ABSTRACT

James S. Dodge (Dodge) of Whitehorse carried out solo Grassroots Prospecting in the Yukon during the 1994 field season under the terms/conditions of the contribution agreement #94-051 by the Yukon Mineral Incentives Program (YMIP).

The Agreement, as amended, approved the proposal by Dodge to conduct the search for diamonds in south-central Yukon within the mobile orogenic zones dominated by Phanerozoic sedimentary cover within the $\geq$0.706 $^{87}Sr/^{86}Sr$ initial ratio contour indicative of the presence of underlying Precambrian crust. This geologic setting was chosen because it resembled a close paradigm to the mobile zones bordering the Kimberley craton of Western Australia where economic diamond deposits are hosted by lamproites, as contrasted with on-craton diamondiferous kimperlites in the same district.

Results revealed that (1) in-situ eclogitic rocks from a high pressure environment (upper mantle ?) were non-diatremetic, conformable units in the ophiolite terrane of the Anvil allochthon; (2) ubiquitous orange-brown garnets and light green diopside components of stream and soil samples throughout the target areas were most likely 'regional or natural' being derived from garnitiferous amphibolite or skarn, rather than being representative diamond-host indicator minerals; (3) mafic to ultramafic bodies identified from the Quiet Lake map sheet are confirmed to represent structurally displaced elements within the St. Cyr klippe and, so far as examined by several traverses, do not display any evidence of diatremes; and surprisingly (4) numerous boulders along the Hoole River, approximately 8 kilometers up-stream from its confluence with the Pelly River, were found to carry anomalously high values in gold, copper, and zinc whereupon, claims were staked at the end of the field season covering the adjacent, largely till covered, potential bedrock source area.

James A. Dodge

James S. Dodge, P.Eng.
14 MacDonald Road
Whitehorse, Yukon Y1A 4L2
c/o 403-633-3677

INTRODUCTION

The 1994 YMIP Grassroots Prospecting proposal by Dodge was entirely focused on the search for diamonds in south-central Yukon within the mobile orogenic zones underlaim by the Precambrian crust. The maps by R.L. Armstrong of the Canadian Cordillera showing the Mesozoic and Cenozoic $^{87}Sr/^{86}Sr$ initial ratios were used to indicate the geographical areas in the Yukon with ratios greater than 0.706, as these suggest the presence of underlying Precambrian crust. However, because of active telescoping of the North American plate margin, the position of the leading edge of continental basement can be expected to be somewhat migratory (Ross, 1991).

The Yukon mobile orogenic belt resembles,in several important aspects, those Phanerozoic zones adjacent to the kimberley craton of northern Western Australia where economic diamond deposits occur in lamproite tuffs surrounding diatremes. Nearby, on the exposed craton itself, diamondiferous kimberlites occur. Nevertheless, as essential as structural settings appear to be, the enigma of how and where do diamonds concentrate in (apparently ?) discrete geographical areas of the mantle remains the explorationist's greatest challenge in proposing specific prospecting programs.

The criteria used by Dodge in the 1994 program came from an evaluation of several geologic settings, namely: (1) occurrences of diamonds in placers of Crooked Creek, Alaska near the Tintina trench; (2) cluster of small minette diatremes near Dawson City; (3) numberous occurrences of high pressure rocks (eclogite, glaucophane schist) along the Tintina trench; (4) several exposures of eclogitic rocks in the Anvil allochthon; (5) an area north of Quiet Lake where numerous outcrops of ultramafic rocks occur in ophiolite packages - but with eclogitic evidence of its basaltic precursor possibly having been subducted into the

upper-mantle pressure environment; (6) several aeromagnetic anomalies with diatreme-suspect configurations; (7) the possibility of discovering diamonds in gold-poor placer deposits which had not been detected during the wave of early prospectors, and (8) the possibility that a non-traditional source of diamonds might be indicated in alkaline ultrabasic complexes (Mongolia, Russia, Kamchatka), in lamprophyre/diabase dikes (New South Wales, Western Australia), in ophiolite complexes (Morocco, Kalimantan ?) - all of which are present in the central Yukon.

Although no commercial production of diamonds has been reported from such non-traditional source rocks, the presence of even a few diamonds in them may be evidence that earlier-emplaced diamond source rocks at relatively high lithospheric levels had been intersected. In other words, some basis for postulating that the underlying mantle, or its plume, is diamondiferous, as would be the gas-driven diatremes from a mantle source carrying diamond xenocrysts to the surface. Not to be overlooked were the possibilities of sedimentary 'fossil' placer deposits hosting diamonds derived by erosion of now-concealed lamproites (Bergman re Kalimantan placers).

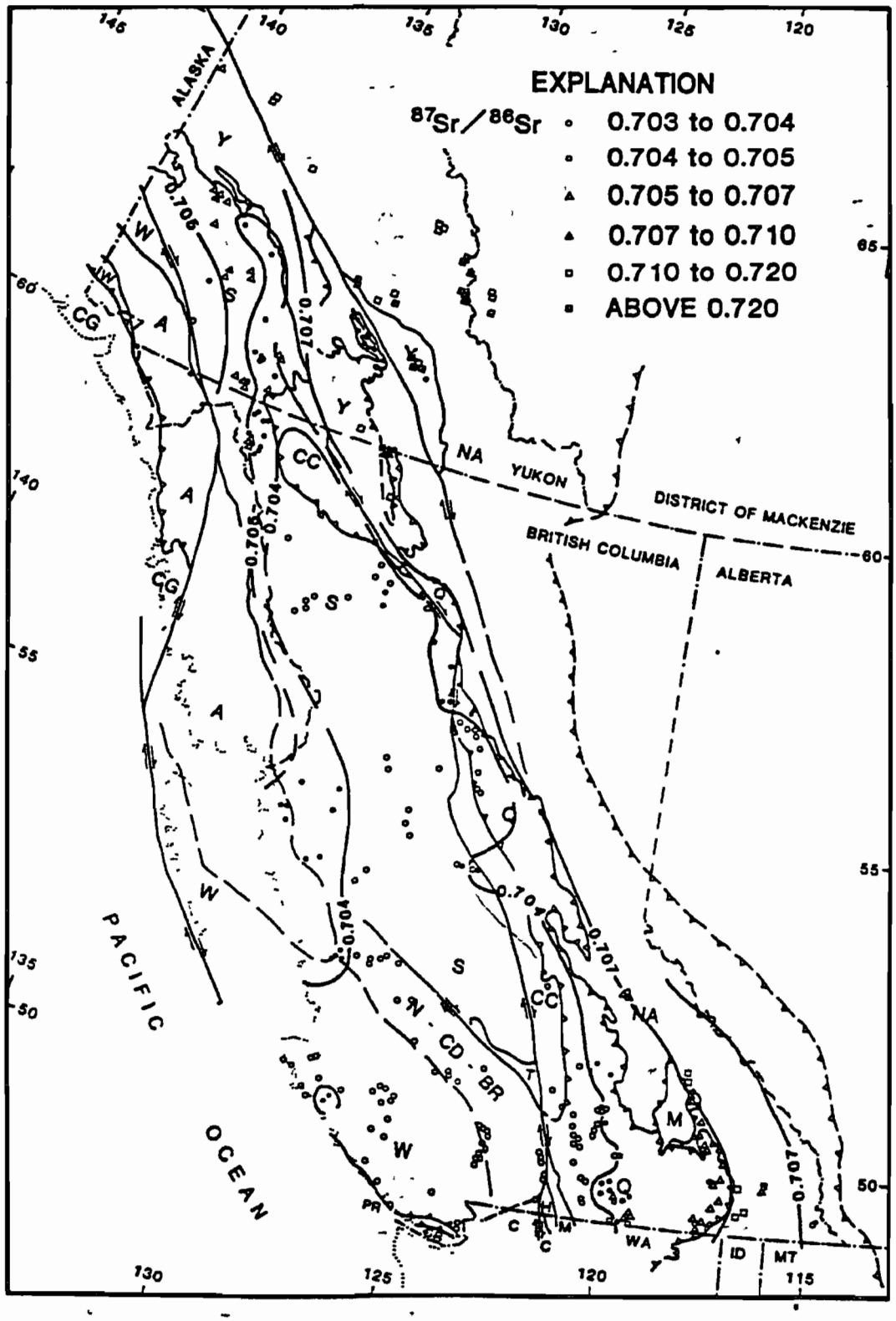


Figure 18. Map of the Canadian Cordillera showing Mesozoic $^{87}Sr/^{86}Sr$ initial ratios. Large area with ratios at or below 0.704 is underlain by ensimatic Phanerozoic crust. Areas with ratios greater than 0.707 are underlain by Precambrian crust that has been incorporated into younger magmas. Transitional areas contain scattered evidence of tectonically reworked Precambrian basement (southern Omineca Belt) or Proterozoic-age, continent-derived clastic sedimentary rocks (Yukon, northern Coast Plutonic Belt, and Omineca Belt).

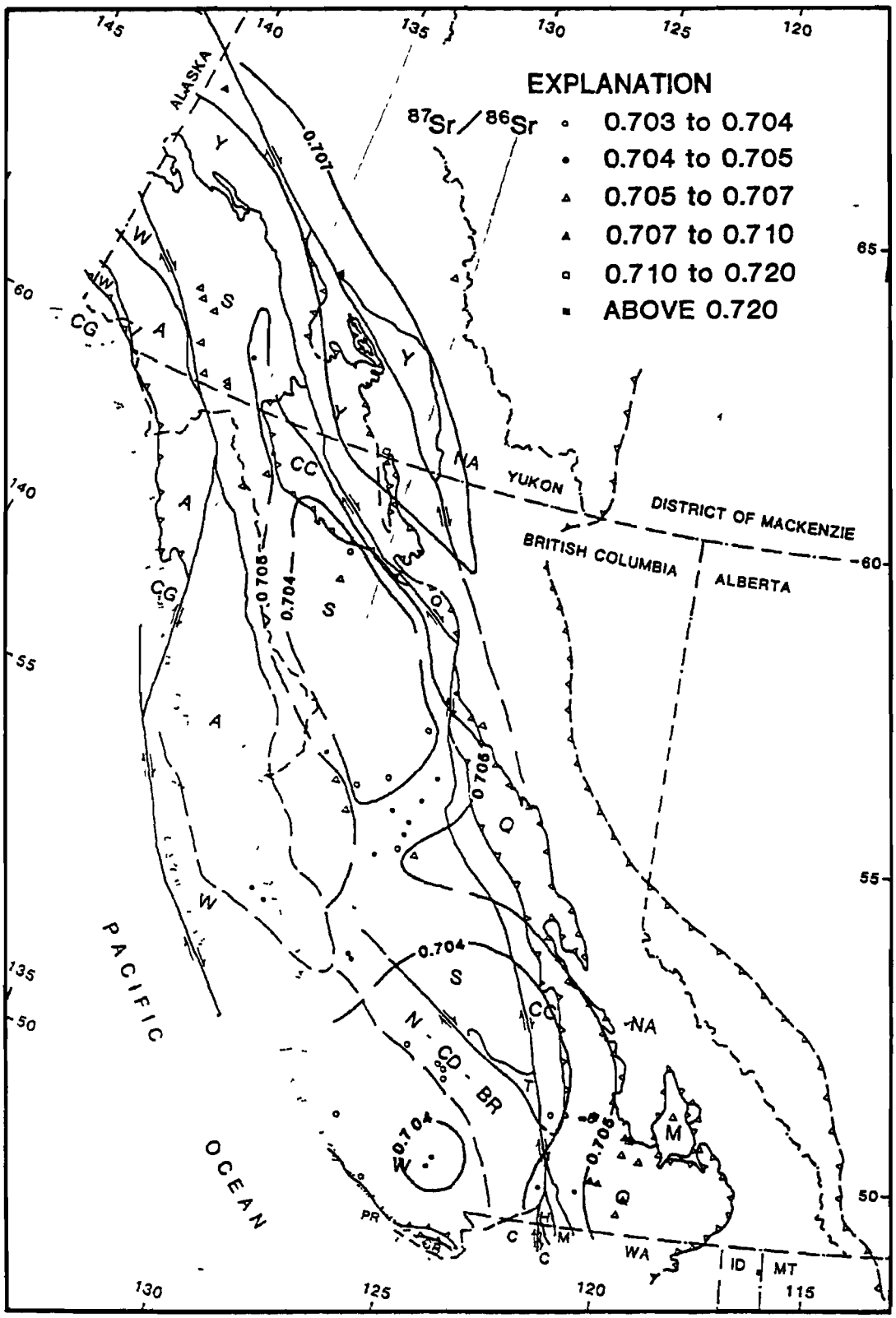


Figure 19. Map of the Canadian Cordillera showing early Cenozoic $^{87}Sr/^{86}Sr$ initial ratios. Pattern is a subdued version of the Mesozoic map (Fig. 18). Where Mesozoic ratios are low, the early Cenozoic ratios are slightly higher because the underlying crust has become more evolved. However, the area of very high ratios in Mesozoic rocks shows only transitional ratios (0.705 to 0.707) in early Cenozoic time, because continental crust is no longer making as large a contribution to the magmas.

