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DANIEL HANGARTNER

1997 AND EARLY 1998 EXPLORATION OF THE LESSER SLAVE LAKE PROPERTY

NORTH-CENTRAL, ALBERTA

Metallic and Industrial Mineral Permits
9395020018 and 9395020019

Geographic Co-ordinates
55°07' to 55°20' N
114°28' to 114°56' W

NTS Sheets 83 O/1, O/2 and O/7

1998 05 26

by

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1. SUMMARY

Along the northeastern part of Swan Hills, Alberta the metallic and industrial minerals permits which constitute the Lesser Slave Lake property were explored for primary diamond deposits.

In early October, 1997 approximately 2,455 line-km of a 600-m line spaced high resolution aeromagnetic survey were acquired from Spectra Exploration Geoscience Corporation. The total magnetic intensity and other maps depict a number of anomalous areas. Two areas were selected for more detailed high resolution aeromagnetics: the Delorme Lake block and the Sawridge block. Between November 17, 1997 and December 11, 1997 Terraquest Ltd. conducted a 200-m line spaced high resolution aeromagnetic survey consisting of 2240.6 line km over the Delorme Lake block and 1271.7 line-km over the Sawridge block.

At the Delorme Lake block Terraquest Ltd. identified one high-priority and several secondary anomalies that may represent kimberlite. At the Sawridge block three high-priority and five secondary anomalies were identified.

Between early October, 1997 and February, 1998 Blanket Earth Resources Ltd. in conjunction with 756736 Alberta Ltd. conducted ground magnetic surveys within the Lesser Slave Lake property. In most cases, these ground magnetic surveys more precisely localized the source or possible sources, of some of the aeromagnetic anomalies.

2. INTRODUCTION

During 1997 and early 1998 Blanket Earth Resources Ltd. in conjunction with 756736 Alberta Ltd. conducted exploration for primary diamond deposits within the Lesser Slave Lake property on behalf of Daniel Hangartner. Exploration activities included the acquisition of high-resolution aeromagnetic data (HRAM) from Spectra Exploration Geoscience Corp. and Terraquest Ltd.; ground magnetometer surveys by Blanket Earth Resources Ltd. in conjunction with 756736 Alberta Ltd.; and a brief review of aerial photographs, digital elevation data, and other publically available information by Halferdahl & Associates Ltd.

This assessment report describes the exploration conducted at the Lesser Slave Lake property and is based mainly on a review of published and unpublished information. It has been prepared at the request of Daniel Hangartner, who is the owner of the metallic and industrial minerals permits which constitute the Lesser Slave Lake property.

3. PROPERTY

3.1 METALLIC AND INDUSTRIAL MINERALS PERMITS

The Lesser Slave Lake property consists of metallic and industrial minerals (MAIM) permits 9395020018 and 9395020019 which encompass an area of approximately 17,784.72 hectares (44,461.8 acres) within north-central Alberta (Fig. 3.2, Table 3.1). The permits are registered in the name of Daniel Hangartner.

On February 27, 1995 Daniel Hangartner received 25 MAIM permits near Slave Lake, Alberta. On February 26, 1997 a six-month extension was granted by Alberta Energy to conduct assessment work on 13 of the permits (Hudson, 1997) and 12 of the permits were surrendered. Subsequently, an additional six-month extension was granted.

After a review of a semi-detailed HRAM survey by Spectra Exploration Geoscience Corp. and initial ground magnetometer surveys, Daniel Hangartner, on November 20, 1997 surrendered five of the 13 MAIM permits which constituted the Lesser Slave Lake property (Fig. 3.2, Table 3.1). Subsequent reviews of preliminary HRAM data by Terraquest Ltd. and additional ground magnetometer surveys prompted the surrender of six of the remaining eight MAIM permits.

TABLE 3.1 PROPERTY DESCRIPTION AND LOCATION OF THE LESSER SLAVE LAKE PROPERTY MAIM PERMITS

Permit Number	Date Issued	Expiry Date	Land Description (Tp-RW5)	Approx. Size (ha)
Retained Permits (Fig. 3.2)				
9395020018[1]	02-27-1995	02-27-1998	71-4W5 (Sec. 1-36)	9216
9395020019[1]	02-27-1995	02-27-1998	72-6W5 (Sec. 2-11; 14-23; 26-33; 34S,NW,NEP; 35NP,SEP,SW; 36SWP) 73-6W5 (Sec. 3SP; 4S; 5S; 6S,NW; 7W; 18N,SW,L1N,L2N,L7,L8) - portions south and west of Hwy. 2. 73-6W5 (Sec. 19SP) - portions outside Lesser Slave Lake.	8568.72
			Total Retained:	17784.72
Permits Surrendered March 14, 1997 (Fig. 3.2)				
9395020003	02-27-1995	-	67-3W5 (Sec. 1-36)	9216
9395020005	02-27-1995	-	67-5W5 (Sec. 1-36)	9216
9395020006	02-27-1995	-	68-3W5 (Sec. 1-36)	9216
9395020008	02-27-1995	-	68-5W5 (Sec. 1-36)	9216
9395020009	02-27-1995	-	69-3W5 (Sec. 1-36)	9216
9395020011	02-27-1995	-	69-5W5 (Sec. 1-36)	9216
9395020012	02-27-1995	-	70-2W5 (Sec. 1-36)	9216
9395020015	02-27-1995	-	70-5W5 (Sec. 1-36)	9216
9395020021	02-27-1995	-	72-8W5 (Sec. 1-36)	9216
9395020022	02-27-1995	-	72-9W5 (Sec. 1-5; 8-17; 20-29; 32-36)	7680
9395020024	02-27-1995	-	73-8W5 (Sec. 3-11; 14-18; 19NP,SE,SWP; 20S,NWP,NE; 21-23; 26; 27S,NWP,NE; 28NP,SE,SWP; 29SP; 34SP,NEP; 35S,NP) 73-9W5 (Sec. 1-5; 8S,NP; 9S,NP; 10S,NP; 11; 12; 13S,NP; 14SP,NEP; 24SEP) - portions south and east of Hwy. 2.	8483.09
Permits Surrendered November 20, 1997 (Fig. 3.2)				
9395020001[1]	02-27-1995	-	71-5W5 (Sec. 1-36)	9216
9395020004[1]	02-27-1995	-	67-4W5 (Sec. 1-36)	9216
9395020007[1]	02-27-1995	-	68-4W5 (Sec. 1-36)	9216
9395020010[1]	02-27-1995	-	69-4W5 (Sec. 1-23; 24S,NP; 25SP, NP; 26-35; 36SP,NP) - portions outside the restricted area of a forestry research plot.	9086
9395020016[1]	02-27-1995	-	71-2W5 (Sec. 1SEP,SW,NWP,L10P; 2-10; 11NP,SEP,SW; 12L4P; 14SWP; 15NP,SEP,SW; 16-18; 19S,NW,NEP; 20NP,SEP,SW; 21SP; 22L4P; 30SP) 71-3W5 (1-3; 10-15; 22-24; 25SP,NWP;26S,NP; 27; 34SP,NWP; 35L4P) - portions south and west of Hwy. 2.	7854.71
Permits Surrendered December 15, 1997 (Fig. 3.2)				
9395020002[1]	02-27-1995	-	72-4W5 (Sec. 2-10; 15; 16) 72-5W5 (Sec. 1-12; 15-21; 30) 72-6W5 (Sec. 1; 12; 13; 24; 25)	9216
9395020014[1]	02-27-1995	-	70-4W5 (Sec. 1-36)	9216
9395020023[1]	02-27-1995	-	73-7W5 (Sec. 1-22;23S,NP;24SP,NWP, 26WP, 27SNW,NEP;28-30; 31S,NP; 32NP,SEP,SW; 33SP; 34SWP) 73-8W5 (Sec. 1; 2; 12; 13; 24; 25; 36S,NP) - portions outside Lesser Slave Lake.	9190
Permits Surrendered December 16, 1997 (Fig. 3.2)				
9395020013[1,2]	02-27-1995	-	70-3W5 (Sec. 1-36)	9216
9395020017[1]	02-27-1995	-	71-3W5 (Sec. 4-9; 16-21; 28-32; 33S,NW,NEP) 72-3W5 (Sec. 4SP,NWP; 5S,NW,NEP; 6; 7S,NP; 8SP,NWP; 18L4P) 72-4W5 (Sec. 1; 11; 12; 13SP; 14NP,SEP,SW) - portions south and west of Hwy. 2.	6531.57
9395020020[1]	02-27-1995	-	72-7W5 (Sec. 1-36)	9216

[1] One year extension granted by Alberta Energy for conducting and filing of assessment work (Hudson, 1997).
[2] Permit description approximate.

3.2 1997 AND 1998 EXPLORATION

In early October, 1997 approximately 2,455 line-km of a 600-m line spaced HRAM survey were acquired from Spectra Exploration Geoscience Corporation (Fig. 3.3). The surveyed area covered the northern part of the Lesser Slave Lake property which included all or parts of MAIM permits 9395020001, 9395020002, 9395020016 to 9395020020, and 9395020023.

Between November 17 and December 11, 1997 Terraquest Ltd. conducted a 200-m line spaced HRAM survey consisting of 2240.6 line km over the Delorme Lake block and 1271.7 line-km over the Sawridge block (Terraquest, 1998). The Delorme Lake block is centered upon MAIM permit 9395020018 and included parts of permits 9395020002, 9395020020, and 9395020023 (surrendered December 12 and 16, 1997). The Sawridge block is centered upon MAIM permit 9395020019 and included parts of permits 9395020002, 9395020013, 9395020014, and 9395020017 (surrendered December 12 and 16, 1997).

Between early October, 1997 and February 27, 1998 Blanket Earth Resources Ltd. in conjunction with 756736 Alberta Ltd. conducted approximately 115 km of ground magnetic surveys at the Lesser Slave Lake property (Appendices 3A and 3B). During October and November ground magnetometer traverses were conducted at various locations within MAIM permits 9395020001, 9395020002, and 9395020017 to 9395020019. Subsequent traverses were confined to locations within MAIM permits 9395020018 and 9395020019 (Hangartner, 1998).

3.3 EXPLORATION EXPENDITURES

Between 1997 and early 1998 exploration expenditures not including G.S.T. totalled $135,067.79 (Appendix 1). These expenditures are allocated as follows:

MAIM Permit	Expiry Date	Required Expenditures	Assigned Expenditures
9395020018	1998-02-27	$46,080.00	$70,802.39
9395020019	1998-02-27	$42,843.60	$64,265.40
		Total:	$135,067.79

4. GEOGRAPHIC SETTING

4.1 LOCATION, ACCESS, AND INFRASTRUCTURE

The Lesser Slave Lake property extends from about 55°07' to 55°20' north latitude and 114°28' to 114°56' west longitude, within NTS map sheets 83 O/1, O/2 and O/7, north-central Alberta (Fig. 3.1). The property is about 200 km north to northwest of the City of Edmonton and immediately south of the town of Slave Lake. The property is situated approximately 200 km directly south of the Buffalo Hills property, where Ashton Mining of Canada Inc., Pure Gold Resources Ltd., and Alberta Energy Ltd. recently identified 23 kimberlites (Ettlinger, 1998).

The central parts of the property are accessible by graveled oil and gas service roads leading from Highway 2 near the town Slave Lake (Fig. 8.2). Other bush roads shown on the 1:20 000 topographic maps are accessible by four wheel vehicles. Seismic lines provide all terrain vehicle or snow-machine access to remote areas of the property.

Infrastructure within the area includes accommodations, food, supplies, and vehicles at Slave Lake. Economic activities in the area are dominated by logging and timber operations, and oil and gas exploration and development. Additional land uses include coal and gravel exploration and development.

4.2 PHYSIOGRAPHY, VEGETATION, AND CLIMATE

The Lesser Slave Lake property is located immediately to the south and south east of Lesser Slave Lake, within the Interior Plains physiographic region of Canada (Ceroici, 1979). The property encompasses the northeastern part of Swan Hills within hydrographic basins of Mooney Creek, Sawridge Creek, Eating Creek, Otauwau River, and Saulteaux River.

Within Swan Hills numerous irregular uplands form prominent plateaus. House Mountain which is about 60 km southwest of the property, is the highest of the Swan Hills plateaus at 1200 m elevation. From House Mountain, towards the northeast, the land surface descends abruptly in a series of step-like plateaus with approximate elevations of 1065 m, 915 m, 820 m, and 760 m. Within the Lesser Slave Lake property topographic relief is fairly rugged with a maximum elevation of about 1000 m near the southwestern boundary of MAIM permit 9395020019 and minium elevation of about 635 m near the eastern boundary of MAIM permit 9395020018.

Most drainages flow to the north and are routed into Athabasca River via Lesser Slave Lake and Lesser Slave River. Present-day drainages are dendritic, deeply incised, and have a low bifurcation ratio, indicating little control by the underlying geology. Below about 760 m elevation most rivers are noticeably meandring and generally underfit in broad open valleys. Muskegs are found at various elevations.

The regional climate is Sub-Arctic, characterized by short cool summers with the annual mean daily temperature at Lesser Slave Lake of 0.6°C (Vogwill, 1977). One to three months have mean temperatures above 10°C, with an average temperature of 14°C in July and mean daily temperatures below freezing from early October to late April. The area is snow covered from late September to late April. Mean annual precipitation ranges from 68 to 70 cm.

Vegetation is dominated by stands of aspen poplar with white spruce and jack pine on topographic highs. Large stands of white spruce occur on north-facing slopes. Lakes, peat bogs, and muskeg of Sphagnum mosses and black spruce are common in low lying areas.

5. REGIONAL EXPLORATION FOR DIAMONDS

The first documented discovery of kimberlite or lamproite in the Western Canada Sedimentary Basin include the Cross kimberlite discovered in 1955 near Elkford, British Columbia, and the Jack and Mark diatremes, found in the early 1980's near the Alberta-B.C. border north of Golden, B.C. (Fig's. 7.1 and 7.2). Since then at least 24 alkaline diatremes have been identified in the area (McCallum, 1991).

During1994 Monopros Ltd. confirmed in an assessment report (Wood and Williams, 1994) the discovery of a kimberlite near Mountain Lake, which is about 75 km northeast of Grande Prairie, Alberta. Based on mineralogy and whole-rock geochemistry the Mountain Lake diatreme is considered an ultramafic lamprophyre or crustally contaminated kimberlite (Kjarsgaard, 1996).

The Mountain Lake diatreme is located south of the axial trace of the Peace River Arch near the intersection of two prominent basement structures with possible Phanerozoic reactivation: the South Peace River and Belloy faults (Fig. 7.1). The physiographic expression of the diatreme is that of an ovoid hill with about 30 m relief. Tree cover above the Mountain Lake diatreme is dominated by balsam poplar while the surrounding area contains white spruce, balsam poplar, and dense undergrowth (Eccles, 1998). Stratigraphic age determinations and apatite fission track analysis provide an age range of 72 to 78 Ma for the diatreme (Leckie et al., 1997). The basement beneath the area belongs to the Chinchaga terrane; U-Pb zircon age determinations of 2.08 to 2.17 and Nd model ages of 2.46 to 2.68 (Villeneuve et al., 1993) indicates intense Early

Proterozoic magmatism and variable mixing with Archean crustal components.

