble (1984) reports sporadic Au - Ag mineralization (up to 131.66 g Au/t) in sulphide rich diorite and syenite intrusives and breccias from near Commerce Peak.

1.4 PURPOSE OF SURVEY

The work described in this report was undertaken to provide geophysical information on the bedrock within the Commerce Property. The aeromagnetic survey provided data for recognition of magnetic bodies and localized conductors and/or resistivity changes which reflect lithology, structure, and alteration/mineralization in the bedrock.

1.5 SUMMARY OF WORK

Between December 16 and 20, 1999 Geotrex-Dighem of Mississauga, Ontario flew a low level magnetic/resistivity/electromagnetic survey over the Commerce Property. The data collected was leveled, processed, and reviewed. Total magnetic field contour and vertical gradient data were examined for areas of high magnetic intensity, contrasting zones, and offsets or breaks in magnetic trends. Electromagnetic

conductance and resistivity data were examined for bedrock conductive zones and areas of low resistance; caution interpreting EM data in areas of strong topographic relief was required for anomalies caused by turbulence from rapid altitude changes encountered while flying the survey.

To assist in the interpretation, digital contour maps were produced for total magnetic field, calculated vertical magnetic gradient, apparent resistivity for 7,200 and 56,000 Hz coplanar, and one displaying conductance of electromagnetic anomalies (Fig's. 4.1 to 4.5).

1.6 FIELD OPERATIONS

The airborne geophysical survey was based out of Fernie, B.C., totaled 9.3 line-km's, and was flown by helicopter at 57 m terrain clearance along east-west trending traverse lines spaced at 200 m intervals. The average airspeed was 67 km/h with the electromagnetic sensor towed 30 m above ground.

2. REGIONAL GEOLOGY

The region is underlain by a series of Precambrian sedimentary rocks of the Belt-Purcell Series and Palaeozoic to Mesozoic marine sediments of the Lewis Thrust Sheet. The Lewis Thrust carried the Precambrian rocks, which now constitute a portion of Clark Range, eastward between 7½ to 9 km and superimposed them on younger Palaeozoic and Mesozoic strata. Regionally, the Lewis Thrust Sheet forms a broad synclinorium within which Precambrian sediments form the Akamina Syncline. The Akamina Syncline is a broad northwest trending structure approximately 30 km wide by 65 km long and is truncated along its western edge by Flathead Fault. Flathead Fault is a major southwest dipping normal fault which has dropped strata on its west side by more than 6,000 m.

Price (1962) shows bedrock geology in the area of the Commerce Property to consist dominantly of Precambrian strata which include the Waterton, Altyn, Appekunny, Grinnell, Siyeh, Purcell, Sheppard, Gateway, Phillips, and Roosville formations. A series of Proterozoic diabasic to dioritic sills and dykes intrude rocks of the Siyeh and Sheppard formations. Cretaceous and/or Tertiary aged dykes and anastomosing stock-like masses of trachyte, syenite, and intrusion breccias intrude the Proterozoic succession. A summary of the regional stratigraphy is provided in Table 2.1.

TABLE 2.1

TABLE OF FORMATIONS

Era	Period or Epoch	Formation	Lithology	Thickness (m)	
Paleozoic	Mississippian	Rocky Mountain	Marine sandstone, dolomite, chert, shale, siltstone	0-455	
		Etherington	Marine limestone, dolomite, shale, siltstone, anhydrite	60-260	
		Mount Head	Marine limestone, dolomite, dolomite and limestone breccias	120-305	
		Livingstone	Marine limestone, cherty limestone, dolomite	245-425	
		Banff	Marine limestone, cherty limestone, shale, chert	180-320	
		Exshaw	Marine shale	2-12	
	Devonian	Palliser	Marine limestone, dolomite	200-220	
		Alexo	Marine limestone, dolomite, siltstone, sandstone	6-150	
		Fairholme	Marine limestone, argillaceous limestone, shale, dolomite	290-455	
	Cambrian	Elko	Marine dolomite, dolomitic limestone	85-215	
		Flathead	Marine sandstone, conglomeratic sandstone	7-45	
	Precambrian	Purcell	Roosville	Green argillite, siltstone, sandstone, stromatolitic dolomite	1070+
			Phillips	Red sandstone, siltstone, argillite	150-215
Gateway			Argillite, argillaceous siltstone, dolomite, sandstone	350-915	
Sheppard			Quartzitic and dolomitic sandstone, dolomite, argillite, siltstone, pillowed andesite	45-275	
Purcell			Chloritized andesite, amygdaloidal andesite flows, pillowed andesite	0-180	
Siyeh			Limestone, dolomite, argillite	345-915	
Grinnell			Red argillite, sandstone, siltstone	110-520	
Appekunny			Argillite, sandstone, siltstone	455-610	
Altyn			Argillaceous limestone and dolomite, argillite	150-1,220	
Waterton			Limestone and dolomite, argillite, argillaceous dolomite	455+	

3.

PROPERTY GEOLOGY

The geology of the Commerce Property is known from reconnaissance scale government mappings (see Section 2). It is underlain by Precambrian limestone, dolomite and argillite of the Siyeh Formation (Fig. 3.1). Detailed geological maps of the property are unavailable.

The Commerce Peak area is host to three types of mineralization including:

- 1) copper-silver as chalcopyrite-bornite-chalcocite disseminations within quartzites of the Grinnell Formation;
- 2) gold with lesser amounts of silver associated with contact related sulphide concentrations at margins of syenite and/or diorite sills;
- 3) veinlets of quartz-carbonate crosscut the Grinnell and Siyeh formations and host local concentrations of copper sulphides.

Copper may assay up to 0.2 to 0.3 per cent locally with silver in the 1 to 10 g/t range within thin 1 to 5 cm thick Grinnell Formation quartzite horizons. Although gold values as high as 34.28 g/t associated with syenitic intrusives have been reported, anomalous values are usually 1 g Au/t or less. Quartz-carbonate veinlets 3 to 5 cm wide have assayed up to 1 to 3 per cent copper (B.C. Min. Energy, Mines, Petr. Res. MINFILE Commerce F & G and TRI 38 showings). MINFILE showings Commerce F & G and TRI 38 are near the east and southeast property boundaries respectively (Fig. 3.1).

4. AIRBORNE GEOPHYSICAL SURVEY

The Commerce Property is characterized by a magnetically quiet background with a dynamic range of about 10 nT. The most prominent feature is an oblate, weak magnetic high (4nT) about 300 m wide by 1,200 m long trending east-west across the northern portion of the property. The magnetic anomaly is coincident with a large resistivity low and several small, 'spot' electromagnetic conductors. The anomaly displays characteristics of a shallow bedrock source and may represent mineralized/altered sediments or a shallowly emplaced intrusive.

5. CONCLUSIONS AND RECOMMENDATIONS

Based upon a review of geologic and geophysical information available, it can be concluded that the Commerce Property is located in an area favourable for hosting stratabound sedimentary copper-silver, intrusive related gold (syenite and intrusive breccia) and mineralized quartz-carbonate veins. The airborne geophysical survey identified a magnetic anomaly coincident with weak electromagnetic conductive zones, which may be mineralized/altered sediments or an intrusive plug. Additional exploration *for the intrusive and stratabound related mineralization is warranted. Future exploration on the Commerce claims should include:*

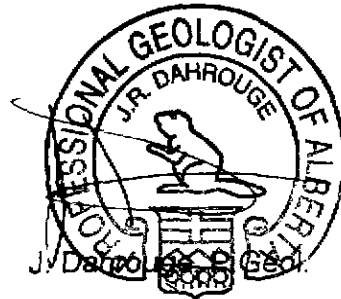
- a) property-scale geologic mapping, prospecting, and detailed geologic mapping of known mineral occurrences; and
- b) limited trenching of those areas with encouraging results.

In areas of mineralization, detailed mapping and sampling of alteration and mineralization should be conducted with emphasis on relationships between stratigraphy, contact zones, structure, and intrusive units. Ground geophysical surveys

may be required to elucidate structure, lithology and extent of mineralization. Contingent upon favourable results, diamond drilling may be required to further evaluate the mineral potential of the Commerce Property.



T. Faragher, B.Sc. (Geol.)



Edmonton, Alberta

2000 06 22

6.

REFERENCES

- Goble, R. (1984) Mineralogy and petrology of the Commerce Mountain copper/gold deposit; B.C. Min. of Energy, Mines, and Petr. Resources assessment report 12,638, 23 p., 4 figs.
- Grant, B. (1985) Assessment Report Sambo #1; B.C. Min. of Energy, Mines, and Petr. Resources assessment report 13,978, 12 p., 3 figs.
- International Curator Resources Ltd. (1999a) Corporate press release dated 05/03/99.
- International Curator Resources Ltd. (1999b) Corporate press release dated 09/15/99.
- Northern Miner (1974) Article dated 21/02/74 in Canadian mineral deposits not being Mined; Energy, Mines and Resources Canada, Mineral Bulletin MR 223, November, 1989, B.C. 42.
- Price, R. A. (1962) Fernie map-area, east half, Alberta and British Columbia; Geol. Sur. of Can. Paper 61-24.
- Price, R. A. (1965) Flathead map-area, British Columbia and Alberta; Geol. Sur. of Can. Mem. 336.
- Stephens, M. (2000) Dighem survey for Aubryd Property, Comm Property, and Commerce Property; unpublished report dated February, 2000 for Dahrouge Geological Consulting Ltd. by Geoterrex-Dighem, 45 p.
- Stevenson, R.W. (1968) Final Report – 1967 Waterton Copper Project; unpublished report dated January, 1968 for Kennco Explorations, 20 p., 2 appendices.
- Trueman, E. (1970) Exploration – 1970 Flathead Project; unpublished report dated October, 1970 for Alcor Minerals Ltd. by Geowest Services Ltd., 15 p., 15 figs, 5 appendices.

