REPORT ON

1996 GEOPHYSICAL SURVEY

(work carried out from Aug. 3 to Aug. 16, 1996)

on the

KLU PROPERTY

KLU 1013 to 1014	KLU 1112 to 1115
KLU 1116 to 1117	KLU 1118 to 1127
KLU 1211 to 1215	KLU 1216 to 1217
KLU 1218 to 1227	KLU 1310 to 1315
KLU 1316 to 1317	KLU 1318 to 1327
KLU 1410 to 1415	KLU 1416 to 1417
KLU 1418 to 1427	KLU 1510 to 1515
KLU 1516 to 1517	KLU 1518 to 1527
KLU 1610 to 1615	KLU 1616 to 1617
KLU 1618 to 1627	KLU 1710 to 1715
KLU 1716 to 1717	KLU 1718 to 1727
KLU 1810 to 1811	KLU 1818 to 1827
KLU 1910 to 1911	KLU 1918 to 1927
KLU 2018 to 2027	KLU 2118 to 2127
KLU 2218 to 2227	KLU 2318 to 2327
KLU 2418 to 2427	KLU 2520 to 2527
KLU 2620 to 2627	KLU 2720 to 2727
KLU 2820 to 2827	KLU 2920 to 2927
KLU 3020 to 3027	KLU 3120 to 3127
KLU 3218 to 3227	KLU 3318 to 3327
KLU 3418 to 3427	KLU 3518 to 3527
KLU 3618 to 3627	KLU 3718 to 3727
KLU 3818 to 3827	KLU 3918 to 3927
KLU 4018 to 4027	KLU 4118 to 4127
KLU 4218 to 4227	KLU 4318 to 4327
KLU 4410 to 4425	KLU 4510 to 4525
KLU 4610 to 4625	KLU 4710 to 4725
KLU 4810 to 4825	KLU 4910 to 4925
KLU 5010 to 5025	KLU 5112 to 5125
KLU 5213 to 5225	KLU 5314 to 5325

NTS 115G/2

Latitude 61° 10′N; Longitude 139° 48′

Whitehorse Mining District

Yukon Territory

Pat McGowan
Inco Limited
Vancouver, B.C.
November 10, 1996

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 136,600.

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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Appendices

1.0 Introduction

The Klu property was staked in October of 1994 to cover Ni-Cu-PGE showings discovered during a reconnaissance exploration program carried out in 1993 and 1994. The showings occur at the base of a Triassic peridotite sill hosted in Permian Hasen Creek Formation sediments. These showings are in the vicinity of a Ni-Cu showing documented in a 1973 assessment report. Massive, disseminated and net textured sulphides occur in the marginal gabbro phase of the sill. Massive sulphide lenses (up to 2.0 x 0.25 m) and fracture controlled sulphides occur in siltstone in the footwall of the sill. Values up to 2.6% Ni, 10.45% Cu, 0.09% Co, 75.8 g/t Pt, 7.9 g/t Pd and 7.0 g/t Au were returned from samples of these lenses.

This report documents the helicopter-borne combined electromagnetic (EM) and magnetometer survey carried out on the property during August of 1996. A total of 1217 kilometres of data were collected and the survey was completed in ten days.

2.0 Location, Access and Topography

The Klu property is centred 8 kilometres south of the village of Destruction Bay and 20 kilometres southeast of the village of Burwash Landing. Whitehorse is approximately 200 kilometres east of the property. The property parallels the Alaska Highway with its northeast boundary being 5 kilometres southwest from the highway. Kluane National Park borders the property to the southeast and southwest. The property is completely within the Kluane Game Sanctuary. Figure 1 shows the location of the property.

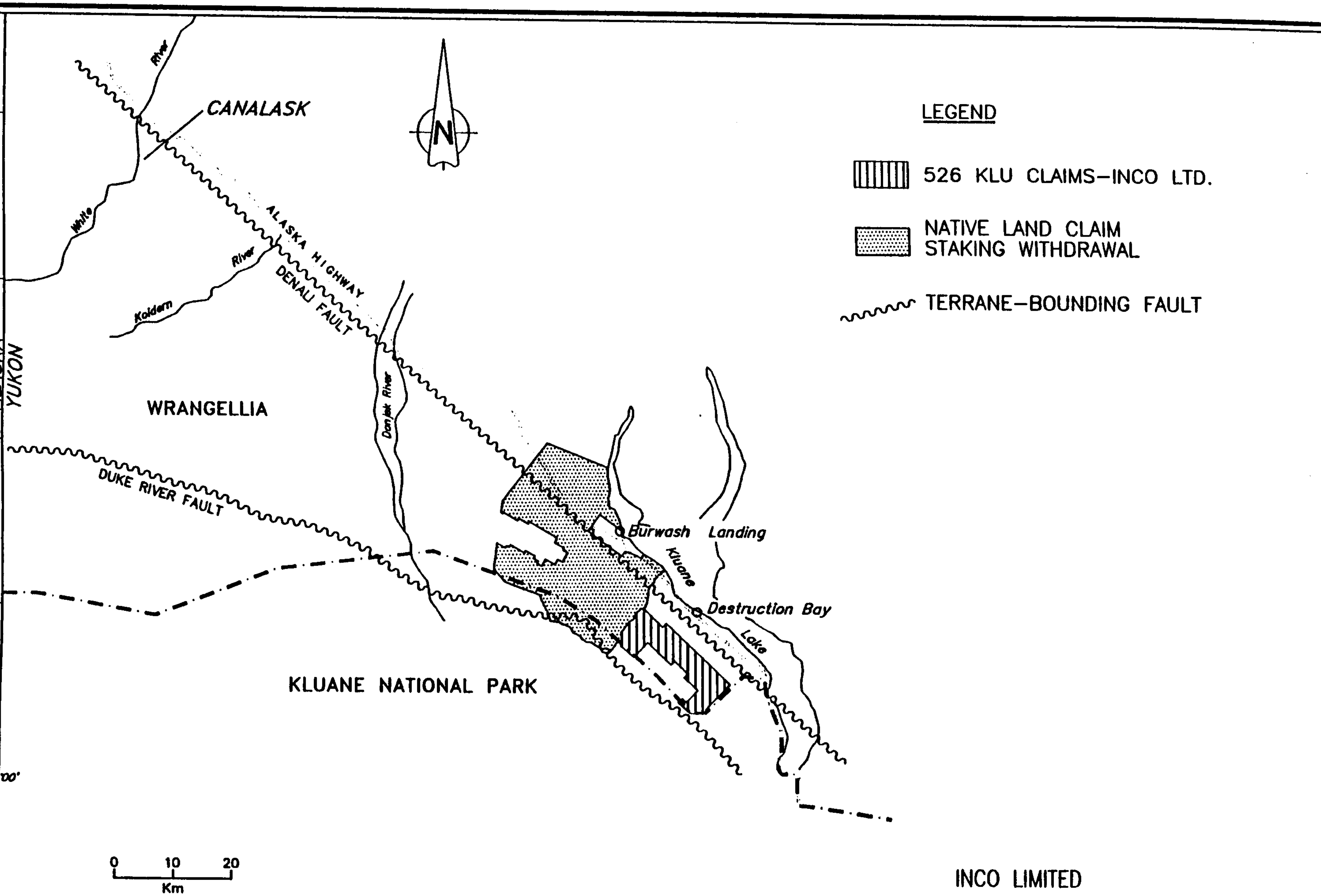
Primary access to the property is by helicopter. A permanent helicopter base is in Haines Junction, 70 kilometres to the southeast. Secondary gravel roads run off the Alaska Highway along the southeast banks of Nines Creek and Bock's Brook. These roads both end approximately two kilometres short of the northeast boundary of the property.

Topography on the property is extremely rugged. Elevations range from 3,500 to 8,200 feet. Treeline is generally at about 4,200 feet with treed areas only occurring in the Congdon, Nines, Bock's and Lewis Creek valleys. Several glaciers occur on the property above the 7,000 foot level.

3.0 Property

The property consists of 526 contiguous quartz claims located in the Whitehorse Mining District. The claims are 100% owned by Inco Limited. Figure 2 shows the outside boundary of the claim block. A detailed claim map including record numbers and claim names is shown in Figure 4.

Table 1 lists the claim names, grant numbers and renewal dates of the claims pending acceptance of this report.



INCO LIMITED

YUKON TERRITORY KLU PROPERTY LOCATION MAP

FIGURE 1

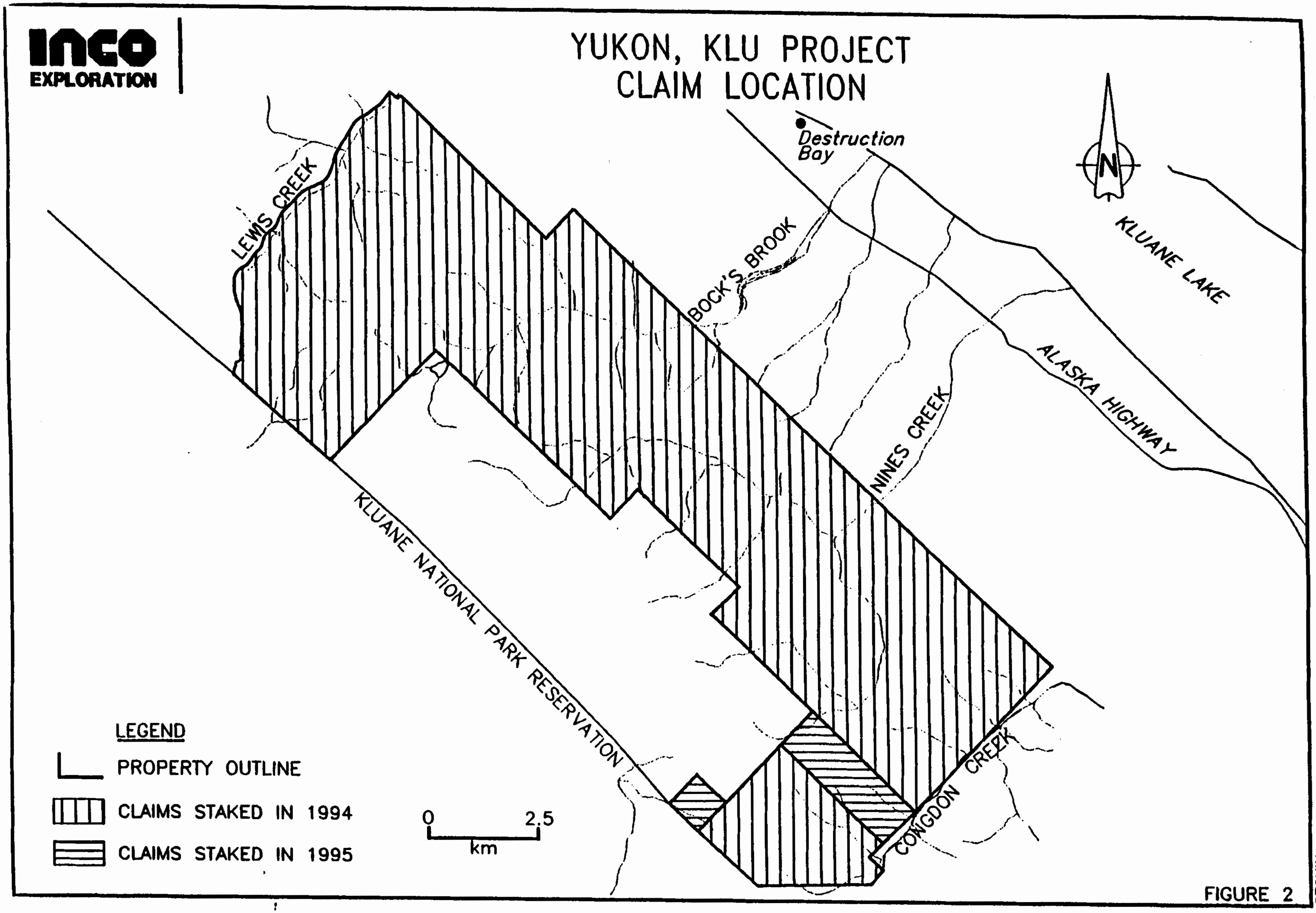

INCO EXPLORATION
YUKON, KLU PROJECT
CLAIM LOCATION
N
Destruction Bay
KLUANE LAKE
ALASKA HIGHWAY
LEWIS CREEK
BOCK'S BROOK
NINES CREEK
KLUANE NATIONAL PARK RESERVATION
COWGDON CREEK
LEGEND
PROPERTY OUTLINE
CLAIMS STAKED IN 1994
CLAIMS STAKED IN 1995
0
2.5
km
NIK020