FIELD PROCEDURES

Three areas were chosen for prospecting:

(1)	Starr Creek - Hoole River	105G-12
(2)	St. Cyr klippe off South Canol Road	105F-3/6/7
(3)	Big Timber Creek, tributary to Ross River	105J-4

The modus operandi was similar in each area, i.e., stream sediment and, where applicable, soil sampling in the search for diamond indicator minerals. Sieve sets were used both in coarse screening (-2.00mm) of the average 10 kilogram bulk samples in the field, as well as for separating finer fractions for examination under a binocular microscope at base camps. Clay fractions were washed out and magnetic minerals removed by a hand-held magnet. Final air-dried sample fraction sieved sizes were: -2.00 +850 μm; -850 μm +600 m; and -600 μm. Tweezers were used under the microscope to hand pick grains that appeared to be garnets and diopside, irrespective of shades of color, and to drop them into small plastic vials and bags for possible laboratory microprobe analysis if warranted.

RESULTS

Starr Creek - Hoole River

Two features signalled this area for prospecting: the aeromagnetic anomalous pattern, and the proximity of mafic rocks mapped on the Finlayson sheet 105G. Prospecting of the entire target area was precluded by a large Native land claims withdrawal selection.

Initial investigation of the area began with the gravel bar along the west side of the Hoole River at its confluence with the Pelly River. As at the end of the 1993 field program, several small cobbles of eclogite were found, but megascopically it was impossible to determine if the source was a xenolith from a pipe. or was an unbrecciated unit in a conformable ophiolite package. A cursory inspection of several horizons of basalt flows exposed in the canyon walls failed to present any evidence indicating that eclogitic material had been enveloped during extrusion of the olivine-basalt flows. Consequently, attention was directed to stream sediment sampling up-stream along the west shore of the Hoole River in the search for diamond indicator minerals.

Several samples were taken beginning up-stream from the inaccessible basalt-lined canyon and then up to the mouth of the first northeast-flowing tributary creek which previously had been set as the approximate southern boundary of the Starr-Hoole prospect area. Of continuing interest was the discovery of one small cobble of eclogite along the Hoole River bed-load approximately one kilometer downstream from the tributary creek.

Sediment stream sampling was carried out on this creek at approximately 500 meter intervals until reaching the topographic divide with the north-flowing Starr Creek.

Along Starr Creek a cliff forming intrusive basalt lies wholly within the prominent aeromagnetic high/low linear patterns. As at the outset of the program, one of the principal goals was to determine if mafic/ultramafic terrane as mapped displayed any indications of hosting diatreme structures; no such evidence was seen in float or in the cliff outcrops.

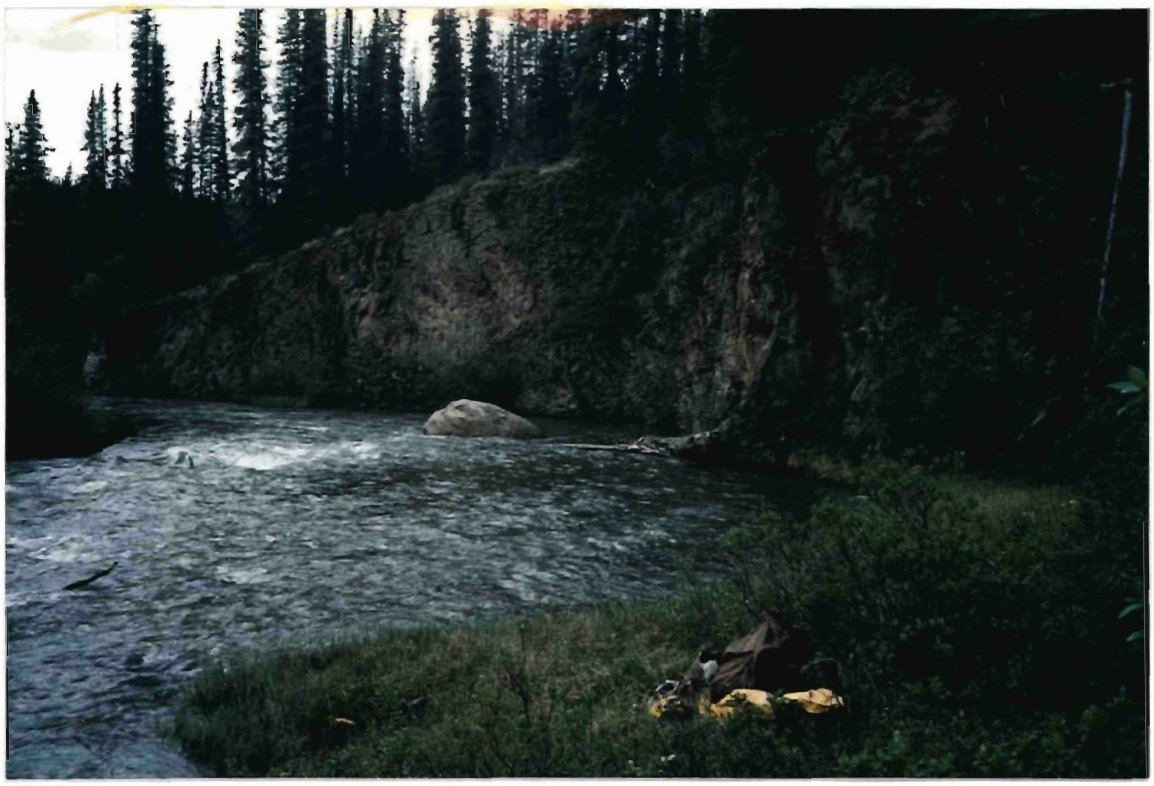
Prospecting northeast of Starr Creek was unsuccessful in locating bedrock, but several soil samples were taken near the western boundary of the abandoned LUG claim block.

Microscopic examination of Hoole River samples revealed numerous brown to brownish-orange garnets and fewer green diopside. No garnets or diopside were evident in stream sediment or soil samples taken on the tributary creek or on the till-covered terrain to the north.

Except for the unknown up-stream bedrock source of eclogite, the originally selected prospecting area is judged to have little potential for diamonds.

Sediment Sampling on NE-flowing Tributary of Hoole River

Soil Sampling on Divide East of Starr Creek



Basalt Cliffs on Starr Creek in Area of High Aeromagnetic Anomalies

St. Cyr Klippe Ultramafics

The St. Cyr klippe comprises a broad area of dominantly ophiolitic terrane of the Anvil allochthon and hosts six discrete ultramafic bodies along with their associated serpentinized and rodingized alteration products which are commonly recognized as talc horizons and ankeritic nephrite lenses. Until Dodge discovered eclogitic rocks in Canol Creek and Fish Creek drainages in 1992, the klippe was assumed to be the obducted split of a MORB subduction event during the collision with the westward drifting and overriding North American plate. However, the presence of eclogite, even though it had for the most part undergone retrograde amphibolite metamorphism, implied that it likely formed from deeply subducted MORB under upper-mantle pressures. The process of exhumation of these eclogites from their evident high pressure regime is unclear. Or so Dodge was inclined to interpret the St. Cyr eclogites before the 1994 program.

At the outset it became apparent that sediment samples from creeks in the St. Cyr klippe contained readily recognized grains of orange-brown garnets and sea green diopside, together with magnetite and haornblende as the principal heavy minerals. In most samples, at least 50% of the grains were quartz and feldspar derived from nearby batholiths.

Although predicted as a problem, only when sample sites were followed up with outcrop provenance checks did its full dimension become apparent. The sampling of Canol Creek, for instance, confirmed the anticipated concentration of garnets, owing to the eclogite exposed in the canyon zone. The situation was similar on adjacent Deer creek in which several boulders of eclogite were found. This led to a presumption that the source there could be an extension of the Canol creek eclogite outcrops.

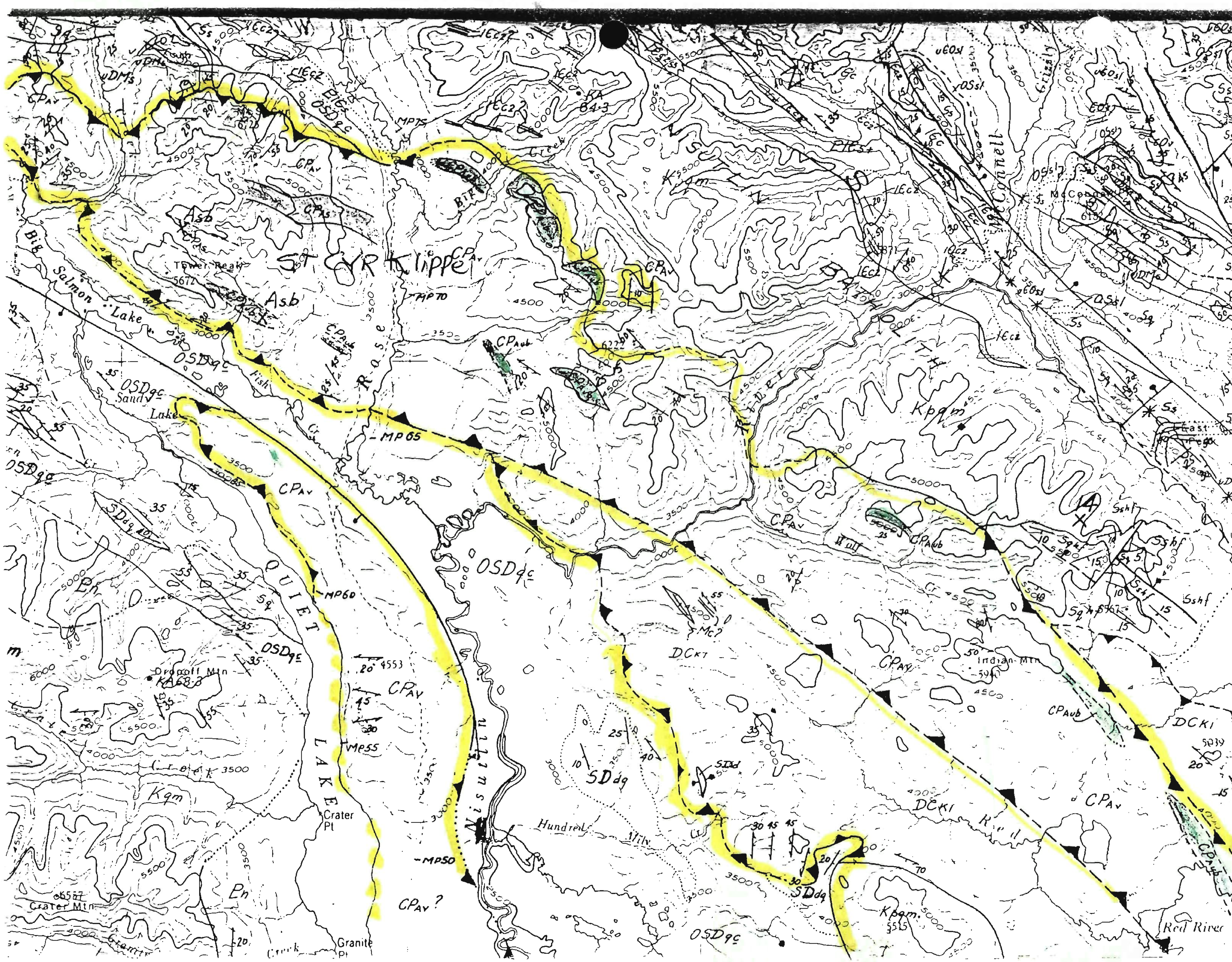
Yet, the train of garnet/diopside-bearing sediment in both Canol and Deer creeks persisted, albeit in lesser concentrations, up-stream from the known eclogite occurrences. Prospecting 8-10 kilometers to the east into the creek divides confirmed the presence of a wide skarn halo in the ophiolitic package especially where underlain and penetrated by the Nisutlin batholith. Evaluation of the diamond potential was redirected then to a close scrutiny of cobbles/boulders in the lithological search for evidence of breccias, lamproite, or even minette in the drainage areas. Even so, the presence of glacial till continually cast in doubt the in-situ source of any of the above ultramafics, if they were encountered as float. However, some confidence was established by the many eclogite cobbles exposed in the outwash of Canol creek where bulldozing had occurred during installation of the large culvert under the South Canol road.