The Mountain Lake diatreme was discovered by stream sediment sampling for diamond indicator minerals and confirmed by a weak positive magnetic anomaly on a ground magnetometer geophysical survey. A HRAM survey indicates that the diatreme is composed of two centres with an overall strike length of about 1450 m and a width of up to 700 m at a depth of 200 m (Leckie et al., 1997).

On January 24, 1997 Ashton Mining of Canada Inc. (AMC), Pure Gold Resources Ltd., and Alberta Energy Ltd. announced the discovery of two separate kimberlites on their Buffalo Hills property in north-central Alberta (AMC, 1997a). To date, the AMC joint venture has identified 23 kimberlites with reported diamond grades that range from 0 to 35 carats per 100 tonnes (Table 5.1).

The kimberlites are located along the eastern margin of the Buffalo Head Hills (Beauchamp, 1998), a bedrock topographic high which is possibly the result of structural uplift, and less than 50 km north of the axial trace of the Peace River Arch (Fig. 7.1). Furthermore AMC's (1997c)

> "...detailed logging of core from the first pipes has indicated that the majority is volcaniclastic crater facies kimberlite. This suggests that glacial erosion of these pipes has been minimal and that most of the pipes original dimensions have been preserved."

Quaternary sediments overlying the Buffalo Hills kimberlites range in thickness from a few meters to 127 m. The kimberlites range in size from less than 1 hectare to about 45 hectares. Several of the pipes outcrop, while kimberlite K5 forms a hill with about 60 m relief. U-Pb perovskite age determinations for two of the kimberlites have provided ages of 86 Ma and 88 Ma (Carlson et al., 1998). The basement beneath the area belongs to the accreted lower Proterozoic (2.0 to 2.4 Ga) Buffalo Head terrane (Section 7.1).

The Buffalo Hills kimberlites were initially identified by a HRAM survey and subsequently confirmed by the examination of pre-existing seismic profiles, detailed ground geophysics, and diamond or reverse-circulation drilling.

TABLE 5.1 REPORTED KIMBERLITE OCCURRENCES FROM THE BUFFALO HILLS PROPERTY, NORTH-CENTRAL ALBERTA*

Notes:
1) Micro-diamonds are less than ½ mm in size (number of diamonds per kg in brackets).
2) Macro-diamonds are greater than ½ mm in size (number of diamonds per kg in brackets).
3) For all stones greater than 0.8 mm (total carats in brackets).
4) Initial micro diamond results include fragments of broken diamonds.
5) K5A and K5B may represent a single diatreme and K14, K14B, and K14C may represent a single diatreme.

Pipe	Pipe Dimensions (m x m)	Overburden Thickness (m)	Micro Diamond Results			Mini-Bulk Sample Results	
			Sample Weight (kg)	Micro-diamonds(1)	Macro-diamonds(2)	Sample Weight (tonnes)	Grade (carats/100 tonnes)(3)
K1A	-	-	135.2	1 (0.0)	0 (0.0)	-	-
K1B	-	-	134.8	2 (0.0)	2 (0.0)	-	-
K2	200 x 500	2	180.9	3 (0.0)	0 (0.0)	-	-
K3	650 x 500	29	180.2	0 (0.0)	0 (0.0)	-	-
K4A	250 x 300	24.7	194.7	2 (0.0)	1 (0.0)	-	-
K4B	350 x 400	8.5	197.3	4 (0.0)	0 (0.0)	-	-
K4C	200 x 250	43.9	299.9	0 (0.0)	0 (0.0)	-	-
K5A(5)	600 x 600	14.3	196.9	43 (0.2)	0 (0.0)	7.55	0.0 (0.027)
K5B(5)	150 x 450	50.3	103.9	31 (0.3)	1 (0.0)	-	-
K6	450 x 600	13	321.5	53 (0.2)	5 (0.0)	13.95	6.3 (0.876)
K7A	200 x 200	69	113.9	0 (0.0)	0 (0.0)	-	-
K7B	200 x 350	34.7	101.4	1 (0.0)	0 (0.0)	-	-
K7C	150 x 150	37	51.8	0 (0.0)	0 (0.0)	-	-
K10	150 x 150	127	-	-	-	-	-
K11	500 x 250	13.4	-	-	-	-	-
K14(5)	400 x 400	7	204.1	190 (0.9)	12 (0.1)	31.8	18.2 (5.80)
K14B(5)	400 x 400	-	78	55 (0.7)	2 (0.1)	10.36	18.6 (1.93)
K14C(4,5)	400 x 400	-	43.4 45.6	328 (7.6) 94 (2.1)	93 (2.1) 1 (0.0)	2.71	2.2 (0.06)
K15	600 x 200	42.7	-	-	-	-	-
K19	-	-	51.3	0 (0.0)	0 (0.0)	-	-
K32	100 x 150	90	-	-	-	-	-
K91	400 x 100	-	97	139 (1.4)	7 (0.1)	0.85	35.4 (0.301)
K92	450 x 200	80	-	-	-	-	-
K93	350 x 150	79	-	-	-	-	-
K95	200 x 200	26	90	0 (0.0)	0 (0.0)	-	-
WP	200 x 500	2	89	2 (0.0)	2 (0.0)	-	-

* After AMC (1997b, 1997c, 1997d, 1997e, and 1998).

6. KIMBERLITE EXPLORATION

6.1 GEOLOGY OF PRIMARY DIAMOND DEPOSITS

Diamonds form under specific pressure and temperature constraints within the subcratonic lithosphere in association with two rock types: garnet peridotites that are predominantly harzburgite and rarely lherzolite, and eclogite. Garnet peridotites yield P-type diamonds that are primarily 3.0 to 3.3 Ga and eclogites yield E-type diamonds that are 990 to 1670 Ma (Bulanova, 1995). Coexisting minerals constrain temperatures of formation to about 1000 to 1300°C and pressures to about 40 to 60 kbar (150 to 200 km depth). Conditions favourable for the preservation of diamond (diamond stability field) are restricted to Archean (> 2.5 Ga) cratons where thick and relatively cool lithospheric keels are preserved, or rarely within Proterozoic mobile belts adjacent to Archean cratons.

Kimberlites and lamproites are the only known economic primary sources of diamonds. Kimberlites most commonly occur as carrot-shaped pipes, as dykes, or more rarely as sills. Three zones have been recognized within the idealized kimberlite pipe: the crater, diatreme, and root zones. Kimberlite pipes vary in size and can be up to 200 hectares. Kimberlites generally occur in clusters of less than 50 pipes over distances of up to 50 km. Clusters of kimberlites are located within geologically favourable provinces which may extend hundreds of kilometers.

If the host kimberlite (or lamproite) magma is sourced within the upper mantle below the diamond stability field it can provide a medium to sample the diamond-bearing source region and transport the diamonds to the surface. Hence, diamonds within the host kimberlite occur as xenocrysts and are primarily derived from the disaggregation of the source rock. In addition, the kimberlite host must ascend rapidly enough for diamonds to survive transport to the surface (Helmstaedt and Gurney, 1995).

6.2 AREA SELECTION

Exploration for primary kimberlite (or lamproite) diamond deposits is based on the empirical knowledge that economically viable deposits primarily occur on Archean cratons (Clifford, 1966). Hence, the selection of an area for diamond exploration should include the following steps (Helmstaedt and Gurney, 1995):

1) the identification of regions with conditions favourable for the formation of diamond,
2) the identification of those areas where diamonds should have survived to be sampled by

more recent kimberlites, and

3) the identification of areas where favourable mantle processes have resulted in kimberlite formation, and areas where regional tectonics and local structures are favourable for the emplacement of kimberlites.

Other important considerations include

4) the presence of known kimberlites within the region,
5) the presence of known detrital diamonds within the area, and
6) the presence of known diamond indicator minerals within the area.

6.3 EXPLORATION METHODOLOGIES

Throughout much of northern Alberta drift-thickness ranges from nil to more than 300 m. Individual physiographic expression of some known kimberlites in northern Alberta are areas of positive relief with possible associated vegetative anomalies (Section 5). Within Alberta sampling for diamond indicator minerals has led to the discovery of the Mountain Lake diatreme, while HRAM surveys have successfully outlined at least 23 kimberlites within the Buffalo Head hills area of north-central Alberta.

The most common technique in diamond exploration is sampling for diamond indicator minerals. In areas with multiple sequences of thick drift with a complex history surface sampling techniques may be inadequate or unreliable. However, initial orientation surveys can provide sufficient information to assess the potential of a given region and provide information to refine sampling procedures.

Geophysical techniques include HRAM and ground magnetometer surveys, seismic surveys, and gravity surveys. The effectiveness of electrical methods (EM) may be hindered in areas with conductive host rock or overburden. Seismic data may be used to compliment other methods or to identify kimberlites where other methods are inconclusive (provided the seismic line is recorded in the immediate vicinity of the target). Ground-based gravity surveys may provide an effective means in identifying the density contrast between kimberlite and its host. The cost and sensitivity of gravity surveys may restrict their use to pre-existing targets.

Digital elevation data, Landsat or Radarsat satellite imagery, and aerial photographs may assist in the identification of physiographic, vegetative features, or geological structures associated with kimberlites. Use of remote sensing data in conjunction with diamond indicator sampling and geophysics will aid in the prioritization of targets for more detailed examination.

7. REGIONAL GEOLOGY

7.1 BASEMENT AND STRUCTURAL GEOLOGY

The basement rocks of Alberta are an extension of the Churchill Structural Province, which has been subdivided into 22 distinct domains (Fig. 7.1) that range in age from Middle Proterozoic to Archean (1.7 to 3.2 Ga; Ross et al. 1991). The subdivisions are largely interpretative, derived from aeromagnetic and horizontal gravity data, and complimented with age determinations. Surface to basement depth within the Western Canada Sedimentary Basin is typically greater than a thousand meters, hence the delineation between terranes is uncertain (Janse and Sheahan, 1995). The basement is transected by three major crustal discontinuities: the Vulcan Low in southern Alberta, the Snowbird Tectonic Zone in central Alberta, and the Great Slave Lake Shear Zone in northwestern Alberta. The Snowbird Tectonic Zone, a northeast trending crustal lineament of Early Proterozoic Age (1.8 to 2.0 Ga), separates the Churchill Structural Province into the southern Hearne and northern Rae Sub-Provinces. South of the Snowbird Tectonic Zone the Hearne Sub-Province is predominately Archean in age, while to the north the Rae Sub-Province is thought to be either thermally reworked Archean or an accreted juvenile Proterozoic terrane (Dufresne et. al., 1996).

In north-central Alberta the crystalline basement underlying the Lesser Slave Lake property belongs to the accreted lower Proterozoic (2.0 to 2.4 Ga) Buffalo Head terrane (Fig. 7.1). To the east it is accreted to the Archean Rae terrane along the Early Proterozoic (1.9 to 2.0 Ga) Taltson orogen. The Buffalo Head terrane is characterized by a northwest trending curvilinear belt of positive aeromagnetics and is thought to be a continental margin magmatic arc of calc-alkaline affinity with ages of 2.0 to 2.32 Ga (U-Pb zircon and monazite; Ross et. al., 1991). However, Villeneuve et. al. (1993) provide Nd model ages that range from to 2.51 to 2.83 Ga, which indicates mixed juvenile and Archean crustal components.

The Lesser Slave Lake property is located approximately 125 km south of the axial trace of the northeast trending Peace River Arch (Fig. 5.1) and less than 50 km north of the trace of the Snowbird Tectonic Zone.

The Peace River Arch, an area of cratonic uplift where the basement is up to 800 to 1000 m above the regional basement elevation (Cant, 1988), has a complex tectonic history of uplift and subsidence that extends from the Late Proterozoic until at least Late Cretaceous. This history has influenced the basement and overlying Phanerozoic rocks and generated a zone of structural disturbance up to 140 km wide (Cant, 1988).

The Peace River Arch is characterized by anomalous sedimentalogical and structural features, including a coincident rectilinear pattern of northeasterly and northwesterly trending faults within the Phanerozoic strata. Reactivation of regional basement faults associated with the Peace River Arch may have occurred throughout the Phanerozoic (O'Connell et al., 1990), perhaps as recent as Middle Cretaceous to Early Tertiary in response to compression and regional loading of thrust sheets along the western margin of the North American craton.

7.2 STRATIGRAPHY AND SURFICIAL GEOLOGY

In general, the Western Canada Sedimentary Basin is a homoclinal sequence of westerly dipping Phanerozoic strata that attain a maximum thickness of about 6000 m near the foothills and tapers to nil in northeastern Alberta, where the basement is exposed. Surficial or drift deposits cover most of the interior plains. For much of northern Alberta unconsolidated sediments are characterized as a complex sequence of glacial, lacustrine and fluvial deposits with subordinate amounts of aeolian and organic material that vary in thickness from nil on some topographic highs to over 300 m within some preglacial valleys (Fenton et. al., 1994). Pawlowicz and Fenton (1995) mapped the thickness of drift in Alberta, however their interpretation for much of northern Alberta is based on sparse data.

7.3 DIAMOND INDICATOR MINERAL ANOMALIES

Reconnaissance sampling of till, fluvial sand and gravel deposits, and modern drainages by federal and provincial geological agencies and subsequent processing, microprobe analysis, and data analysis for diamond indicators has identified a number of discrete diamond indicator mineral trends in Alberta (Fig. 7.2).

At least five till sample sites exist within the immediate vicinity of the Lesser Slave Lake property (Dufresne et al., 1996). Anomalous till sample site 328, which is about 2½ km southeast of Mitsue Lake and immediately north of the property, yielded one chromite and one chrome diopside (Fig. 8.2). About 20 km directly north of the property till sample site 312 yielded three G5 eclogitic garnets (Dufresne et al., 1996). Based on regional glacial flow directions of northeast to southwest it is possible that these indicator minerals may have been sourced locally from within the area of the property or possibly to the north or northeast.

8.1 PROPERTY GEOLOGY

The Lesser Slave Lake property is underlain at depth by the southern termination of the Buffalo Head terrane. The anomalous regional aeromagnetics which characterize the Buffalo Head terrane do not extend south to the Lesser Slave Lake property. Within the vicinity of the property, samples of basement lithologies from deep oil and gas drill-holes are dominated by gneiss and granulite with granite to quartz-diorite intrusions. Isotope age determinations for these samples include three U-Pb dates in the range 2.0 to 2.4 Ga, one K-Ar date of 1.6 to 2.0 Ga, and two Sm-Nd model ages in the range 2.4 to 2.8 Ga (Burwash et al., 1994). The presence of granulite rocks within the gneissic basement suggests incomplete re-equilibration from granulite to medium-grade conditions, partly consistent with the model of Archean granulite (M1) and Aphebian (M2) metamorphic cycles proposed for the basement assemblages of northeastern Alberta (Langenberg and Nielsen, 1982).