FIGURE 2

KLU PROPERTY CLAIM STATUS		Table 1
Claims Staked In 1994		
Claim Name	**Tag Number**	**Renewal To**
KLU 1013 to 1014	YB 54767 - 768	October 24, 2000
KLU 1112 to 1115	YB 54769 - 772	October 24, 2000
KLU 1118 to 1127	YB 54773 - 782	October 24, 2000
KLU 1211 to 1215	YB 54783 - 787	October 24, 2000
KLU 1218 to 1227	YB 54788 - 797	October 24, 2000
KLU 1310 to 1315	YB 54798 - 803	October 24, 2000
KLU 1318 to 1327	YB 54804 - 813	October 24, 2000
KLU 1410 to 1415	YB 54814 - 819	October 24, 2001
KLU 1418 to 1427	YB 54820 - 829	October 24, 2001
KLU 1510 to 1515	YB 54830 - 835	October 24, 2001
KLU 1518 to 1527	YB 54836 - 845	October 24, 2001
KLU 1610 to 1615	YB 54846 - 851	October 24, 2001
KLU 1618 to 1627	YB 54852 - 861	October 24, 2001
KLU 1710 to 1715	YB 54862 -867	October 24, 2001
KLU 1718 to 1727	YB 54868 - 877	October 24, 2001
KLU 1818 to 1827	YB 54878 - 887	October 24, 2001
KLU 1918 to 1927	YB 54888 - 897	October 24, 2001
KLU 2018 to 2027	YB 54898 - 907	October 24, 2001
KLU 2118 to 2127	YB 54908 - 917	October 24, 2001
KLU 2218 to 2227	YB 54918 - 927	October 24, 2001
KLU 2318 to 2327	YB 54928 - 937	October 24, 2001
KLU 2418 to 2427	YB 54938 - 947	October 24, 2001
KLU 2520 to 2527	YB 54948 - 955	October 24, 2001
KLU 2620 to 2627	YB 54956 - 963	October 24, 2001
KLU 2720 to 2727	YB 54964 - 971	October 24, 2001
KLU 2820 to 2827	YB 54972 - 979	October 24, 2001
KLU 2920 to 2927	YB 54980 - 987	October 24, 2001
KLU 3020 to 3027	YB 54988 - 995	October 24, 2001
KLU 3120 to 3127	YB 54996 - 55003	October 24, 2001
KLU 3218 to 3227	YB 55004 - 013	October 24, 2001
KLU 3318 to 3327	YB 55014 - 023	October 24, 2001
KLU 3418 to 3427	YB 55024 - 033	October 24, 2001
KLU 3518 to 3527	YB 55034 - 043	October 24, 2001
KLU 3618 to 3627	YB 55044 - 053	October 24, 2001
KLU 3718 to 3727	YB 55054 - 063	October 24, 2001
KLU 3818 to 3827	YB 55064 - 073	October 24, 2001
KLU 3918 to 3927	YB 55074 - 083	October 24, 2001
KLU 4018 to 4027	YB 55084 - 093	October 24, 2000
KLU 4118 to 4127	YB 55094 - 103	October 24, 2000
KLU 4218 to 4227	YB 55104 - 113	October 24, 2000
KLU 4318 to 4327	YB 55114 - 123	October 24, 2000
KLU 4410 to 4425	YB 55124 - 139	October 24, 2000
KLU 4510 to 4525	YB 55140 - 155	October 24, 2000

Claim Name	Tag Number	Renewal To (Table 1 Cont'd)
KLU 4610 to 4625	YB 55156 - 171	October 24, 2000
KLU 4710 to 4725	YB 55172 - 187	October 24, 2000
KLU 4810 to 4825	YB 55188 - 203	October 24, 2000
KLU 4910 to 4925	YB 55204 - 219	October 24, 2000
KLU 5010 to 5025	YB 55220 - 235	October 24, 2000
KLU 5112 to 5125	YB 55236 - 249	October 24, 2000
KLU 5213 to 5225	YB 55250 - 262	October 24, 2000
KLU 5314 to 5325	YB 55263 - 274	October 24, 2000
Claims Staked in 1995		
KLU 1116 to 1117	YB58152-153	September 1, 2000
KLU 1216 to 1217	YB58154-155	September 1, 2000
KLU 1316 to 1317	YB58156-157	September 1, 2000
KLU 1416 to 1417	YB58158-159	September 1, 2001
KLU 1516 to 1517	YB58160-161	September 1, 2001
KLU 1616 to 1617	YB58162-163	September 1, 2001
KLU 1716 to 1717	YB58164-165	September 1, 2001
KLU 1810 to 1811	YB58166-167	September 1, 2000
KLU 1910 to 1911	YB58168-169	September 1, 2000

4.0 Previous Work

The earliest recorded exploration on the present Klu property was carried out by John S. Vincent Ltd. for the Nickel Syndicate during 1972-73 (MacEy et al, 1973). This work consisted of geological mapping and rock sampling on the Spy 1-12 claims. The claims were located on the northeast facing slope above the southern branch of Nines Creek. John S. Vincent Ltd. mapped a series of gabbro to peridotite sills intruding the Hasen Creek Formation. Sulphide mineralization was reported to occur at the base of a "gabbro-peridotite" sill. Values up to 1.47% Ni and 0.49% Cu were reported for sulphides occurring in "quartz xenoliths" at the base of the sill. Additional sulphide mineralization consisting of disseminated chalcopyrite, pyrrhotite and pyrite with values of 0.5% Ni and 0.5% Cu was reported to occur in gabbro along strike from the previous showing. The above mineralization is in the same area as the Ni-Cu-PGE rich sulphide showings discovered by Inco personnel in 1994. Elsewhere on the Spy claims, sphalerite-galena mineralization was reported on the margins of a quartz vein. This showing returned values of 1.25% Zn and 0.25% Pb.

The only other recorded exploration on the property was carried out by Aurum Geological Consultants Inc. for Walhala Explorations Ltd. in 1987. Assessment was filed on the Tony 1-28 and Tony 29-60 claim blocks. This work consisted of geological mapping and lithogeochemical sampling (Keyser, 1987).

Most of the current property was staked in October of 1994 following the discovery of the Ni-Cu-PGE showings during a regional reconnaissance program. During 1995, Inco personnel completed an exploration program consisting of geological mapping, lithogeochemical sampling, stream sediment sampling and limited soil geochemistry. The remainder of the claims were staked in August of 1995.

5.0 Regional Geology

The Klu property is situated within Wrangellia, which is an accreted terrane extending 2,340 kilometres from Alaska to southern B.C.. Certain geological elements are common throughout the terrane including an Upper Paleozoic island arc basement overlain by a thick Triassic flood basalt sequence.

The eastern part of Wrangellia (in Southwest Yukon) is bounded to the northeast by the Denali Fault System and to the southwest by the Duke River Fault. Oldest Wrangellian rocks in the belt are the Pennsylvanian to Lower Permian Skolai Group. The Station Creek Formation occurs at the base of the Skolai Group and consists of tuffs, pyritic black tuff, mafic volcanics and argillite. This is overlain by the Hasen Creek Formation which consists of tuffs, mafic volcanics, argillite and limestone. The Skolai Group is stratigraphically overlain by Pennsylvanian to Triassic mafic meta-volcanics, Upper Triassic Nikolai basalt, and Upper Triassic McCarthy Formation limestone and phyllite. Tertiary volcanics and sediments unconformably overlie the sequence. Quaternary surficial deposits locally cover the Paleozoic, Mesozoic and Cenozoic strata.

There are two major suites of intrusive rocks in the belt: the oldest is the mafic to ultramafic Triassic suite which includes ultramafic sills, marginal gabbro, and the Maple Creek Gabbro. This suite is thought to be cogenetic with the Nikolai flood basalt. Cretaceous Kluane Range Intrusions are dioritic to granodioritic in composition and occur throughout northern Wrangellia. Minor Tertiary sills, dykes and stocks of felsic to intermediate composition are also present.

The major Triassic ultramafic intrusions (Kluane -Type) are sill-like bodies which intrude the Hasen Creek and Station Creek Formations. The dips of the sills range from vertical to steeply overturned to as shallow as 30 degrees. Maximum dimensions of the sills are estimated to be up to 18 kilometres in length and 600 metres in thickness.

Peridotite is the dominant ultramafic phase with lesser dunite and pyroxenite. The peridotite ranges in composition from wehrlitic to lherzolitic and contains varying amounts of olivine, clinopyroxene, orthopyroxene, plagioclase, phlogopite and oxides. The degree of serpentinization varies locally from minor to total. Many of the ultramafic sills have a marginal gabbro at their base which makes up approximately 4% of the thickness of each sill. Clinopyroxenite layers locally are present above the marginal gabbro layer. Some of the sills also have marginal gabbro at their upper contacts. Field relationships suggest that these marginal gabbros represent an initial pulse of magma which was followed by progressively more ultramafic magma. The apparent "reverse layering" of these intrusions is probably a result of the sequential tapping of a compositionally layered magma chamber at depth.

Permo-Triassic rocks of the belt are faulted and tightly folded about steeply dipping axial planes and shallow northwest trending axes. Faulting includes bedding-plane slip faults and strike-slip faults which trend normal to the Denali Fault (a terrane-bounding transcurrent fault).

6.0 Property Geology and Mineralzation

6.1 Property Geology

The geology of the property is dominated by several fault bounded slices of folded paleozoic and mesozoic strata. These rocks are overlain by gently dipping Tertiary sediments and volcanics. Figure 3 shows a generalized geological map of the property. The bounding faults trend southeast to northwest and are believed to dip steeply. The axial planes of the folds also trend from southeast to northwest and appear to dip steeply; fold axes are assumed to be near horizontal. Much of the folding is inferred; no large scale folds were observed on the property. Scarcity of outcrop in the valley bottoms of Congdon Creek, Nines Creek, Bock's Brook and Lewis Creek make some structural interpretations tenuous. Certain faults and folds shown on GSC Open File Map 381 are not shown on maps accompanying this report. The property geology is shown in Figure 3.

A Table of Formations present on the Klu property is shown in Table 2. Geological age, map symbol, unit name and a brief description of each unit are listed in the table.

TABLE OF FORMATIONS (Table 2)

STRATIFIED ROCKS

AGE	SYMBOL	UNIT	DESCRIPTION
Tertiary (Miocene-Pliocene)	Nw	Wrangell Lava (Undivided)	Basalt to andesite flows, minor white to yellow felsic pyroclastics and flows
Tertiary (Oligocene)	Os	Amphitheatre Formation	Yellow-buff to gray-buff sandstone, pebbly sandstone, polymictic conglomerate
U. Triassic-Cretaceous	uTrKp		Dark gray phyllite, minor greywacke and conglomerate
U. Triassic	uTrM	McCarthy Formation	Argillaceous limestone and dark gray argillite
U. Triassic	uTrc	Chitistone and Nizina Formations	Massive light gray limestone, limestone breccia, and dark gray well bedded limestone
U. Triassic	uTre		White to creamy-white gypsum and anhydrite
U. Triassic	uTrN	Nikolai Greenstone	Dark green and maroon amygdaloidal to massive basaltic and andesitic flows, locally interbedded with tuff, breccia, shale, limestone; pillow lava and conglomerate occur at base
L. Permian	Ps	Hasen Creek Formation	Thin bedded siliceous argillite, siltstone, shale, greywacke, conglomerate, local thin basalt flows
L. Permian	Pc	Hasen Creek Formation	Buff to gray bioclastic limestone
Pennsylvanian	Pv	Station Creek Formation	Andesitic to basaltic tuffs and flows

INTRUSIVE ROCKS

AGE	SYMBOL	UNIT	DESCRIPTION
Tertiary (Miocene)	lMf	Wrangell Plutonic Suite	Buff to creamy-white granodiorite, diorite, gabbro dykes and sills, fine grained
Tertiary (Miocene)	lMdi	Bock's Brook Stock	Light buff-gray biotite diorite, medium grained
Triassic	Trb	Maple Creek Gabbro (Kluane-Type)	Gabbro and anorthositic gabbro sills, medium grained
Triassic	Trub	Kluane-Type Ultramafics	Peridotite, feldspathic peridotite sills with minor pyroxenite and dunite, medium grained
Triassic	Trmg	Kluane-Type Marginal Gabbro	Gray medium grained to fine grained locally chilled gabbro, forms along margins of peridotite

The Triassic Kluane-type intrusions form sills in Hasen Creek Formation strata and to a lesser extent in the Station Creek Formation. The location of the major ultramafic intrusions on the property is shown on Figure 3. Intrusion names shown on this map will be used in this report when describing a particular intrusion. The geology of the property is summarized below with reference to the major Kluane-type intrusions on the property.

The Spy Sill in the southeastern part of the property is a 75 to 100 metre thick, 6-kilometre long (minimum) intrusion of dominantly unserpentinized feldspathic peridotite. The Spy Sill is emplaced within Hasen Creek Formation siltstone. Marginal gabbro up to 10 metres thick is locally present at the top and base of the sill. Maple Creek gabbro sills occur stratigraphically above and below the Spy Sill as well as directly at its base. The most continuous Maple Creek gabbro sill occurs 230 metres down-section from the base of the peridotite and is up to 160 metres thick. This sill is intermittently exposed over a 10-kilometre strike. The northwestern end of the Spy Sill is cut by a 200-metre thick section of Maple Creek gabbro. Elsewhere, smaller bodies of Maple Creek gabbro also cut and form lens shaped bodies within the peridotite. Three stacked lenses of the peridotite occur below the main sill on the ridge between Congdon Creek and the southern branch of Nines Creek. These lenses are up to 600 metres long and 30 metres thick. Smaller lenses of peridotite occur below the main sill elsewhere. The lower contact of the main peridotite sill occurs 100 metres above a distinctive chert + siltstone pebble conglomerate bed, while the upper contact is approximately 20 metres below a buff weathering limestone bed with positive weathering relief. Down-section from the Spy Sill on the opposite side of the southern branch of Nines Creek, two apparently unconnected feldspathic peridotite intrusions up to 65 metres thick occur within the Station Creek Formation. Two kilometres northwest of the northwest extremity of the Spy Sill is an additional peridotite intrusion up to 200 metres thick with poor strike continuity. This sill is emplaced near the Station Creek-Hasen Creek Formation contact. The Hasen Creek and Station Creek Formations have a constant southeast-northwest strike and dip at an average of 40 degrees to the southwest. The strata in the Spy Sill area do not appear to be overturned. Nikolai basalt caps the ridge above the Spy Sill. The lower contact of the basalt is approximately 450 metres up-section from the top of the peridotite. The contact between the Hasen Creek Formation and the Nikolai basalt appears to be disconformable.