APPENDIX 1: ITEMIZED COST STATEMENT

a) Personnel

J. Dahrouge, geologist

0.2 days arranging for airborne geophysics, report writing, and supervision

0.2 days @ \$ 428.00 \$ 94.16

T. Faragher, geologist

0.6 days review geophysical data, report writing

0.6 days @ \$ 374.50 \$ 217.21

W. McGuire, draftsman

0.4 days preparing figures and maps

0.4 days @ \$ 374.50 \$ 140.81

\$ 452.18b) Food and Accommodation n/ac) Transportation n/ad) Instrument Rental n/ae) Drilling n/af) Analyses n/ag) Report \$ 75.00h) Other

Airborne Geophysics (Geoterrex-Dighem) \$ 1,551.93

Geophysical Data Interpretation (Intrepid Geophysics) \$ 102.72

Courier \$ 3.75

Long distance telephone \$ 0.48

Map reproductions \$ 4.00

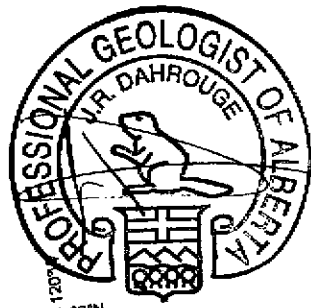
\$ 1,737.88Total

\$ 2,190.06

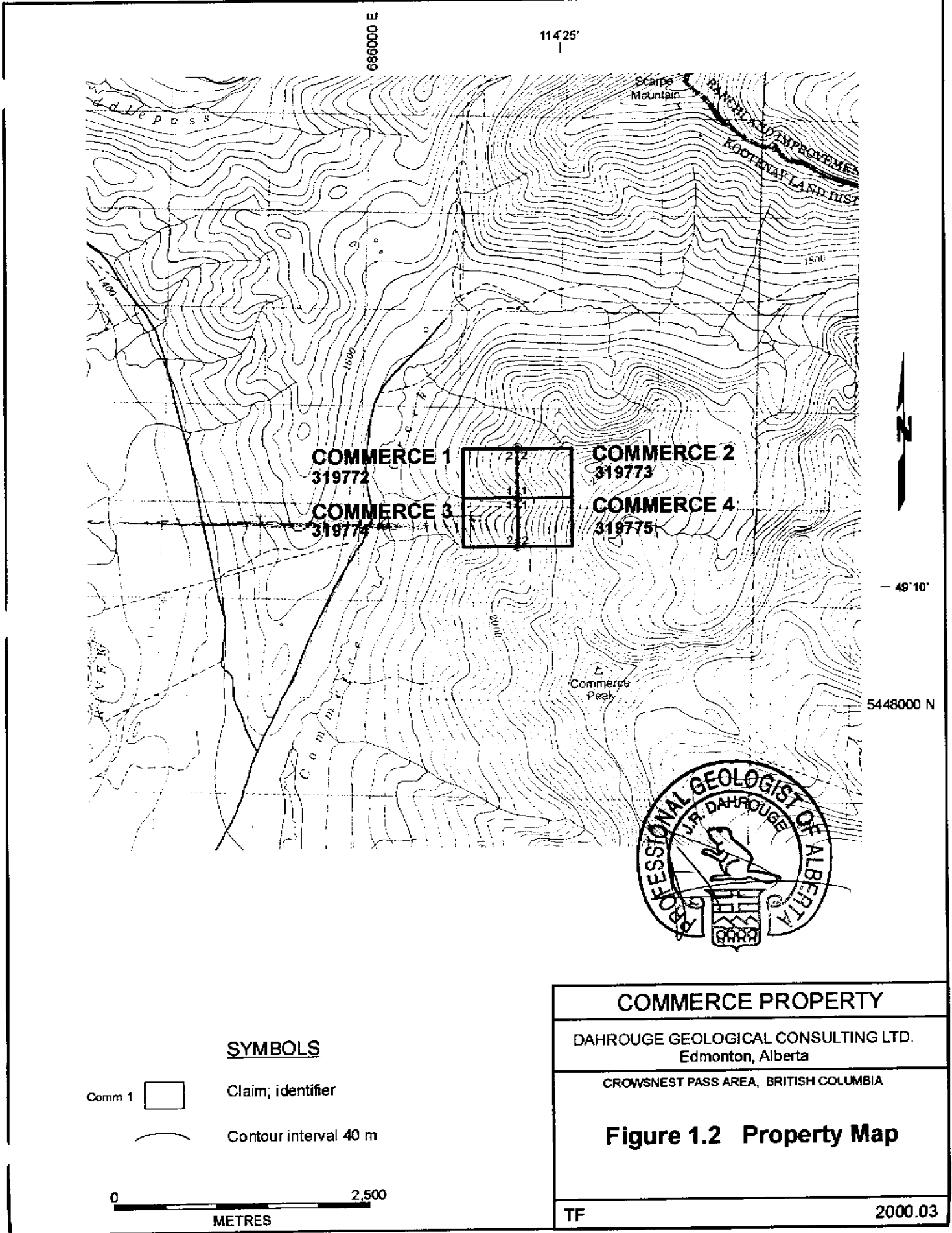
APPENDIX 2: STATEMENT OF QUALIFICATIONS

T. Faragher obtained a degree in geology from the University of Alberta, Edmonton in 1988. He has more than 10 years of experience in mineral exploration.

The work described in the report was under the supervision of J.R. Dahrouge who obtained degrees in geology and computing science from the University of Alberta, Edmonton in 1988 and 1994 respectively. He has more than 10 years of experience in mineral exploration. He is a member of the Canadian Institute of Mining and Metallurgy and is registered as P.Geol. with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.



COMMERCE PROPERTY	
DAHROUGE GEOLOGICAL CONSULTING LTD. Edmonton, Alberta	
CROWNEST PASS AREA, BRITISH COLUMBIA	
Figure 1.1 Location Map	
TF	2000.03



SYMBOLS

- Comm 1 Claim; identifier
- Contour interval 40 m

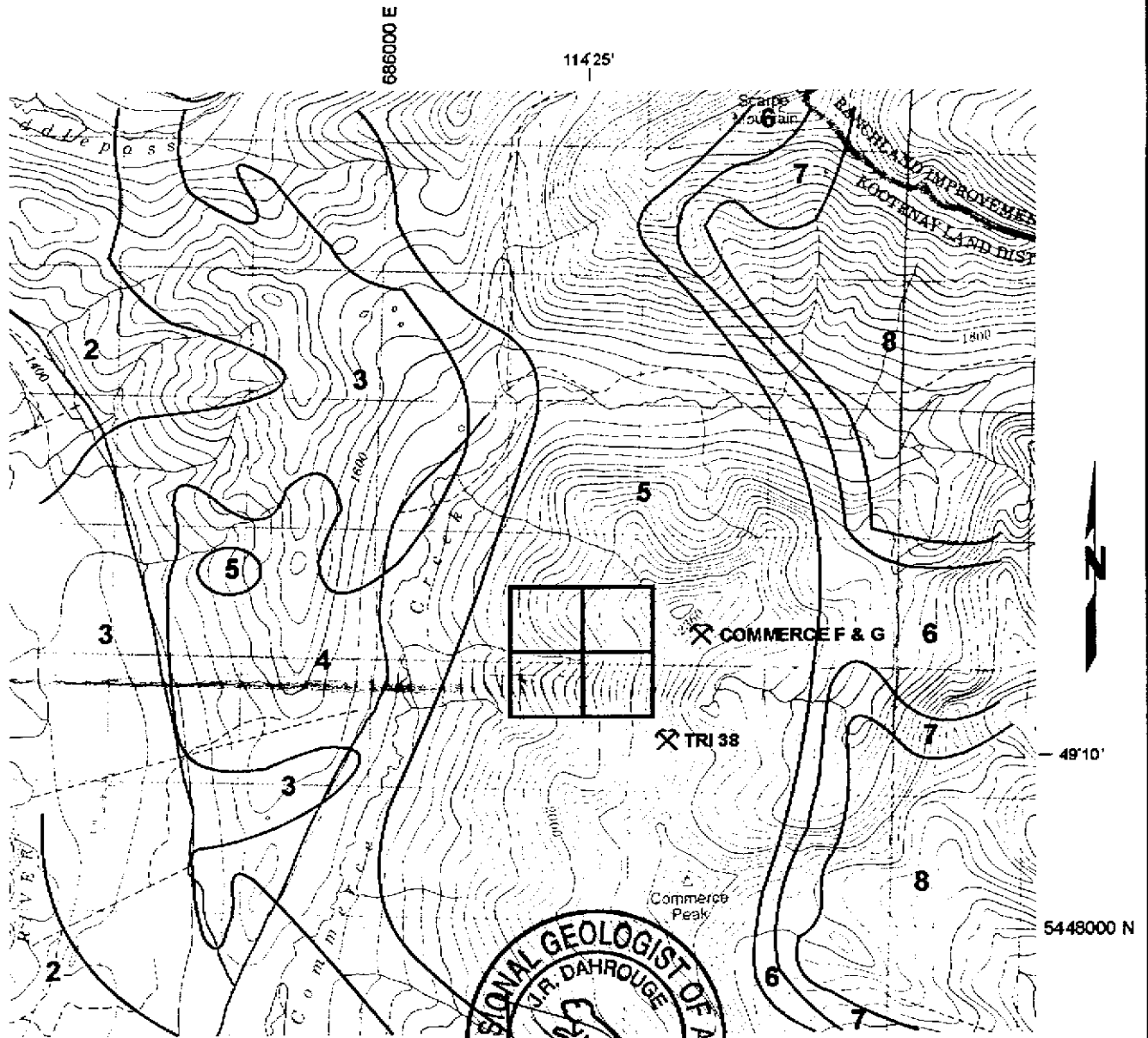


COMMERCE PROPERTY

DAHROUGE GEOLOGICAL CONSULTING LTD.
Edmonton, Alberta

CROWSNEST PASS AREA, BRITISH COLUMBIA

Figure 1.2 Property Map






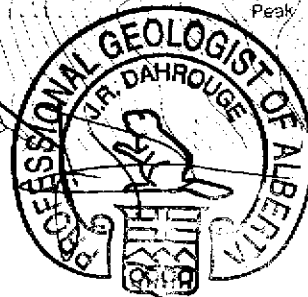
LEGEND

Precambrian

- 10 **Rooseville Formation**
green and grey argillite, siltstone and sandstone; dolomite
- 9 **Phillips Formation**
red and purplish red sandstone, siltstone, argillite
- 8 **Gateway Formation**
red, purplish siltstone and argillite; sandstone; dolomite
- 7 **Sheppard Formation**
grey quartzitic and dolomitic sandstone, dolomite; argillite; chloritized andesite and pillowed andesite
- 6 **Purcell Lava**
green chloritized andesite, amygdaloidal, and pillowed andesite
- 5 **Siyeh Formation**
grey limestone, dolomite, green and red argillite
- 4 **Grinnell Formation**
red argillite, white and red sandstone, siltstone
- 3 **Appekunny Formation**
green and grey argillite, quartzose sandstone
- 2 **Aityn Formation**
grey to black argillaceous limestone and dolomite