Phanerozoic cover within the immediate vicinity of the property varies from about 2000 m along the northeast boundary to about 2200 m in the southwest, with about 1300 m pre-Jurassic and about 800 m of Jurassic and younger stratigraphy (Fig. 8.1; Wright et al. 1994). Vogwill (1978) inferred the bedrock geology of the region from 450 lithological and electrical logs, and very limited outcrop. Bedrock geology consists of Late Cretaceous grey feldspathic clayey sandstone, bentonitic mudstone and bentonite, and scattered coal beds of the nonmarine Wapiti Formation (Fig. 8.1). Northwest of the property bedrock geology includes marine strata of the Smoky Group and to the northeast are laterally equivalent shales, and glauconitic silty shale with ironstone concretions of the marine Lea Park Formation.

Glacial deposits mantle the entire area except in upland regions where bedrock outcrops. According to Vogwill (1977) glacial flutings and linear ice disintegration ridges indicate that glaciation was from the northeast. Ice disintegration ridges and their remnants have been seen on the plateau east of Marten Mountain and near Otauwau Lake. Ground moraine is the more common type of till and is most abundant in the uplands. Present-day drainages generally follow the same flow directions as preglacial drainage systems.

South of Lesser Slave Lake within the immediate vicinity of the Lesser Slave Lake property glaciolacustrine deposits are widespread and occur south of Delorme Lake. Drift thickness within the property boundaries varies from nil to more than 200 feet (Fig. 8.1).

TABLE 8.1: CRETACEOUS STRATIGRAPHY NEAR LESSER SLAVE LAKE AREA, NORTH-CENTRAL ALBERTA

Age	Unit*	
Quaternary	Unconsolidated Drift	
Upper Cretaceous		Wapiti Formation
	Smoky Group°	Lea Park Formation°
		Dunvegan Formation
	Colorado Group	La Biche Formation° Shaftesbury Formation°
Lower Cretaceous		Pelican Formation° Joli Fou Formation°
	Mannville Group	Grand Rapids° Spirit River°

° Exact stratagraphic assemblage depends upon location.
* Modified after Vogwill (1977).

8.1 PHYSIOGRAPHIC FEATURES

In early 1997, Dr. L.B. Halferdahl conducted a brief review of aerial photographs and 1:20,000 scale topograhic maps for circular or oval-shaped physiographic features (Fig. 8.2), either topograhic lows as in the Lac des Gras region of the NWT or topograhic highs as the Mountain Lake diatreme (Halferdahl, 1997). Topograhic lows in areas with 200 or more feet of overburden were not selected. The following features were identified for additional investigation:

Feature	NTS Map Sheet	Approx. Legal Description (Sec)-Tp-RW5
irregular pond	83J/15SE	(22/27) 67-W5
oval-shaped hill	83J/15NE	(9/10/15/16) 69-4W5
circular pond	83J/16SW	(1) 67-4W5
irregular pond	83J/16SW	(12) 68-4W5
circular pond*	83-O/1SW	(23) 70-3W5
oval-shaped pond*	83-O/1NW	(24) 71-3W5
oval-shaped pond*	83-O/2NE	(10) 71-5W5
hill*	83-O/2NE	(15/16) 72-4W5
oval-shaped hill*	83-O/2NW	(16/21) 72-6W5

* Fig. 8.2

Additional physiographic features that may warrant follow-up exploration are listed in Appendix 2.

9. PROPERTY GEOPHYSICS

9.1 1997 HRAM SURVEY BY SPECTRA EXPLORATION GEOSCIENCE CORP.

In early October, 1997 approximately 2,455 line-km of a HRAM survey were acquired from Spectra Exploration Geoscience Corporation. The Utikuma Lake HRAM survey was conducted during the early part of 1997 as part of non-exclusive survey for oil exploration. The survey was drape flown at a nominal altitude of 120 m with east-west traverse lines spaced at 600 m and north-south control lines spaced at 1800 m. The resultant data was edited for cultural anomalies. The following 1:100,000 scale maps were provided:

a) total intensity magnetics,
b) first vertical derivative,
c) 1500 m - 500 m high pass difference, and
d) 3 km - 9 km band pass.

Additional maps were provided by Spectra at a scale of 1:50,000. The 1:50,000 maps and other data such as magnetic profiles were not available to the authors for consultation.

The total magnetic intensity (Fig. 9.1) and vertical gradient maps were employed to identify regions of anomalous magnetics that warranted more detailed exploration. The 1500 m - 500 m high pass difference map, which accentuates shallow high-frequency anomalies, allow for the selection of individual targets with anomalous magnetics (Fig. 8.2).

The map of total intensity magnetics provided by Spectra shows three distinct, large amplitude, positive anomalies (Fig. 9.1):

a) a large amplitude oval northeast trending anomaly centered upon Tp.70,R.3W5 is about 22½ nT above a regional magnetic field of 59398 nT,
b) a large amplitude circular anomaly centered upon the southwest corner of Tp.73,R.7W5 is about 22½ nT above the regional magnetic field, and
c) a large amplitude oval anomaly along the southern shore of Lesser Slave Lake and centered upon the northern part of Tp.73,R.7W5 is about 22½ nT above the regional magnetic field.

Anomaly (a) above consists of three oval zones of with maximum values of about 15 nT. Two of the wider zones overlap an area with dense cultural sources, hence it is uncertain whether these anomalies have any geological significance.

Anomaly (b) above is approximately 4 km across and is considered geologically significant as it may depict a circular intrusion at depth.

A large irregularly shaped zone of low magnetics, which for most part is more than 250 nT below the magnetic field, trends through the property to the northeast. Within this zone a second order circular anomaly near the northeast corner of Tp.72,R.6W5, is contoured around a peak of -30 to -37 nT and may be related to a shallow intrusive. There is no apparent cultural source for this anomaly.

9.2 1997 HRAM SURVEY BY TERRAQUEST LTD.

Based upon the results of the 1997 HRAM survey by Spectra Exploration Geoscience Corp. additional areas were selected for more detailed HRAM surveys. Between November 27 and December 11, 1997 Terraquest Ltd. conducted a fixed-wing HRAM survey that totalled about 5,126.3 km over the Slave Lake property (Terraquest, 1998). The survey was drape flown at a nominal altitude of 75 m with a line spacing of 200 m. The survey was conducted at the following locations (Fig.'s 3.3 and 8.2):

Location	Line Azimuth	Line-km
Delorme Block	52°	2240.6
Sawridge Block	69°	1271.7
	Total:	3512.3

Total magnetic intensity, calculated magnetic vertical gradient, and other filtered maps were employed to interpret and delineate magnetic trends and areas which are magnetically mafic in character and may represent kimberlitic intrusives (Appendix 2).

The Sawridge Block total magnetic intensity contains two large dimension anomalies, at the east and west edges, and a central medium dimension anomaly (Fig. A-985-1:Sawridge Block). All three are interpreted as intrusives at depth, and as estimated from the horizontal gradient vectors are significantly greater than 300 m depth. The remaining part of the survey block has smooth total intensity.

The vertical gradient contours are probably the expression of a variable bedrock lithology highly deformed along northwest, north, northeast and east structural trends.

Three strong (T) and five weak (t) circular anomalies are considered geologically significant and may represent clusters of more magnetic sediment within the Cretaceous bedrock or kimberlite (Fig. 8.2). Numerous other questionable anomalies display circular characteristics.

The Delorme Lake Block required a substantial amount of deculturing; hence considerable non-verified cultural sources may still exist. The total magnetic intensity has smooth contours which are indicative of deep sources except along the northern edge (Fig. A-985-1:Delorme Lake Block NW and SE). One exception is the prominent anomaly (T) in the northern corner of the survey block (Fig. 8.2); this anomaly has a near surface source as corroborated by both the horizontal and vertical gradients, and does not have a verified cultural source.

The contours of the vertical magnetic gradient have been interpreted as northeast trending lithologies within the basement rocks. Two strong trends which also show well in the total intensity, are interpreted as intrusives and most of the remaining trends as subtle magnetostratigraphic horizons within the basement. A few narrow anomalies trend to the north; these may represent dykes or faults with significant displacement. Numerous structures have been interpreted that trend to the north and northwest (Fig. 8.2).

Apart from the major target to the north there are several other weaker anomalies (t) identified only by the horizontal and vertical gradient (Fig. 8.2); these have near surface sources but could not be correlated with culture and therefore require ground verification.

9.3 1997 AND 1998 GROUND MAGNETOMETER SURVEYS

Blanket Earth Resources Ltd. in conjunction with 756736 Alberta Ltd. carried out preliminary ground follow-up of the HRAM anomalies and other features between early October, 1997 and February 27, 1998. Blanket Earth Resources Ltd. performed a non-conventional magnetic survey using a GMS-19 Overhauser Memory Magnetometer (Appendix 3A). Approximately 115 km of ground magnetic surveys were completed at the Lesser Slave Lake property (Appendix 3B).

As a preliminary prospecting tool, Blanket Earth Resources Ltd. recorded magnetic data along the most accessible paths across and in the vicinity of selected HRAM anomalies and other features. The objective was to determine if an anomaly had promising indicators by taking advantage of cutlines, clearings, and areas where the terrain permitted travel in a timely manner.

Although at variance with the standard procedure of setting up grids over each of the aeromagnetic anomalies and then recording ground magnetic data at each station, the Blanket Earth Resources Ltd. method was intended:

a) to be a faster preliminary check of individual aeromagnetic anomalies,

b) for a partial investigation of areas where higher magnetometer readings were detected, and

c) to cover wider areas of the permits and select first priority targets,.

This non-conventional approach by Blanket Earth Resources Ltd. was justified by observations such as (Hangartner, 1998):

a) some relatively wide anomalies appear to be the cumulative effect of multiple sources; only the sources localized by ground measurements deserve further consideration,

b) HRAM data processing and editing appear to have arbitrarily eliminated geologically significant anomalous values. Raw data processing using Surfer Software resulted in a number of anomalies not shown by the aeromagnetic maps but confirmed by ground measurements, and

c) anomalies eliminated by cultural editing of the HRAM data appear in fact to be independent of any cultural source suggesting subsurface sources.

The contoured ground magnetic traverses, as provided by 756736 Alberta Ltd., are shown in Fig's. 9.2 thru 9.5. Numerous ground traverses were carried out in the immediate vicinity of HRAM anomaly AT11 (Fig. 8.2). These traverses identified several anomalies of more than 12 nT and up to 200 m by 200 m in size.

10. CONCLUSIONS

The Lesser Slave Lake property is underlain by a favourable basement terrane with demonstrated potential to host primary diamond deposits. Bedrock geology consists primarily of Upper Cretaceous strata equivalent to or younger than strata which hosts the Mountain Lake diatreme and the Buffalo Hills kimberlites. Drift cover over much of the property is minimal.

HRAM surveys by Terraquest Ltd. identified one high-priority and several secondary anomalies at the Delorme Lake block and three high-priority and five secondary anomalies at the Sawridge block. Follow-up ground based magnetometer traverses by Blanket Earth Resources Ltd., in the immediate vicinity of HRAM anomaly AT11 within the Sawridge block, confirmed the presence of several isolated magnetic anomalies.

The HRAM anomalies defined by Terraquest Ltd., particularly those coincident with anomalous physiographic features, warrant additional exploration.

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________________ (1997e) Corporate press releases dated 10/2/1997 and 10/31/1997.

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12. QUALIFICATIONS

D. I. Pană obtained a Diploma of Geological and Geophysical Engineer from the University of Bucharest in 1980 (equivalent to an M.Sc. in North America) and a Ph.D. in Structural Geology and Petrology at the University of Alberta, Edmonton in 1998. He has more than 15 years of experience in mineral exploration and regional mapping, including several years as a senior research Geologist with the Geological Survey of Romania. He is a member of the Geological Society of America.

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

Neither D.I. Pană or J.R. Dahrouge hold any direct or indirect interest in metallic and industrial minerals permits 9395020018 and 9395020019, which are the subject of this report.

[redacted]

Dinu Pana, Ph.D.,

J.R. Dahrouge, B.Sc., P.Geol.