The Right-On Mountain Intrusions occur at the southern extremity of the property in a package of Hasen Creek Formation shale, chert and limestone which trend southeast-northwest and dip steeply to the southwest (60-90 degrees). These beds may be overturned. Two major peridotite sills occur here, the largest of which is 200 metres thick (some of this thickness may be due to fault repetition). These sills trend into Kluane National Park to the southeast. The large peridotite sill truncates a short distance (approximately 150 metres) into the property while the narrower peridotite sill (60 metres thick) trends into Kluane Park to the northwest where it is locally obscured by Tertiary cover. The southwestern contact of the narrower peridotite sill is locally part of the Duke River Fault which forms the boundary between Wrangellia and Alexander Terrane. A Maple Creek gabbro sill up to 250 metres thick occurs to the northeast of the peridotite sills.

Portions of the Duke and Halfbreed Intrusions occur in the northwestern part of the property. Both intrusions trend northwest into the Native Land Claim Staking Withdrawal. These sills are emplaced within Hasen Creek Formation siltstone and conglomerate which are part of a synclinal structure cored by overlying Nikolai basalt. The Duke Intrusion is a mafic/ultramafic sill emplaced within Hasen Creek Formation strata which trend southeast-northwest and dip at approximately 50 degrees to the southwest. The base of the intrusion consists of a lower peridotite section which is approximately 200 metres thick. The peridotite varies from partially to totally serpentinized. This is overlain by 30 to-50 metre thick screen of Hasen Creek Formation siltstone and chert. The cherty sediment may be silicified siltstone. Above these sediments is a 350 metre thick section of gabbro. This gabbro is believed to be of the Maple Creek-type and contains multiple intrusions which are complexly mixed. Marginal gabbro is not exposed at the base of the peridotite in the Duke Intrusion. The Duke Intrusion trends below Tertiary cover to the southeast.

INCO EXPLORATION

YUKON TERRITORY, KLU PROPERTY
GENERALIZED GEOLOGY

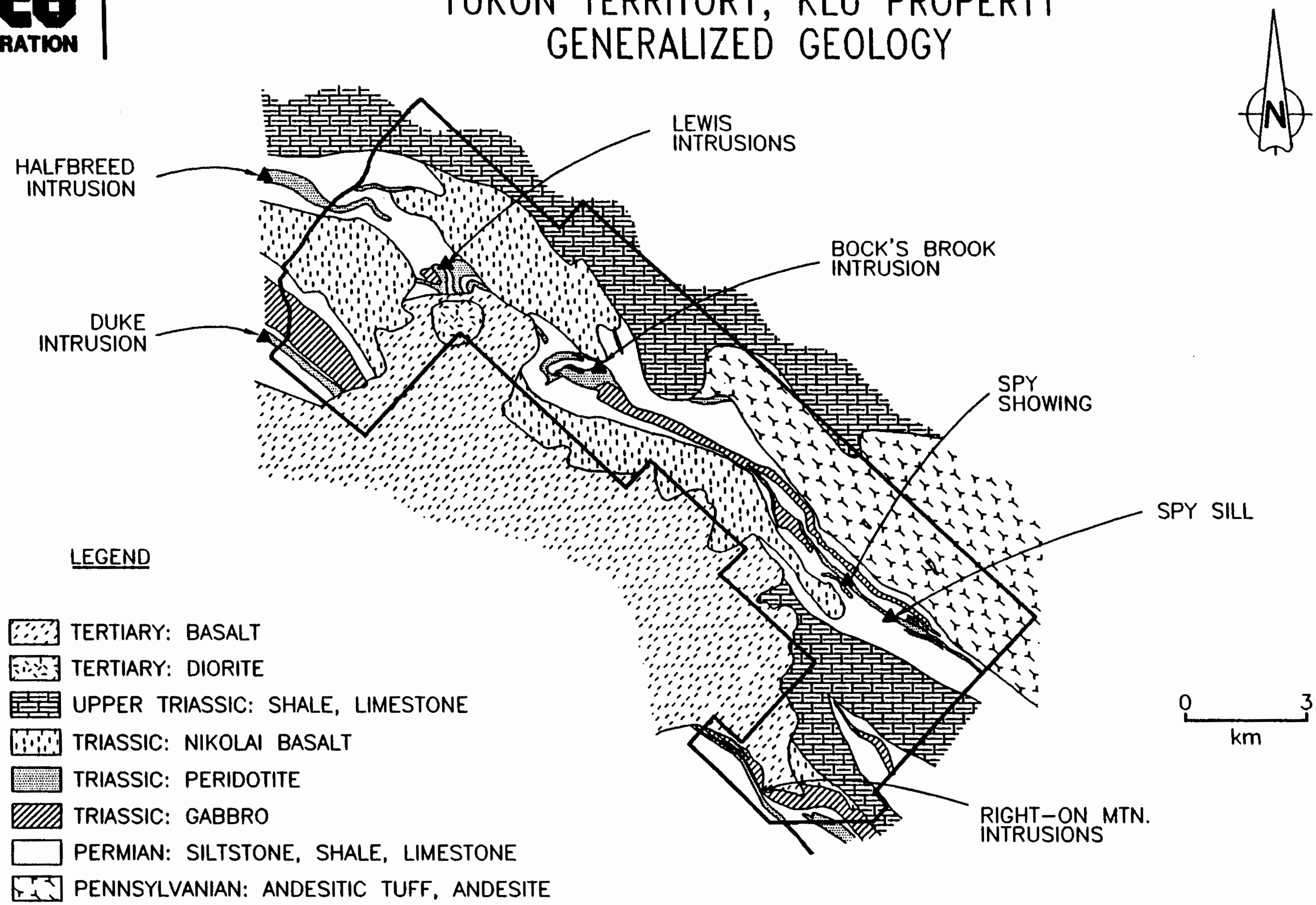


FIGURE 3

KLU067

Only the southeastern extremity of the Halfbreed Intrusion is present on the property. The majority of the Intrusion occurs on the Native Land Claim Staking Withdrawal. On the Klu property, the Halfbreed Intrusion consists of two peridotite sills which are individually up to 125 metres thick. These sills occur in siltstone, conglomerate and limestone beds of the Hasen Creek Formation which strike southeast-northwest and dip to the southwest at 50 to 60 degrees. Thin discontinuous marginal gabbro lenses occur at the base of these sills. Maple Creek gabbro sills occur both up-section and down-section from the peridotite sills. The peridotite and gabbro sills here are poorly exposed due to extensive glacial moraine, beneath which the sills terminate. A detailed description of the Duke and Halfbreed intrusions is given in GSC Open File 3057 (Hulbert ,1995).

The Lewis Intrusions occur in the north-central part of the property two kilometres southeast of the terminus of the Halfbreed Intrusion. The Lewis Intrusions appear to consist of three relatively unserpentinized peridotite to pyroxenite sills of complex morphology. The sills intrude a package of siltstone, chert and argillite of the Hasen Creek Formation. these rocks have variable orientations, but generally trend southwest-northeast and dip between 20 and 85 degrees to the southeast. An irregular body of Maple Creek gabbro with local cummulate layering appears to intrude the western-most sill. A thin gabbro, possibly Marginal-type, occurs at the base of the southeastern-most sill. The sills are overlain by Tertiary volcanics to the southeast. South of the Lewis Intrusions is a circular stock of Tertiary diorite approximately 1.2 kilometres in diameter. The Lewis Intrusions were difficult to map due to the extreme ruggedness of the area.

The Bock's Brook Intrusion is located in the central part of the property between the Spy Sill and the Lewis Intrusions. This peridotite intrusion is largest on the property with the main intrusion being approximately 500 metres thick at its maximum. At least one smaller sill occurs below the main sill. The peridotite is strongly serpentinized and appears to be fault bounded along part of its northern contact. The thickness of the sill may be exaggerated due to fault repetition. The top of the sill and part of the base are in contact with Hasen Creek Formation limestone, siltstone and conglomerate. These beds have inconsistent orientations, but generally trend east-west and dip at approximately 50 degrees to the south. Much of the intrusion occupies a boulder choked cirque at the head of a tributary of Bock's Brook. Downstream of the main sill along the tributary are complicated fault slices of Hasen Creek Formation sediment, Nikolai basalt, Upper Triassic shale, a narrow fault bounded peridotite sill and Upper Triassic gypsum and limestone. The Nikolai basalt to the north of the Bock's Brook Intrusion has numerous small (2x3x1 metre) rafts of gypsum in it. At the eastern end of the Bock's Brook Intrusion, the peridotite is in contact with a gabbro sill. This sill may be a continuation of the Maple Creek gabbro sill emplaced below the Spy Sill.

Upper Triassic gypsum and limestone beds occur directly above the Nikolai basalt. Several exposures of these beds occur between the Bock's Brook Intrusion - Lewis Intrusions trend and the northeast boundary of the property. Locations with gypsum interlayered with basalt may be in-part due to interbedding, but are probably repeated tectonicly to some degree.

6.2 Mineralization

Ni-Cu-PGE mineralization on the property is associated with the basal marginal gabbro phase of the Spy Sill. Sulphide mineralization at the Spy Showing occurs in siltstone in the footwall of the sill, marginal gabbro and feldspathic peridotite. Massive chalcopyrite-pyrrhotite lenses in footwall siltstone are up to 2.0 x 0.25 metres; these lenses grade up to 2.6% Ni, 10.45% Cu, 0.09% Co, 75.8 g/t Pt, 7.9 g/t Pd and 7.0 g/t Au (1994 sample from 2.0 x 0.25 metre lens). The host siltstone is weakly altered, but highly fractured with chalcopyrite-pyrrhotite mineralization occurring along the fractures.

The basal marginal gabbro unit hosts massive sulphide lenses, net-textured sulphide and disseminated sulphide. Gabbro hosted massive pyrrhotite-chalcopyrite lenses grade up to 3.1% Ni, 2.8% Cu, 0.2% Co, 3.1 g/t Pt, 1.4 g/t Pd and 1.0 g/t Au. These lenses are up to 20 centimetres thick and occur at the gabbro-siltstone contact and within zones of gabbro-hosted semi-massive sulphide. Disseminated and net-textured pyrrhotite and chalcopyrite within marginal gabbro grade up to 1.2% Ni, 1.0% Cu , 0.009% Co, 290 ppb Pt, 180 ppb Pd and 88 ppb Au in grab samples. A 1.2-metre chip sample of net-textured pyrrhotite-chalcopyrite mineralization in marginal gabbro returned values of 0.2% Ni, 1.4% Cu, 1.9 g/t Pt, 1.0 g/t Pd and 0.7 g/t Au. Ni-Cu-PGE mineralization at the base of the Spy Sill has been traced over a strike of 3.6 kilometres. Gabbro/sulphide talus from the base of the sill, 900 metres northwest of the Spy Showing, returned values of 1.5% Ni, 0.4% Cu, 0.7 g/t Pt and 1.4 g/t Pd. A gabbro boulder with coarse blebs of pyrrhotite was found at the base of the Spy Sill, 2.7 kilometres southeast of the Spy Showing. This boulder returned values of 0.3% Ni, 0.4% Cu, 0.4 g/t Pt and 0.7 g/t Pd.

Several pyrrhotite-magnetite horizons occur between the Spy Sill and the base of the Nikolai basalt. One magnetite horizon is up to 10 metres thick, while pyrrhotite horizons are up to 4 metres thick. A 4-metre thick pyrrhotite horizon discovered in 1995 was named the Claimpost Showing. This pyrrhotite body is hosted within silicified siltstone and is capped by gabbro and magnetite. Minor magnetite and chalcopyrite occur with the pyrrhotite. Copper values from chip samples across the horizon returned values from 0.1 to 0.3%; Co values are anomalous (330-640 ppm). The maximum Ni value from these samples is 520 ppm. Pt and Pd are not anomalous. Common skarn minerals such as garnet, epidote and clinopyroxene are not present in sediments adjacent to the pyrrhotite-magnetite bodies. The sediments are locally highly silicified, probably due to the presence of numerous Maple Creek Gabbro sills. Most of the pyrrhotite-magnetite horizons are not in contact with gabbro sills. The 10-metre thick magnetite horizon abruptly changes to a thinner pyrrhotite-rich zone. No bedding is visible in either pyrrhotite or magnetite rich horizons. Thus, it is not clear whether these horizons represent skarn-type mineralization or are a type of syngenetic iron formation.

Exposure on the property is good at elevations above glacial sediments and valley filling talus fans, but the bases of the various peridotite intrusions are generally poorly exposed. The best exposed peridotite intrusion on the property is the Spy Sill. Even here, the base of the sill is relatively poorly exposed as mineralized marginal gabbro and massive sulphide lens weather recessively relative to the peridotite. A thin layer of fine talus was observed covering gossanous material at several places along the base of the sill; this makes locating sulphide mineralization difficult. Other intrusions such as the Duke Intrusion have almost no exposure at their basal contacts.

7.0 1996 Work Program

The exploration target on the Property is Ni-Cu bodies of large tonnage. These are highly conductive and magnetic. To provide rapid thorough geophysical coverage of the entire property, a helicopter-borne frequency-domain EM and magnetometer survey was carried out. The EM system employed offers moderate depth penetration (up to about 150 metres) over a range of frequencies which would detect both highly conductive massive Ni-Cu mineralization and disseminated or net-textured sulphides. The magnetometer survey was designed to permit interpretation of the geology in the poorly exposed or inaccessible parts of the property. The prospective intrusive rocks are known to be highly magnetic and as such are well mapped with a magnetometer survey.

The survey's relatively tight flight line spacing (100 metres) permits detection of any significant conductor having a near-surface strike length of at least 100 metres. As the severe terrain generally precludes any ground geophysical follow-up of anomalies, the closely-spaced survey lines would act as a reliable frame of reference for geological verification and/or drilling. The flight line direction lies perpendicular to the NW trending geology so as to best resolve the prospective host sills. The position and heading of the aircraft was controlled with the use of a real-time differentially-corrected Global Position System (GPS).