I conclude that stream sediment sampling gives unacceptable mixed signals because of the pervasive shedding of garnet/diopside minerals from bedrocks. Detailed prospecting of stream bedload gravels-to-boulders with megascopic lithologic identification in the field is the best method in the search for diamondiferous host rocks. Regretably, during rock prospecting, no evidence was seen of diatreme pipe style of brecciation. One exposure of autobrecciated, fine-grained, amphibolite was noted in the lower canyon of Canol creek.

The time spent and the area covered in evaluating the St. Cyr klippe eclogites led Dodge to reflect on the Franciscan metamorphic terrane of northern California where eclogites occur as conformable units among amphibolites and high pressure glaucophane assemblages. Field evidence

at the Canol creek outcrops favors the development of eclogite as conformable layers within a metamorphosed ophiolite package - specifically from a basalt flow of MORB provenance. This is reinforced by the dominant "C" type eclogite (Coleman, 1965) described by Erdmer from Canol creek. Thus, the St. Cyr klippe after all may very well be the obducted segment of a subducting oceanic plate being overridden by the North American plate. Metamorphosing pressures of the event may have been sufficient to convert basalt into "C" type eclogite which then experienced retrograde metamorphism during intrusion of the Nisutlin batholith.

As Coleman stressed, there are 'eclogites and eclogites'! I now believe that those of the St. Cyr klippe were not products of upper mantle subducted MORB. Thus, they did not offer, even briefly, a diamond stability field. Any diamonds present in the St. Cyr eclogite terrane most likely would have been zenoliths in the MORB - a most unlikely host for a commercial diamond concentration.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Tower Peak
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Rose
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MP75
MP70
MP65
MP60
MP55
MP50
Dropoff Mtn
Crater Pt
Crater Mtn
Granite Pt
Kqm
Kpqm
Hundred Mile
DCK1
Indian Mtn
Wolf
River
McConnell
Grizzly
East Peak
Red River
Sshf
CPAv?

Fish Creek Sample Examination of Sieved -2.00mm+850 μm Fraction

Canol Creek Sample Site at Head of Eclogite Canyon 2½ Km from Rose River

Sample Site on Canol Creek 1 Km Above Rose River

Sample Site on Fish Creek 10 Km West of South Canol Road

Big Timber Creek Aeromagnetic Anomalies

The 1994 prospecting proposal by Dodge was amended to include the investigation of a string of five circular, aeromagnetically high, anomalies in the Big Timber creek drainage 30-40 kilometers northeast of the settlement of Ross River. The isolated anomalies resembled those of a series of volcanic necks both in shape and size, while their linear, equidistant, spacing suggested a prominent structural control of their emplacement, perhaps related to a warp in a prominent NNE trending suture mapped in the district.

A comparison of the aeromagnetic anomalies and the GSC Map 19-1987 by Gordy of the area showed no correlation with the caldera fill or with perimeter faults of the South Fork bolcanic terrane to the west. However, though not indicated on Gordy's map, his subsequent 1988 report described South Fork volcanics as occurring in the Big Timber creek drainage. Thus, Dodge believed that rocks considerabley more mafic than the South Fork volcanics were responsible for the string of circular aeromagnetic anomalies.

A stream sediment and soil sampling program was undertaken from a helicopter set-in base camp between anomalies designated arbitrarily as #3 and #4 in order to determine if surface sampling could be used to identify the lithology of rocks responsible for the unique string of anomalies.

Samples of coarse sediment from the sluggish streams in the low, boggy terrain were obtained with a long-handled shovel at over one-meter depths below the top of the muskeg banks. Each sample totalled over 10 kilograms in weight and was screened wet through a 2.00mm sieve; the -2.00mm fraction of approximately 5 kilograms each were packed to base camp for drying and further sieving and microscopic examination.

Several low, glacial-till, moraine ridges were sampled from handdug pits on the average 0.5 meters deep. The initial 10 kilogram samples were packed down to the nearest muskeg water source and screen-washed through the 2.00 mm sieve to remove gravel and silt prior to final base camp drying, sieving, and microscopic examination.

Traverses between small creeks 2-3 kilometers to the south led to hilltop oucrops of South Fork welded crystal tuffs with low dips to the north (Photo). This ridge of outcrops lies approximately one kilometer north of the perimeter of the #4 aeromagnetic 'bullseye' anomaly. No outcrops were seen along the till-covered, west-facing, slopes on a hill centered on the aeromagnetic anomaly.

It was concluded that the ubiquitous brownish-orange garnets and dull green diopside handpicked from all stream and silt samples most likely were shed from the skarn rocks hosting base metal occurrences on the former AM claims up-ice approximately 4 kilometers to the north-east on a high ridge. Thus, the souce rock for the targeted aeromagnetic anomalies remains unknown. Then again, after studying flight lines for the aeromagnetic mapping, there was the unanswered and nagging question as to whether the unique string of circular anomalies were 'real', or a mere most-likely configuration based on the string of multiple anomalies on only one north-south flight line. No recommendations can be made for further surface sampling as a tool in identifying the source rock for the Big Timber aeromagnetic anomalies.

Base Camp in Big Timber Creek Area

Examination of Sieved Fractions of Semples at Base Camp

Test Pit for Sampling of Moraine Till

Bog Sampling Near
Big Timber Tributary

South Fork Crystal Tuff Between Anomalies #3/#4
Dip is 10° Right to Left(North)

Washing Silt from
Sample taken in Limonite
Flooded Brook Tributary
to Big Timber Creek

Hoole River Eclogite Revisited
(and an unexpected find)

On 19 August, upon premature suspension of prospecting in the Starr, St Cyr klippe, and Big Timber creek areas, the decision was made to follow-up the eclogite float first seen at the mouth of the Hoole River late in the 1993 YMIP field season A brief re-examination of the bedload at very low August water level revealed two more cobble-sized pieces of eclogite with characteristic brown-orange garnets ranging 1 to 3 mm in diameter Groundmass was dark green, fine grained and may be partially amphibolitized retrograded omphacite Is the eclogite a conformable unit in ophiolite, or is it a xenolith from a diatreme?

Inasmuch as one cobble of similar eclogite was found along the Hoole River 500 meters down-stream from the northeast flowing tributary creek, prospecting was resumed at the first bar up-stream from the mouth of the tributary At approximately 800 meters south of the tributary, a malachite-stained boulder, 30cm in diameter, was noted at the Hoole's low water level and which upon breaking revealed milky white quartz streaked with veinlets and splotches of chalcopyrite and, on one side, a dense mass of grey pyrite This boulder closely resembled those of a series of copper-bearing quartz boulders that Dodge had noted below the tributary creek on the Eldorado claims, and which Al Carlos had said carried up to 1-2 grams/t gold

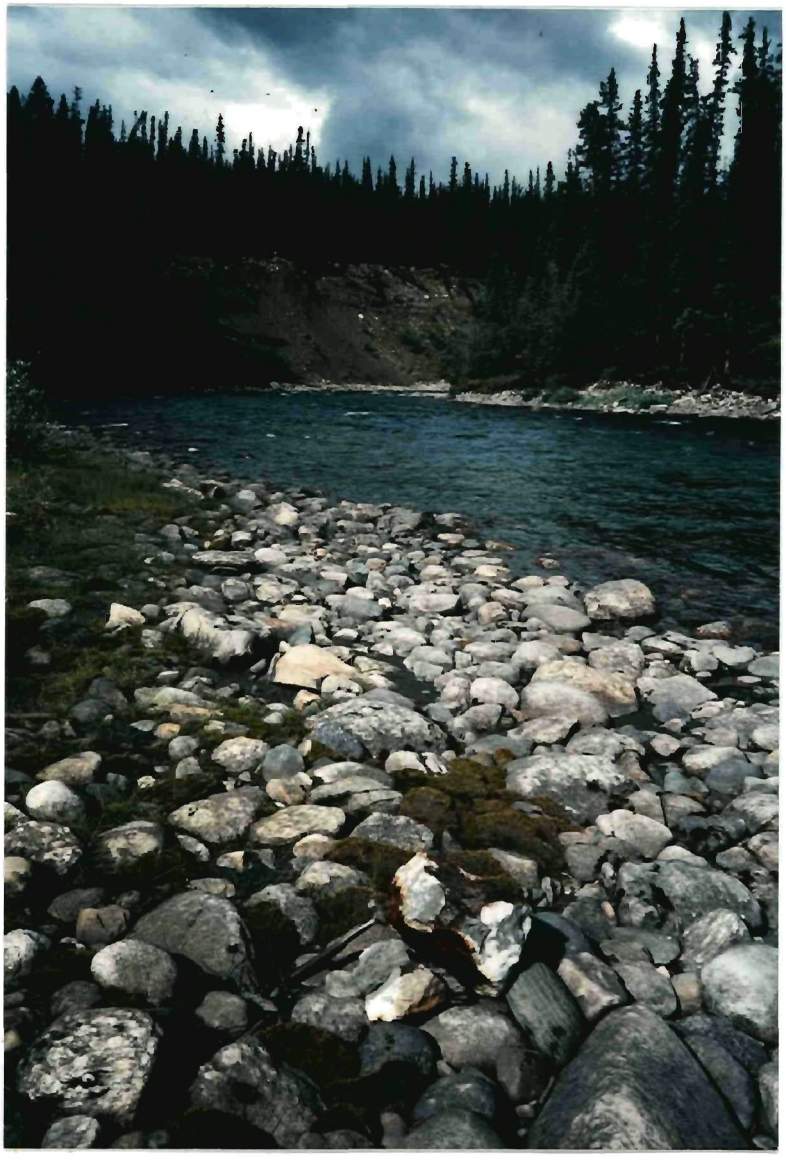
Consequently, following this unexpected finding, prospecting attention was broadened from a purely eclogite eye-focus to include scanning for limonite-stained boulders Subsequently, over a 200 meter distance along the shore farther up-stream, two more, somewhat smaller, quartz-chalcopyrite-pyrite boulders were found One, with a particularly rusty quartz matrix, later was assayed and yielded values 6667 ppb Au and 1 68% Cu In addition, a medium-

sized boulder coated with dark limonite was found to be skarn with bands (layers 1-2cm thick) of fine grained, light brown mineral which, from later assays, was to be identified as sphalerite from its 3- Zn, 4 4 ppm Ag, and 2- 227 ppb Au One cobble sized rock contained coarsely crystalline dark brown sphalerite and galena in a white calcite matrix which upon analysis reported out to contain 14- Zn, 1 15- Pb, and 16 ppm Ag' One dark grey colored cobble displayed a concentration of compact, weakly lustrous minerals that upon assaying was found to contain 0 19% Cu, 2842 ppm As, 300 ppm Bi, and 15% Fe - thus, concievably tennantite and bismuthinite