Edmonton, Alberta
1998 05 26

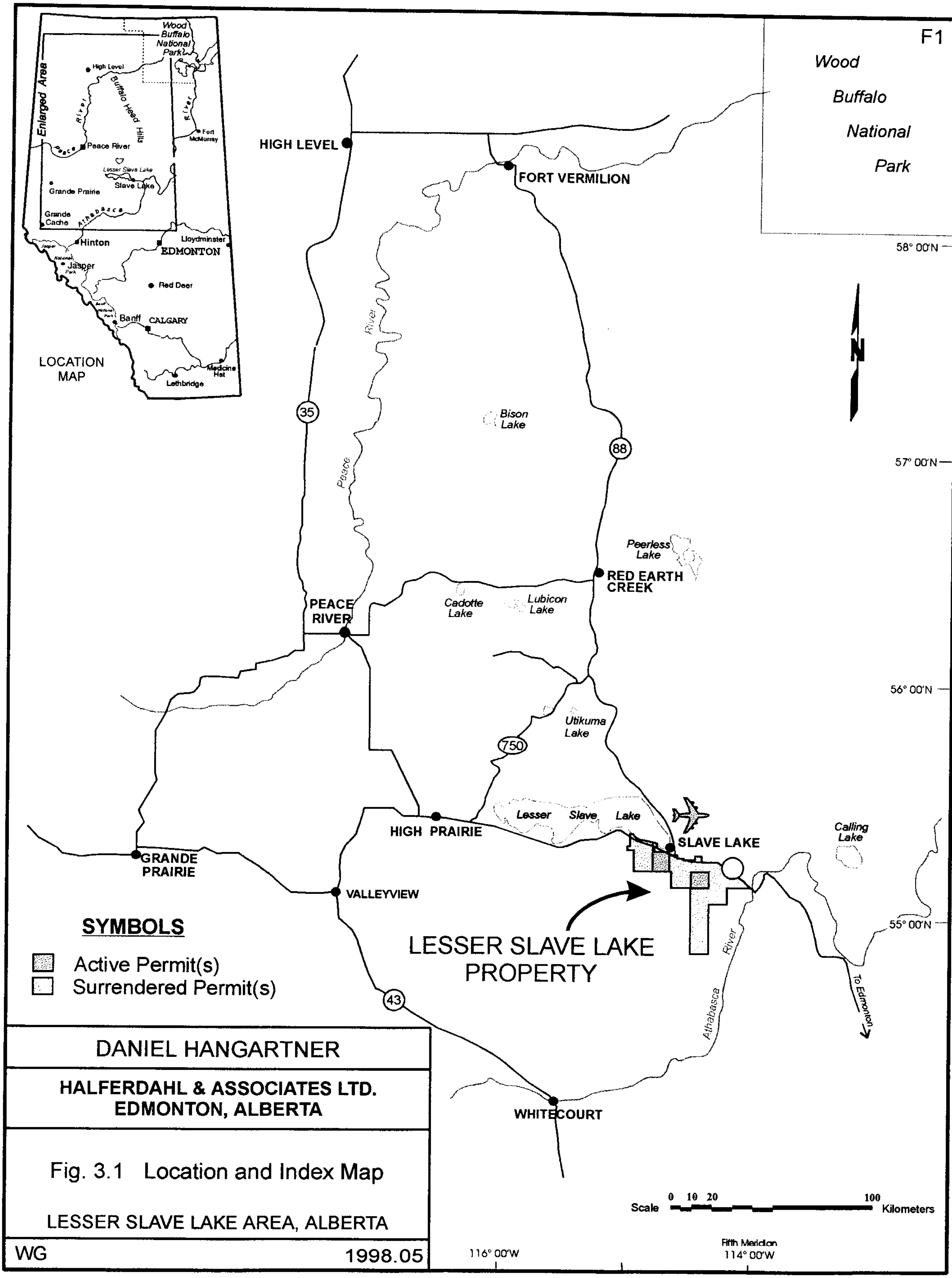
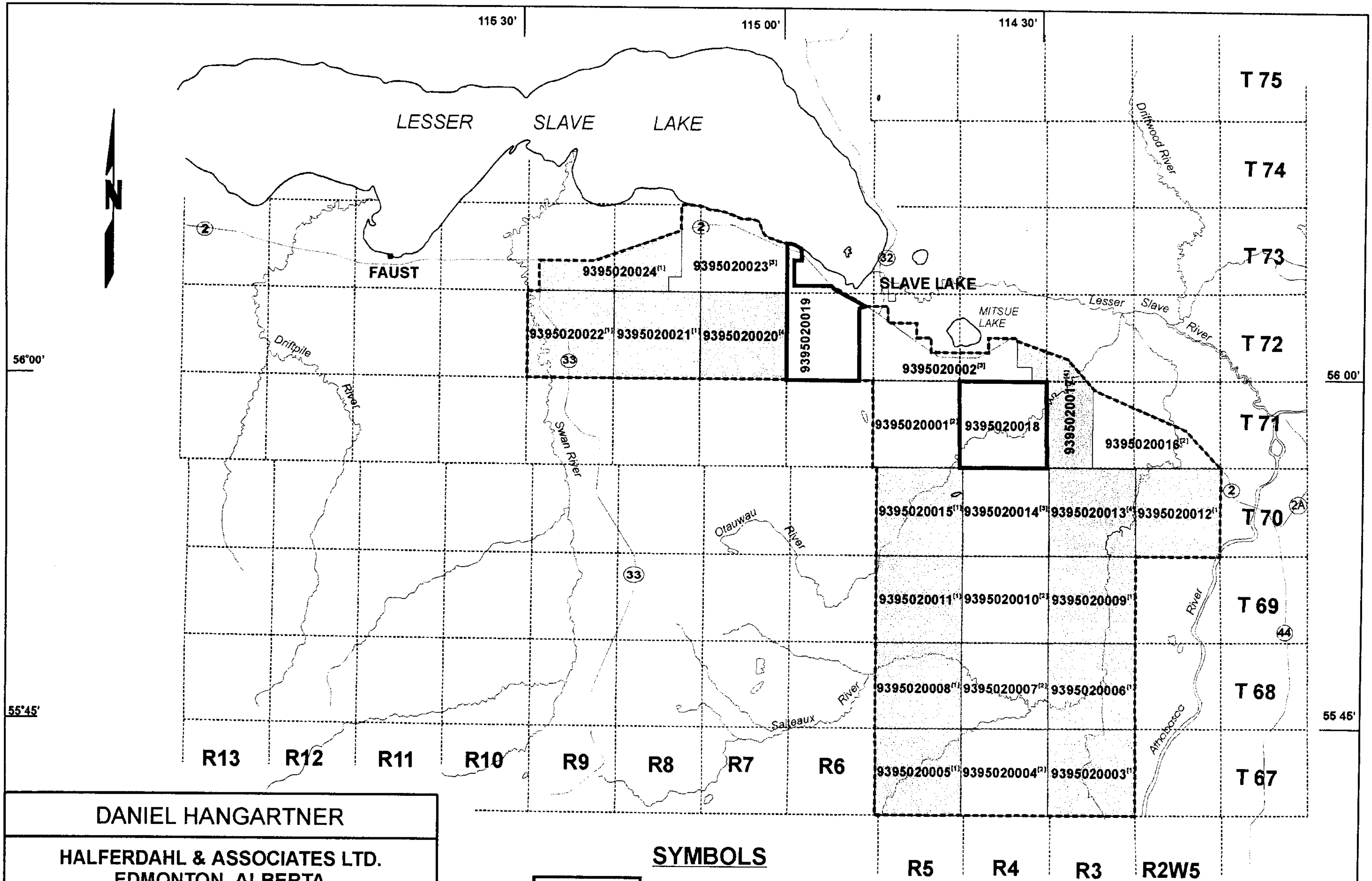


Fig. 3.1 Location and Index Map



SYMBOLS

9395020000	MAIM Permit (Active)
9395020000[1]	MAIM Permit (Surrendered 03-14-1997)
9395020000[2]	MAIM Permit (Surrendered 11-20-1997)
9395020000[3]	MAIM Permit (Surrendered 12-12-1997)
9395020000[4]	MAIM Permit (Surrendered 12-16-1997)

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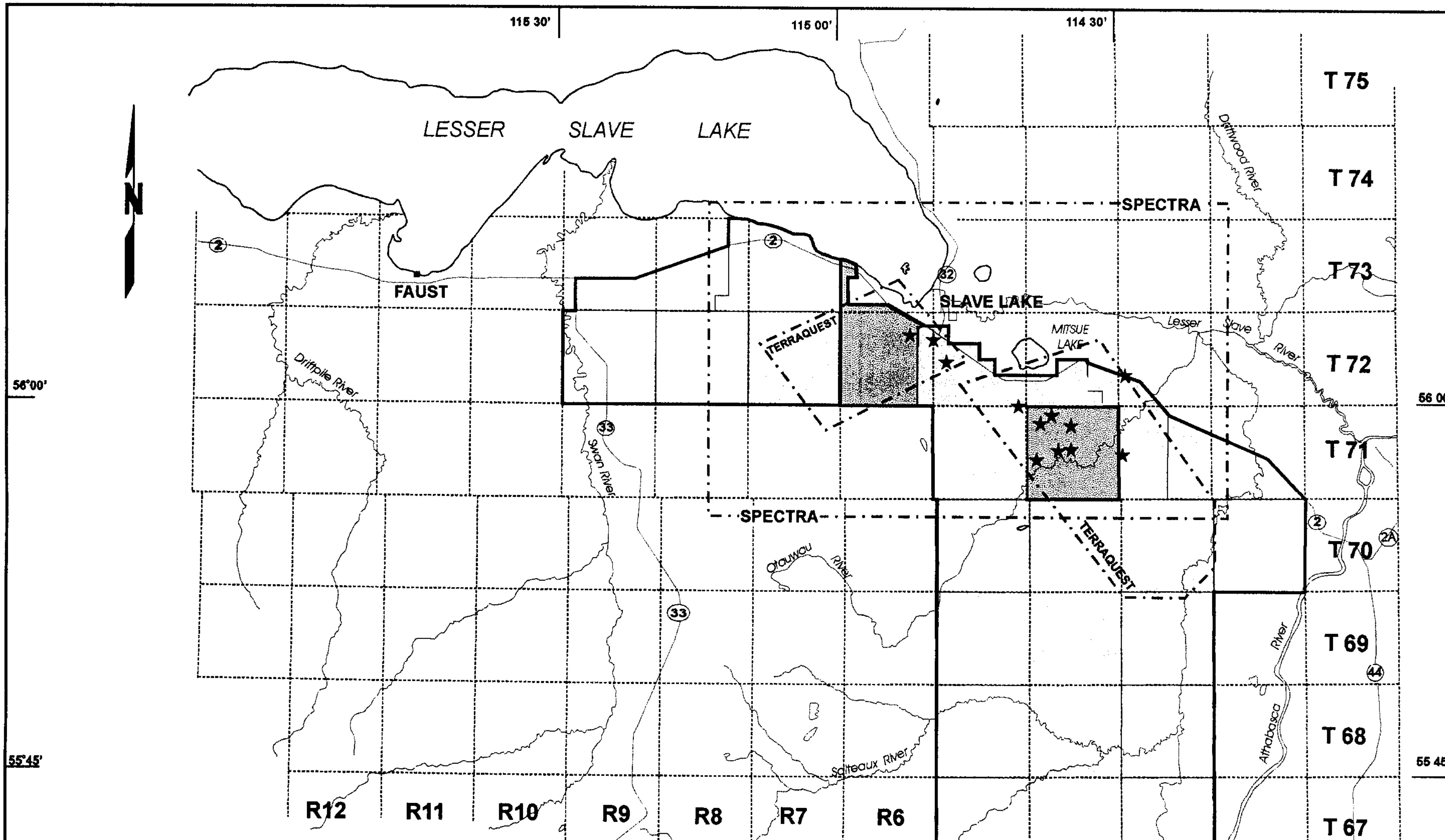
Fig. 3.2 Property Map

LESSER SLAVE LAKE AREA, ALBERTA

WG 1998.05

F2



SYMBOLS

- MAIM Permit of the Lesser Slave Lake Property (active)
- MAIM Permit of the Lesser Slave Lake Property (surrendered November to December, 1997)
- MAIM Permit (surrendered in March, 1997)
- Aeromagnetic survey block (- Sawridge Block (Terraquest); - Delorme Block (Terraquest))
- ★ Area with one or more ground magnetometer traverses

Scale 0 5 10 15 20 Kilometers

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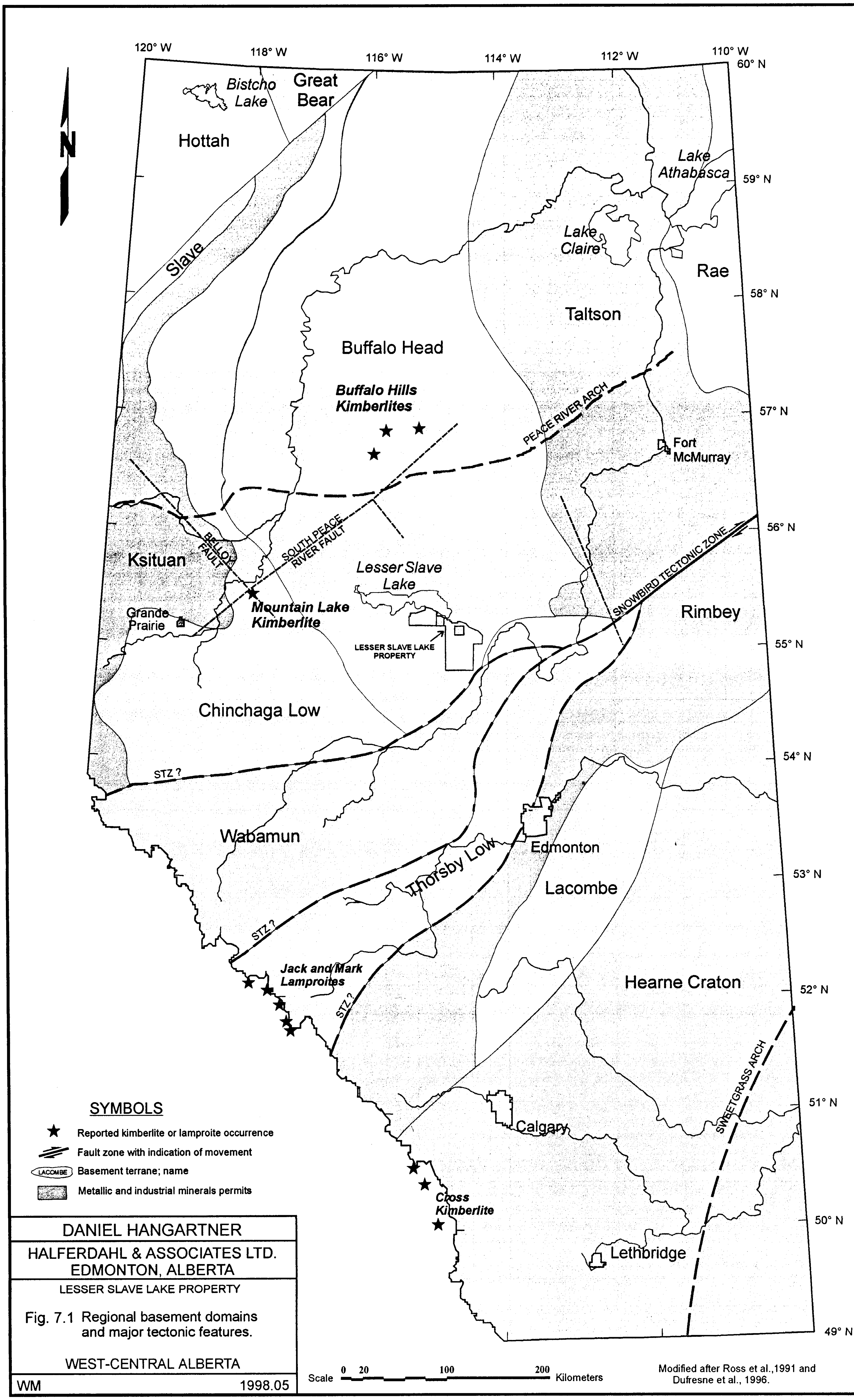
Fig. 3.3 Location of Exploration

LESSER SLAVE LAKE AREA, ALBERTA

WG 1998.05

F3



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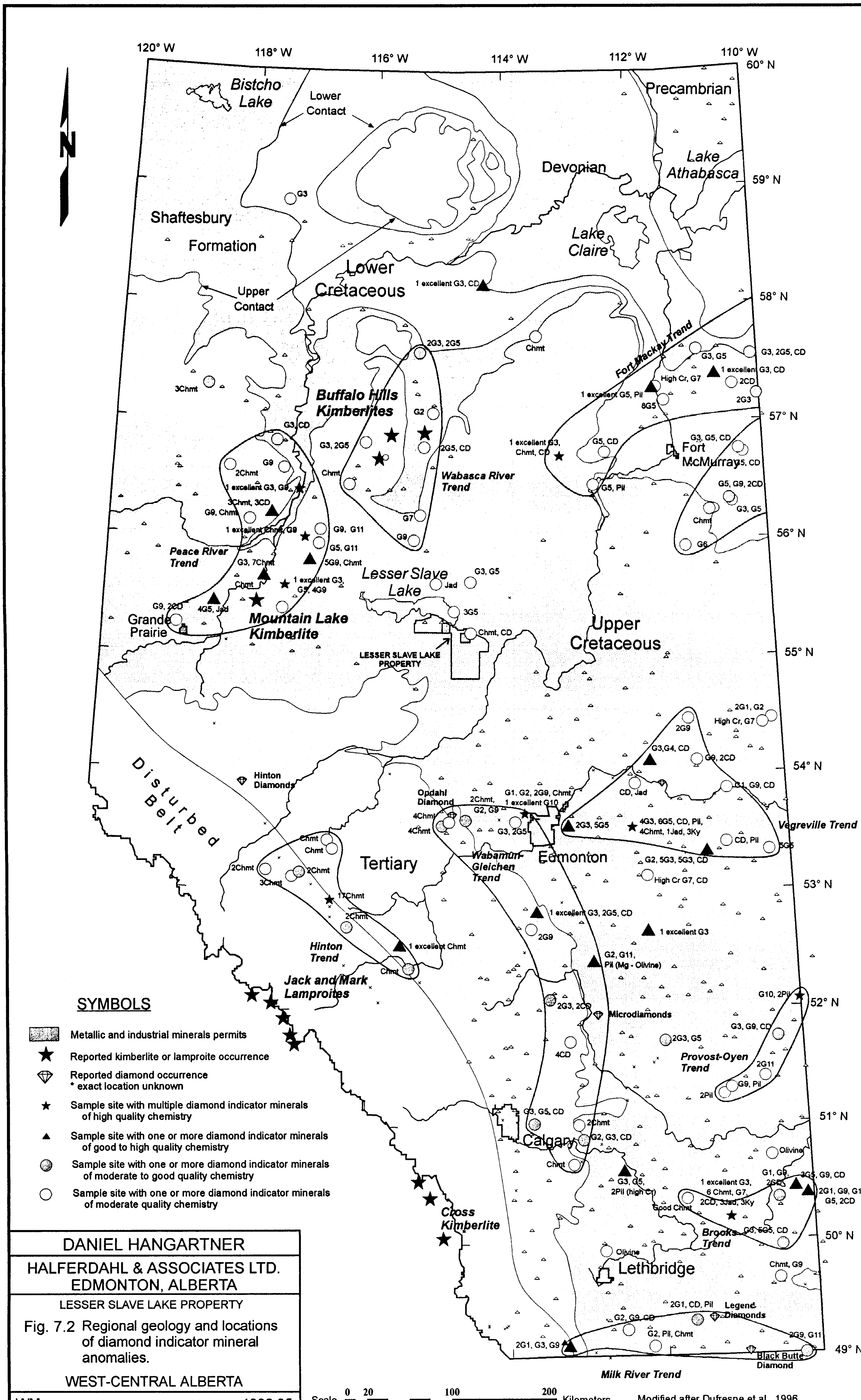
LESSER SLAVE LAKE PROPERTY

Fig. 7.1 Regional basement domains and major tectonic features.