The details of the survey logistics and methods is found in Appendix 1 to this report and was prepared by the contractor which carried out the survey (Dighem).

8.0 Conclusions and Recommendations

The magnetic data reveals that the Lewis and Bock's Brook Intrusions are flat-lying and more extensive than mapped and that they are connected to the Spy Sill to the southeast, forming one continuous intrusive body running the full length of the property. The Spy Sill varies in dip along its strike, ranging from approximately 30 to 45 in the immediate vicinity of the Spy Showing to almost vertical to the southeast and northwest. The Spy Sill also appears to thicken as it approaches the Bock's Brook Intrusion. In addition to the Spy Sill, several other sills are visible. One of these my be a folded repetition of the Spy Sill to the southwest.

The best conductors detected by the survey are correlated to graphitic horizons. These are easily recognized as they are associated with magnetic lows or voids. Many of the anomalies were followed-up on the ground and verified to be graphite.

Only three conductors were found to be coincident with positive magnetic anomalies and all appear to be weak to fair in conductance. Within the sill to the northwest of the Spy Showing is a conductor traceable for about 1.5 kilometres coincident with a thickened section of the sill. However, the anomaly occurs in an area that is overburden covered so that its source cannot be inspected directly. Of note is the fact that the Spy Showing itself does not appear to have been detected by the survey. This would seem to indicate that the conductive mineralization is not very extensive.

Two, very short strike-length conductors located within magnetic highs. One is located close to the southwest boundary of the Property at the south end of the exposed portion of the Duke Intrusion, the other near the north end of the exposed part of the Right-on Mountain Intrusion.

It is recommended that the conductor lying within the Spy Sill to the northwest of the Spy Showing be followed-up with a deep-penetrating ground EM survey. The terrain in the area is amenable to a large loop time-domain EM survey. Due to the high conductance of typical Ni-Cu mineralization, UTEM would be the system of choice because of its broad band-width system response. A ground magnetic survey could also be carried out on the same grid to provide detailed mapping of the sill's extent.

The two smaller conductors are not suited to a UTEM survey for logistical reasons. Namely, in consideration of the apparent northeast dip of the sills a transmitter loop would need to be placed to the southwest - within the boundaries of Kluane National Park. In lieu of a UTEM survey, horizontal loop EM (MaxMin) and magnetometer surveys could be carried out on small grids over each anomaly.

9.0 Personnel

Names of Inco personnel who participated in fieldwork on the property in 1996 are listed below.

Patrick McGowan, Senior Geophysicist Inco Limited

Cameron Bell, Project Geologist Inco Limited

The list of personnel from the contractor (Dighem) participating in the collection and processing of the data is given in Appendix 1 to this report.

10.0 Cost Statement

Airborne Geophysical Survey (Contract)

1,217 line km x $90/km = $109,530

Mob/Demob = $5,000

Personnel

Patrick McGowan (Survey Preparation and Supervision) 9 days x $650/day = $5,850

Patrick McGowan (Report Writing and Interpretation) 15 days x $650/day = $9,750

Cameron Bell (Field Orientation and Survey Supervision) 5 days x $400/day = $2,000

Field Costs

Truck Rental 7 days x $90/day = $630

Accommodation (Patrick McGowan, Cameron Bell) 12 days x $80/day = $960

Meals (Patrick McGowan, Cameron Bell) 12 days x $40/day = $480

Computer rentals (Patrick McGowan) 17 days x $25/day = $425

Helicopter (Bell 206 - Trans North Helicopters, Haines Junction) 5 hours x $700/hour = $3,500

TOTAL $138,125

11.0 Statement of Qualifications

I, Patrick McGowan, residing at 187 Heward Avenue, Toronto, Ontario, M4M 2T6, certify that:

1) I graduated from the University of Toronto, Toronto, Ontario, with a Bachelor of Science Degree in Geophysics in May of 1980 and Master of Science Degree in Geophysics in November of 1984.

2) I have practiced the profession of geophysics since 1980.

3) I am an Associate Member in good standing of the Society of Exploration Geophysicists and member of the Canadian Exploration Geophysicists Society.

4) I am a self employed geophysicist on dedicated contract to Inco Limited since April 1, 1996.

5) I personally supervised the work documented in this report.

Dated this 21th day of Nov, 1996, at Vancouver, British Columbia

Patrick McGowan. M.Sc.

12.0 References

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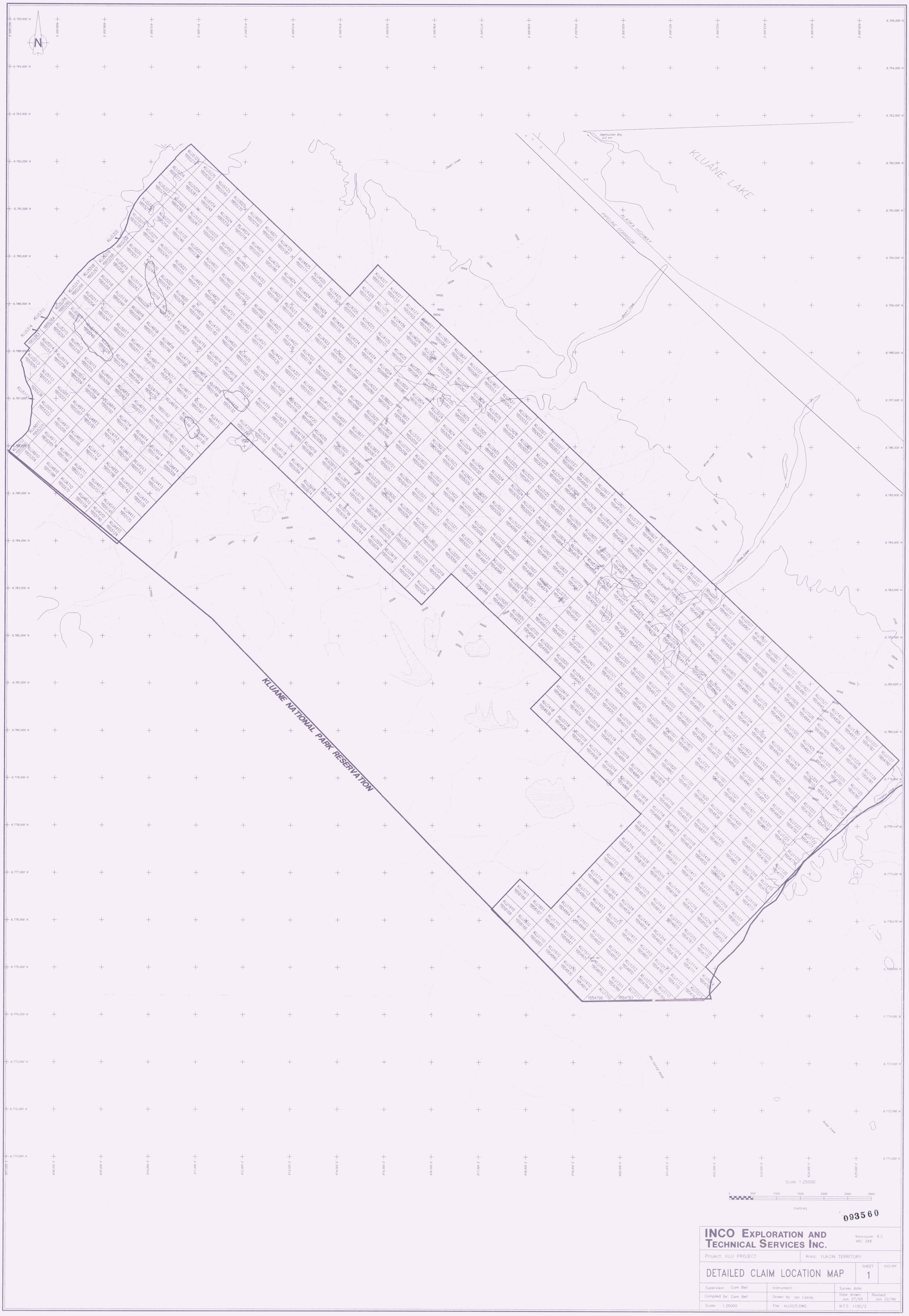

N
KLUANE LAKE
ALASKA HIGHWAY
PIPELINE CORRIDOR
KLUANE NATIONAL PARK RESERVATION
Scale 1:25000
0 500 1000 1500 2000 2500 3000
metres
093560
INCO EXPLORATION AND TECHNICAL SERVICES INC.
Vancouver B.C. V6C 2X8
Project: KLU PROJECT
Area: YUKON TERRITORY
DETAILED CLAIM LOCATION MAP
SHEET 1
FIGURE
Supervisor: Cam Bell
Instrument:
Survey date:
Compiled by: Cam Bell
Drawn by: Ian Casidy
Date drawn: Jun 27/95
Revised: Jan 22/96
Scale: 1:25000
File: KLU025.DWG
N.T.S. 115G/2

APPENDIX 1

Report #1236

DIGHEM^{V} SURVEY FOR INCO LIMITED KLUANE AREA, YUKON

NTS 115G/2,3,7

Dighem, A division of CGG Canada Ltd.
Mississauga, Ontario
November 5, 1996

Ruth A. Pritchard
Geophysicist

R1236NOV.96R

CONTENTS

SUMMARY

This report describes the logistics and results of a DIGHEM^V airborne geophysical survey carried out for Inco Limited, over a property located in the Kluane area, Yukon. Total coverage of the survey block amounted to 1217 km. The survey was flown from August 9 to August 19, 1996.

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

The survey property contains many anomalous features, some of which may be considered as exploration targets. Most of the inferred bedrock conductors appear to warrant further investigation using appropriate surface exploration techniques. Areas of interest may be assigned priorities on the basis of supporting geophysical, geochemical and/or geological information. After initial investigations have been carried out, it may be

necessary to re-evaluate the remaining anomalies based on information acquired from the follow-up program.

INTRODUCTION

A DIGHEM^V electromagnetic/resistivity/magnetic survey was flown for Inco Limited from August 9 to August 19, 1996, over a survey block located in the Kluane area, Yukon. The survey area can be located on NTS map sheet 115G/2,3,7 (see Figure 1).

Survey coverage consisted of approximately 1217 line-km, including 60 line-km of tie lines. Flight lines were flown in an azimuthal direction of 45°/225° with a line separation of 100 metres.

The survey employed the DIGHEM^V electromagnetic system. Ancillary equipment consisted of a magnetometer, radar altimeter, video camera, analog and digital recorders and an electronic navigation system. The instrumentation was installed in an A-Star AS350B2 turbine helicopter (Registration CG-NAH) which was provided by Highland Helicopters Ltd. The helicopter flew at an average airspeed of 46 km/h with an EM bird height of approximately 30 m.

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

In some portions of the survey area, the steep topography forced the pilot to exceed normal terrain clearance for reasons of safety. It is possible that some weak conductors may have escaped detection in areas where the bird height exceeded 120 m. In difficult areas where near-vertical climbs were necessary, the forward speed of the helicopter was reduced to a level which permitted excessive bird swinging. This problem, combined with the severe stresses to which the bird was subjected, gave rise to aerodynamic noise levels which are slightly higher than normal. Where warranted, reflights were carried out to minimize these adverse effects.

SURVEY EQUIPMENT

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

Electromagnetic System

Model:	DIGHEM^{V}
Type:	Towed bird, symmetric dipole configuration operated at a nominal survey altitude of 30 metres. Coil separation is 8 metres for 900 Hz, 5500 Hz and 7200 Hz, and 6.3 metres for the 56,000 Hz coil-pair.
Coil orientations/frequencies:	coaxial / 900 Hz coplanar / 900 Hz coaxial / 5,500 Hz coplanar / 7,200 Hz coplanar / 56,000 Hz
Channels recorded:	5 inphase channels 5 quadrature channels 2 monitor channels
Sensitivity:	0.06 ppm at900 Hz 0.10 ppm at5,500 Hz 0.10 ppm at7,200 Hz 0.30 ppm at56,000 Hz
Sample rate:	10 per second

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

Magnetometer

Model:	Picodas 3340
Type:	Optically pumped Cesium vapour
Sensitivity:	0.01 nT
Sample rate:	10 per second

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

Magnetic Base Station

Model:	Scintrex MEP-710
Type:	Digital recording cesium vapour

Sensitivity: 0.01 nT

Sample rate: 1 per second

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

Radar Altimeter

Manufacturer: Honeywell/Sperry

Type: AA 220

Sensitivity: 0.3 m

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

Analog Recorder

Manufacturer:	RMS Instruments
Type:	DGR33 dot-matrix graphics recorder
Resolution:	4x4 dots/mm
Speed:	1.5 mm/sec

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

Digital Data Acquisition System

Manufacturer:	RMS Instruments
Model:	DGR 33
Recorder:	RMS TCR-12, 6400 bpi, tape cartridge recorder

The digital data are used to generate several computed parameters. Both measured and computed parameters are plotted as "multi-channel stacked profiles" during data processing. These parameters are shown in Table 2-2. In Table 2-2, the log