After 8 days of very detailed prospecting up-stream for about 4 kilometers above the tributary creek, a decision was made to return to Whitehorse for submission of two sets of samples for analysis

Results of all analyses were finally in hand by 03 October The anomalously high values of Au, Cu, and Zn in float confirmed the need to stake claims along the west side of the Hoole River covering much of the area formerly staked as the LUG claims During 07-10 October and 21-26 Octôber the MIDAS 1-29 claims were staked along two parallel lines extending SSE from the flagged northern boundary of the former LUG claims An EM survey now appears to be the preferred approach to locating any sub-till conductors which might localize the exploration for bedrock source of the sulfide-bearing float found along the banks of the Hoole River

Hoole River Boulder w. Chalcopyrite-Pyrite in Quartz



Hoole River Looking Downstream from First Boulder above Tributary Creek

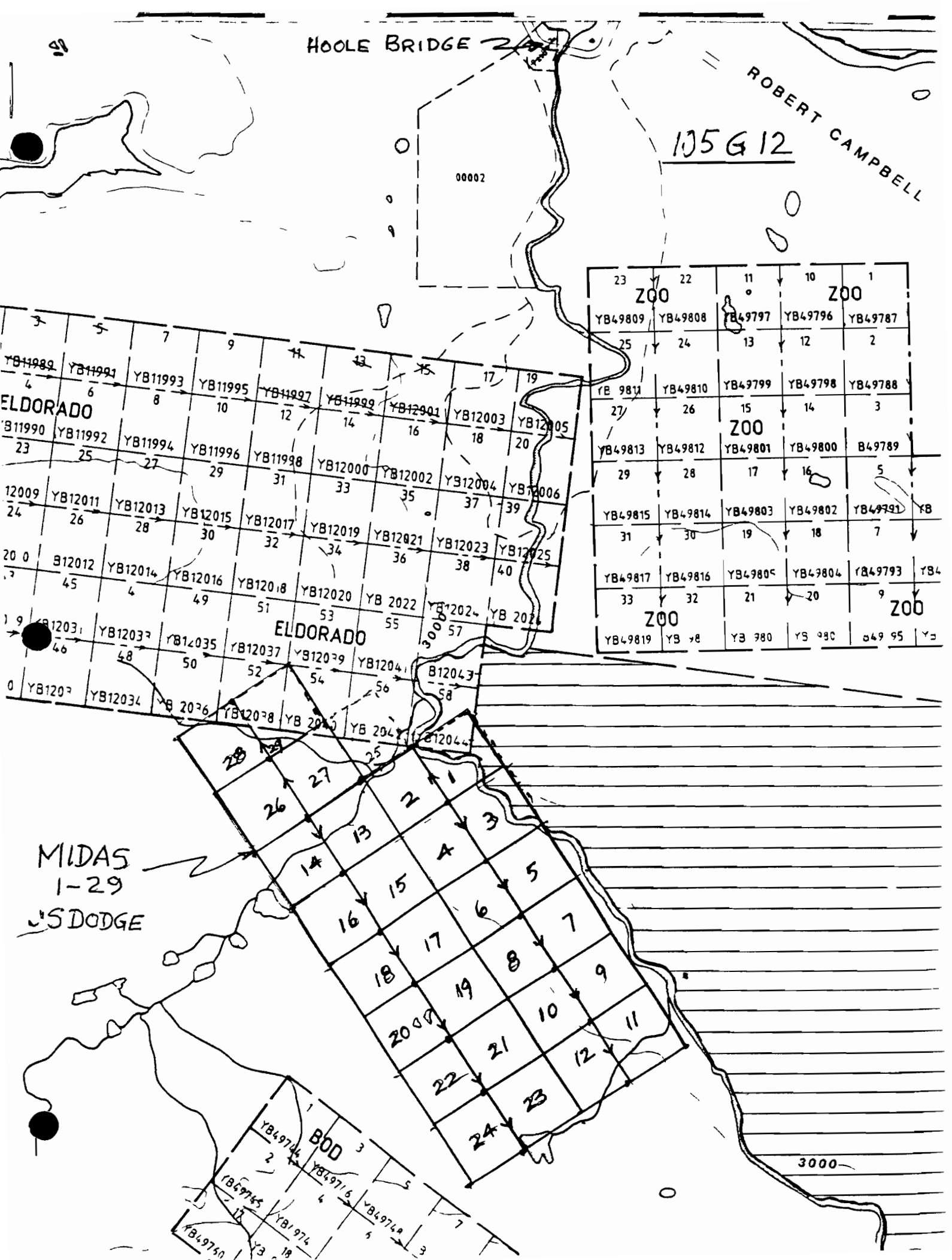
Base Camp Laboratory with Sieved Sample Fractions in Bags

Base Camp Examination of Samples of Hoole River Boulders

Staking Campsite Above Hoole River - 08 October, 1994

Posts No. 2
MIDAS 11/12
West of Hoole River
08 October, 1994

No. 2 Post for MIDAS 23/24 10 October, 1994
Southernmost Claims on Line II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Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

Northern Affairs Program | Programme des affaires du Nord

Mineral Rights | Droits miniers

Canada

WATSON LAKE 24 JUNE 86

83 DEC 93
03 AUGUST 93
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21 OCT 92
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25 AUG 88
24 JUNE 88
20 MAY 88
4 MAR 88
26 JAN. 88
18 DEC. 87
17 SEPT. 87
6 JULY 87
16 FEB 94

105G-12

QUARTZ & PLACER

LATITUDE 61° 30' TO 61° 45'
LONGITUDE 131° 30' TO 132° 00'

ISSUED UNDER THE AUTHORITY OF THE MINISTER OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

SCALE 1:50,000

METRES 1000 0 1000 3000 METRES
FEET 1500 0 1500 3000 4500 6000 7500 9000 10500 FEET

MAGNETIC NORTH 25° 56' E

NOTE:

THIS MAP IS ISSUED AS A PRELIMINARY GUIDE FOR WHICH THE DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT WILL ACCEPT NO RESPONSIBILITY FOR ANY ERRORS, INACCURACIES OR OMISSIONS WHATSOEVER.

TOPOGRAPHY COMPILED FROM 1:50,000 NATIONAL TOPOGRAPHIC SERIES.
CONTOUR INTERVAL 500 FEET.
SURVEY INFORMATION COMPILED FROM LEGAL SURVEYS, BY DRAFTING SERVICES.

Note: Entry on certain lands is withdrawn from staking in cross-hatched areas to facilitate the settlement of Native Land Claims without prejudice to Existing Surface and Subsurface Rights.

105F-16	105G-13	105G-14
105F-9	105G-12	105G-11
105F-8	105G-5	105G-6

Sediment x Sample @ Starr Creek on Campbell Hwy. 13-06-94

B6-13 JUNE, 1994
19-29 AUGUST
07-10 OCTOBER
22-26 OCTOBER

J. Dodge

132° 00' 55 50 40 35 131° 30'
61° 45'

HOOLE BRIDGE

ROBERT CAMPBELL HIGHWAY

PELLY RIVER

Horton Creek

Starr Creek

ELDORADO
LUG
STAR
FOX
PIKE
LYNX
GAZZUS
RABBIT
TIA

R-1 R-3 R-4

3000 3500

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

MAP 1391G

STARR CREEK

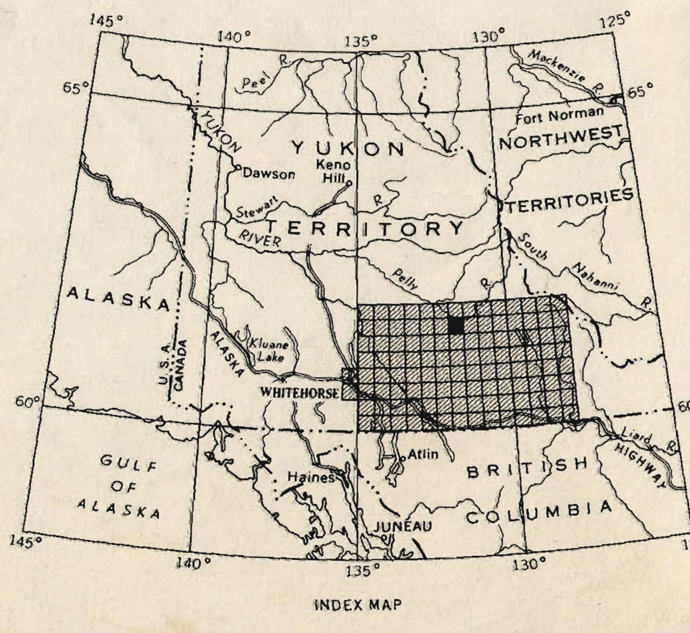
YUKON TERRITORY

Scale: One Inch to One Mile = $\frac{1}{63,360}$

Miles

1 ½ 0 1 2 3

Air photographs covering this map-area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario.



ISOMAGNETIC LINES (absolute total field)

- 500 gammas
- 100 gammas
- 20 gammas
- 10 gammas
- Magnetic depression

Flight lines

Flight altitude: nominally 1000 feet above ground level where terrain permitted.

Airborne Magnetic Survey, June to September, 1961, by Aero Surveys Ltd.

No correction has been made for regional variation.

The planimetry for this map was obtained from topographical map sheets, published by the Department of Mines and Technical Surveys.

PUBLISHED, 1963

The magnetic data on this ma[illegible] compiled from information recorded along the flight lines shown. The anomalies expressed by the magnetic contours are dependent on the variable magnetic intensities of the underlying rocks, and may be due to conditions near, or at unk[illegible] depths below the surface. High magnetic anomalies normally [illegible] the presence of basic rocks, such as diabase, gabbro, or serp[illegible] have a relatively high iron content, but in special instances may be due, or partly due, to concentrations of magnetic ore minerals. By means of the magnetic anomalies, various rock bodies or structural features, such as faults or folds, may be traced into, or across, areas of few or no outcrops. In many instances, however, no interpretation of particular anomalies may be possible without further geological information.