SYMBOLS

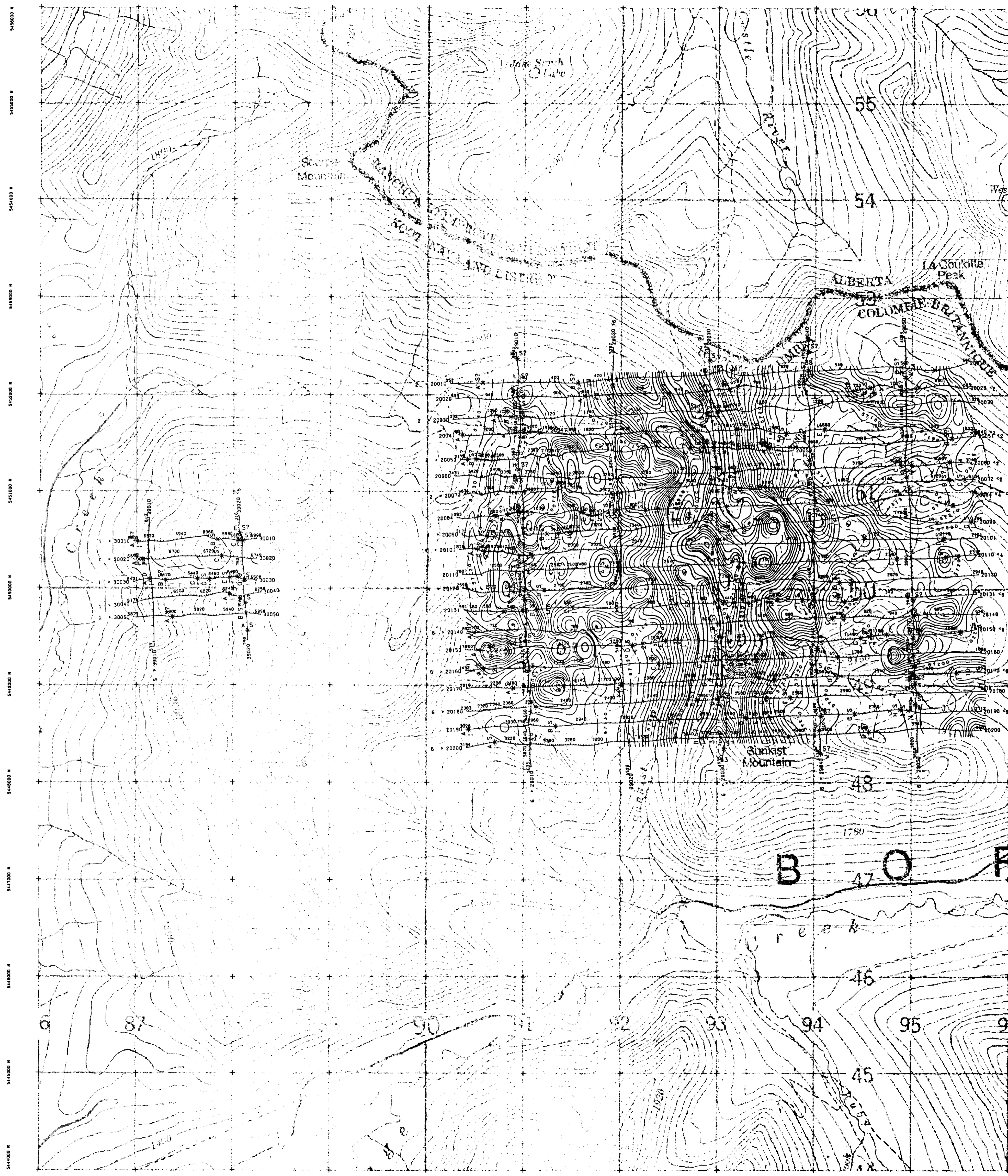
-  Claim
-  Geologic boundary
-  MINFILE showing, identifier



COMMERCE PROPERTY
DAHROUGE GEOLOGICAL CONSULTING LTD. Edmonton, Alberta
CROWSNEST PASS AREA, BRITISH COLUMBIA
Figure 3.1 Property Geology
TF 2000.03

* geology modified after Price (1964)

88000 E 887000 E 894000 E 899000 E 906000 E 913000 E 920000 E 927000 E 934000 E 941000 E 948000 E 955000 E 962000 E



TECHNICAL SUMMARY

Navigation: Differentially-corrected GPS
 Data reduction grid interval: 50 metres
 Terrain clearance: Helicopter 57 m
 Electromagnetic sensor 30 m
 Magnetometer 30 m

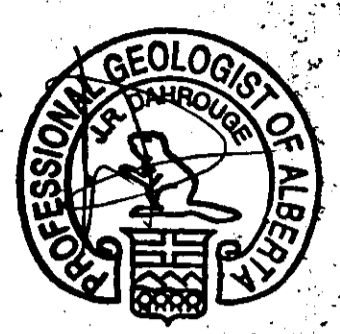
Data sampling interval: 0.1 second
 Magnetometer / sensitivity: Caesium / 0.01 nT
 Electromagnetic system: DIGHEM

Frequency	Sensitivity	Coil Orientation
900 Hz	08 ppm	Vertical coplanar
5500 Hz	12 ppm	Vertical coplanar
900 Hz	12 ppm	Horizontal coplanar
7200 Hz	24 ppm	Horizontal coplanar
56000 Hz	80 ppm	Horizontal coplanar



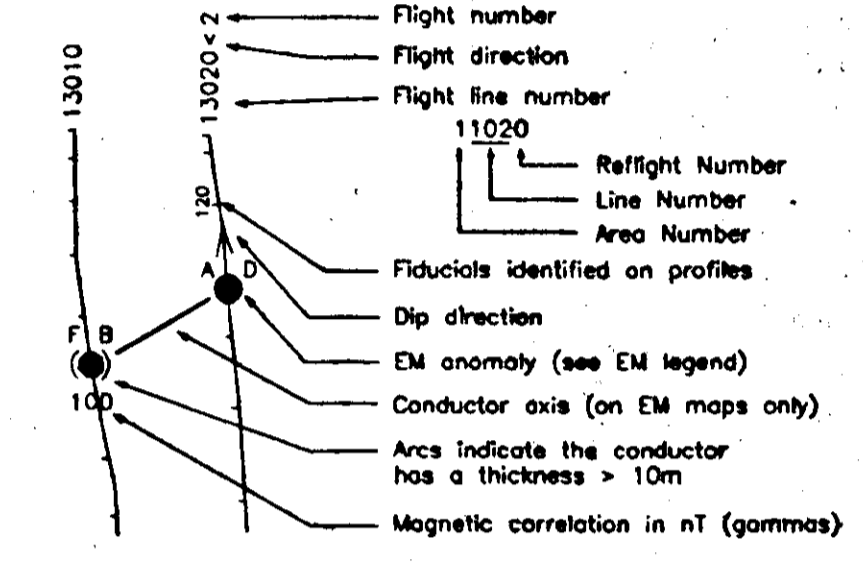
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemens
-	*	Questionable anomaly

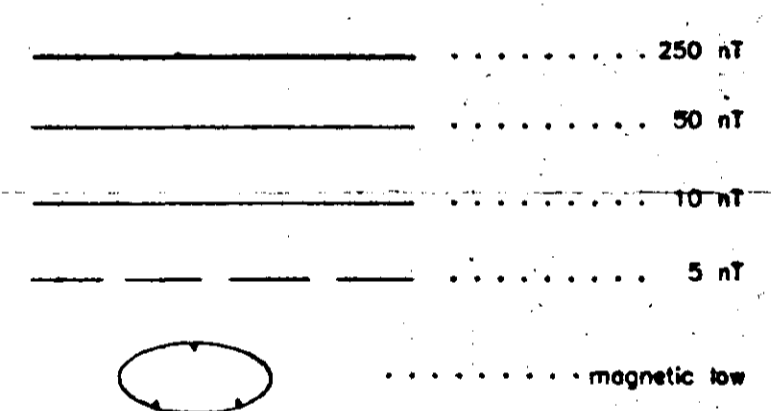


Anomaly Identifier	Interpretive symbol	Interpretive description
Depth is greater than:		
15 m		Inphase and Quadrature of coastal coil is greater than
30 m		5 ppm
45 m		10 ppm
60 m		15 ppm
		20 ppm

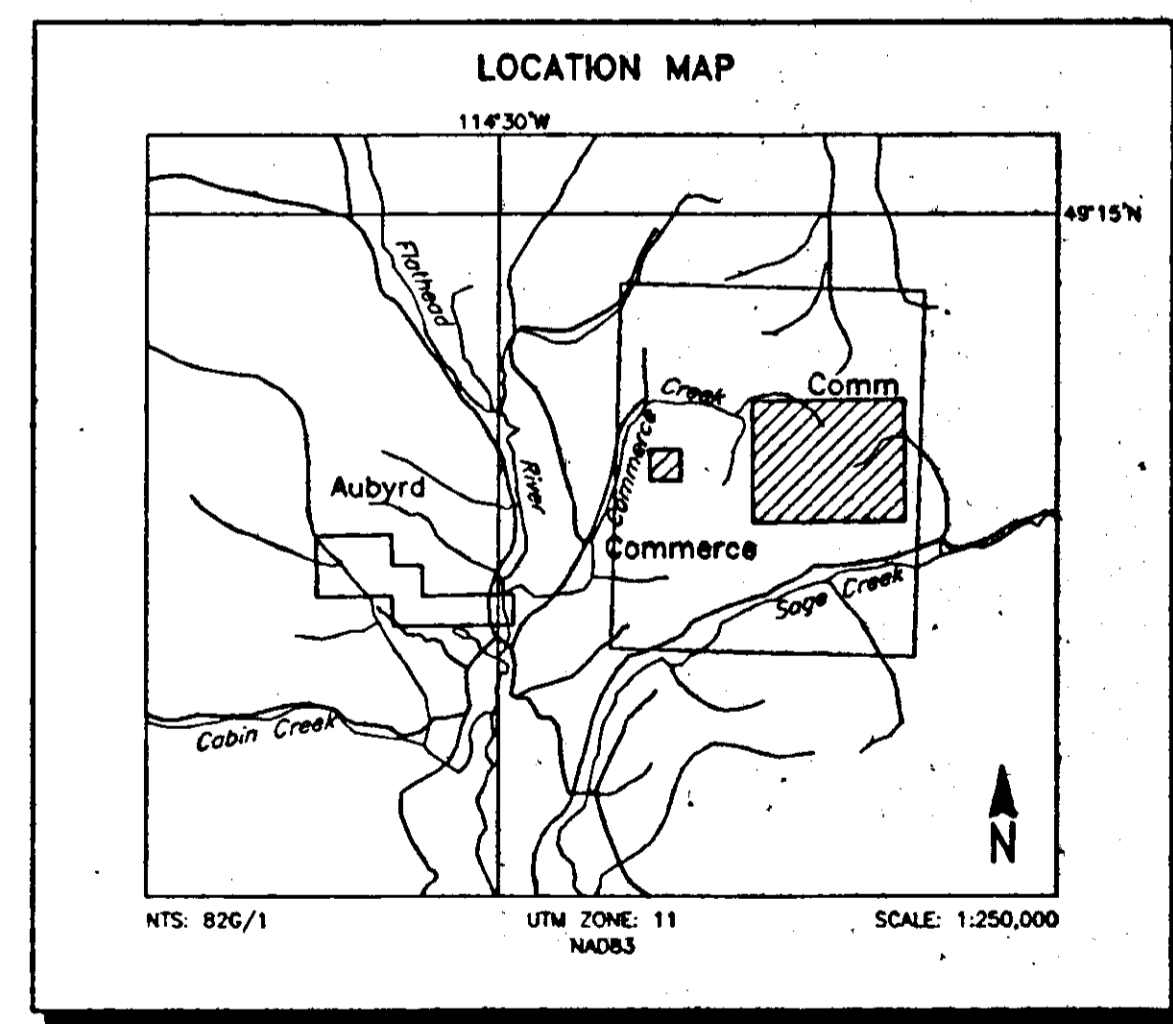
FLIGHT LINES WITH EM ANOMALIES



TOTAL MAGNETIC FIELD CONTOURS



Magnetic inclination within the survey area: 73 degrees N
 Magnetic declination within the survey area: 17 degrees E

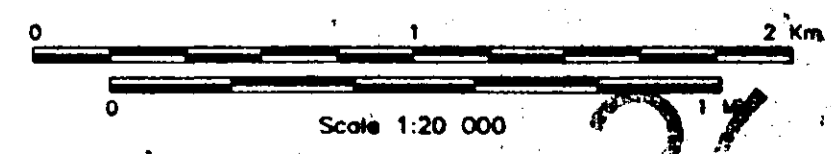


ROCCA RESOURCES LTD.
COMM AND COMMERCE PROPERTIES, B.C.