Table 2-1. The Analog Profiles

Channel Name	Parameter	Scale units/mm	Designation on Digital Profile
1X9I	coaxial inphase (900 Hz)	2.5 ppm	CXI (900 Hz)
1X9Q	coaxial quad (900 Hz)	2.5 ppm	CXQ (900 Hz)
3P9I	coplanar inphase (900 Hz)	2.5 ppm	CPI (900 Hz)
3P9Q	coplanar quad (900 Hz)	2.5 ppm	CPQ (900 Hz)
2P7I	coplanar inphase (7200 Hz)	5 ppm	CPI (7200 Hz)
2P7Q	coplanar quad (7200 Hz)	5 ppm	CPQ (7200 Hz)
4X7I	coaxial inphase (5500 Hz)	5 ppm	CXI (5500 Hz)
4X7Q	coaxial quad (5500 Hz)	5 ppm	CXQ (5500 Hz)
5P5I	coplanar inphase (56000 Hz)	10 ppm	CPI (56 kHz)
5P5Q	coplanar quad (56000 Hz)	10 ppm	CPQ (56 kHz)
ALTR	altimeter	3 m	ALT
MAGC	magnetics, coarse	20 nT	MAG
MAGF	magnetics, fine	2.0 nT	
CXSP	coaxial spherics monitor		CXS
CPSP	coplanar spherics monitor		CPS
CXPL	coaxial powerline monitor		CXP
CPPL	coplanar powerine monitor		CPP
4XSP	coaxial spherics monitor		4XS

Table 2-2. The Digital Profiles

Channel Name (Freq)	Observed Parameters	Scale Units/mm
MAG	magnetics (fine)	10 nT
MAG	magnetics (coarse)	100 nT
ALT	bird height	6 m
CXI (900 Hz)	vertical coaxial coil-pair inphase	2 ppm
CXQ (900 Hz)	vertical coaxial coil-pair quadrature	2 ppm
CPI (900 Hz)	horizontal coplanar coil-pair inphase	2 ppm
CPQ (900 Hz)	horizontal coplanar coil-pair quadrature	2 ppm
CXI (5500 Hz)	vertical coaxial coil-pair inphase	4 ppm
CXQ (5500 Hz)	vertical coaxial coil-pair quadrature	4 ppm
CPI (7200 Hz)	horizonta coplanar coil-pair inphase	4 ppm
CPQ (7200 Hz)	horizontal coplanar coil-pair quadrature	4 ppm
CPI (56,000 Hz)	horizontal coplanar coil-pair inphase	10 ppm
CPQ (56,000 Hz)	horizontal coplanar coil-pair quadrature	10 ppm
CXS	coaxial spherics monitor	
CXP	coaxial powerline monitor	
CPP	coplanar powerline monitor	
CPS	coplanar spherics monitor	
4XS	coaxial spherics monitor	
	Computed Parameters	
DFI (900 Hz)	difference function inphase from CXI and CPI	2 ppm
DFQ (900 Hz)	difference function quadrature from CXQ and CPQ	2 ppm
RES (900 Hz)	log resistivity	.06 decade
RES (7200 Hz)	log resistivity	.06 decade
RES (56,000 Hz)	log resistivity	.06 decade
DP (900 Hz)	apparent depth	6 m
DP (7200 Hz)	apparent depth	6 m
DP (56,000 Hz)	apparent depth	6 m
CDT	conductance	1 grade

resistivity scale of 0.06 decade/mm means that the resistivity changes by an order of magnitude in 16.6 mm. The resistivities at 0, 33 and 67 mm up from the bottom of the digital profile are respectively 1, 100 and 10,000 ohm-m.

Tracking Camera

Type: Panasonic Video

Model: AG 2400/WVCD132

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

Navigation System (RT-DGPS)

Model:	Sercel NR106, Real-time differential positioning
Type:	SPS (L1 band), 10-channel, C/A code, 1575.42 MHz.
Sensitivity:	-132 dBm, 0.5 second update
Accuracy:	< 5 metres in differential mode, ± 50 metres in S/A (non differential) mode

The Global Positioning System (GPS) is a line of sight, satellite navigation system which utilizes time-coded signals from at least four of the twenty-four NAVSTAR satellites.

In the differential mode, two GPS receivers are used. The base station unit is used as a reference which transmits real-time corrections to the mobile unit in the aircraft, via a UHF radio datalink. The on-board system calculates the flight path of the helicopter while providing real-time guidance. The raw XYZ data are recorded for both receivers, thereby permitting post-survey processing for accuracies of approximately 5 metres.

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

Field Workstation

Manufacturer:	Dighem
Model:	FWS: V2.71
Type:	Pentium based P.C.

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

PRODUCTS AND PROCESSING TECHNIQUES

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

Base Maps

Base maps of the survey area have been produced from published topographic maps. These provide a relatively accurate, distortion-free base which facilitates correlation of the navigation data to the UTM grid.

Electromagnetic Anomalies

Anomalous electromagnetic responses are selected and analysed by computer to provide a preliminary electromagnetic anomaly map. This preliminary map is used by the geophysicist, in conjunction with the computer-generated digital profiles, to produce the final interpreted EM anomaly map. This map includes bedrock surficial and cultural conductors. A map containing only bedrock conductors can be generated, if desired.

Table 3-1 Survey Products

1. Preliminary Products @ 1:25,000

   "Redball" EM anomalies with 900 Hz coaxial profiles
   Colour total field magnetic map

2. Final Transparent Maps (+3 prints) @ 1:10,000

   Dighem EM anomalies
   Total field magnetic contours
   Calculated vertical magnetic gradient contours

3. Colour Maps (4 sets) @ 1:10,000

   Total field magnetics
   Calculated vertical magnetic gradient
   Resistivity (7200 Hz)

4. Additional Products

   Digital XYZ archive in Geosoft format (CD-ROM)
   Digital grid archives in I-POWER format (CD-ROM)
   Survey report (3 copies)
   Multi-channel stacked profiles (at 1:12,500)
   Analog chart records
   Flight path video cassettes
   VISION software package
   DIGRES software package

Note: Other products can be produced from existing survey data, if requested.

Resistivity

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

EM Magnetite

The apparent percent magnetite by weight is computed wherever magnetite produces a negative inphase EM response. This calculation is more meaningful in resistive areas.

Total Field Magnetics

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

Enhanced Magnetics

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

Magnetic Derivatives

The total field magnetic data may be subjected to a variety of filtering techniques to yield maps of the following:

first vertical derivative (vertical gradient)

second vertical derivative

magnetic susceptibility with reduction to the pole

upward/downward continuations

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

Multi-channel Stacked Profiles

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

Contour, Colour and Shadow Map Displays

The geophysical data are interpolated onto a regular grid using a modified Akima spline technique. The resulting grid is suitable for generating contour maps of excellent quality. The grid cell size is usually 25% of the line interval.

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

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

Conductivity-depth Sections

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

Conductivity-depth sections can be generated in two formats:

(1) Sengpiel resistivity sections, where the apparent resistivity for each frequency is plotted at the depth of the centroid of the inphase current flow[1]; and,

(2) Differential resistivity sections, where the differential resistivity is plotted at the differential depth[2].

Both the Sengpiel and differential methods are derived from the pseudo-layer halfspace model. Both yield a coloured conductivity-depth section which attempts to portray a smoothed approximation of the true resistivity distribution with depth. Conductivity-depth sections are most useful in conductive layered situations, but may be unreliable in areas of moderate to high resistivity where signal amplitudes are weak. In areas where inphase responses have been suppressed by the effects of magnetite, the computed resistivities shown on the sections may be unreliable. The differential resistivity technique was

---

1 Approximate Inversion of Airborne EM Data from Multilayered Ground: Sengpiel, K.P., Geophysical Prospecting 36, 446-459, 1988.

2 The Differential Resistivity Method for Multi-frequency Airborne EM Sounding: Huang, H. and Fraser, D.C., presented at Intern. Airb. EM Workshop, Tucson, Ariz., 1993.

developed by Dighem. It is more sensitive than the Sengpiel section to changes in the earth's resistivity and it reaches deeper.

SURVEY RESULTS

GENERAL DISCUSSION

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

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

TABLE 4-1

EM ANOMALY STATISTICS

KLUANE AREA, YUKON

CONDUCTOR GRADE	CONDUCTANCE RANGE SIEMENS (MHOS)	NUMBER OF RESPONSES
7	>100	1
6	50 - 100	5
5	20 - 50	9
4	10 - 20	17
3	5 - 10	74
2	1 - 5	554
1	<1	390
*	INDETERMINATE	751
TOTAL		1801

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	576
B	DISCRETE BEDROCK CONDUCTOR	957
S	CONDUCTIVE COVER	204
H	ROCK UNIT OR THICK COVER	64
TOTAL		1801

(SEE EM MAP LEGEND FOR EXPLANATIONS)

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

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

Magnetics

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

The background magnetic level has been adjusted to match the International Geomagnetic Reference Field (IGRF) for the survey area. The IGRF gradient across the survey block is left intact.

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

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

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

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

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

Resistivity

Resistivity maps, which display the conductive properties of the survey area, were produced from the 7200 Hz coplanar data. The maximum resistivity value is 8,000 ohm-m. This cutoff eliminates the meaningless higher resistivities which would result from very small EM amplitudes. The minimum resistivity value is 0.000017 times the frequency. This minimum resistivity cutoff eliminates errors due to the lack of an absolute phase control for the EM data. In general, the resistivity patterns show some agreement with the magnetic trends. This suggests that many of the resistivity lows are probably related to bedrock features, rather than conductive overburden. There are some areas, however, where contour patterns appear to be strongly influenced by conductive surficial material.

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

Electromagnetics

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

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

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

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

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

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

CONCLUSIONS AND RECOMMENDATIONS

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

There are many anomalies in the survey block which are typical of massive sulphide responses. The survey was also successful in locating a few moderately weak or broad conductors which may warrant additional work. The various maps included with this report display the magnetic and conductive properties of the survey area. It is recommended that the survey results be reviewed in detail, in conjunction with all available geophysical, geological and geochemical information. Particular reference should be made to the computer generated data profiles which clearly define the characteristics of the individual anomalies.

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

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

Respectfully submitted,

DIGHEM

Ruth A. Pritchard
Geophysicist

RAP/sdp

R1236NOV.96

APPENDIX A

LIST OF PERSONNEL

The following personnel were involved in the acquisition, processing, interpretation and presentation of data, relating to a DIGHEM^V airborne geophysical survey carried out for Inco Limited, in the Kluane area, Yukon.

Chris Nind	Manager, Helicopter Geophysics
Greg Paleolog	Manager, Helicopter Operations
Mike White	Geophysical Operator
Jeremy Weber	Field Dataman
Pat Rooney	Pilot (Highland Helicopters Ltd.)
Gordon Smith	Data Processing Supervisor
Theron Greenaway	Computer Processor
Ruth Pritchard	Interpretation Geophysicist
Lyn Vanderstarren	Drafting Supervisor
Mike Armstrong	Draftsperson (CAD)
Susan Pothiah	Word Processing Operator
Albina Tonello	Secretary/Expeditor

The survey consisted of 1217 km of coverage, flown from August 9 to August 19, 1996.

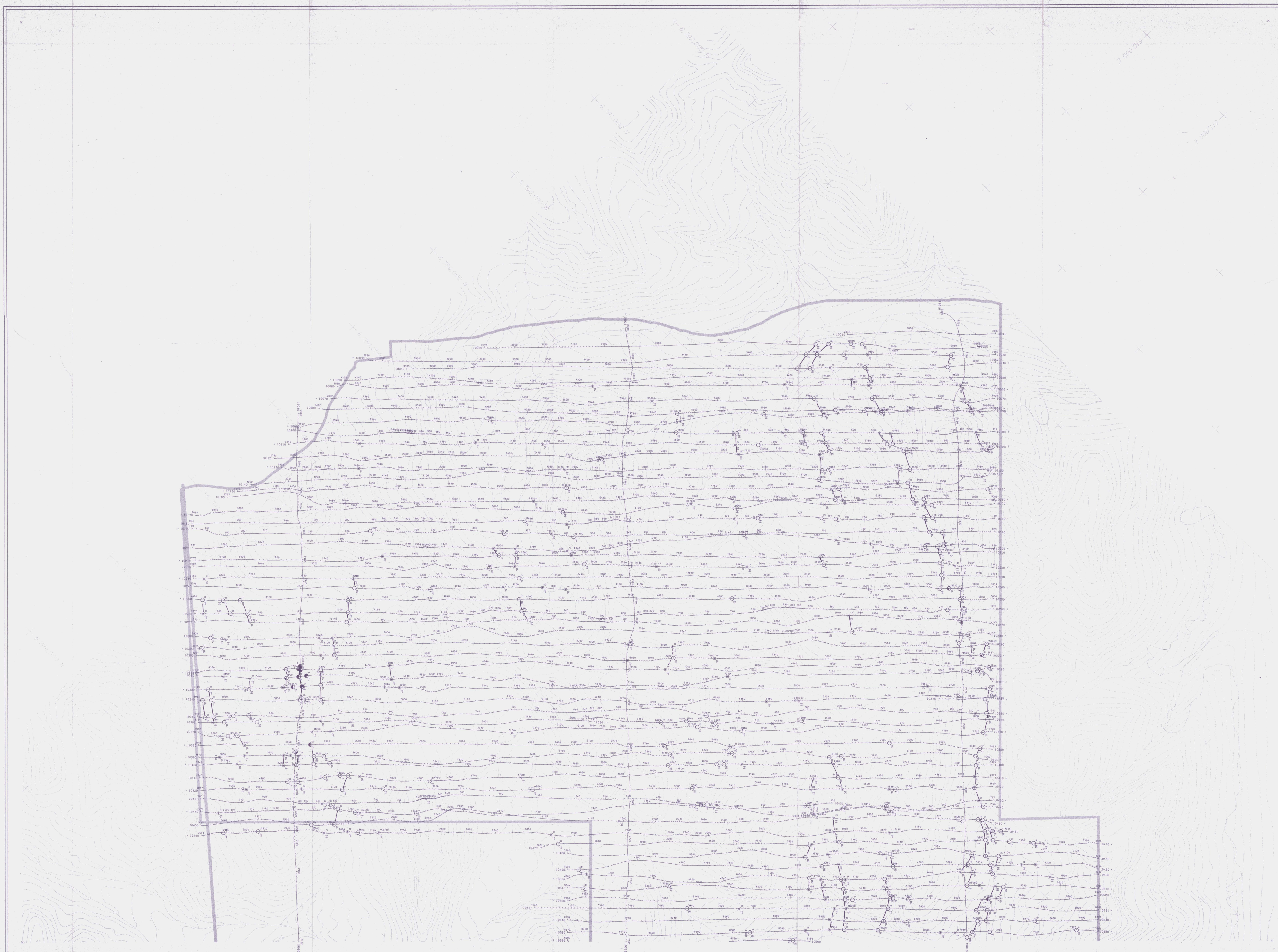
All personnel are employees of Dighem, except for the pilot who is an employee of Highland Helicopters Ltd.