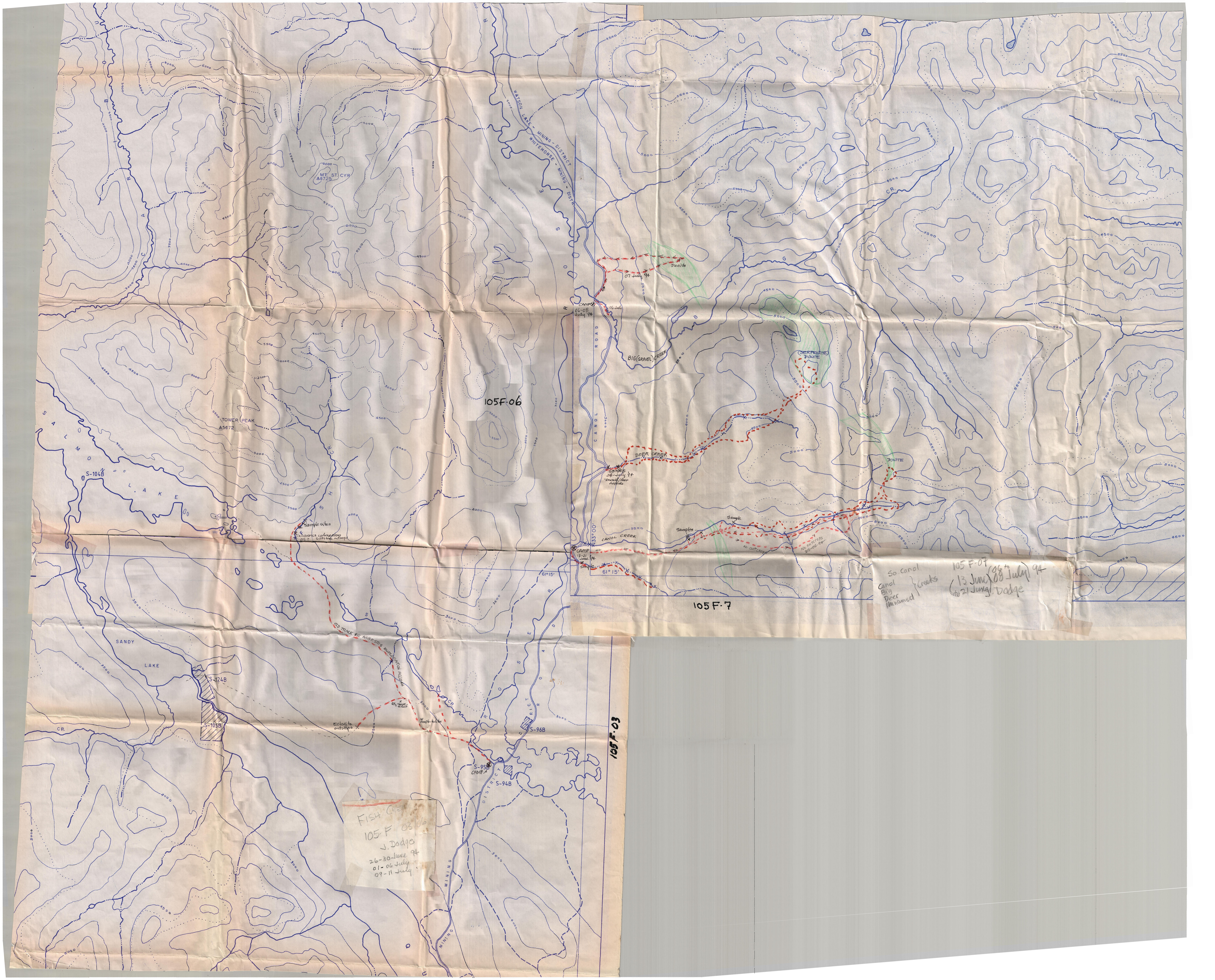
GEOPHYSICS PAPER 1391

STARR CREEK

YUKON TERRITORY

SHEET 105 G/12

LOG 15/16 1314
GEORGE GORZYNSKI
May 12 1958



MT. ST. CYR
Δ6725
TOWER PEAK
Δ5672
SALMON LAKE
S-104B
SANDY LAKE
S-124B
S-105B
CR.
WATSON LAKE - MINING - DISTRICT
WHITEHORSE - MINING - DISTR
CANOL ROAD
BIG (GRAVEL) CREEK
DEER CREEK
CANOL CREEK
CR.
Dunite
07 July '94
CAMP 06-08 July '94
06 July
(SERPENTITE) DUNITE
DUNITE
Samples 08-July '94
CAMP 13-21 June '94
Sample
Samples
No outcrops
No outcrops 20-06-94
61°15'
133°00'
105F-06
105F·7
105F-03
Sample sites
Calcareous carbonaceous OS? Siltstone outcrops
OLD TRACK RE ASBESTOS EXPLORATION
Eclogite outcrops
Qtz. musc. schist
Amphibolite
S-96B
S-95B
CAMP
S-94B
DISTRICT
MINING
FISH CREEK
105-F 03/06
J. Dodge
26-30-June 94
01-06 July
09-11 July
So. Canol
Canol
Big
Deer
Unnamed
Creeks
105 F-07
13 June to 21 June
06 to 08 July 94
J. Dodge

645947 = Base Camp
J.S. Dodge 1994

645947 = Base Camp

BIG TIMBER CREEK

ADVANCE PRINT

CANADA

ÉPREUVE PRÉLIMINAIRE

105 J/4

Military users, refer to this map as: / Référence de la carte pour usage militaire:

SERIES	A701	SÉRIE	
MAP	105 J/4	CARTE	
EDITION	1 MCE	ÉDITION	

LEGEND - LÉGENDE

ROADS AND RELATED FEATURES	ROUTES ET OUVRAGES CONNEXES
HARD SURFACE, ALL WEATHER	SURFACE DURE, TOUTES SAISONS
LOOSE SURFACE	GRAVIER
CART TRACK, WINTER ROAD, UNDER CONSTRUCTION	CHEMIN DE TERRE, D'HIVER, EN CONSTRUCTION
TRAIL, CUTLINE, PORTAGE	SENTIER, PERCÉE, PORTAGE
BUILT UP AREA	AGGLOMÉRATION
RAILWAY, SIDING, STATION, STOP	CHEMIN DE FER, VOIE D'ÉVITEMENT, GARE, ARRÊT
BRIDGE	PONT
SEAPLANE BASE, ANCHORAGE	HYDROAÉROPORT, MOUILLAGE
LANDMARK FEATURES	**POINTS DE REPÈRE**
HOUSE, BARN	MAISON, GRANGE
CHURCH, SCHOOL	ÉGLISE, ÉCOLE
POST OFFICE	BUREAU DE POSTE
HISTORICAL SITE	LIEU HISTORIQUE
TOWERS: FIRE, RADIO	TOURS: FEU, RADIO
WELL: OIL, GAS	PUITS: PÉTROLE, GAZ
TANK: OIL, GASOLINE, WATER	RÉSERVOIR: PÉTROLE, ESSENCE, EAU
TELEPHONE LINE	LIGNE TÉLÉPHONIQUE
POWER TRANSMISSION LINE	LIGNE DE TRANSPORT D'ÉNERGIE
MINE	MINE
CUTTING, EMBANKMENT	TRANCHÉE, REMBLAI
GRAVEL PIT	FOSSE DE GRAVIER
BOUNDARIES AND CONTROL	**FRONTIÈRES ET POINTS DE RÉFÉRENCES**
INTERNATIONAL, PROVINCIAL, BOUNDARY MONUMENT	INTERNATIONALE, PROVINCE, BORNE FRONTIÈRE
COUNTY, DISTRICT	COMTÉ, DISTRICT
TOWNSHIP, PARISH — SURVEYED — UNSURVEYED	CANTON, PAROISSE — ARPENTÉ — NON ARPENTÉ
TOWNSHIP, DLS — SURVEYED — UNSURVEYED — SECTION CORNERS	CANTON, DLS — ARPENTÉ — NON ARPENTÉ — SECTION ANGULAIRE
MUNICIPALITY	MUNICIPALITÉ
INDIAN RESERVE, PARK, ETC.	RÉSERVE INDIENNE, PARC, ETC.
HORIZONTAL CONTROL POINT	REPÈRE PLANIMÉTRIQUE
BENCH MARK	REPÈRE DE NIVELLEMENT
SPOT ELEVATION, ELEVATION APPROXIMATE	POINT COTÉ, ÉLÉVATION APPROXIMATIVE
DRAINAGE AND RELATED FEATURES	**DRAINAGE ET OUVRAGES CONNEXES**
STREAM, SHORELINE: INDEFINITE	COURS D'EAU, RIVE: IMPRÉCISE
DIRECTION OF FLOW	DIRECTION DU COURANT
LAKE: INTERMITTENT	LAC, INTERMITTENT
INUNDATED, FLOODED LAND	TERRAIN INONDÉ
MARSH OR SWAMP (WOODED)	MARAIS OU MARÉCAGE (BOISÉE)
DRY RIVER BED WITH CHANNELS	LIT DE COURS D'EAU TARI AVEC CHENAUX
SAND, ABOVE, IN WATER	SABLE, AU DESSUS, DANS L'EAU
STRING BOG	MARÉCAGES EN ENFILADE
TUNDRA PONDS, POLYGONS	TOUNDRA, ÉTANGS, SOLS POLYGONAUX
RAPIDS	RAPIDES
FORESHORE FLATS	ESTRANS
ROCK	ROCHE
DAM	BARRAGE
WHARF	QUAI
DITCH	FOSSÉ
RELIEF FEATURES	**RELIEF**
CONTOURS	COURBE DE NIVEAU
APPROXIMATE CONTOUR	COURBE DE NIVEAU APPROXIMATIF
DEPRESSION	COURBE DE CUVETTE
ESKER	ESKER
PINGO	PINGO
SAND, SAND DUNES	SABLE, DUNES
PALSA BOG	PALSE
WOODED AREA	RÉGION BOISÉE

GRID ZONE DESIGNATION / DÉSIGNATION DE LA ZONE DU QUADRILLAGE: 9V

100,000 M. SQUARE IDENTIFICATION / IDENTIFICATION DU CARRÉ DE 100,000 M.: UV, UU

NOTE: GRID TICKS WITH NUMBERS IN BRACKETS OR WITHOUT NUMBERS INDICATE THE 1000 METRE U.T.M. GRID ZONE 9
NOTER: LES TRAITS NUMÉROTÉS ENTRE PARENTHÈSES OU SANS NUMÉRO INDIQUENT LE QUADRILLAGE DE 1000 MÈTRES U.T.M.

EXAMPLE OF METHOD USED TO GIVE A REFERENCE TO NEAREST 100 METRES
EXEMPLE DE LA MÉTHODE EMPLOYÉE POUR FIXER DES REPÈRES À 100 MÈTRES PRÈS

REFERENCE POINT / POINT DE REPÈRE: CHURCH — ÉGLISE (as above / ci-dessus)

EASTING. Read number on grid line immediately to left of point. LONGITUDE EST. Noter le chiffre de la ligne du quadrillage immédiatement à gauche du repère: 97
Estimate tenths of a square from this line eastward to point. Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction est: 5
975

NORTHING. Read number on grid line immediately below point. LATITUDE NORD. Noter le chiffre de la ligne du quadrillage immédiatement en-dessous du repère: 98
Estimate tenths of a square from this line northward to point. Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction nord: 4
984

GRID REFERENCE SAMPLE / EXEMPLE DU QUADRILLAGE: 975984

Nearest similar grid reference 100,000 metres (about 63 miles) / La prochaine référence similaire est à 100,000 mètres (environ 63 miles)

105 K/8	105 J/5	105 J/6
105 K/1	105 J/4	105 J/3
105 F/16	105 G/13	105 G/14

ONE THOUSAND METRE UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 9
QUADRILLAGE DE MILLE METRES
UNIVERSEL TRANSVERSE DE MERCATOR

The 1972 MAGNETIC BEARING is 35°46' (636 mils) EAST of GRID NORTH.
Le REPÈRE MAGNÉTIQUE en 1972 est à 35°46' (636 mils) EST du NORD DU QUADRILLAGE.
GRID NORTH is 2°26' (43 mils) WEST of TRUE NORTH for centre of map.
NORD DU QUADRILLAGE est 2°26' (43 mils) à l'ouest du NORD GÉOGRAPHIQUE au centre de la carte.

CONVERSION SCALE FOR ELEVATIONS / ÉCHELLE DE CONVERSION DES ÉLÉVATIONS
Metres / Feet / Mètres / Pieds

MARJORIE LAKE

YUKON TERRITORY

SCALE 1:50,000 ÉCHELLE

1.25 inches to 1 mile approximately

3 Miles; 1000 500 0 1000 2000 3000 4000 Metres

PRODUCED BY SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA, 1971, FROM PHOTOGRAPHS TAKEN IN 1968.