WEST-CENTRAL ALBERTA

WM 1998.05

F4



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LESSER SLAVE LAKE PROPERTY

Fig. 7.2 Regional geology and locations of diamond indicator mineral anomalies.

WEST-CENTRAL ALBERTA

WM 1998.05

F5

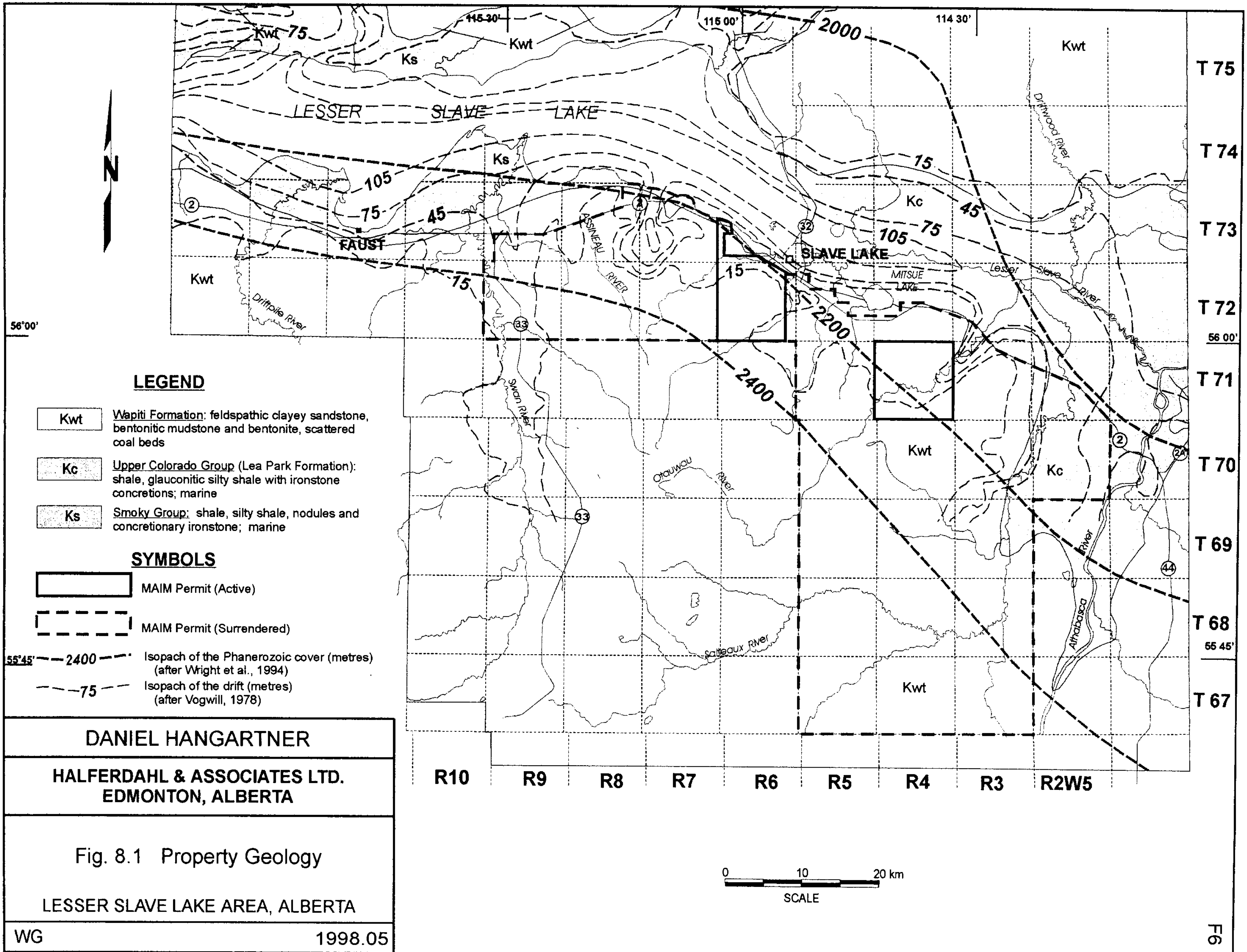

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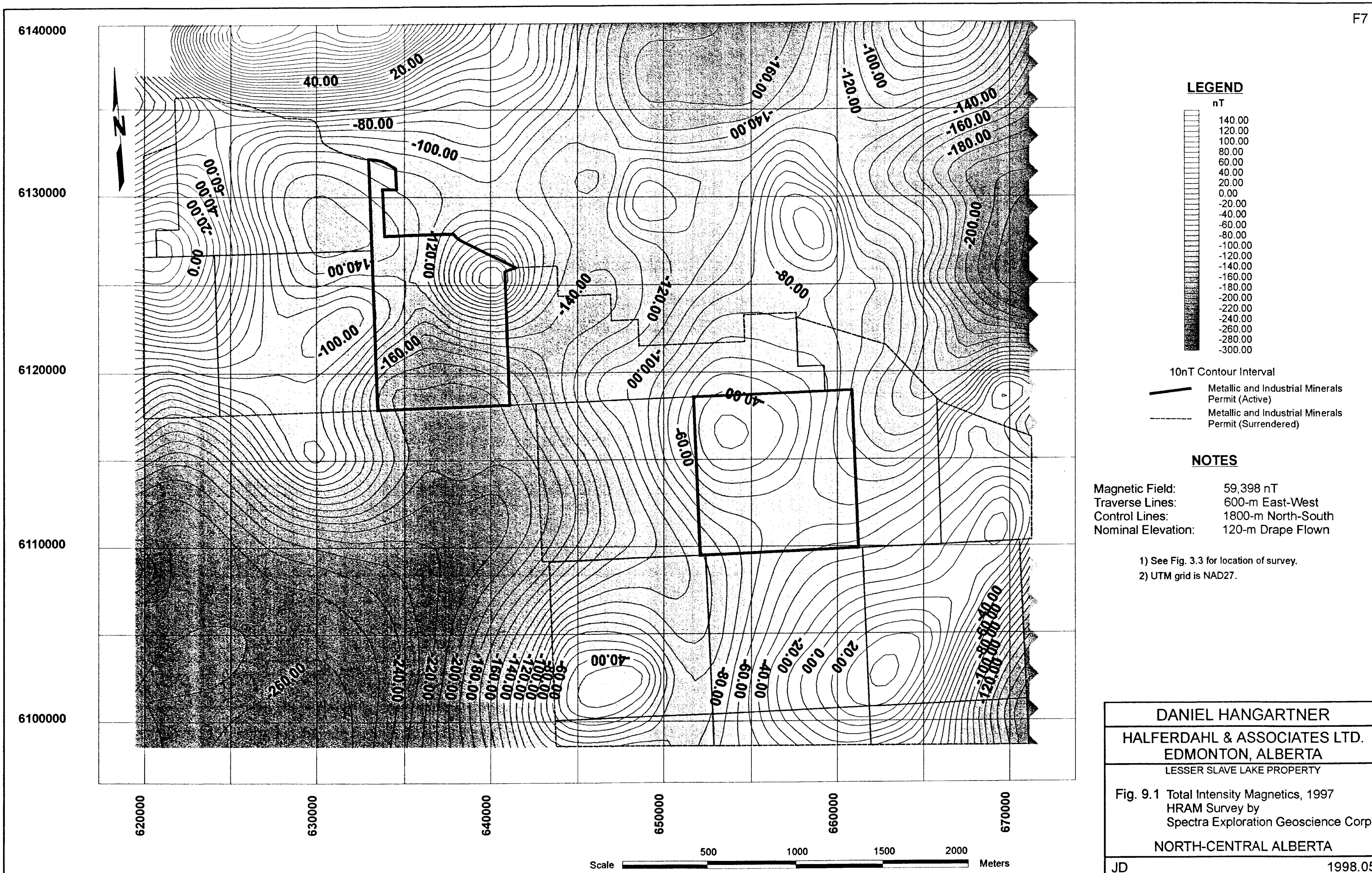
Fig. 8.1 Property Geology

LESSER SLAVE LAKE AREA, ALBERTA

WG 1998.05


F7
LEGEND
nT
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
-100.00
-120.00
-140.00
-160.00
-180.00
-200.00
-220.00
-240.00
-260.00
-280.00
-300.00
10nT Contour Interval
Metallic and Industrial Minerals Permit (Active)
Metallic and Industrial Minerals Permit (Surrendered)
NOTES
Magnetic Field: 59,398 nT
Traverse Lines: 600-m East-West
Control Lines: 1800-m North-South
Nominal Elevation: 120-m Drape Flown
1) See Fig. 3.3 for location of survey.
2) UTM grid is NAD27.
6140000
6130000
6120000
6110000
6100000
620000
630000
640000
650000
660000
670000
N
Scale 500 1000 1500 2000 Meters
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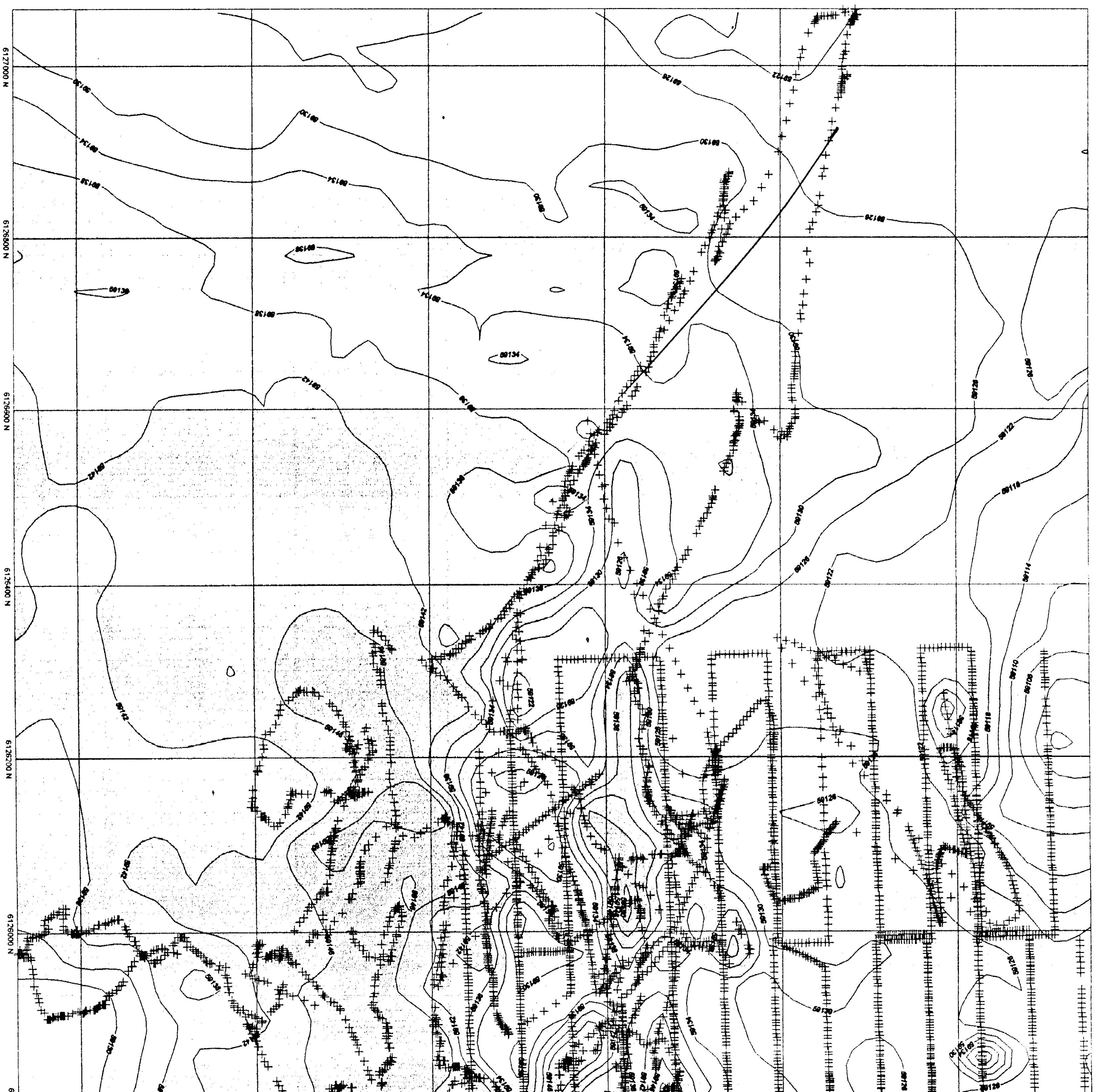
LESSER SLAVE LAKE PROPERTY
Fig. 9.1 Total Intensity Magnetics, 1997
HRAM Survey by
Spectra Exploration Geoscience Corp.
NORTH-CENTRAL ALBERTA
JD
1998.05



N

NOTES

1) See Fig. 8.2 for location of survey.
2) Magnetic contour interval: 4 nT.
3) UTM grid is NAD27.