DIGHEM

Ruth A. Pritchard
Geophysicist

RAP/sdp

R1236NOV.96



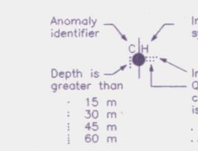
TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 ppm	Horizontal coplanar

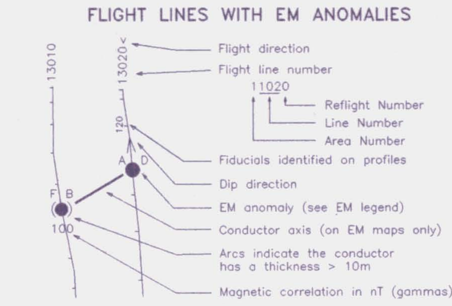
ELECTROMAGNETIC ANOMALIES

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

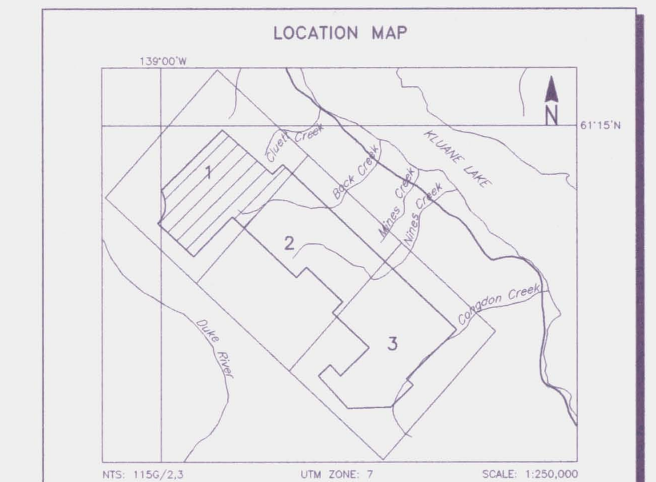


Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture,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

FLIGHT LINES WITH EM ANOMALIES



LOCATION MAP



NTS: 115G/2,3 UTM ZONE: 7 NAD83 SCALE: 1:250,000

INCO LIMITED
KLUANE AREA, YUKON

ELECTROMAGNETIC ANOMALIES

DIGHEM[V] SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 1

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

093560

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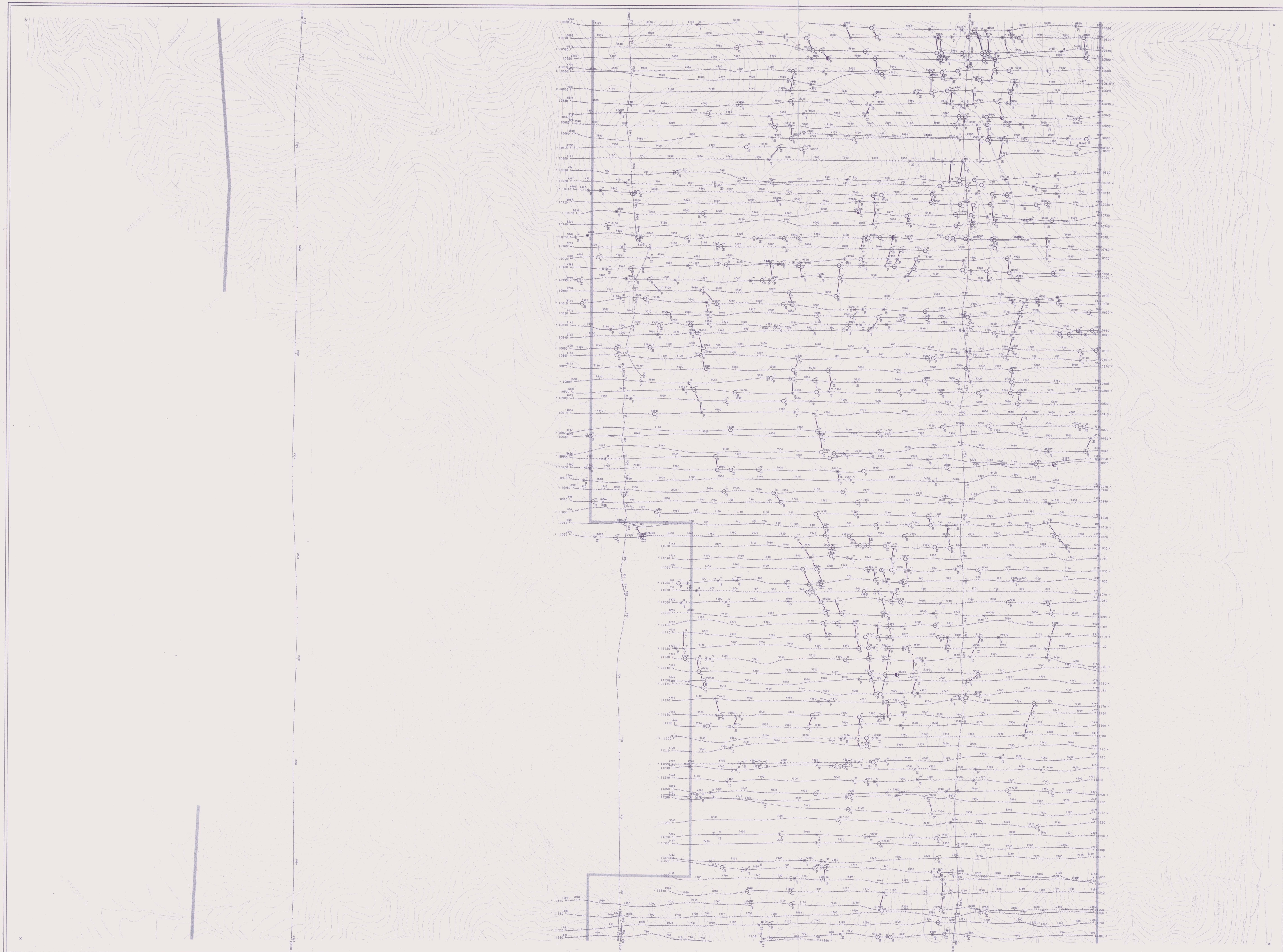
Quality and Service in Airborne Geophysics



TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM[V]

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 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

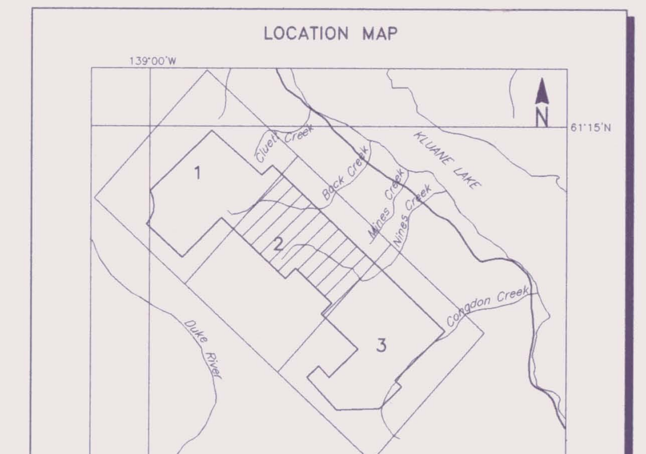
Anomaly identifier
Interpretive symbol
Depth is greater than
· 15 m
: 30 m
⋮ 45 m
⁞ 60 m
Inphase and Quadrature of coaxial coil is greater than
. 5 ppm
.. 10 ppm
... 15 ppm
.... 20 ppm

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

Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

LOCATION MAP



NTS: 115G/2,3
UTM ZONE: 7
NAD83
SCALE: 1:250,000

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KLUANE AREA, YUKON

ELECTROMAGNETIC ANOMALIES

DIGHEM[V] SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 2

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

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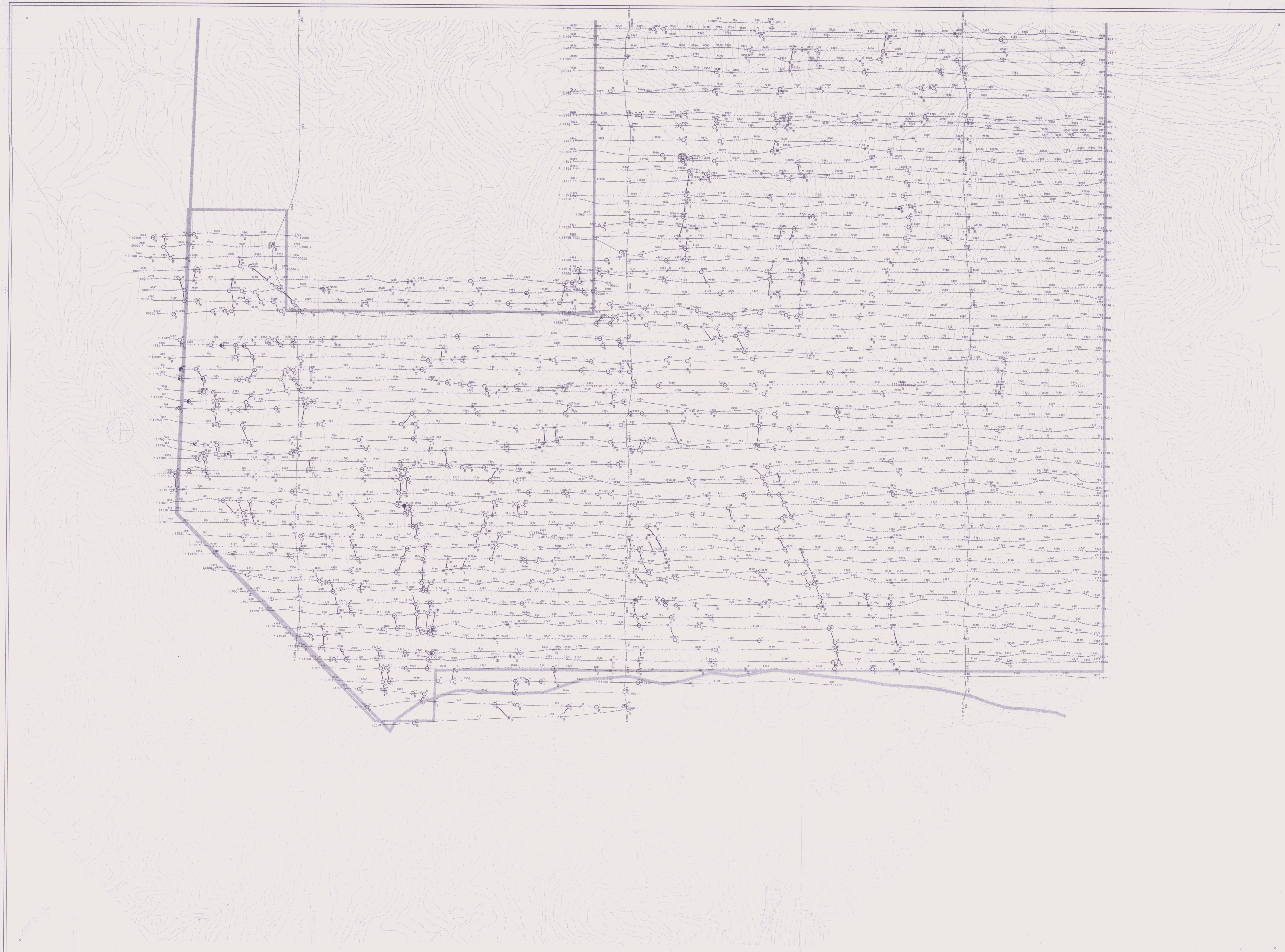


TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 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

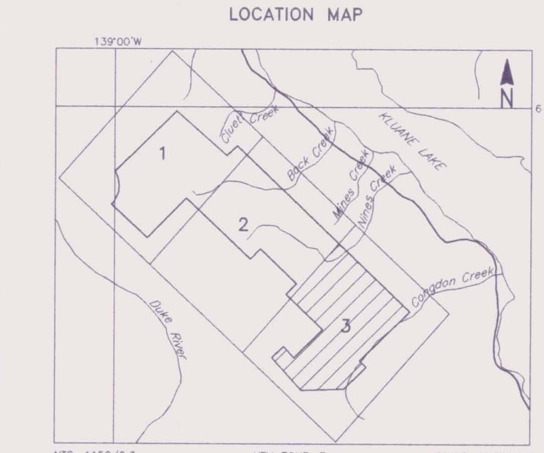
Anomaly identifier — Interpretive symbol
Depth is greater than: 15 m, 30 m, 45 m, 60 m
Inphase and Quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

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

Flight direction
Flight line number
11020 — Reflight Number, Line Number, Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

LOCATION MAP



NTS: 115G/2,3 UTM ZONE: 7 NAD83 SCALE: 1:250,000

INCO LIMITED
KLUANE AREA, YUKON

ELECTROMAGNETIC ANOMALIES

DIGHEM[V] SURVEY	NTS: 115G/2,3	GEOPHYSICIST: EP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 3

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Scale 1:10 000 (0 – 0.5 – 1.0 Km; 0 – 0.5 Mi)