CONTOUR INTERVAL 100 FEET

ÉTABLIE PAR LA DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, OTTAWA, EN 1971, D'APRÈS DES PHOTOGRAPHIES PRISES EN 1968.

ÉQUIDISTANCE DES COURBES 100 PIEDS

105 J/4

EDITION 1

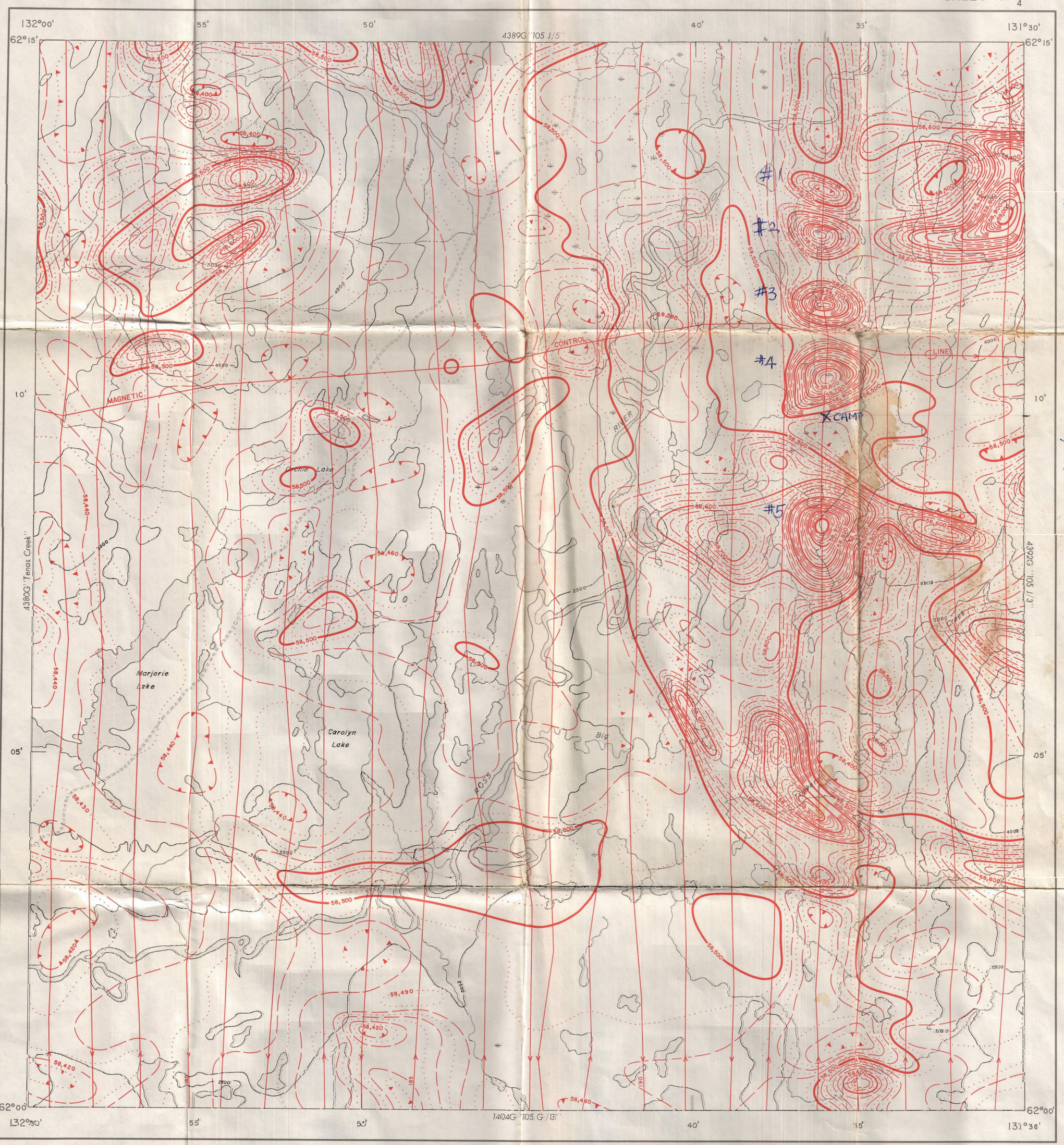
BIG TIMBER CREEK
AREA

2.7/5 = .54/0

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

AEROMAGNETIC SERIES

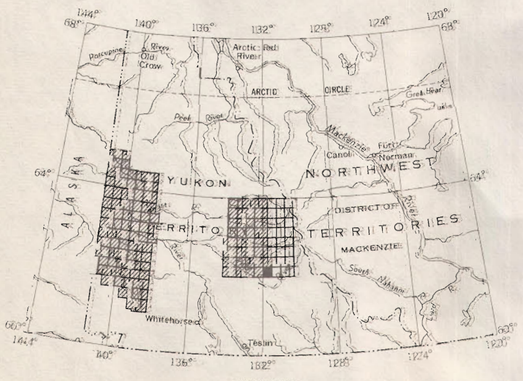
SHEET 105 J/4



J.S. Dodge
Big Timber Creek area
1994

J S Dodge
YMIP 94-051
Big Timber Creek area

9.67
.57
4769
4533
5511.9
575
.57



INDEX MAP

ISOMAGNETIC LINES (absolute total field):

500 gammas
100 gammas
20 gammas
10 gammas
Magnetic depression

Flight lines:
Flight altitude: nominally, 1000 feet above ground level where terrain permitted.

MAP 4388 G

MARJORIE LAKE

YUKON TERRITORY

Scale: One Inch to One Mile = 1/63,360

Miles
1 0 1 2 3

COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR GEOLOGICAL SURVEY OF CANADA, OTTAWA

Magnetic survey, March 1968 to June 1968 by Aero Photo Inc.

No correction has been made for regional variation

Title planimetry for this map was obtained from topographical map sheets published by the Department of Energy, Mines and Resources

The magnetic data on this map were compiled from information recorded along the flight lines shown. The anomalies expressed by the magnetic contours are dependent on the variable magnetic intensities of the underlying rocks, and may be due to conditions near or at unknown depths below the surface. High magnetic anomalies normally indicate the presence of basic rocks, such as diabase, gabbro, or serpentine, which have a relatively high iron content, but in special instances may be due, or partly due, to concentrations of magnetic ore minerals. By means of the magnetic anomalies, various rock bodies or structural features, such as faults or folds, may be traced into, or across, areas of few or no outcrops. In many instances, however, no interpretation of particular anomalies may be possible without further geological information.

GEOPHYSICS PAPER 4388

MARJORIE LAKE

YUKON TERRITORY

SHEET 105 J/4

PUBLISHED 1968

NTE O LASM LA RATO TD

2036 Columbia Street
Vancouver B C
Canada V5Y 3E1
Phone (604) 879 7878
Fax (604) 879 7898

HOOLE RIVER CERTIFICATE OF ANALYSIS
1PL 94I1908

Cl e t Northern A alyt cal Laboratо es — PL 94I1908 — Out Sep 23 1994 — Page 1 of 1 — Sect on 1 of 1
Project WO 25399 8 Pulp — I Sep 19 1994 [049511 17 23 49092394] — Certif ed BC Assayer Dav d Ch u

Sample Name	Ag ppm	Cu ppm	Pb ppm	Z ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	B ppm	Cd ppm	Co ppm	N ppm	Ba ppm	W ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	T %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
8667	P 0 5	106	<	105	26			8		<	2 5	49	73	82		51	51	1 2%		16	3	5	<	2 31	0 24	20%3	49	0 02	0 03	0 02
8668	P	26	4	14	9	6		4	<	<	0 3	78	0 1%	50	<	492	20	1451		164		6	<	0 23	9 29	2 81	6 00	0 01	0 02	<
8669	P	98	<	4	7			5	<	<		24	41	10		172	2	212		12		<	<	0 04	0 45	2 35	0 06	0 02	0 02	
8670	P	25	22	293	15	6		4	<		0 8	8	29	267		82	14	917	9	16	3	2		0 22	0 47	1 85	0 07	0 10	0 02	0 02
8671	P 16 0	13	11473	14%	160						0 5m	26	41	18	680	55	9	6654	2	18	2	<	<	0 10	3 29	15%1	08	0 02	0 02	0 02
8672	P	15	7	124	11	5		3	<		0 3	9	32	204		228	37	368	8	25	1	3	0 07	1 08	0 40	1 74	0 62	0 25	0 09	0 04
8673	P 4 4	17	166	3 0%	82				<	<	32 3	17	68	9	55	102	6	210		39	2	<	<	0 09	1 12	6 52	0 07	0 04	0 02	0 07
8674	P 1 0	1857	15	472	2842	<		5	<	300	1 9	25	15	16		109	9	90	<	2	1		<	0 03	0 05	15%0	02	0 01	0 02	
Min Limit	0 1	1	2	1	5	5	3	1	10	2	0 1	1	1	2	5	1	2	1	2	1	1	1	0 01	0 01	0 01	0 01	0 01	0 01	0 01	0 01
Max Reported*	99 9	20000	20000	20000	9999	9999	9999	9999	999	999	99 9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1 00	9 99	9 99	9 99	9 99	9 99	5 00	5 00
Method	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

—=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate

IN E T O AL PLASM LABO

CERTIFICATE OF ANALYSIS

HOOLE RIVER

1PL 94I1906

2036 Columbia Street
Vancouver B C
Canada V5Y 3E1
Phone (604) 879 7878
Fax (604) 879 7898

Cl e t Norther Analyt cal L borator e PL 94I1906 Out Sep 23 1994 Page 1 of 1 Sect on 1 of 1
Project WO 25393 16 P lp In Sep 19 1994 [049311 14 35 49092394] Cert f ed BC Assayer Dav d Ch

Sample Name		Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	B ppm	Cd ppm	Co ppm	N ppm	Ba ppm	W ppm	C ppm	V ppm	M ppm	La ppm	Sr ppm	Z ppm	Sc ppm	T %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
8651	P	1 0	9716		23	101			4			0 2	145	48	12	<	168	5	99		3	1		<	0 05	0 20	7 64	0 01	0 03	0 02	<
8652	P	2 3	646		2	496			5		<	0 7	309	85	13	<	107	8	18	<	1	1		<	0 02	0 02	15%	0	01	0 02	<
8653	P	1 4	3273	167	57	603			4		<	1 8	115	63	18	<	93	24	2524		20	4	4	<	0 86	1 20	18%	0 48	0 08	0 04	0 03
8654	P		32		5	446	25		3		<	0 3	5	14	6		145	6	42		9	2		<	0 31	0 02	6 88	0 02	0 06	0 02	<
8655	P		32	11	12	28	8		3		<		4	9	25	<	164	3	45	5	8	2		<	0 17	0 17	1 75	0 01	0 08	0 03	0 07
8656	P		16	3	2	72	<		4		<	0 3	3	10	4	<	60	6	16	5	7	3	<	<	0 27	0 06	8 33	0 01	0 19	0 03	<
8657	P	3 0	16806	54	136				4			3 7	5	14	38	<	132	5	191	5	5	1	1	<	0 47	0 16	4 09	0 25	0 02	0 06	0 03
8658	P	<	153		41	<			6			0 5	16	13	42	<	42	15	2233	3	533	1	2	<	0 49	15%	4 99	1 94	0 03	0 02	0 08
8659	P	<	161		12		<		5			0 1	6	19	13	<	267	13	104	7	16	2	1	<	0 62	0 47	6 43	0 26	0 15	0 09	0 14
8660	P	0 1	169		124	<			6	<	<	2 9	85	315	326	<	375	160	1589	9	60	6	20	0 10	0 53	8 60	9 78	0 39	0 07	0 05	0 14
8661	P	<	36	13	41	113	5	<	4		<		9	22	38	<	139	17	200	3	9	1	2	<	0 52	0 21	2 80	0 72	0 03	0 02	0 01
8662	P	<	45	48	45	23	9		3		2		8	10	67	<	100	5	50	4	14	7	2	<	0 22	0 07	1 65	0 02	0 14	0 03	0 01
8663	P	1 6	652	23	21	87	7		3	<	<		3	6	41	<	144	3	37	3	6	1		<	0 16	0 05	2 38	0 02	0 12	0 02	0 01
8664	P	<	43		205	34	84		9	<	<	0 3	37	0 1%	62	<	729	19	521	<	3	1	3	<	0 05	0 04	5 00	0 06	0 02	0 02	0 03
8665	P	0 5	123		111	32		<	6		<	5 5	64	99	58	<	39	55	1 3%	<	12	4	5	<	2 25	0 24	23%	4 28	0 03	0 03	0 01
8666	P	<	34	5	39	16	<		2	<	2	0 2	3	40	86	<	133	9	279	3	60	1	<	0 01	0 85	0 61	0 87	0 09	0 04	0 06	0 02
Mn Limit		0 1	1	2	1	5	5	3	1	10	2	0 1	1	1	2	5	1	2	1	2	1	1	1 0	01	0 01	0 01	0 01	0 01	0 01	0 01	0 01
Max Reported*		99 9	20000	20000	20000	9999	9999	9999	9999	999	999	99 9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1 00	9 99	9 99	9 99	9 99	9 99	5 00	5 00
Method		ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP		ICP	ICP	ICP	ICP	ICP	ICP	ICP