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Fig. 9.2 Ground Magnetometer Survey by Blanket Earth Resources Ltd., Sec. 6, Tp.72, R.6W5

SLAVE LAKE AREA, ALBERTA

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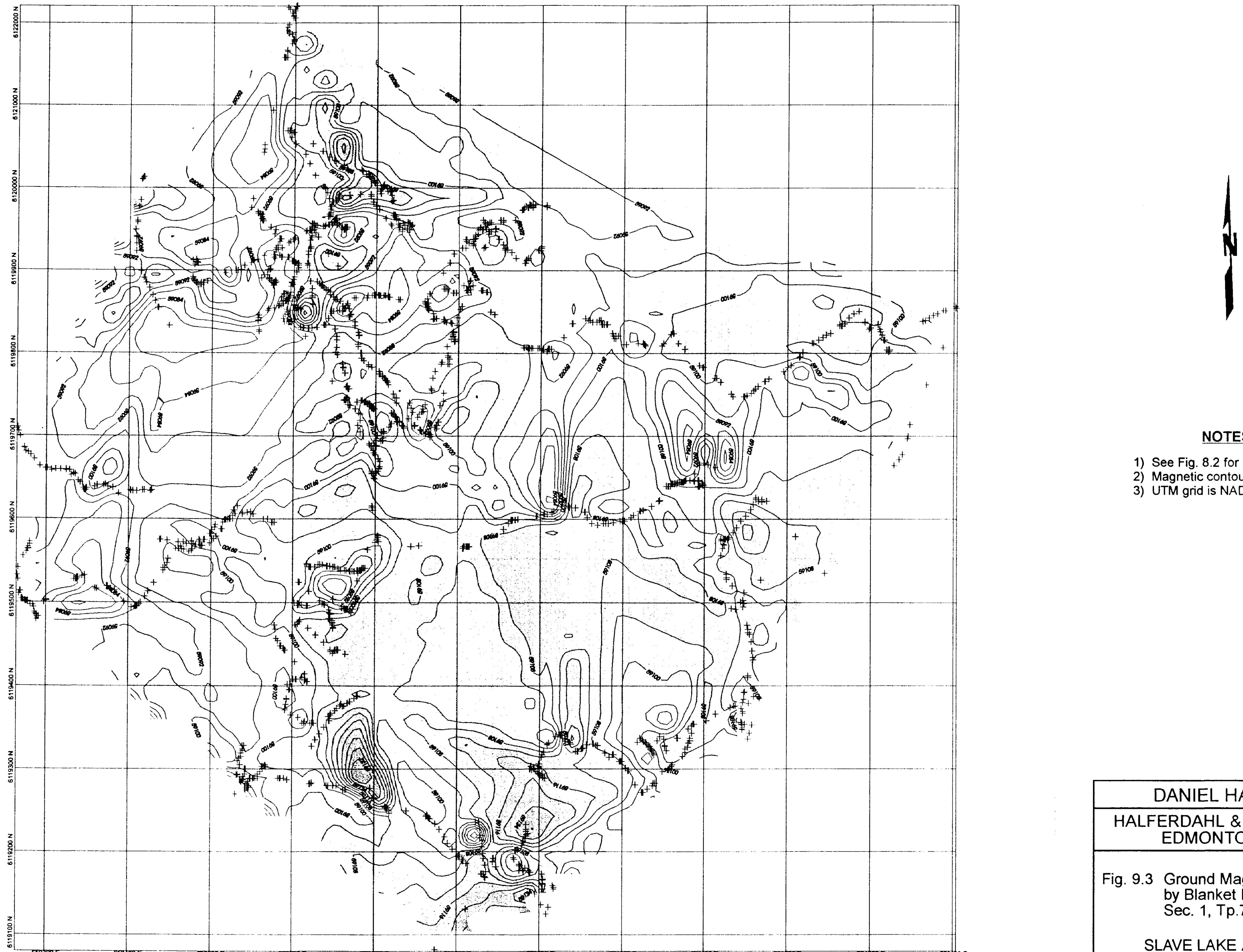

NOTES

1) See Fig. 8.2 for location of survey.
2) Magnetic contour interval: 4 nT.
3) UTM grid is NAD27.

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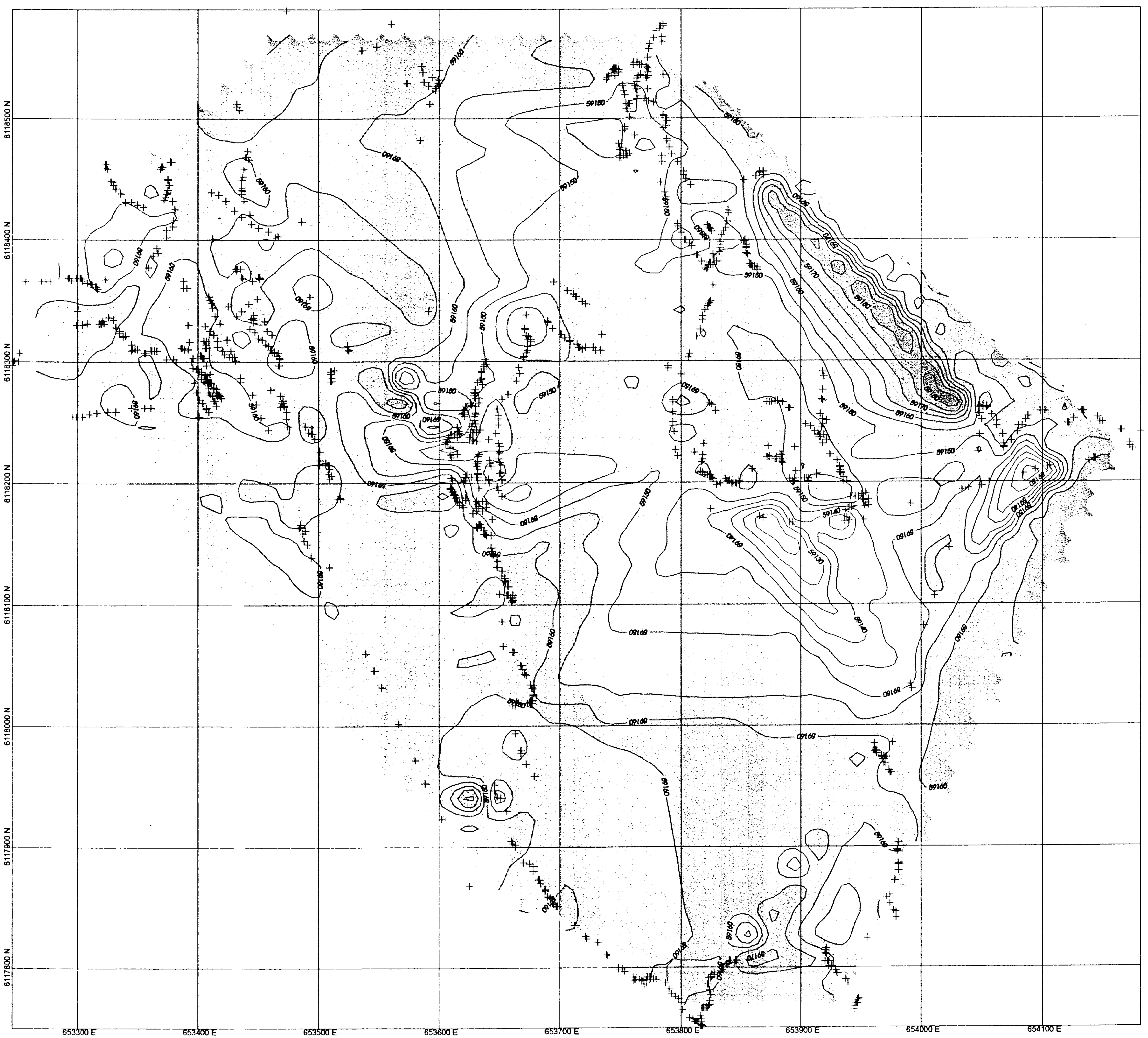
Fig. 9.3 Ground Magnetometer Survey by Blanket Earth Resources Ltd., Sec. 1, Tp.72, R.5W5 SLAVE LAKE AREA, ALBERTA
WM 1998.05



N

NOTES

1) See Fig. 8.2 for location of survey.
2) Magnetic contour interval: 5 nT.
3) UTM grid is NAD27.

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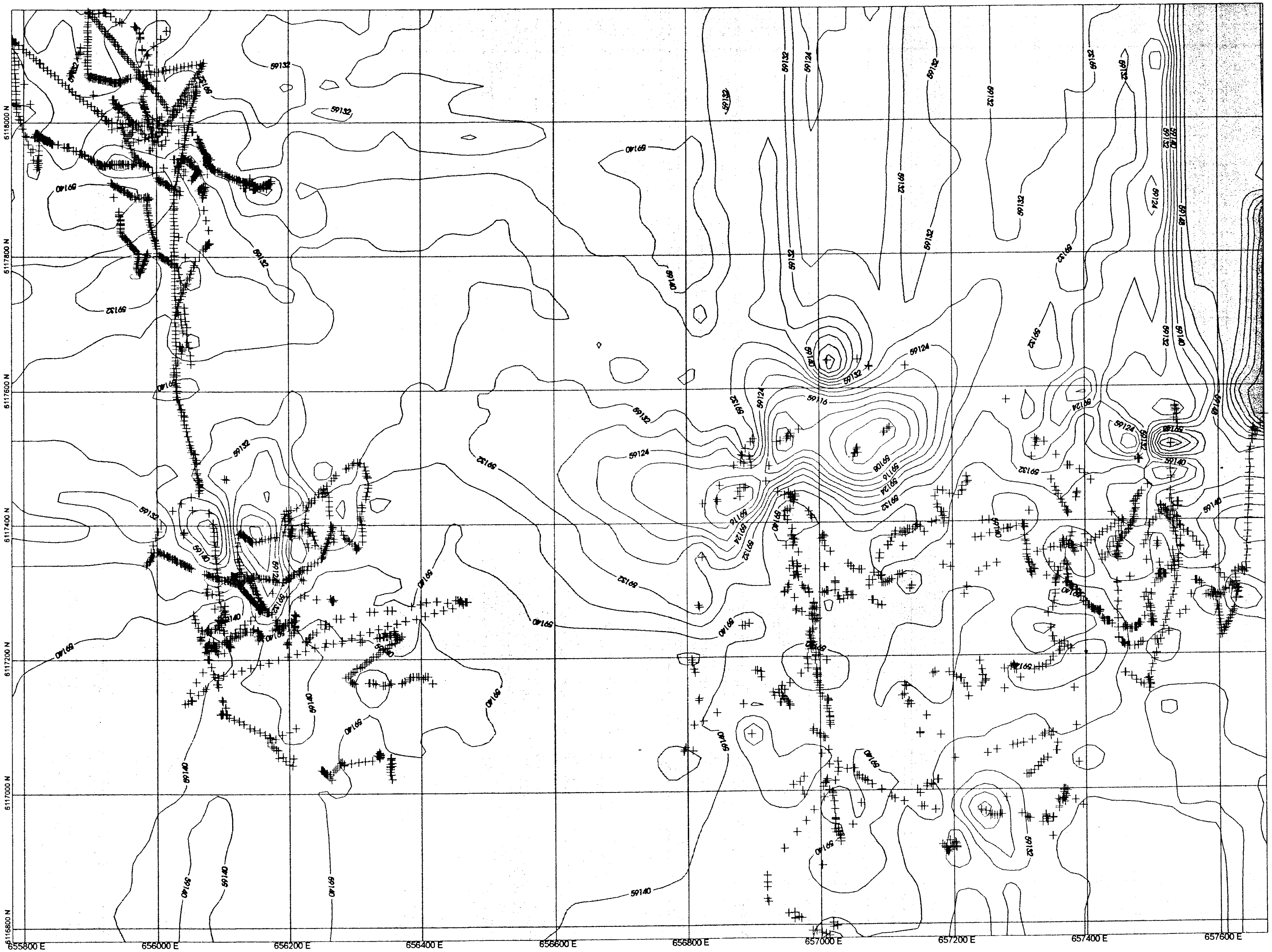
Fig. 9.4 Ground Magnetometer Survey by Blanket Earth Resources Ltd., Sec. 31, and 32, Tp.71, R.4W5

SLAVE LAKE AREA, ALBERTA

WM 1998.05

F11



NOTES

1) See Fig. 8.2 for location of survey.
2) Magnetic contour interval: 4 nT.
3) UTM grid is NAD27.

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Fig. 9.5 Ground Magnetometer Survey by Blanket Earth Resources Ltd., Sec. 27, 28, and 33, Tp.71, R.4W5

SLAVE LAKE AREA, ALBERTA

WM 1998.05

APPENDIX 1: STATEMENT OF EXPENDITURES
FOR METALLIC AND INDUSTRIAL MINERALS PERMITS 9395020018 AND 9395020019

Description		Rates Per	Rates Charge	Amount ($)	G.S.T. ($)	Total ($)
GEOLOGICAL CONSULTING - HALFERDAHL & ASSOCIATES LTD.[1]					-	
L.B. Halferdahl	- consultations, property review	1.00	[redacted]			
"	- consultations, data review, meetings, obtaining quotations on HRAM surveys, supervision	9.25				
J.R. Dahrouge	- review of HRAM data, airphoto interpretation, meetings	6.75				
"	- data compilation and review, reporting	7.25				
D. Pana	- review of HRAM data, meetings, reporting	12.50				
W. McGuire	- drafting	2.50				
"	- data compilation, drafting, and review of remote sensing data	10.50				
- expenses	- airphotos, copying, toll charges, topographic maps, and other	-	-	$ 1,153.08	$ 80.84	$ 1,233.92
"	- digital elevation data, plotting, maps, report binding, and other	-	-	$ 1,904.08	$ 133.28	$ 2,037.36
- subcontracting	- HRAM Survey (Spectra - Lesser Slave Lake)	-	-	$ 8,683.33	$ 607.83	$ 9,291.16
"	- HRAM Survey (Terraquest - Delorme Lake)	-	-	$ 20,165.40	$ 1,411.58	$ 21,576.98
"	- HRAM Survey (Terraquest - Sawridge)	-	-	$ 11,445.30	$ 801.17	$ 12,246.47
			Subtotal(s):	$ 63,953.69	$ 4,476.88	$ 68,430.57
EXPLORATION SERVICES - BLANKET EARTH RESOURCES LTD.[2]						
D.G. Hangartner	- ground magnetometer surveys and gridding	78	[redacted]			
D. Lindsey	"	56				
A. Sinclair	"	5				
G. Giroux	"	4				
N. Twinn	"	2				
- equipment rental	- truck rental	78	$75.00	$ 5,850.00	-	$ 5,850.00
"	- global positioning system rental	78	$20.00	$ 1,560.00	-	$ 1,560.00
			Subtotal(s):	$ 45,670.00	-	$ 45,670.00
EXPLORATION SERVICES - 756736 ALBERTA LTD.[2]						
A.W. Hangartner	- consultations, data processing, drafting, equipment preparation, map preparation, meetings, research	318	$35.00	$ 11,130.00	-	$ 11,130.00
- equipment rental	- computer (two Pentium 300 mhz systems)	5	$550.00	$ 2,750.00	-	$ 2,750.00
"	- GSM-19 Magnetometer	76	$54.00	$ 4,104.00	-	$ 4,104.00
"	- GSM-19 Magnetometer Base Station	76	$54.00	$ 4,104.00	-	$ 4,104.00
"	- global positioning system rental (base station)	76	$20.00	$ 1,520.00	-	$ 1,520.00
"	- laptop computer rental	76	$20.00	$ 1,520.00	-	$ 1,520.00
- expenses	- map reproductions, office supplies, toll charges	-	-	$ 316.10	-	$ 316.10
			Subtotal(s):	$ 25,444.10	$ -	$ 25,444.10
			Total Expenditures:	$ 135,067.79	$ 4,476.88	$ 139,544.67

[1] I, Jody R. Dahrouge, hereby certify that the costs outlined above were expended for the assessment of metallic and industrial minerals permits 9395020018 and 9395020019.