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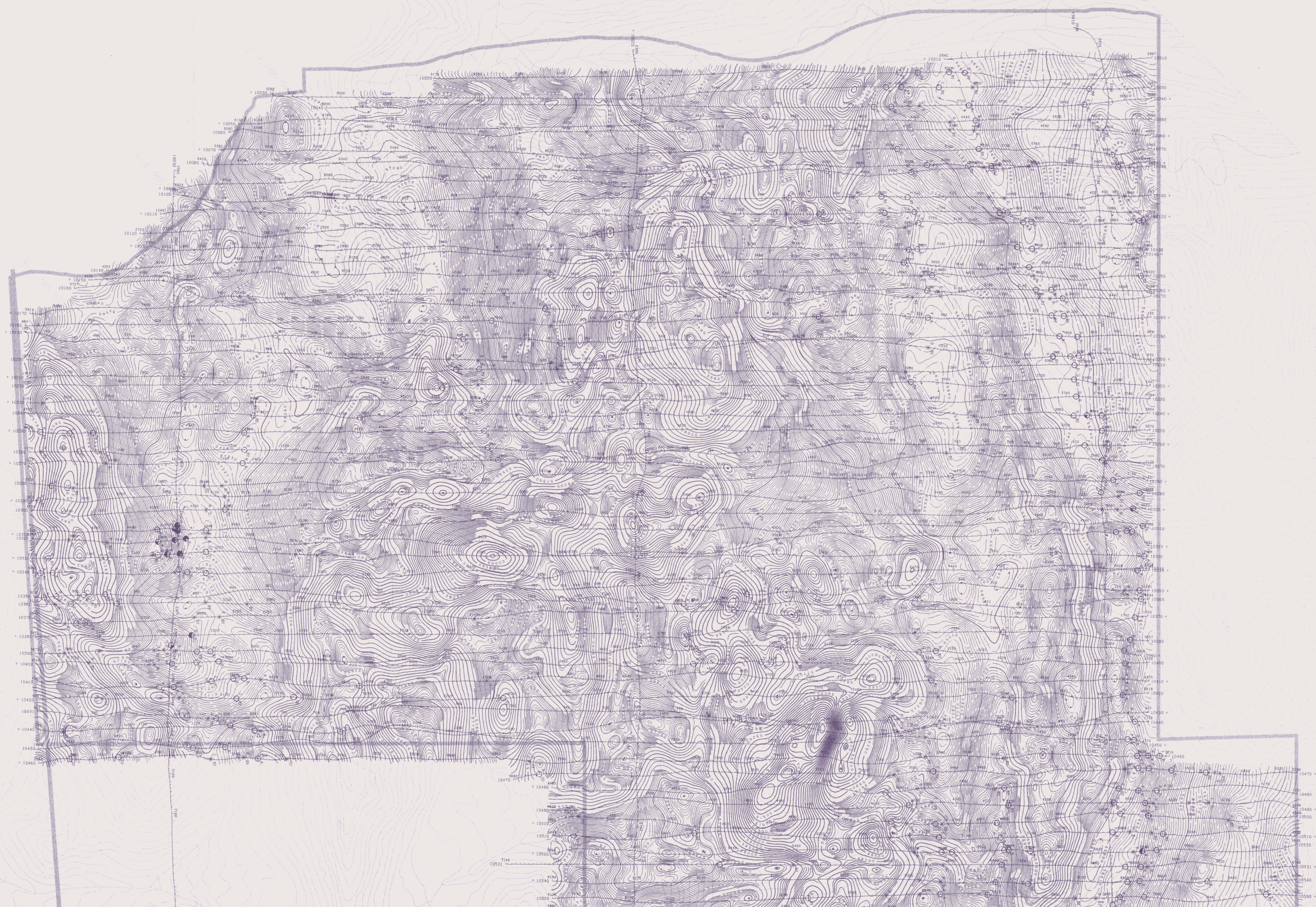
7



TECHNICAL SUMMARY

Navigation	Sercel differential GPS positioning
Data reduction grid interval	25 metres
Terrain clearance	Helicopter 60 m Electromagnetic sensor 30 m Magnetometer 40 m
Data sampling interval	0.1 second
Magnetometer / sensitivity	Scintrex cesium / 0.01 nT
Electromagnetic system	DIGHEM V

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 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
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

Interpretive symbol	Conductor ("model")
B	Bedrock conductor
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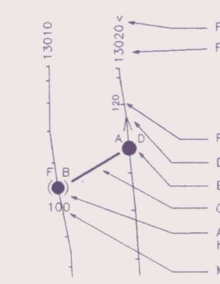
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES



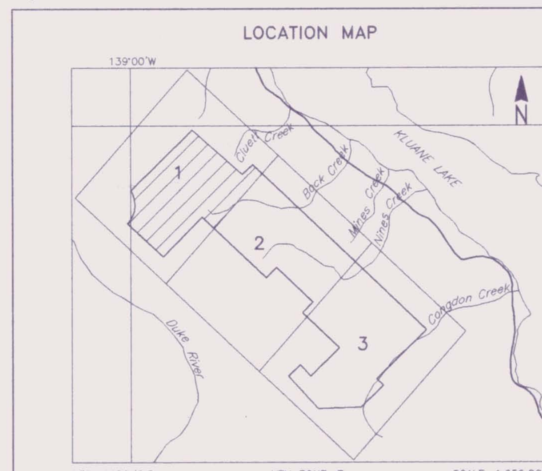
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

TOTAL FIELD MAGNETIC CONTOURS

.... 250 nT
.... 50 nT
.... 10 nT
.... 5 nT
.... magnetic low

Magnetic inclination within the survey area: 76 degrees N
Magnetic declination within the survey area: 27 degrees E

LOCATION MAP



INCO LIMITED
KLUANE AREA, YUKON

TOTAL FIELD MAGNETICS

DIGHEM V SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 1

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

093560

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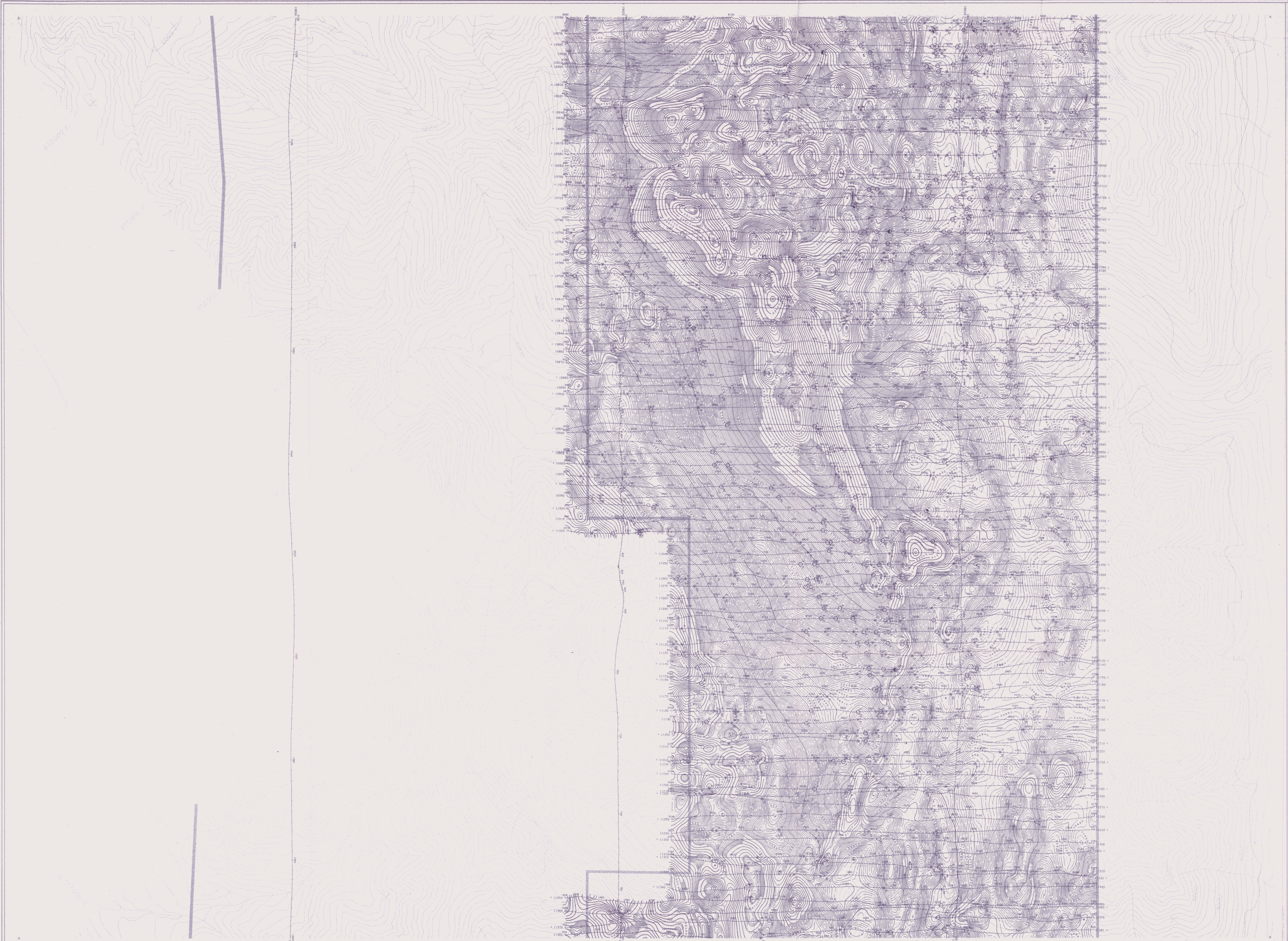

TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM V

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
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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
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· 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

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E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

FLIGHT LINES WITH EM ANOMALIES

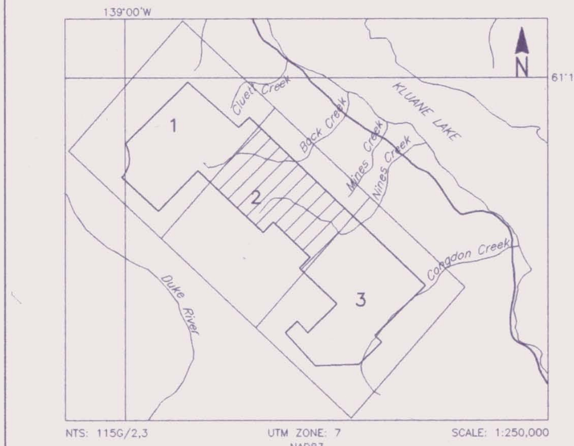
13010
13020
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

TOTAL FIELD MAGNETIC CONTOURS

. . . . 250 nT
. . . . 50 nT
. . . . 10 nT
. . . . 5 nT
. . . . magnetic low

Magnetic inclination within the survey area: 76 degrees N
Magnetic declination within the survey area: 27 degrees E

LOCATION MAP



NTS: 115G/2,3 UTM ZONE: 7 NAD83 SCALE: 1:250,000

INCO LIMITED
KLUANE AREA, YUKON

TOTAL FIELD MAGNETICS

DIGHEM V SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 2

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

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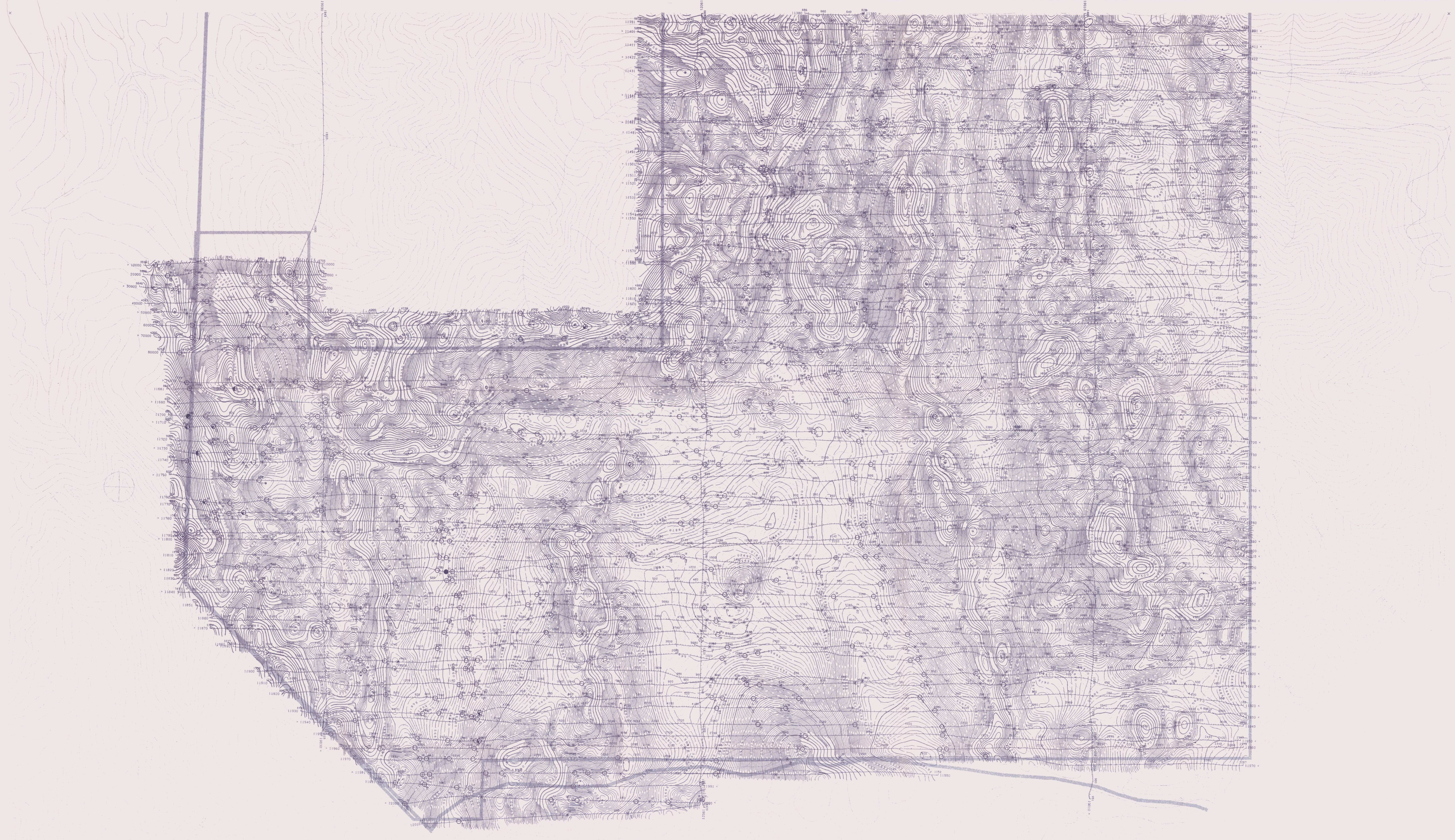
093560