—=No Test ns=Insuff c ent Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Est mate % Max=No Estimate

Northern Analytical Laboratories ltd

09/21/94 Assay Certificate Page 1

James Dodge Hoole River A O#25393

Sample #	Au ppb
8651	146
8652	218
8653	21
8654	33
8655	29
8656	6
8657	>6667
8658	5
8659	15
8660	<5
8661	61
8662	<5
8663	70
8664	24
8665	43
8666	<5

Certified by

105 Copper Road Whitehorse YT Y1A 2Z7 Ph (403) 668 4968 Fax (403) 668 4890

Northern Analytical Laboratories ltd

09/21/94 | Assay Certificate | Page 1

James Dodge | Hoole River | WO#25399

Sample #	Au ppb
8667	31
8668	17
8669	<5
8670	5
8671	10
8672	6
8673	227
8674	14

Certified by

105 Copper Road Whitehorse YT Y1A 2Z7 Ph (403) 668 4968 Fax (403) 668 4890

Northern Analytical Laboratories ltd

22/07/94 **Assay Certificate** Page 1

James Dodge Canal Creek WO#25273

Sample #	Au ppb
2312	<5
2313	<5
2314	5
2315	14
2316	21

Certified by

105 Copper Road Whitehorse YT Y1A 2Z7 Ph (403) 668 4968 Fax (403) 668 4890

Northern Analytical Laboratories ltd

16/08/94 | Assay Certificate | Page 1

James Dodge | Fish Creek | WO#25331

Sample #	Au ppb
2317	<5
2318	6
2319	<5
2320	<5
2321	5
2322	<5

Certified by

105 Copper Road Whitehorse YT Y1A 2Z7 Ph (403) 668 4968 Fax (403) 668 4890

Northern Analytical Laboratories ltd

01/07/94 | Assay Certificate | Page 1

James Dodge | Hoole River | WO#00498

Sample #	Au ppb
2309	1670
2310	15
2311	76

Certified by

195 Copper Road Whitehorse YT Y1A 2Z7 Ph (403) 668 4968 Fax (403) 668 4890

Vancouver Petrographics Ltd.

8080 GLOVER ROAD LANGLEY B C V3A 4P9
PHONE (604) 888 1323 **FAX** (604) 888 3642

Report for James S Dodge,
14 McDonald Road,
Whitehorse, Yukon,
Y1A 4L2

Job 940323

27th July, 1994

SAMPLES

Two rock samples, designated FC-1 and 2, were submitted for sectioning and petrographic examination The first was prepared as a polished thin section the second as a conventional thin section

SUMMARY

Sample FC-1 consists predominantly of brown garnets in a matrix of sericite, apparently derived by alteration of feldspar Red biotite and muscovite are minor accessories This rock is of uncertain origin

Sample FC-2 is a breccia consisting of fragments of quartz diorite, siliceous metasediments and limestone in a micritic carbonate matrix

Neither rock shows features suggestive of ophiolitic derivation

Individual petrographic descriptions are attached

J F Harris Ph D

((604) 929-5867)

SAMPLE FC-1 ALTERED GARNETIFEROUS ROCK

Estimated mode

Quartz	1
Plagioclase	8
K-feldspar	trace
Muscovite	3
Biotite	3
Garnet	28
Chlorite	2
Sericite	50
Apatite	1
Pyrrhotite	1
Pyrite	trace
Chalcopyrite	trace
Ilmenite) Rutile)	3

This is a heterogenous rock containing prominent grains of coarse, brown garnet

The garnets are set in a matrix composed dominantly of a felted aggregate of what is probably sericite (the thin section is somewhat too thick) Diffuse remnants of what appears to be plagioclase are recognizable sporadically throughout the sericitic matrix

The garnet occurs as discrete, equant/subhedral grains, 0 5 - 8 0mm or more in size It is a distinctive yellow-brown colour, and is typically traversed by networks of parallel microfractures These are sometimes infilled by green chlorite - representing incipient alteration (though, overall, the garnet is notably fresh) No reaction rims are recognizable

The principal accessory constituents are orange-brown biotite (partially altered to chlorite) and coarse muscovite These occur as clusters of flakes up to 1mm or more in size, forming pockets between the coarse garnets, and sinuous trains and schistose streaks in the sericitic matrix

Quartz is rare, but is seen as sporadic, individual, equant grains in the matrix, and as inclusions in some large garnets Some of the latter may include some apatite as well as quartz

Opaques consist predominantly of an oxidic phase which appears to be composed of intergrown rutile and ilmenite It occurs as individual grains enclosed within garnet, and as random disseminations Sulfides include pockets and irregular disseminations of pyrrhotite and lesser pyrite, plus traces of chalcopyrite Locally the oxides and sulfides occur intergrown

The overall fabric of this rock is irregularly streaky, but there is no consistent foliation Its origin is obscure The rock has a metamorphic "look", but the garnets are not the pinkish almandine

Sample FC-1 cont

variety typical of both the pelitic metamorphic environment and of eclogite Rather, they appear to be Fe-rich andradite - most commonly seen in skarnic or contact metamorphic products The paucity of quartz is also notable The intensely sericitized matrix (apparently altered feldspar) is suggestive of hydrothermal processes

It is possible that this sample represents an altered and sheared derivative of a soda-rich syenitic intrusive (certain of which are known to contain garnet as a primary constituent) The mineralogy does not appear consistent with derivation from eclogite No pyroxene is present, nor such secondary minerals as might be derived from it

SAMPLE FC-2 **CARBONATE-CEMENTED BRECCIA**

Estimated mode

Quartz	16
Plagioclase	3
Sericite	0 5
Biotite	0 5
Carbonate	80

This sample is clearly a form of breccia, consisting of sharply defined, vari-sized, angular to sub-rounded, non-matching rock fragments in a fine-grained, brown matrix

Thin section examination shows that the clasts are of several distinct types They include fresh, fine to medium-grained quartz diorites mosaic-textured granular (vein-type?) quartz foliated quartzites or quartz schists (granoblastic quartz with schistose partings of biotite/sericite), and very fine-grained, homogenous, micritic limestone The clasts range in size from 0 5mm to 1 or 2cm There are also numerous smaller clasts of the same rocks, ranging down to disaggregated quartz grains and sericite/biotite flakes

The matrix is a featureless aggregate of brown carbonate, of grain size 10 - 100 microns - possibly representing a° finely comminuted version of the large micritic clasts It is diffusely stained, apparently by dust-sized limonite

The carbonate is reactive to dilute acid, and is apparently calcite

The thin section contains no garnet

This rock is of uncertain origin It may possibly represent a calcite-cemented scree deposit derived from a quartz diorite/meta-sedimentary terrane No ophiolite affinities are apparent

Vancouver Petrographics Ltd.

8080 GLOVER ROAD LANGLEY B C V3A 4P9
PHONE (604) 888 1323 FAX (604) 888 3642

Report for James S Dodge,
14 MacDonald Rd ,
WHITEHORSE,
Yukon, Y1A 4L2

Job 940297

July 4th, 1994

SAMPLES

A specimen (un-numbered) of suspected ultramafic rock was submitted for sectioning and petrographic examination

DESCRIPTION

Estimated mode

Plagioclase	25
Hornblende	40
Biotite	12
Chlorite	5
Sericite	trace
Epidote	8
Carbonate	2
Apatite	2
Fe-Ti oxides	6
Pyrite	trace

This sample is a coarse-grained, mafic-rich igneous rock having the textural aspect of an intrusive

It is composed of approximately equal proportions of plagioclase and amphibole, with biotite and Fe-Ti oxides as the principal accessories

The major constituents form an interlocking intergrowth of anhedral-subhedral grains, 2 - 5mm or more in size The biotite likewise forms some coarse flakes and irregular masses, as well as smaller, intergranular concentrations The Fe-Ti oxides occur as disseminated equant grains, 0 2 - 1 0mm in size, and the rather abundant apatite occurs as individual prismatic euhedra of a similar size

Most of the constituents show more or less extensive alteration of late magmatic/deuteric aspect

The plagioclase shows patchily varying degrees of saussuritization, commonly being altered to meshworks of fine-grained epidote, plus minor associated carbonate and sericite

The hornblende is typically flecked with actinolite, secondary biotite and chlorite The primary biotite is a dark brown variety, commonly of striated, sub-opaque appearance as a result of pervasive rutilization

The Fe-Ti oxides consist of sub-opaque material (probably mixtures of rutile and leucoxene) which incorporate lamellae and meshworks of probable ilmenite

The major content of feldspar in this rock means that it is not an ultramafic Petrographic examination failed to confirm the presence of olivine It has the typical texture of a gabbro, but the major mafic component is amphibole rather than pyroxene The significant content of biotite (an Fe-rich variety - not phlogopite) is also atypical of gabbro The rock is, therefore, classifiable as a somewhat altered diorite It shows no fragmental or xenolithic features on the thin section scale to suggest that it is anything other than a normal plutonic intrusive

J F Harris Ph D

(929-5867)

Vancouver Petrographics Ltd.

8080 GLOVER ROAD LANGLEY B C V3A 4P9
PHONE (604) 888 1323 **FAX** (604) 888 3642

Report for James S Dodge,
14 MacDonald Rd ,
WHITEHORSE,
Yukon Y1A 4L2

Job 940259

June 15th, 1994

SAMPLES

1 rock sample (un-numbered polished thin section numbered DD-1) was submitted for petrographic examination

DESCRIPTION **QUARTZ DIORITE PORPHYRY**

Estimated mode

Quartz	30
Plagioclase	25
Carbonate	trace
Epidote	trace
Biotite	12
Hornblende	1
Cryptocrystalline groundmass	30
Pyrite	trace
Xenoliths	2

This sample is a prominently porphyritic igneous rock

Its character is clearly displayed in the stained off-cut, where the relatively large, dark (unetched) phenocrysts are quartz, the white-etched phenocrysts are plagioclase, the tabular mafics are biotite, and the patchily yellow-stained, white-etched matrix is the aphanitic groundmass (of feldspathic composition)

Phenocrysts make up about 70% of the rock in total They range in size from 0 2 - 2 0mm, are generally of equant shape, and show random orientation

The quartz phenocrysts attain the largest size They are anhedral to subhedral in form, and occasionally rounded and/or embayed

Plagioclase phenocrysts are typically of subhedral form, and sometimes show concentric growth zoning Twinning extinction measurements suggest a composition of andesine The plagioclase is

generally strikingly fresh, but a few grains show saussuritic cores (alteration to carbonate and possible epidote)

The biotite is red-brown in colour, and fresh it occurs as well-formed crystals

Hornblende is a very minor mafic accessory

The groundmass is mildly turbid and evenly cryptocrystalline to glassy It shows localized flow textures and vitric features It is probably of feldspathic composition

Some compositional differentiation in the groundmass is apparent from the etched off-cut, with a relatively more potassic (weakly yellow-stained) phase forming streaks and pockets separating fragment-like patches in which the groundmass is of non-potassic character This feature probably reflects incipient autobrecciation late in the crystallization history It is also recognizable in the thin section as occasional clumps of phenocrysts cemented by a relatively coarser-grained, microgranular groundmass variant

A notable feature of the rock is the apparent absence of the normal minor accessories like apatite, sphene and opaque oxides Very rare, minute specks of pyrite occur, mainly within biotite crystals

The rock contains scattered xenoliths, similar in general size and shape to the phenocrysts These appear to consist mainly of micritic carbonate and siltstone/greywacke

This is a fresh rock, having the textural aspect of a minor intrusive It is of quartz diorite composition

J F Harris Ph D

(929-5867)

Vancouver Petrographics Ltd.