TOTAL MAGNETIC FIELD

DIGHEM SURVEY	NTS: 826/1	GEOPHYSICIST: <i>MS</i>
DATE: DECEMBER, 1999	JOB: 992014	SHEET: 1

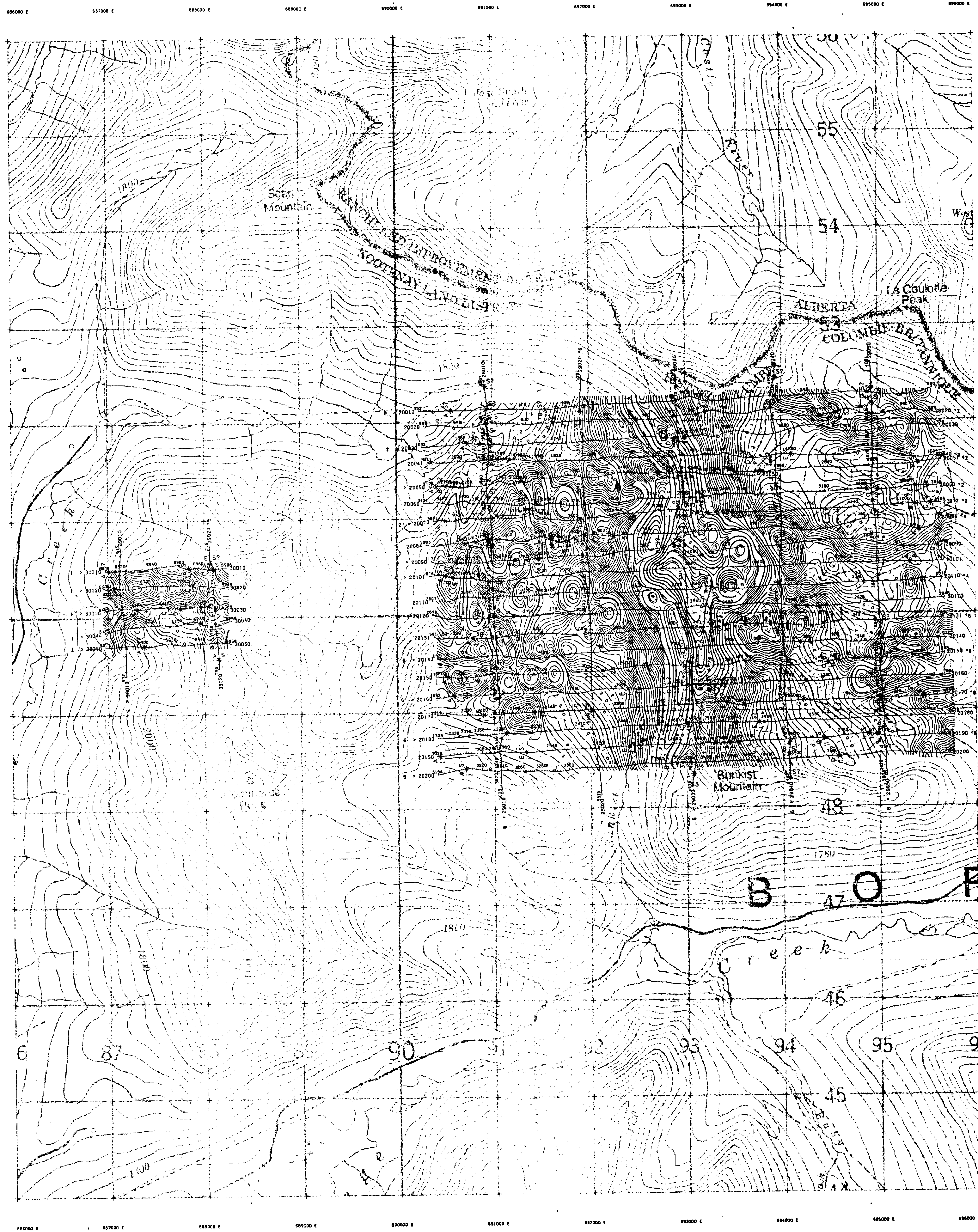
Geotrex-DigheM, A division of CGG-Canada Ltd. SURVEY BRANCH REPORT



26 277

geotrex-digheM
 Airborne & Ground Geophysics

FIG. 4.1



TECHNICAL SUMMARY

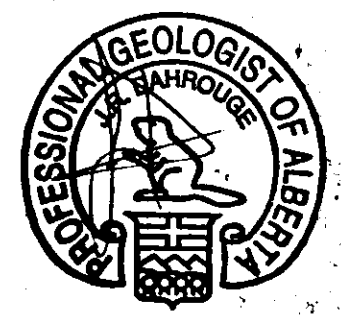
Navigation: Differentially-corrected GPS
 Data reduction grid interval: 50 metres
 Terrain clearance: Helicopter 57 m
 Electromagnetic sensor 30 m
 Magnetometer 30 m
 Data sampling interval: 0.1 second
 Magnetometer / sensitivity: Caesium / 0.01 nT
 Electromagnetic system: DIGEM

Frequency	Sensitivity	Coil Orientation
900 Hz	0.8 ppm	Vertical coplanar
5500 Hz	1.2 ppm	Vertical coplanar
900 Hz	1.2 ppm	Horizontal coplanar
7200 Hz	2.4 ppm	Horizontal coplanar
56000 Hz	.80 ppm	Horizontal coplanar



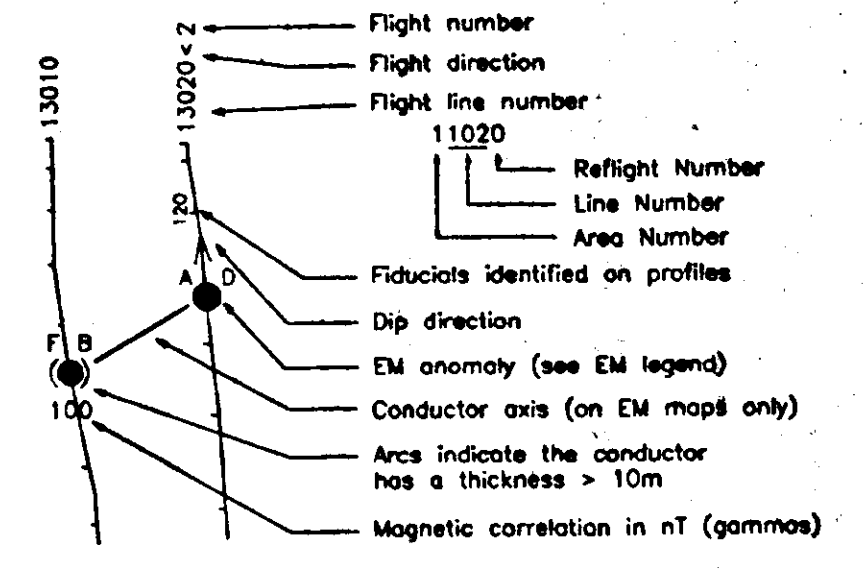
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	<1 siemens
-	*	Questionable anomaly



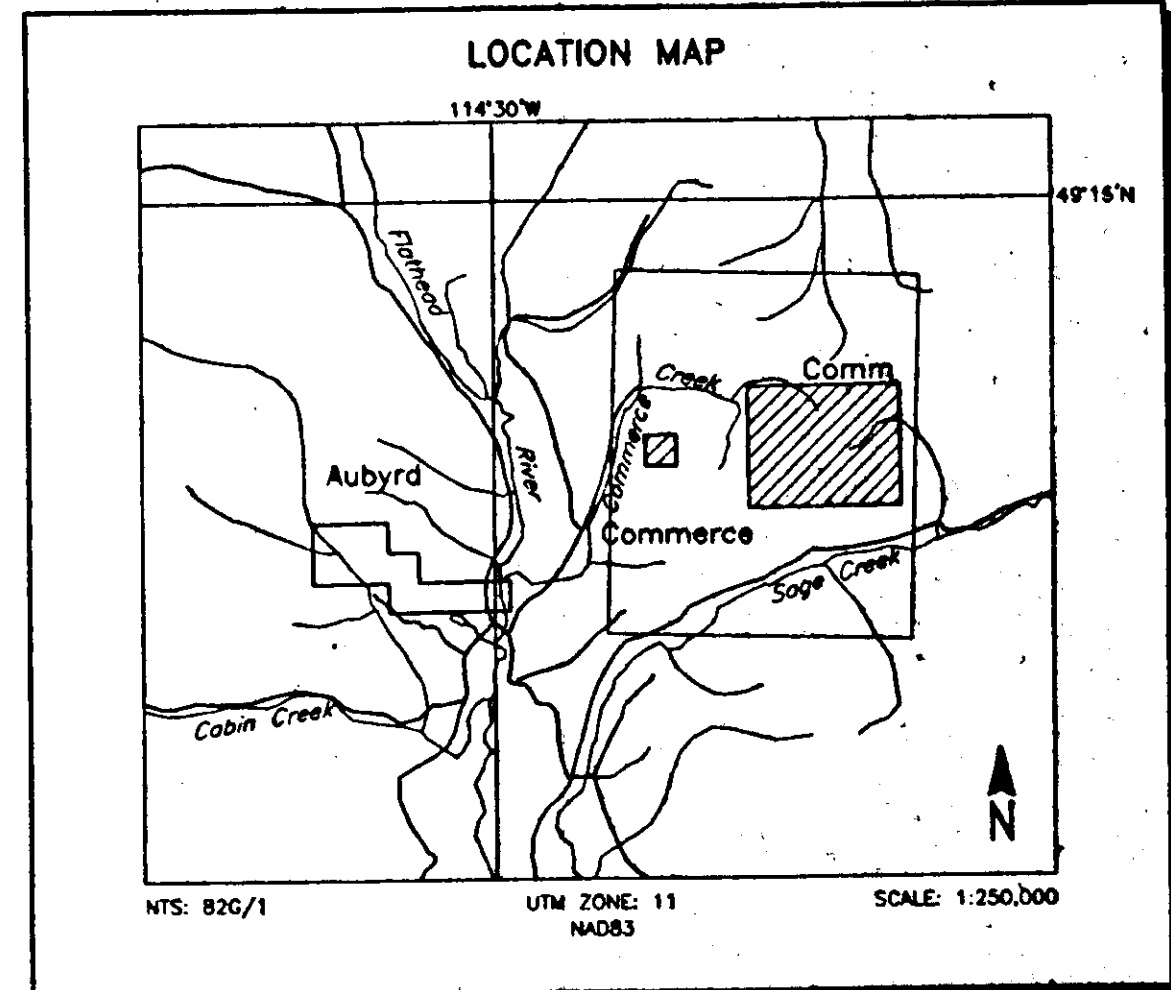
Anomaly identifier	Interpretive symbol	Conductor ("model")
B	—	Bedrock conductor
D	—	Narrow bedrock conductor ("thin dike")
S	—	Conductive cover ("horizontal thin sheet")
H	—	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	—	Edge of broad conductor ("edge of half space")
L	—	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES



CALCULATED VERTICAL GRADIENT CONTOURS

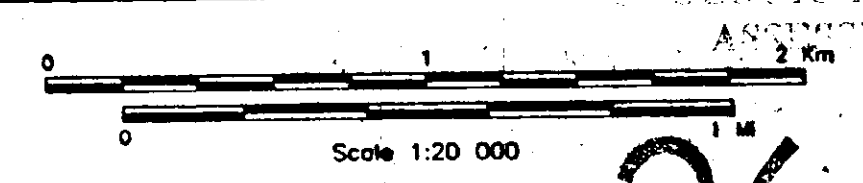
—	2.5 nT/metre
—	0.5 nT/metre
—	0.1 nT/metre
—	0.05 nT/metre



ROCCA RESOURCES LTD.
 COMM AND COMMERCE PROPERTIES, B.C.

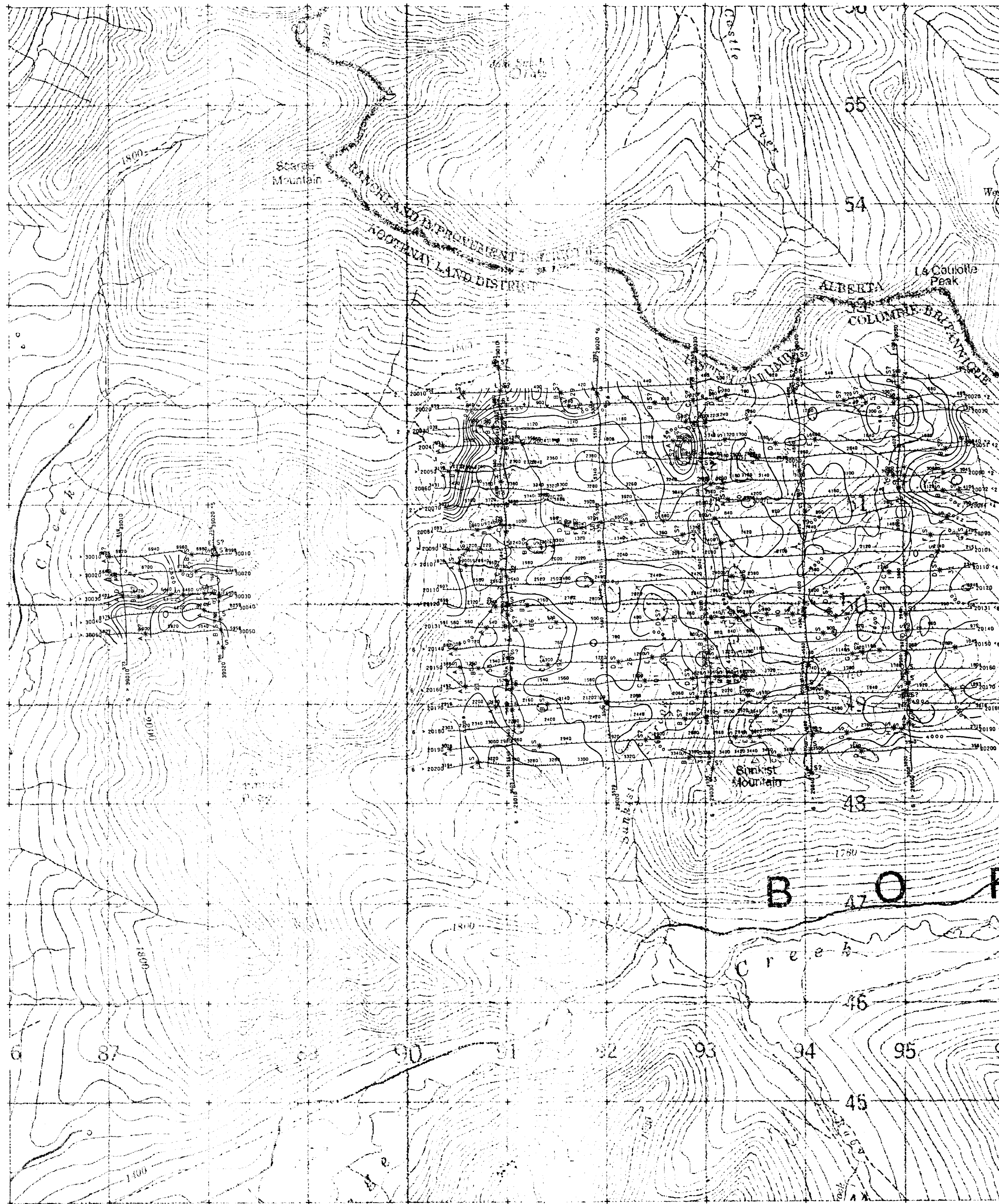
CALCULATED VERTICAL MAGNETIC GRADIENT

DIGEM SURVEY	NTS: 82G/1	GEOPHYSICIST: <i>NB</i>
DATE: DECEMBER, 1999	JOB: 992014	SHEET: 1
Geotrex-Dighem, A division of CGG Canada Ltd.		



geotrex-dighem
 Airborne & Ground Geophysics

88000 E 88700 E 89400 E 90100 E 90800 E 91500 E 92200 E 92900 E 93600 E 94300 E 95000 E 95700 E 96400 E



88000 E 88700 E 89400 E 90100 E 90800 E 91500 E 92200 E 92900 E 93600 E 94300 E 95000 E 95700 E 96400 E

TECHNICAL SUMMARY

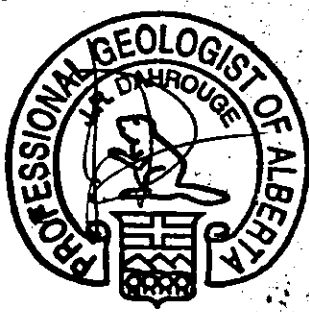
Navigation Differentially-corrected GPS
 Data reduction grid interval 50 metres
 Terrain clearance Helicopter 57 m
 Electromagnetic sensor 30 m
 Magnetometer 30 m
 Data sampling interval 0.1 second
 Magnetometer / sensitivity 0.01 nT
 Electromagnetic system DIGEM

Frequency	Sensitivity	Coil Orientation
900 Hz	.08 ppm	Vertical coplanar
5500 Hz	.12 ppm	Vertical coplanar
900 Hz	.12 ppm	Horizontal coplanar
7200 Hz	.24 ppm	Horizontal coplanar
56000 Hz	.60 ppm	Horizontal coplanar



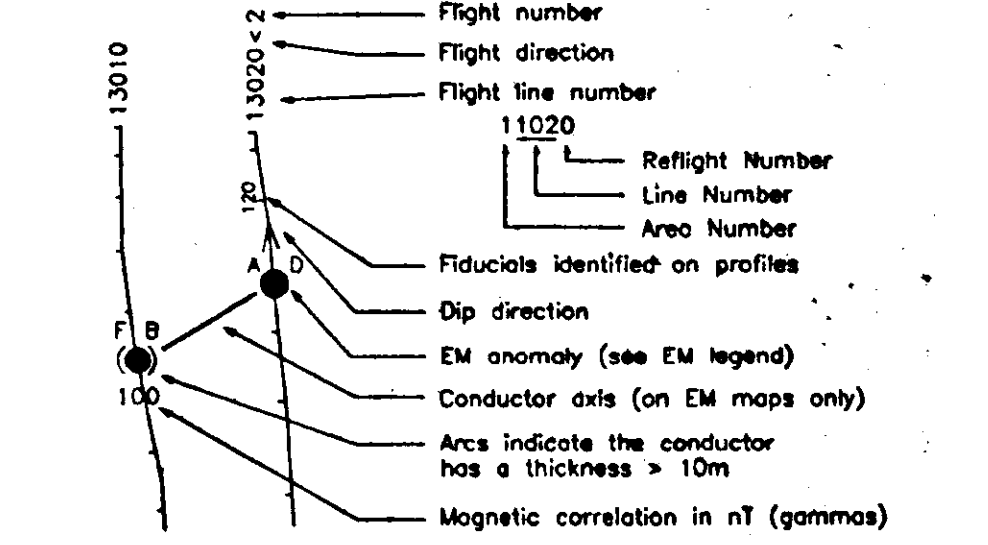
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	<1 siemens
-	*	Questionable anomaly