PROFESSIONAL GEOLOGIST OF ALBERTA — J. DAHROUGE

Jody R. Dahrouge, B.Sc., Sp.C, P.Geol.

[2] I, August Hangartner, hereby certify that the costs outlined above were expended for the assessment of metallic and industrial minerals permits 9395020018 and 9395020019.

[redacted]

August Hangartner

APPENDIX 2: LOCATIONS OF ANOMALIES

Notes: AT - anomaly as defined and classified by Terraquest Ltd. (1998) as:
- T - priority target based primarily on total magnetic intensity data,
- t - second priority target defined by small amplitude anomalies with variable horizontal gradient component,
- w - potential target defined by vertical gradient and vectors of horizontal gradient in the vicinity of known wells that may have deeper source, and
- ? - uncertain target, circular questionable anomaly.

AS - anomalous location as selected from 1:100,000 1500m - 500m High Pass Difference of Total Magnetic Intensity map by Spectra Exploration Geoscience Corp.

HRAM	UTM		Priority
Anomaly	Easting	Northing	
AT1	645856	6124081	?
AT2	645622	6123833	?
AT3	645243	6124563	?
AT4	644147	6125804	?
AT5	643957	6124213	?
AT6	643387	6124008	T
AT7	642236	6126169	?
AT8	641506	6125862	?
AT9	640322	6126052	T
AT10	640220	6126869	?
AT11	640103	6126227	T
AT12	639840	6125468	?
AT13	639709	6126461	?
AT14	639577	6125891	?
AT15	639300	6124578	W
AT16	639168	6126505	?
AT17	638745	6128862	?
AT18	638321	6129738	?
AT19	637620	6129709	?
AT20	634990	6129373	?
AT21	633851	6126191	t
AT22	633895	6129388	?
AT23	633646	6129534	?
AT24	632806	6123589	?
AT25	631059	6125680	t
AT26	629154	6120271	t
AT27	632792	6123589	t
AT28	626200	6121750	w
AT29	625726	6121318	t
AT30	661776	6116545	?
AT31	661324	6115917	?
AT32	660535	6112291	?
AT33	657306	6109751	?
AT34	658986	6125016	?
AT35	658533	6126125	?
AT36	657993	6122446	?
AT37	657803	6125395	T
AT38	652883	6122797	?
AS 5	671300	6115700	
AS 8	669741	6107193	
AS 22	636962	6118863	
AS 23	632769	6123621	
AS 24	632388	6120096	
AS 31	631840	6125358	

APPENDIX 2: CONTINUED

SELECTED PHYSIOGRAPHIC FEATURES

Identifier	UTM		Description
	Easting	Northing	
P1	636962	6118863	small oval hill
P2	638113	6124576	small oval hill
P3	636066	6121263	small oval hill
P4	634445	6123023	irregular shaped hill
P5	634265	6123635	irregular shaped hill
P6	633815	6126205	small oval hill
P7	633777	6124855	small oval hill
P8	632776	6123751	irregular shaped hill
P9	631810	6125534	small oval hill
P10	632619	6121263	small oval hill
P11	632450	6120085	small elongated hill
P12	632124	6119614	small oval hill
P13	650856	6120002	small oval hill
P14	653710	6118323	small oval hill
97-1	670825	6116052	small lake
97-2	670164	6106804	small lake
97-3	656874	6123348	small oval hill along Highway 2
97-4	647823	6117341	small oval hill
97-5	647530	6112688	small oval shaped pond
97-6	646505	6114766	elongate hill
97-7	635402	6124019	small oval hill

COINCIDENT ANOMALIES AND PHYSIOGRAPHIC FEATURES

Identifier	UTM		HRAM	UTM		HRAM	UTM	
	Easting	Northing	Anomaly[1]	Easting	Northing	Anomaly[2]	Easting	Northing
P1	636962	6118863	AS 22	636962	6118863	-	-	-
P6	633815	6126205	-	-	-	AT21	633851	6126191
P8	632776	6123751	AS 23	632769	6123621	AT24	632806	6123589
P9	631810	6125534	AS 31	631840	6125358	-	-	-
P11	632450	6120085	AS 24	632388	6120096	-	-	-
P12	632124	6119614	AS 24	632388	6120096	-	-	-
97-1	670825	6116052	AS 5	671300	6115700	-	-	-
97-2	670164	6106804	AS 8	669741	6107193	-	-	-

[1] Spectra Exploration Geoscience Corp.
[2] Terraquest Ltd. (1998).

APPENDIX 3A: METHODS OF GROUND MAGNETIC SURVEYING EMPLOYED BY BLANKET EARTH RESOURCES LTD. IN CONJUNCTION WITH 756736 ALBERTA LTD.*

The 600 m flyby indicated there were hundreds of anomalies that had to be explored. The current method of setting up grids over each of these indicated anomalies and then recording magnetic data at each station was not practical and not a very efficient use of time. The method chosen, although not conventional, works quite well as a preliminary prospecting tool. This method is not intended to replace conventional methods . The process only determines if girding the area is appropriate.

The GPS base station, a Trimble Scoutmaster attached via an RS232 serial link to the base processor, a Pentium II/300 PC located near the exploration project, was setup to record continuous NMEA messages that contained all visible satellite azimuths and elevations and the PRN numbers of each of the satellites which were used in the position calculation. This information is later used for post processing removal of error information - a process referred to as 'Positional Solution'[1] or 'Position Method'[2] similar to a GIS system, accurate enough for our application and less expensive. (GPSs, with a differential GPS base station, do not work well in heavily treed areas because of reflections and line-of-sight requirements[3]. The base station antenna would have to be elevated above the tree canopy. At each station, the mobile unit's antenna would have to be punched up through the tree canopy and data would have to be collected for 15 min., a slow process .[4] It is impossible to do continuous readings using this process.)

The base magnetometer, an Overhauser Model GSM-19, was set up to operate in base mode - continuous time and magnetometer readings at 3 second intervals. This information was collected for post processing diurnal correction. The mobile magnetometer, an Overhauser Model GSM-19, carried by an operator devoid of any metallic objects, was set up in walking mode to record continuous magnetic and time data at 3 second intervals. Both units are proton magnetometers with omnidirectional sensors. They have relative sensitivities of 0.2 nT sensitivity, absolute accuracy of 1 nT, no moving parts, and measure total field intensity with without orientation errors.

The mobile GPS, another Trimble ScoutMaster, was set up to continuously output NMEA messages that contained date, time, position information., and the PRN numbers of each satellite used in the calculation. As much of the internal metal as possible was removed. This included the internal antenna and the batteries. These were replaced by an external non-magnetic antenna and an external non-magnetic

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1 Push the Limits of Your Scoutmaster from Trimble', suggested reading by Marcelo Rodrequez Systems Engineer CompassCom, Inc.

2 Differential Positioning with post-mission processing', Chapter 4 - GPS Positioning Techniques Natural Resources Canada Geomatics Canada.

3 GPS Made Easy', - Lawerence Letham.

4 Focus Surveying.

* As provided by A. Hangartner of 756736 Alberta Ltd.

APPENDIX 3A: CONTINUED

battery pack. The data logging device was a Panasonic CF-V21P 486/40 based laptop processor connected to the GPS via an RS232 serial link. It was also powered by the same non-magnetic battery as the GPS. A second operator carried this system approximately 10 seconds behind the operator carrying the field magnetometer unit. (At this distance, the GPS system had no noticeable effect on the readings.) The data logging unit also has the capability to display raw GPS progress on scanned in bit maps of the area, but because of the ruggedness of the terrain, this feature was awkward to use - the unit never left the pack sack. At intersections single manual GPS readings were recorded; at changes of direction or the ends of profiles, double manual GPS readings were recorded; and at referenceable map features, triple manual GPS readings were recorded. Distances were recorded by use of a hip chain.

The collected data from the mobile GPS , mobile magnetometer and the base magnetometer was uploaded to the base computer using Procom Plus and, along with the base GPS readings, e-mailed over the Internet for processing.

Another Pentium II/300 processor post-processed the collected data using time as the common reference - 10 seconds were subtracted from the corrected magnetometer readings to make up for the distance difference between the mobile GPS and mobile magnetometer. Noise filtering removed most readings that were obvious errors or short duration noise. Magnetometer readings were paired with their corresponding GPS coordinates to generate a representation of a magnetic surface by scattered data points. The lat/long coordinate information was then converted to UTM for convenience. (Trimble Scoutmaster NMEA message time is in Universal Mean Time (UMT) and the coordinates are in lat/long. A considerable amount of processing was required to use this method. A GIS Mapping System would save time and reduce inconvenience. Apparently there are base stations in Boyle, Fox Creek, Grande Prairie and Whitecourt that record the error data, they are within the 300 mi. to obtain mapping accuracy specification and there is off -the-shelf software available to post-process the data.) All post-processing and data conversions were done using MS Access Basic. Grid files were generated using triangular interpolation of irregular scattered data[5]. Magnetic contours were plotted.

Digital spatial data interpolation techniques are increasingly becoming commonplace. GIS scattered data collections are more precise, computers are faster, software comes with many of the popular contouring programs and the method is well suited in situations where it is desired to have a quick look at a set of data points.

The objective was to determine if an anomaly had promising indicators by taking advantage of cutlines, clearings and areas where the terrain permitted travel in a timely manner. This method allowed the operators to more thoroughly investigate areas where higher magnetometer readings were detected. The processed data can now be used to determine what, if any, additional exploration will be required at some later date.

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5 GIS and Spatial Data Analysis - Fred C. Colins, Ph.D (IBM)

APPENDIX 3B : LOCATIONS AND DISTANCES OF GROUND MAGNETIC TRAVERSES BY BLANKET EARTH RESOURCES LTD IN CONJUNCTION WITH 756736 ALBERTA LTD.*

Shown in Figure	Traverse Number	Invoice	Date	Township	Range	Section	Northing (m)	Easting (m)	Distance (km)
9.2	9.2-1	0011	18-Oct-97	72	6	25/26	6126160	639774.5	0.25
9.2	9.2-2	0062	18-Dec-97	72	6	26	6126073	639643	7.72
9.2	9.2-3	0063	19-Dec-97	72	6	25	6125950	639584	6.66
9.2	9.2-4	0065	21-Dec-97	72	6	26	6125900	639146	3.05
9.2	9.2-5	0066	22-Dec-97	72	6	26	6126014	639478	7.38
9.2	9.2-6	0112	27-Feb-98	72	6	26	6126000	640000	3.79
9.3	9.3-1	0041	22-Nov-97	72	5	1	6119849	650554	0.10
9.3	9.3-2	0042	23-Nov-97	72	5	1	6119373	650635	0.55
9.3	9.3-3	0043	24-Nov-97	72	5	1	6119878	650655	5.02
9.3	9.3-4	0045	28-Nov-97	72	4	19	55° 12' 07"	114° 37' 34"	5.92
9.3	9.3-5	0046	29-Nov-97	72	5	1	6119516	650821	5.40
9.4	9.4-1	0035	16-Nov-97	71	4	32	6118026	653893	3.53
9.4	9.4-2	0037	17-Nov-97	71	4	32	6118370	653806	0.80
9.4	9.4-3	0038	18-Nov-97	71	4	32	6118320	653516	1.91
9.4	9.4-4	0039	19-Nov-97	71	4	32	6114592	652744	3.90
9.4	9.4-5	0040	20-Nov-97	71	4	31	6118244	653453	8.54
9.5	9.5-1	0019	27-Oct-97	71	4	27	6117215	657145.5	15.65
9.5	9.5-2	0020	28-Oct-97	71	4	33	6117807	656032	0.80
9.5	9.5-3	0023	2-Nov-97	71	4	27	6117276	657146	5.34
9.5	9.5-4	0024	3-Nov-97	71	4	28	6117360	656125	3.02
9.5	9.5-5	0025	4-Nov-97	71	4	27	6117807	655978	3.79
9.5	9.5-6	0026	5-Nov-97	71	4	33	6117970	655980	0.80
9.5	9.5-7	0027	6-Nov-97	71	4	28	6118012	655977	3.90
9.5	9.5-8	0028	9-Nov-97	71	4	28	6117212	657162	4.13
9.5	9.5-9	0032	14-Nov-97	71	4	27	6117271	657492	8.41
9.5	9.5-10	0033	15-Nov-97	71	4	27	6117182	656988	0.55
9.5	9.5-11	0059	15-Dec-97	71	4	28	6117257	656237	5.89
								Total	116.80

* As provided by A. Hangartner of 756736 Alberta Ltd.

SYMBOLS

Elevation contour (interval: 10 m)

Highway with number (11)

All weather or dry weather gravel or dirt road

Trail or cut line

MAIM Permit boundary

Terraquest HRAM survey area

Ground follow-up survey area; figure reference — Fig. 9.3

Selected physiographic feature; identity — P15

Selected physiographic feature (Halferdahl, 1997); identity — 97-3

Magnetic anomaly (Terraquest, 1998); identity; priority — AT26(t)
(T - first priority; t - second priority; w - third priority; ? - questionable)

Selected magnetic anomaly (Spectra, 1998); identity — AS2
(from Spectra Exploration, Utikuma Participation Survey, 1500 m - 500 m High Pass Difference Map)

Interpreted fault (Terraquest)

Diamond indicator sample location; identity — ◆328 (NAT93-51)
(after Dufresne et al., 1996)

NOTES

1) Map compiled from 1 : 20 000 scale digital base maps 83O/1SW, 1NW, 2SE, 2NE, 2NW, and 7SW supplied by Spatial Data Warehouse Ltd., Calgary, Alberta.

2) UTM grid is based on North American Datum, 1983 (NAD83); UTM grid zone: 11U.