5



TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM V

Frequency	Sensitivity	Coil Orientation
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ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
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6	◕	50–100 siemens
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4	⊕	10–20 siemens
3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
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· 15 m
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⋮ 45 m
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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

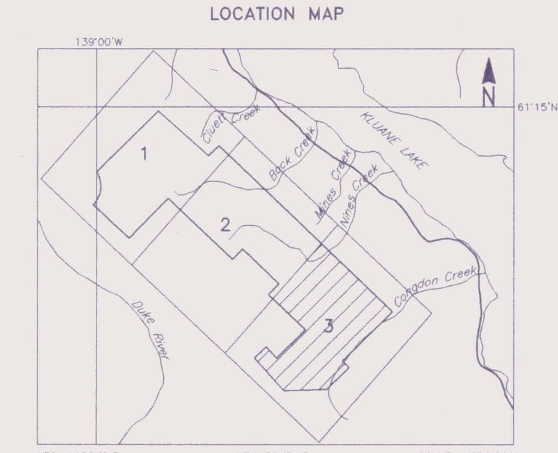
13010
13020 <
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
120
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
100
Magnetic correlation in nT (gammas)

TOTAL FIELD MAGNETIC CONTOURS

. . . . 250 nT
. . . . 50 nT
. . . . 10 nT
. . . . 5 nT
. . . . magnetic low

Magnetic inclination within the survey area: 76 degrees N
Magnetic declination within the survey area: 27 degrees E

LOCATION MAP



NTS: 115G/2,3 UTM ZONE: 7 NAD83 SCALE: 1:250,000

INCO LIMITED
KLUANE AREA, YUKON

TOTAL FIELD MAGNETICS

DIGHEM V SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 3

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

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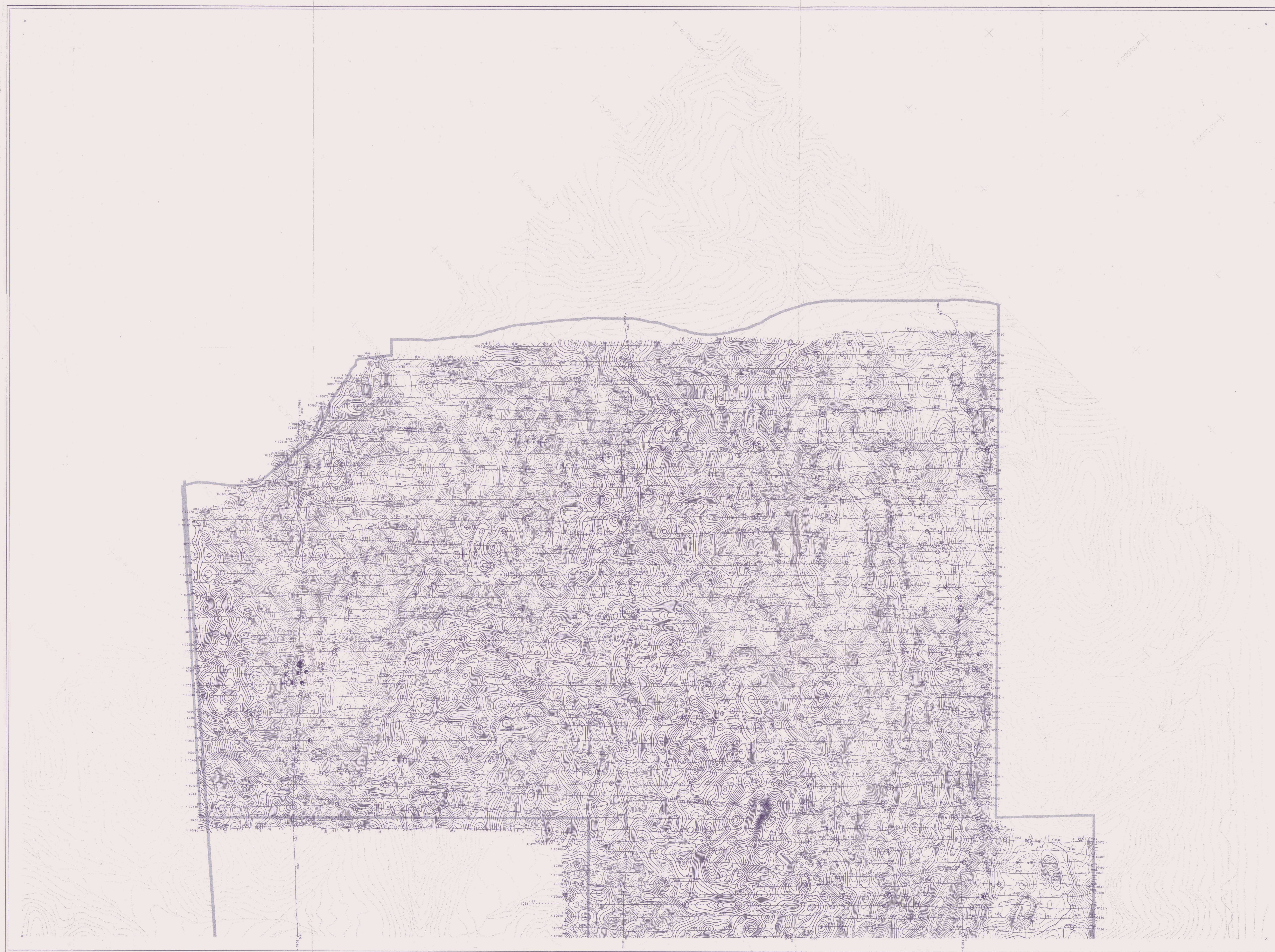
093560

4



TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
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Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 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
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

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

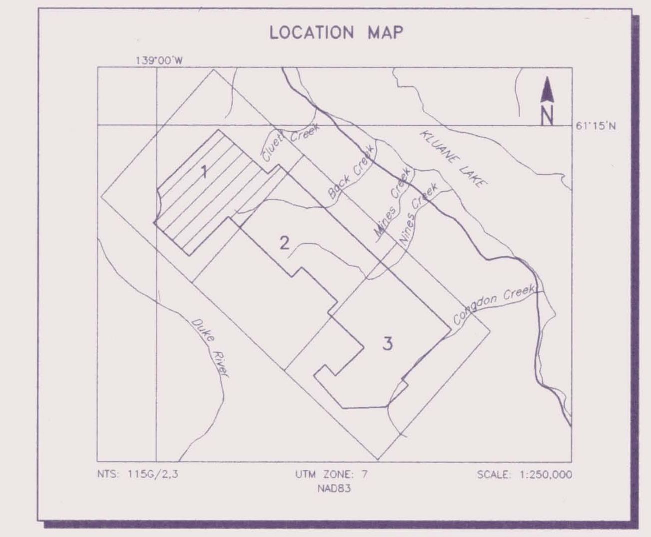
FLIGHT LINES WITH EM ANOMALIES

13010
13020
Flight direction
Flight line number
11020
Reflight Number
Line Number
Area Number
Fiducials identified on profiles
Dip direction
EM anomaly (see EM legend)
Conductor axis (on EM maps only)
Arcs indicate the conductor has a thickness > 10m
Magnetic correlation in nT (gammas)

CALCULATED VERTICAL GRADIENT CONTOURS

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

LOCATION MAP



INCO LIMITED
KLUANE AREA, YUKON

CALCULATED VERTICAL GRADIENT MAGNETICS

DIGHEM[V] SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 1

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

DIGHEM
Quality and Service in Airborne Geophysics

093560

3

TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . . . DIGHEM[V]

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
6	◕	50–100 siemens
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3	⊕	5–10 siemens
2	○	1–5 siemens
1	◌	< 1 siemens
–	✳	Questionable anomaly

Anomaly identifier
Interpretive symbol
Depth is greater than
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: 30 m
⋮ 45 m
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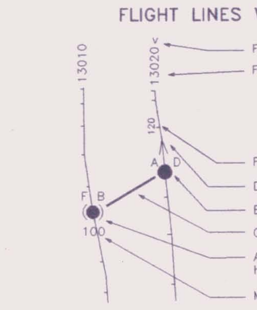
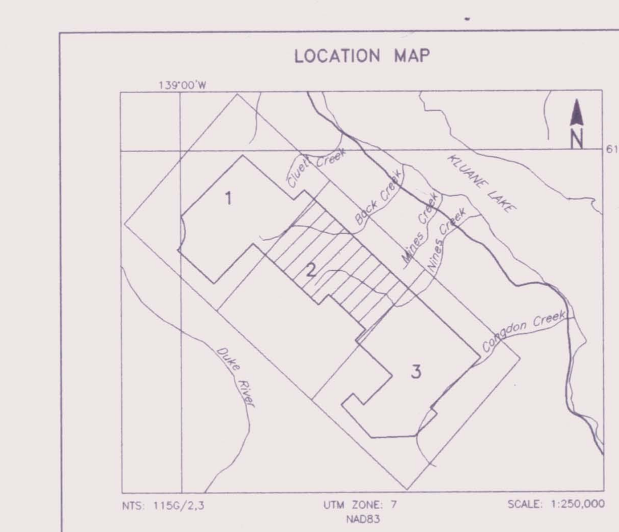
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g. power line, metal building or fence

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



INCO LIMITED
KLUANE AREA, YUKON

CALCULATED VERTICAL GRADIENT MAGNETICS

DIGHEM[V] SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 2

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

DIGHEM
Quality and Service in Airborne Geophysics

093560

2

TECHNICAL SUMMARY

Navigation . . . . Sercel differential GPS positioning
Data reduction grid interval . . . . . 25 metres
Terrain clearance . . . . Helicopter 60 m
Electromagnetic sensor 30 m
Magnetometer 40 m
Data sampling interval . . . . 0.1 second
Magnetometer / sensitivity . . . . . Scintrex cesium / 0.01 nT
Electromagnetic system . . . . DIGHEM[V]

Frequency	Sensitivity	Coil Orientation
900 Hz	0.1 ppm	Vertical coaxial
5500 Hz	0.2 ppm	Vertical coaxial
900 Hz	0.1 ppm	Horizontal coplanar
7200 Hz	0.2 ppm	Horizontal coplanar
56000 Hz	0.5 ppm	Horizontal coplanar

ELECTROMAGNETIC ANOMALIES

Grade	Anomaly	Conductance
7	●	>100 siemens
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Anomaly identifier
Interpretive symbol
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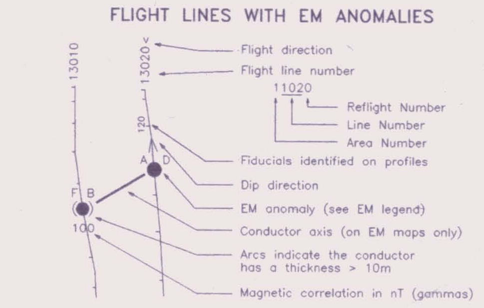
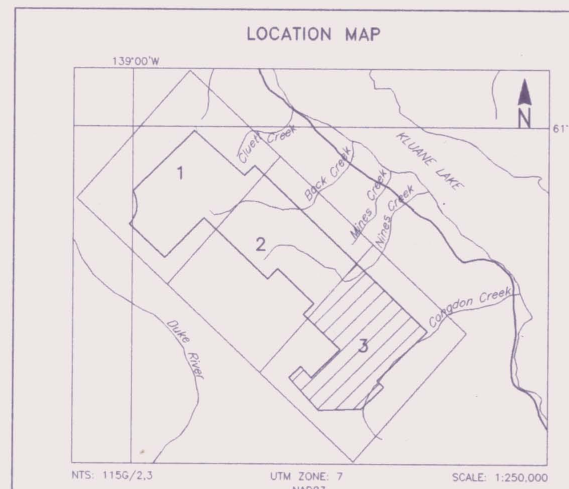
FLIGHT LINES WITH EM ANOMALIES



CALCULATED VERTICAL GRADIENT CONTOURS

. . . . 2.5 nT/metre
. . . . 0.5 nT/metre
. . . . 0.1 nT/metre
. . . . 0.05 nT/metre

LOCATION MAP



NTS: 115G/2,3
UTM ZONE: 7
NAD83
SCALE: 1:250,000

INCO LIMITED
KLUANE AREA, YUKON

CALCULATED VERTICAL GRADIENT MAGNETICS

DIGHEM[V] SURVEY	NTS: 115G/2,3	GEOPHYSICIST: RP
DATE: SEPTEMBER, 1996	JOB: 1236	SHEET: 3

DIGHEM, A division of CGG Canada Ltd.

0 0.5 1.0 Km
0 0.5 Mi
Scale 1:10 000

DIGHEM
Quality and Service in Airborne Geophysics

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