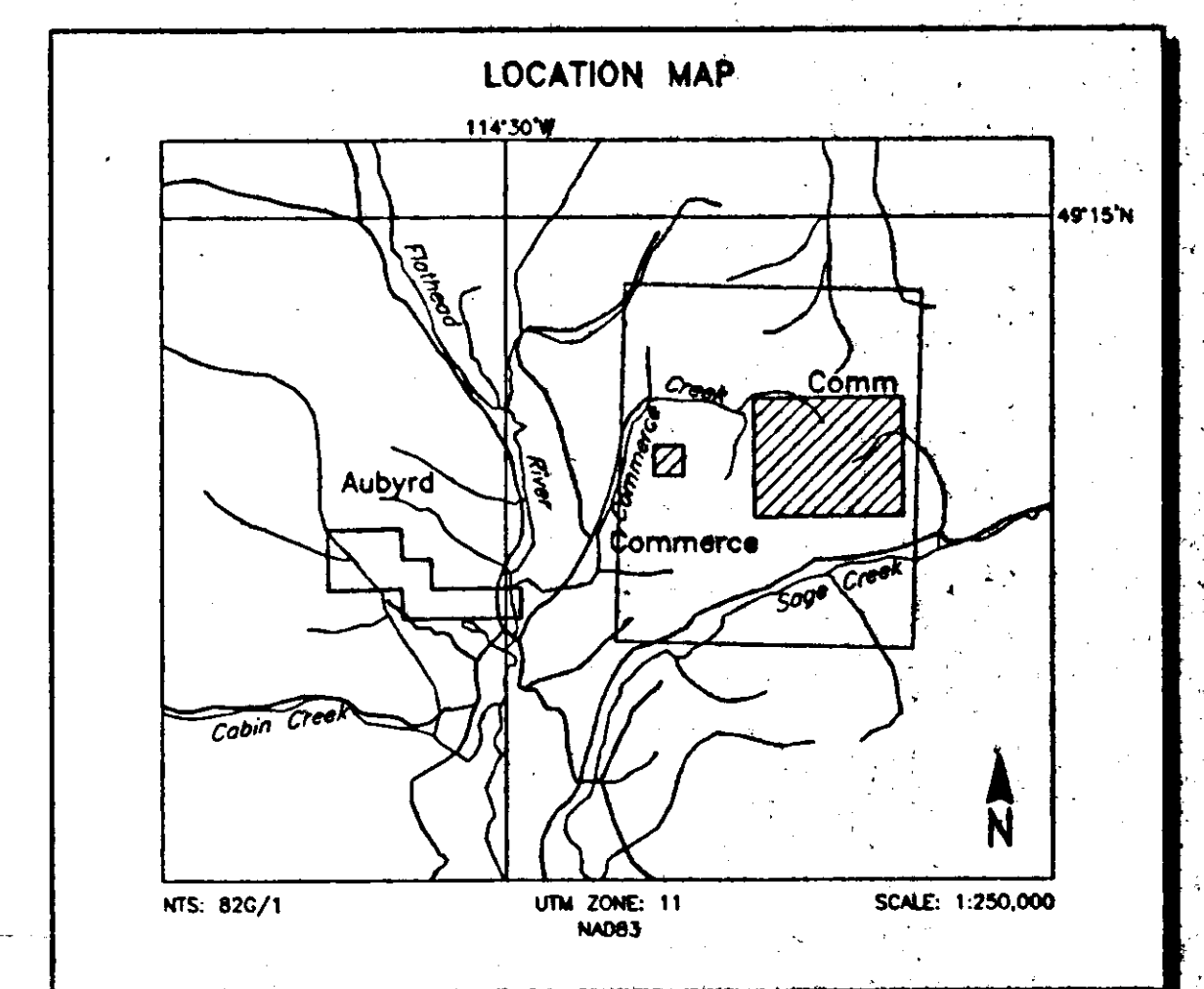
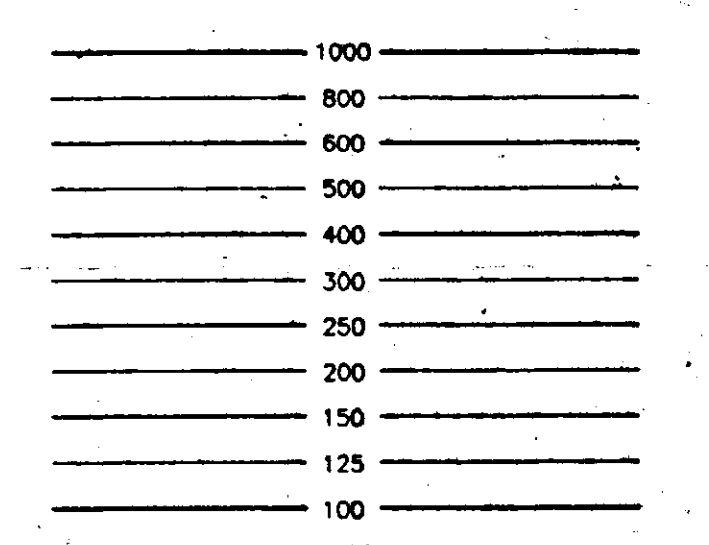


Anomaly identifier	Interpretive symbol	Interpretive description
●	B	Bedrock conductor
○	D	Narrow bedrock conductor ("thin dike")
○	S	Conductive cover ("horizontal thin sheet")
○	H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
○	E	Edge of broad conductor ("edge of half space")
○	L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES



RESISTIVITY CONTOURS

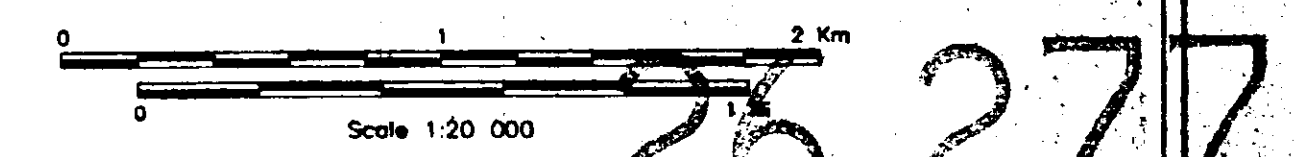


ROCCA RESOURCES LTD.
 COMM AND COMMERCE PROPERTIES, B.C.

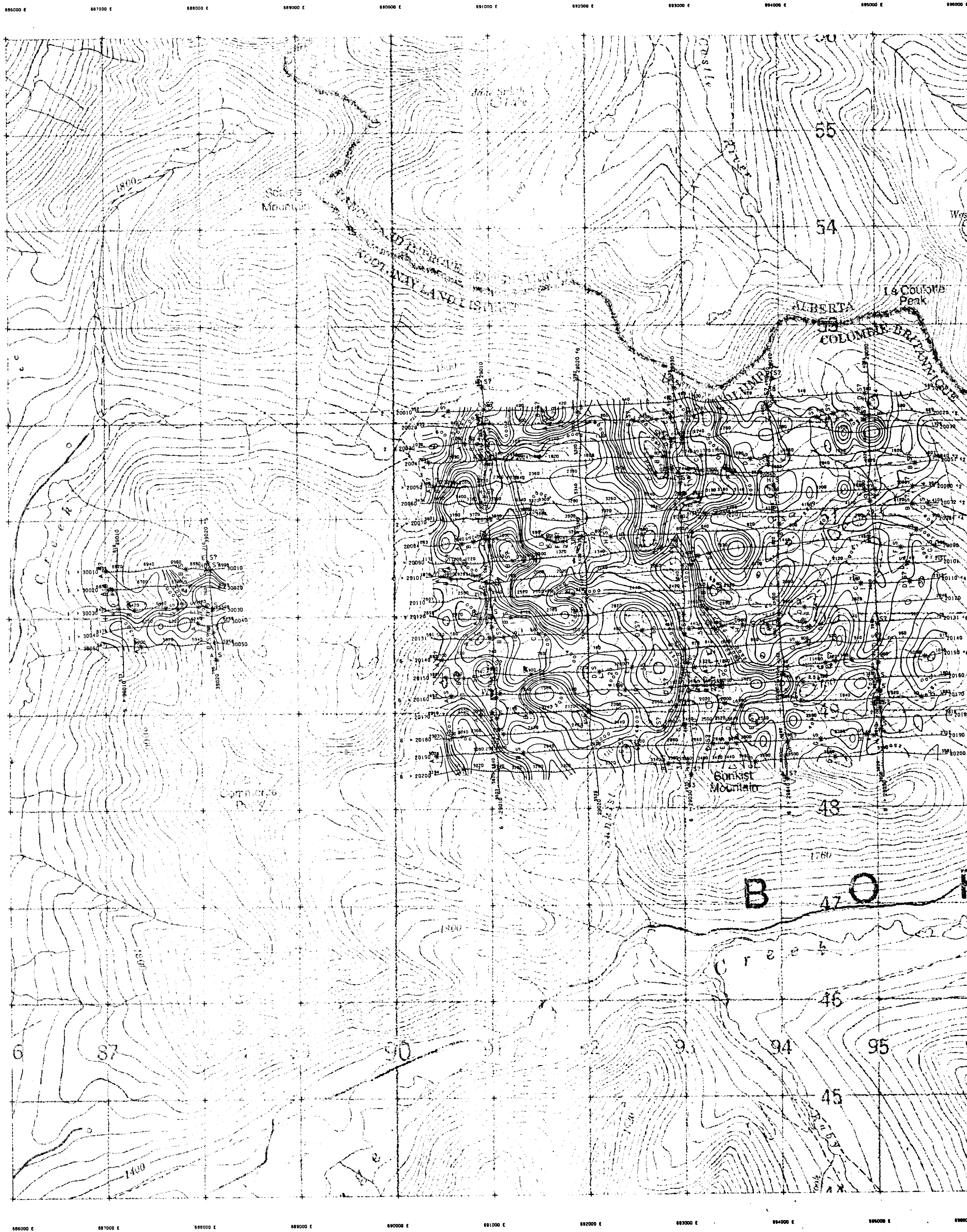
APPARENT RESISTIVITY
 7200 Hz COPLANAR

DIGEM SURVEY	NTS: 82G/1	GEOPHYSICIST: <i>MB</i>
DATE: DECEMBER, 1999	JOB: 992014	SHEET: 1/3

Geotrex-Digem, A division of CGG Canada Ltd.



geotrex-digem
 Airborne & Ground Geophysics



TECHNICAL SUMMARY

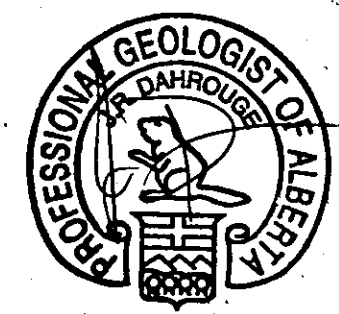
Navigation: Differentially-corrected GPS
 Data reduction grid interval: 50 metres
 Terrain clearance: Helicopter 57 m
 Electromagnetic sensor 30 m
 Magnetometer: 30 m
 Data sampling interval: 0.1 second
 Magnetometer / sensitivity: Cesium / 0.01 nT
 Electromagnetic system: DIGHEM

Frequency	Sensitivity	Coil Orientation
900 Hz	08 ppm	Vertical coaxial
5500 Hz	12 ppm	Vertical coaxial
900 Hz	12 ppm	Horizontal coplanar
7200 Hz	24 ppm	Horizontal coplanar
56000 Hz	60 ppm	Horizontal coplanar



ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemens
-	*	Questionable anomaly