DANIEL HANGARTNER

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

LESSER SLAVE LAKE PROPERTY

Fig. 8.2

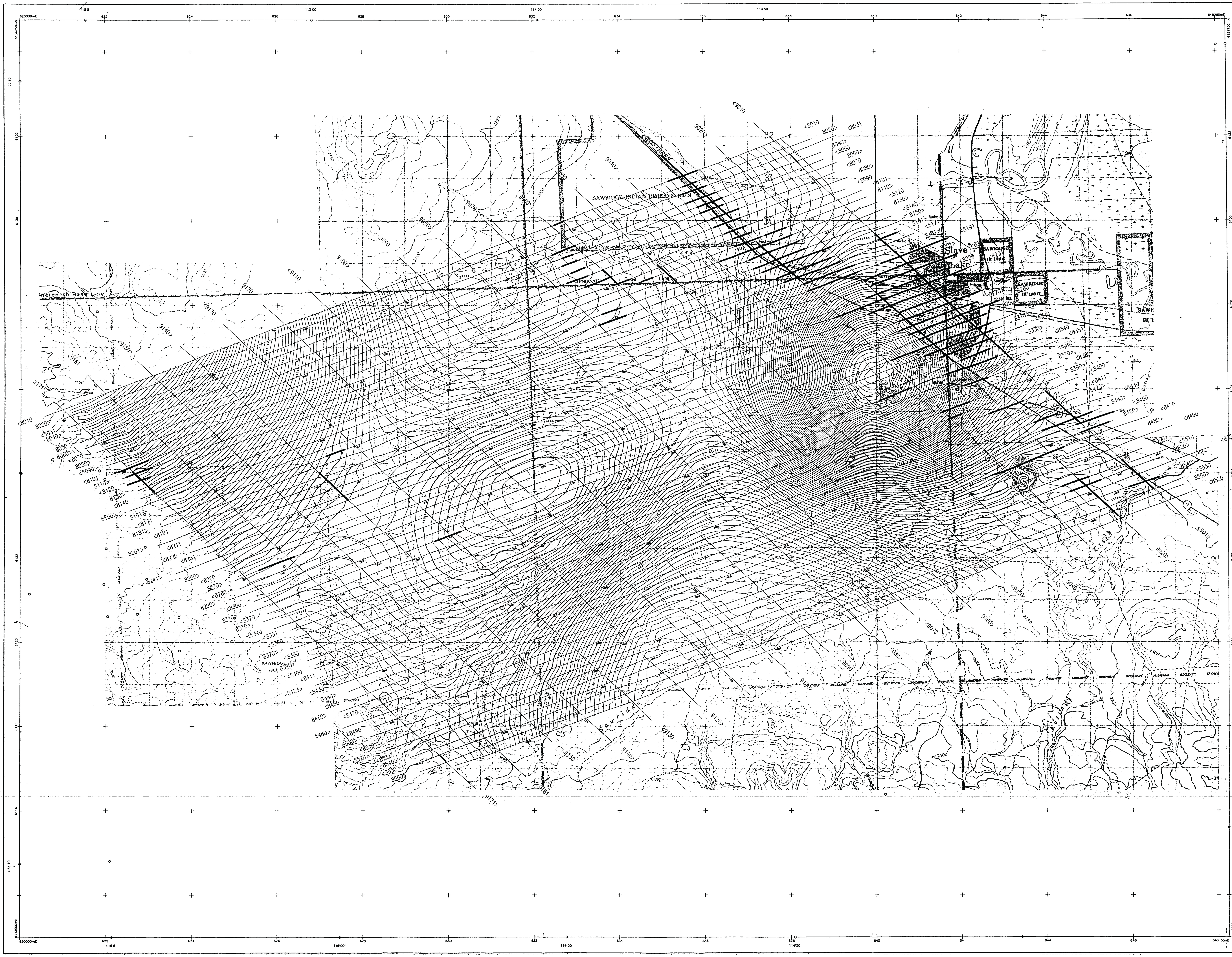
Locations of Anomalies, MAIM Permits 9395020018 and 9395020019

SLAVE LAKE AREA, ALBERTA

Scale: 0 1 2 3 4 km

W.M. 1998.05

REVISIONS	
BY	DATE



Scale 1 25000

500 0 500 1000 1500 2000
(metres)
2000 0 2000 4000 6000
(feet)

OPERATIONAL INFORMATION

AIRCRAFT CESSNA U206
CONFIGURATION TAIL STINGER AND WING TIP PODS
SENSOR SCINTREX CESIUM VAPOUR
FLIGHT PLAN 200 METRE LINE SPACING
NOMINAL TERRAIN CLEARANCE 75 METRES

NAVIGATION GLOBAL POSITIONING SYSTEM (G P S)

Mag data omitted for culture are plotted along Flight Path

2 mm Circles Represent Digital Well Locations

50 metres Grid Cell Size
Contour Intervals (nT)

2
10
50
250

IGRF AT 114 55'W 55°15N ON JANUARY 1 1998
TOTAL MAGNETIC FIELD 59613 25 nT
MAGNETIC INCLINATION. 76.99°
MAGNETIC DECLINATION. 20.26° E

Halferdahl and Associates Ltd

Reduced To Pole Magnetic Intens Contours

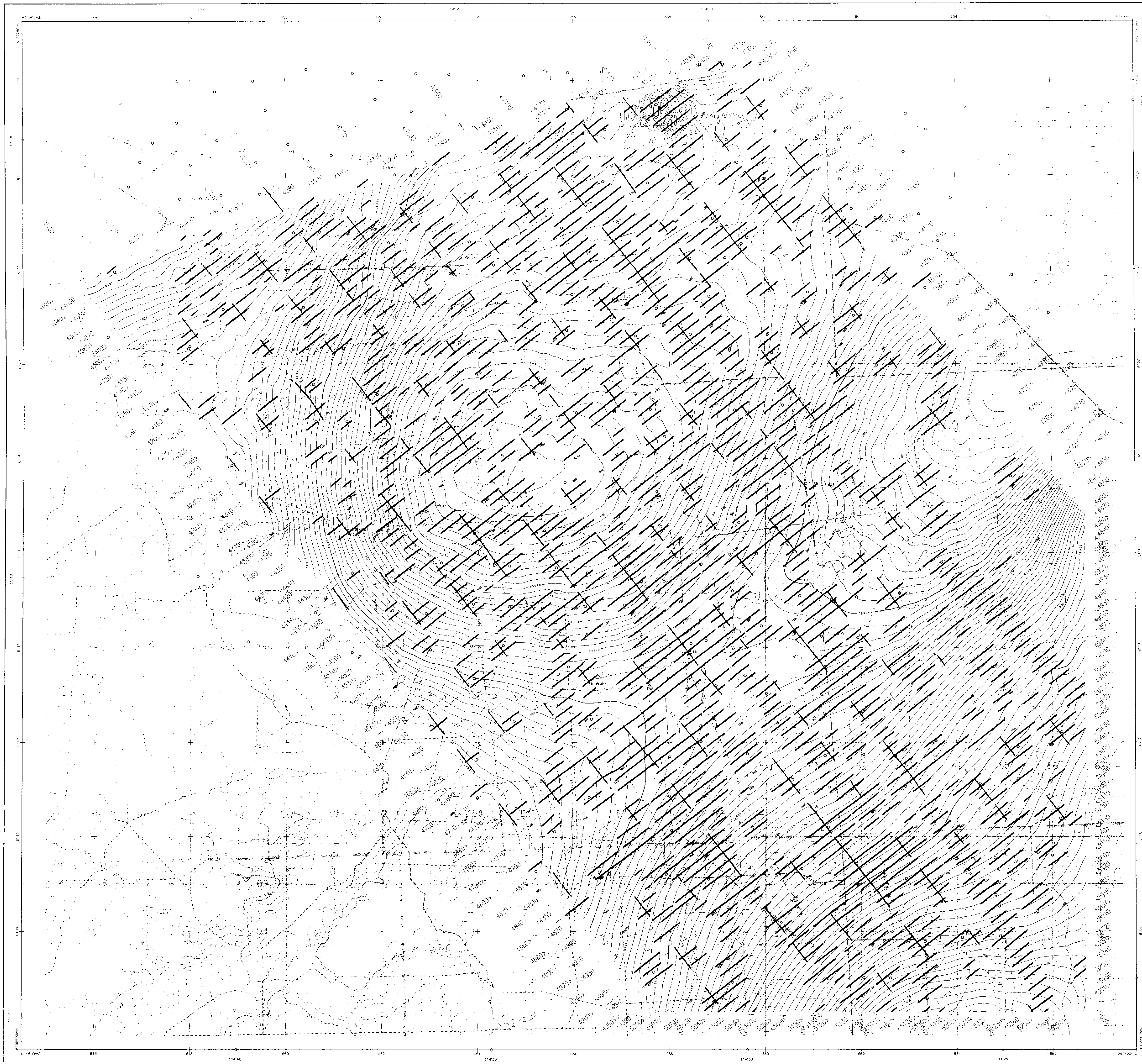
SAWRIDGE BLOCK

Lesser Slave Lake Project Alberta

Su
TERRAQUEST LTD
ssı g On no CANADA

Data Compiled ted by
CGI *CONTROLLED* GEOPHYSICS Inc
Thornh Ontario CANADA

Date: bruary 998	igure 3 985



Scale 1:25000

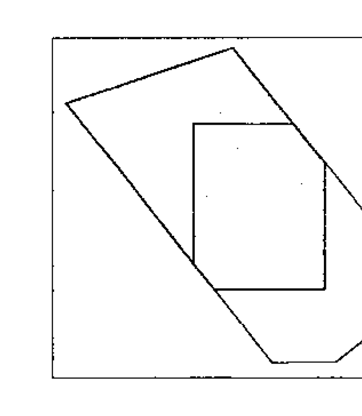
(metres)

(feet)

OPERATIONAL INFORMATION

AIRCRAFT: CESSNA U206
CONFIGURATION: TAIL STINGER AND WING TIP PODS
SENSOR: SCINTREX CESIUM VAPOUR
FLIGHT PLAN: 200 METRE LINE SPACING
NOMINAL TERRAIN CLEARANCE: 75 METRES

NAVIGATION: GLOBAL POSITIONING SYSTEM (G.P.S)



Mag data omitted for culture are plotted along Flight Path

2 mm Circles Represent Digital Well Locations

50 metres Grid Cell Size
Contour Intervals (nT)

2
10
50
250

IGRF AT 114°30'W 55°10'N ON JANUARY 1, 1998

TOTAL MAGNETIC FIELD: 59641.50 nT
MAGNETIC INCLINATION: 77.02°
MAGNETIC DECLINATION: 19.98° E

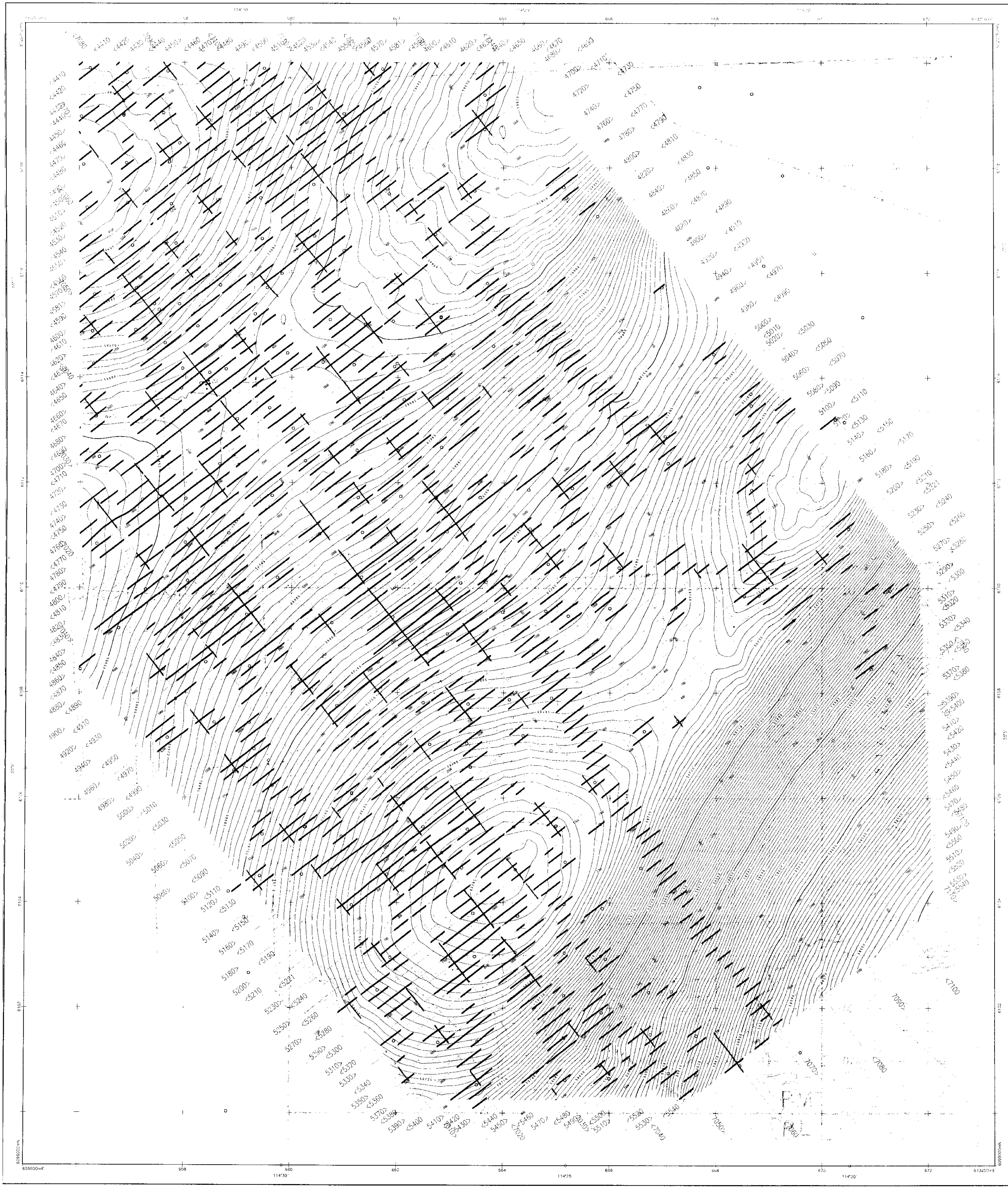
Halferdahl & Associates Ltd.

Reduced to Pole Magnetic Intensity Contours
Delorme Block – NW Sheet
Lesser Slave Lake Project, Alberta

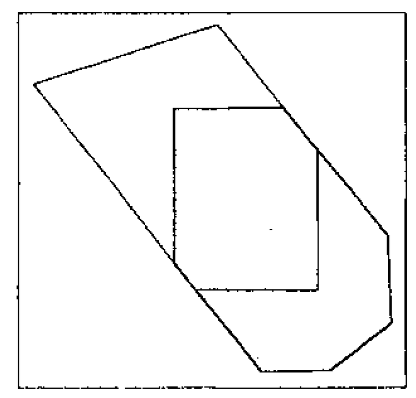
Surveyed by
TERRAQUEST LTD.
Mississauga, Ontario, CANADA

Data Compiled and Plotted by
CGI CONTROLLED GEOPHYSICS Inc.
Thornhill, Ontario, CANADA

Date: February, 1998	Figure: A – 985 – 1



OPERATIONAL INFORMATION



Mag data omitted for culture are plotted along Flight Path

2 mm Circles Represent Digital Well Locations

50 metres Grid Cell Size
Contour Intervals (nT)

thin solid	2
dashed	10
solid	50
heavy solid	250

IGRF AT 114°30'W 55°10'N ON JANUARY 1, 1998

TOTAL MAGNETIC FIELD: 59641.50 nT
MAGNETIC INCLINATION: 77.02°
MAGNETIC DECLINATION: 19.98° E

Halferdahl & Associates Ltd.

Reduced to Pole Magnetic Intensity Contours
Delorme Block – SE Sheet
Lesser Slave Lake Project, Alberta

Surveyed by
TERRAQUEST LTD.
Mississauga, Ontario, CANADA

Data Compiled and Plotted by
CGI CONTROLLED GEOPHYSICS Inc.
Thornhill, Ontario, CANADA

Date: February, 1998 | Figure: A – 985 – 1