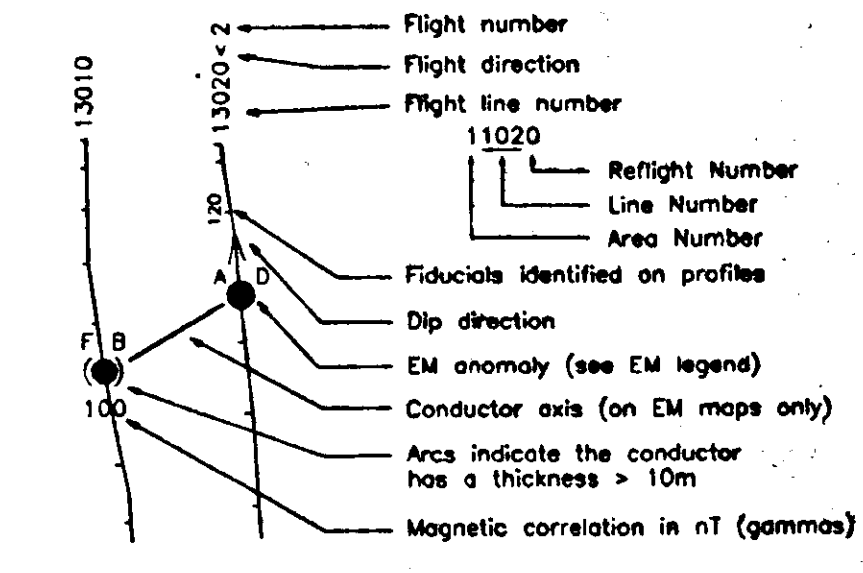


Interpretive symbol
 B Bedrock conductor
 D Narrow bedrock conductor ("thin dike")
 S Conductive cover ("horizontal thin sheet")
 H Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
 E Edge of broad conductor ("edge of half space")
 L Culture, e.g. power line, metal building or fence

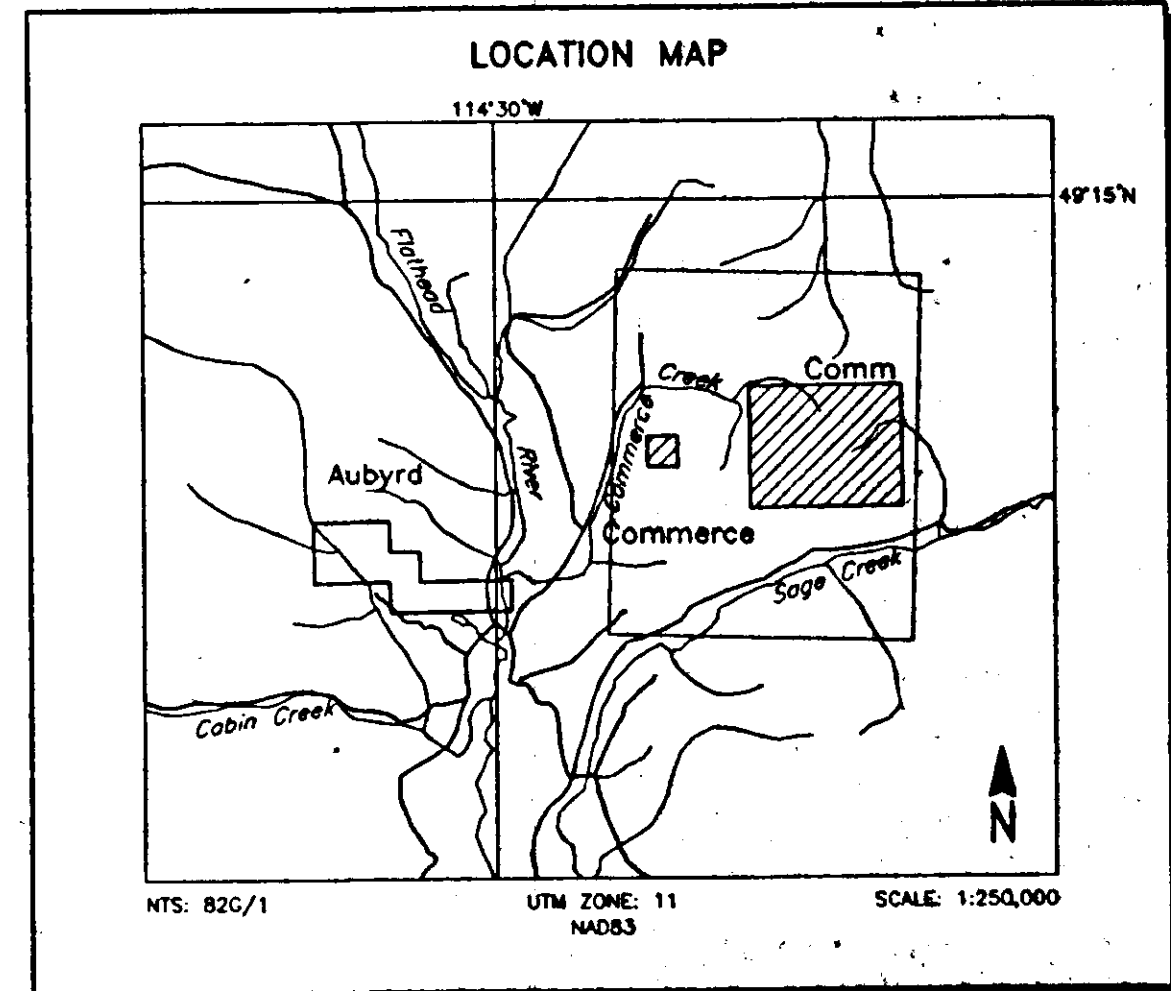
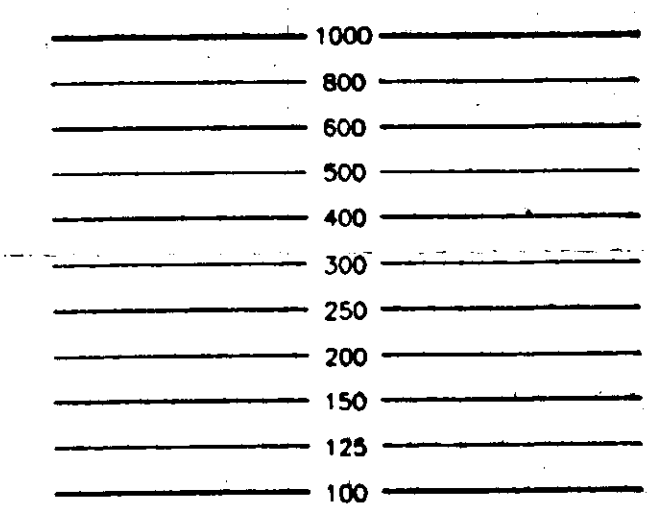
Anomaly identifier
 Depth is greater than:
 15 m
 30 m
 45 m
 60 m

Inphase and Quadrature of coaxial coil is greater than
 5 ppm
 10 ppm
 15 ppm
 20 ppm

FLIGHT LINES WITH EM ANOMALIES



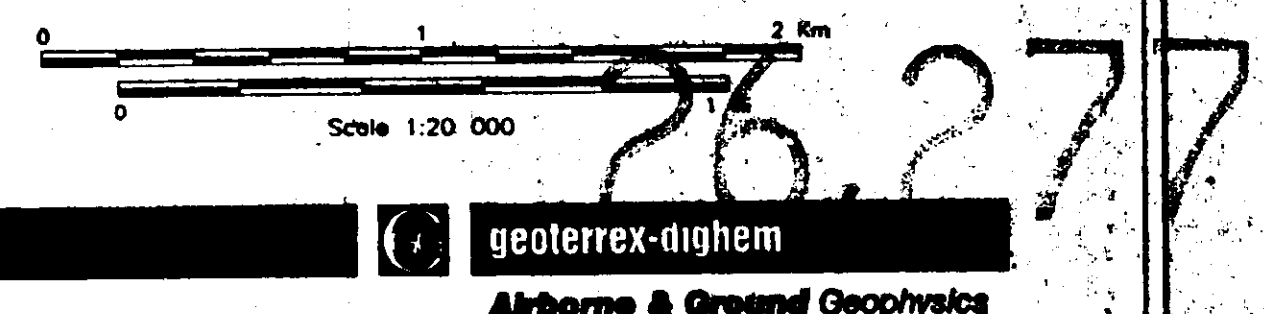
RESISTIVITY CONTOURS



ROCCA RESOURCES LTD.
 COMM AND COMMERCE PROPERTIES, B.C.

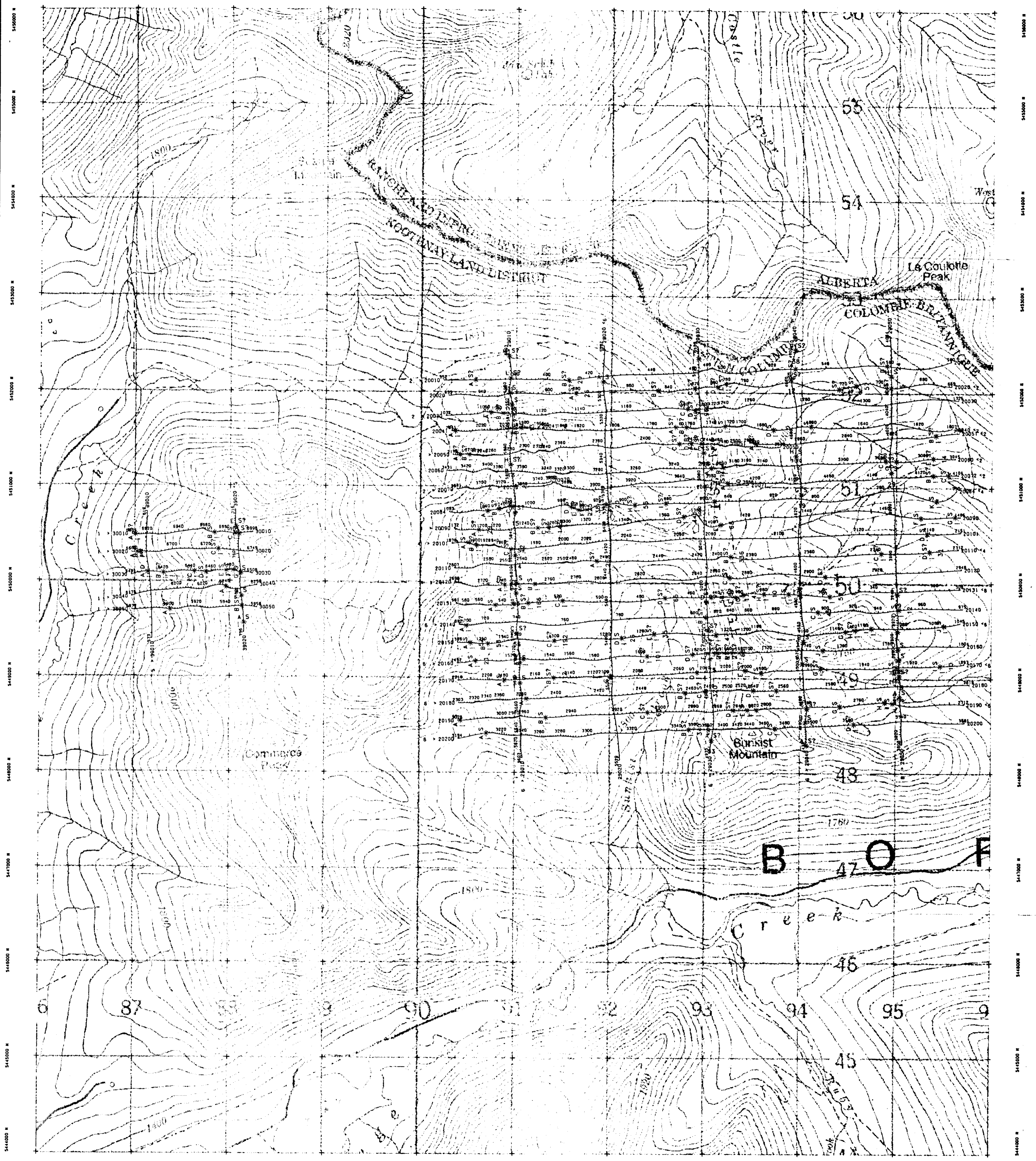
APPARENT RESISTIVITY
 56,000 Hz COPLANAR

DIGHEM SURVEY NTS: 826/1 GEOPHYSICIST: *RL*
 DATE: DECEMBER, 1999 JOB: 992014 SHEET: 1
 Geotrex-Dighem, A division of CGG Canada Ltd. REPORT



geotrex-dighem
 Airborne & Ground Geophysics

885000 E 887000 E 889000 E 891000 E 893000 E 895000 E 897000 E 899000 E 901000 E 903000 E 905000 E 907000 E



TECHNICAL SUMMARY

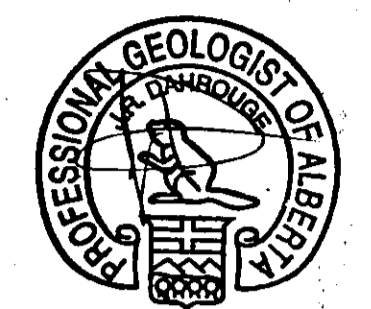
Navigation : Differentially-corrected GPS
 Data reduction grid interval : 50 metres
 Terrain clearance : Helicopter 57 m
 Electromagnetic sensor 30 m
 Magnetometer 30 m
 Data sampling interval : 0.1 second
 Magnetometer / sensitivity : Caesium / 0.01 nT
 Electromagnetic system : DIGHEM

Frequency	Sensitivity	Coil Orientation
900 Hz	06 ppm	Vertical coaxial
5500 Hz	12 ppm	Vertical coaxial
900 Hz	12 ppm	Horizontal coplanar
7200 Hz	24 ppm	Horizontal coplanar
56000 Hz	60 ppm	Horizontal coplanar



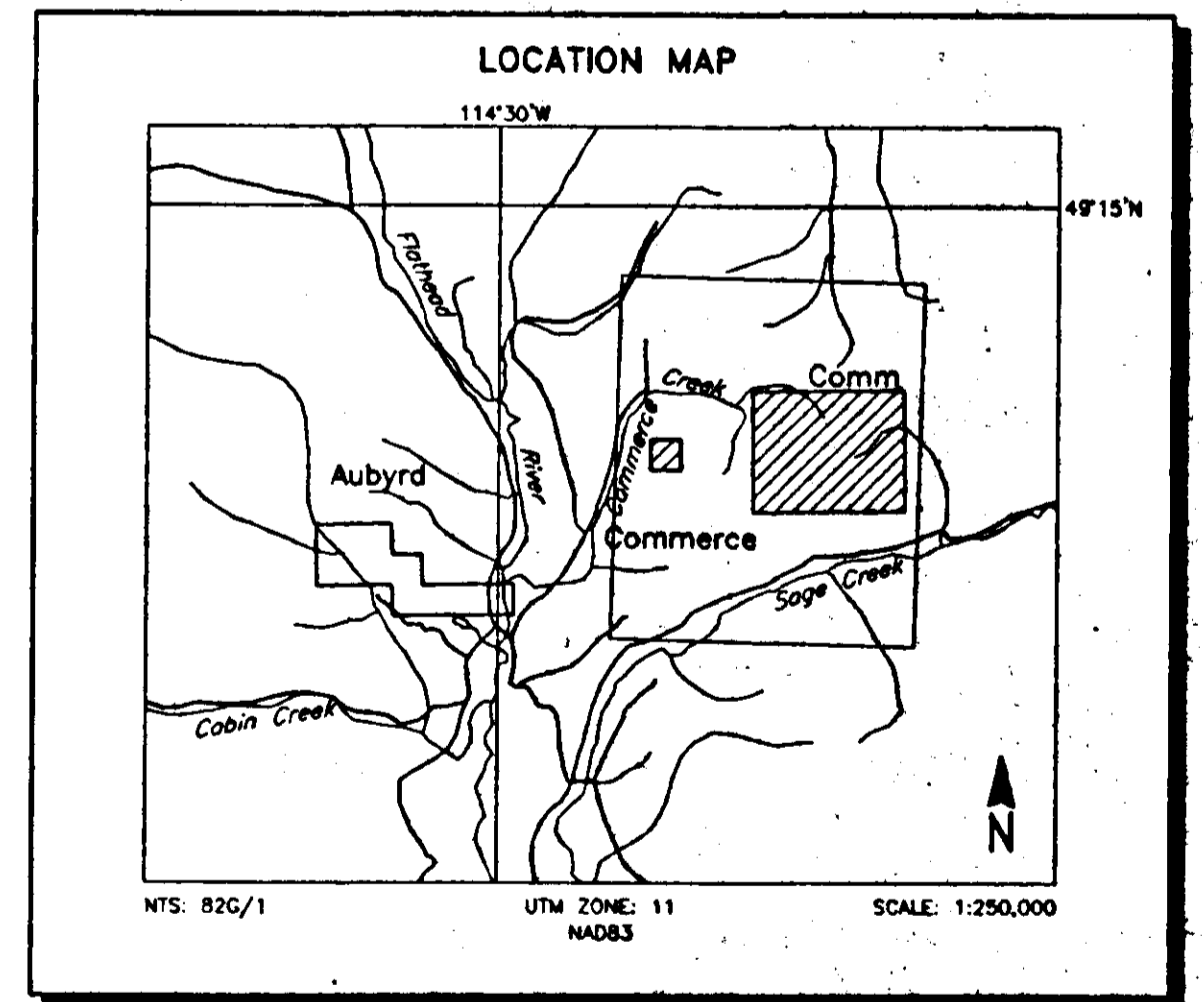
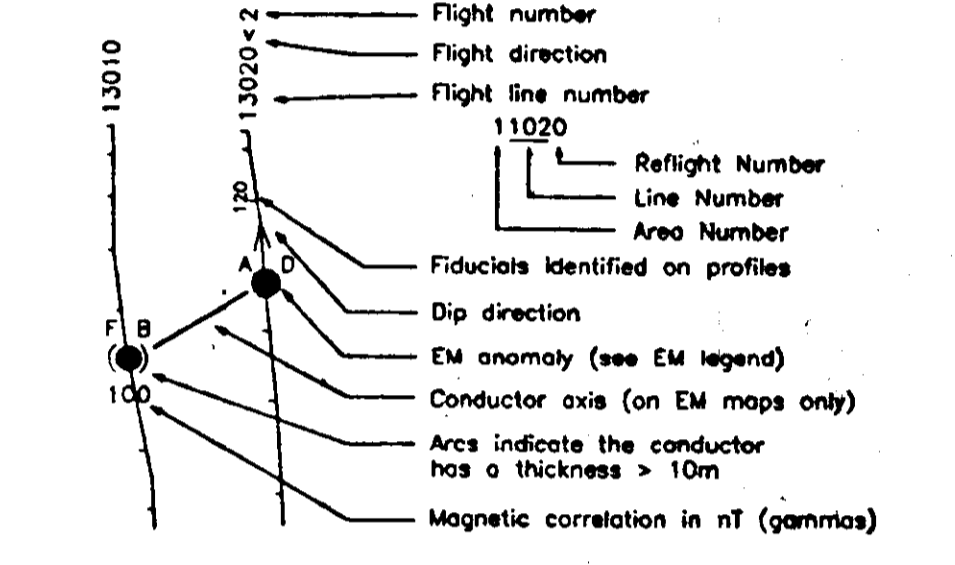
ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	●	50-100 siemens
5	●	20-50 siemens
4	●	10-20 siemens
3	●	5-10 siemens
2	●	1-5 siemens
1	●	< 1 siemens
-	*	Questionably anomaly



Anomaly identifier	Interpretive symbol	Interpretive	Conductor ("model")
CH	○	Inphase and Quadrature of coaxial coil is greater than	B Bedrock conductor
15 m	○	3 ppm	D Narrow bedrock conductor ("thin dike")
30 m	○	10 ppm	S Conductive cover ("horizontal thin sheet")
45 m	○	15 ppm	H Broad conductive rock unit, deep conductive weathering, thick conductive cover ("hot space")
60 m	○	20 ppm	E Edge of broad conductor ("edge of hot space")
			L Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES



ROCCA RESOURCES LTD.
 COMM AND COMMERCE PROPERTIES, B.C.

ELECTROMAGNETIC ANOMALIES

DIGHEM SURVEY	NTS: 82G/1	GEOPHYSICIST: <i>me</i>
DATE: DECEMBER, 1999	JOB: 992014	SHEET: GEOLOGICAL SURVEY BRANCH

Geotrex-Dighem, A division of CGG-Canada Ltd.

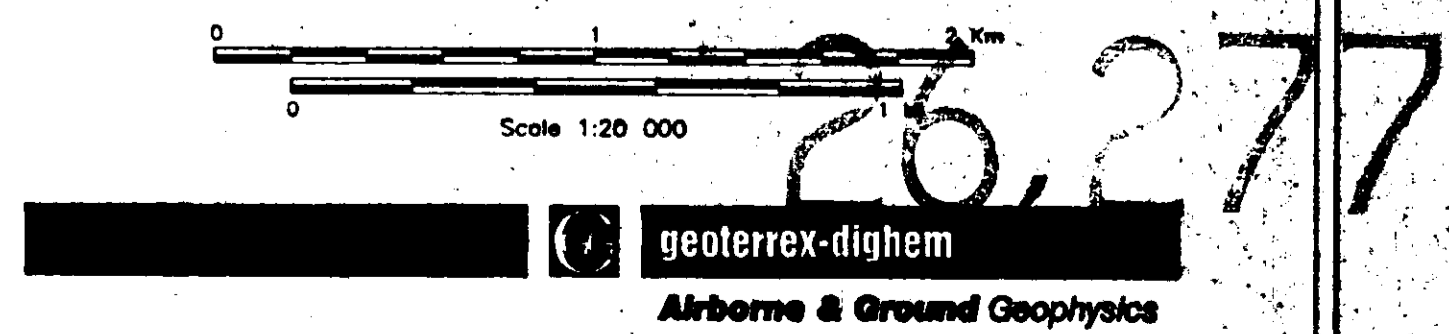


FIG. 4.5