8080 GLOVER ROAD LANGLEY B C V3A 4P9
PHONE (604) 888 1323 **FAX** (604) 888 3642

Report for James S Dodge,
14 MacDonald Rd ,
Whitehorse,
Yukon, Y1A 4L2

Job 940379

August 22nd, 1994

SAMPLES

1 rock sample, designated Slope #2, for petrographic examination

DESCRIPTION LAMINATED SILTSTONE OR TUFF

Estimated mode

K-feldspar	30
Plagioclase	5
Quartz	2
Sericite	50
Chlorite)	10
Epidote)	
Leucoxene	2

The stained off-cut of this sample shows a striking laminar structure of thin, diffuse-margined bands or lenses of alternating potassic (yellow-stained) and non-potassic composition

In thin section the rock is found to be composed predominantly of sericite (the non-potassic bands) and K-feldspar (the yellow-stained bands) The bulk of the rock is minutely fine-grained - especially the potassic bands which are composed of a cryptocrystalline to felsitic aggregate of K-feldspar, of grain size 5 - 20 microns, speckled with tiny flecks of chlorite and clusters of sub-opaque leucoxene

The non-potassic bands are slightly coarser, being composed essentially of felted sericite, of grain size 10 - 50 microns Minor intergrown feldspars and dustings of accessory chlorite and leucoxene are the remaining constituents

A few coarser, silty bands contain clasts of quartz and plagioclase up to 100 microns in size

Minor epidote is present, as a concordant veinlet in one of the potassic laminae, and as disseminated small cryptocrystalline clusters

The rock has the aspect of a fine-grained sediment (arkosic mudstone) or a bedded tuff of trachytic to andesitic composition

J F Harris Ph D

(929-5867)

94-051

SHEET 105 J-3

LATITUDE 62° 00' To 62° 15'
LONGITUDE 131° 00' To 131° 30'

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

SCALE: ½ MILE To 1 INCH

1500 0 1500 3000 4500 6000 7500 9000 10500
FEET

ISSUED BY AUTHORITY OF THE MINISTER

NOTICE

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15 OCT. 1973.
WHITEHORSE 2 DEC. 1965.

31 MAY 79
21 SEPT 81
12 JUNE 81
13 JULY 81
1 OCT 81
18 SEPT. 81
9 SEPT. 81
20 AUG 80
7 AUG. 78

Magnetic North
30° 40' E
N31° 40' E

105 J-5	105 J-6	105 J-7
105 J-4	105 J-3	105 J-2
105 G-13	105 G-14	105 G-15

62° 15'
131° 30'
131° 00'
62° 00'

4000
3500
3000
4500
5000

BIG TIMBER CREEK

5563
00001

A M
A M
H E N C H
C L I N G O N

105 J-3

94-051

SHEET 105 J-4

LATITUDE 62° 00' To 62° 15'
LONGITUDE 131° 30' To 132° 00'

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

SCALE: ½ MILE To 1 INCH

1500 0 1500 3000 4500 6000 7500 9000 10500
FEET

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21 June 1988
15 OCT. 1973
WHITEHORSE 25 NOV. 1965

25 MAY 93
31 MAY 90
18 MAY 89
30 AUG 88

I.G. Indian Grave Site

Magnetic North 34° 30' E 31° 10' E

Note: Entry on certain lands is withdrawn from staking in cross-hatched areas to facilitate the settlement of Native Land Claims without prejudice to Existing Surface and Subsurface Rights.

105 K-8	105 J-5	105 J-6
105 K-1	105 J-4	105 J-3
105 F-16	105 G-13	105 G-14

SUPPLEMENTAL AREA
94-051

132° 00'
62° 15'
131° 30'
62° 15'

ROAD DISTRICT
ROAD DISTRICT
MINING
MINING
WHITEHORSE
LAKE
WHITEHORSE
LAKE
MARJORIE LAKE
ORCHIE LAKE
WATSON
LYNN
RIVER
BIG
RIVER
TIMBER
CR.
ROSS

5500
5000
4500
4000
3500
3500
3000
2500
2500
3000
3500
4000
2500

I.G.
I.G.

S-7
CANYON

aero-mag (weak)
aeromag + anomaly
aeromag + anomaly
aeromag + anomaly

A996

62° 00'
132° 00'
62° 00'
131° 30'

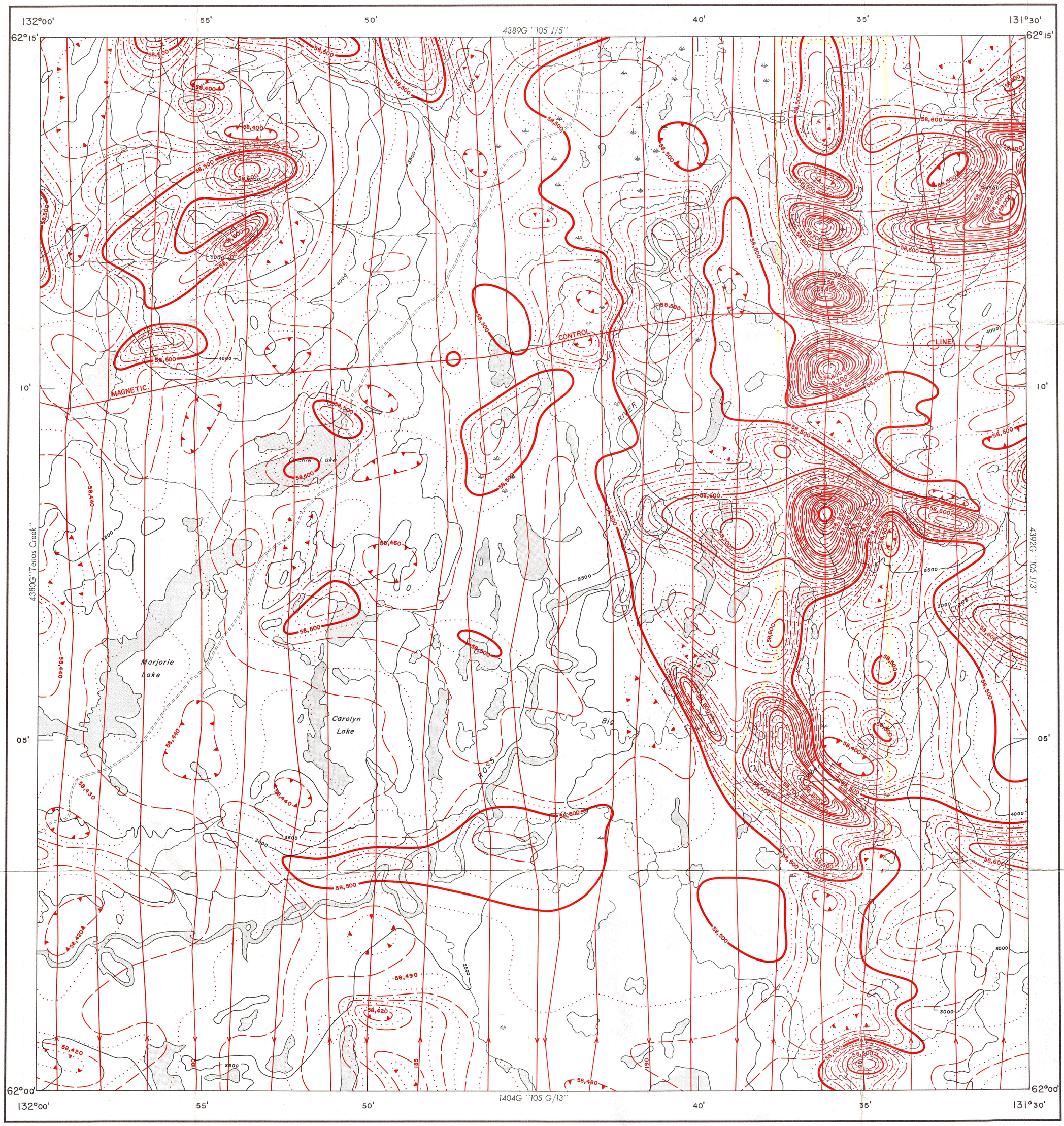
105 J-4

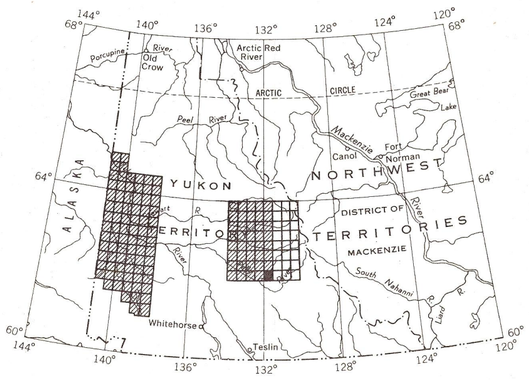
94-051
Supplemental
Prospecting Area

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

AEROMAGNETIC SERIES

SHEET 105 J/4





INDEX MAP

ISOMAGNETIC LINES (absolute total field)

500 gammas
100 gammas
20 gammas
10 gammas
Magnetic depression

Flight lines
Flight altitude: nominally 1000 feet above ground level where terrain permitted.

MAP 4388 G

MARJORIE LAKE

YUKON TERRITORY

Scale: One Inch to One Mile = $\frac{1}{63,360}$

Miles

1 1/2 0 1 2 3

COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

Magnetic survey, March 1968 to June 1968 by Aero Photo Inc.

No correction has been made for regional variation

The planimetry for this map was obtained from topographical map sheets published by the Department of Energy, Mines and Resources

94-051

The magnetic data on this map were compiled from information recorded along the flight lines shown. The anomalies expressed by the magnetic contours are dependent on the variable magnetic intensities of the underlying rocks, and may be due to conditions near, or at unknown depths below the surface. High magnetic anomalies normally indicate the presence of basic rocks, such as diabase, gabbro, or serpentine, which have a relatively high iron content, but in special instances may be due, or partly due, to concentrations of magnetic ore minerals. By means of the magnetic anomalies, various rock bodies or structural features, such as faults or folds, may be traced into, or across, areas of few or no outcrops. In many instances, however, no interpretation of particular anomalies may be possible without further geological information.

GEOPHYSICS PAPER 4388

MARJORIE LAKE

YUKON TERRITORY

SHEET 105 J/4

PUBLISHED, 1968

Supplemental to
94-051

OK

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

Northern Affairs Program
Programme des affaires du Nord

Mineral Rights Droits miniers

Canada

WATSON LAKE 24 JUNE 86

03 AUGUST 93
21 JULY 93
21 OCT 92
28 AUG 92
29 JULY 92 L
23 JULY 92
09 JULY 92
26 MAY 92
08 JAN 92
18 APR 91
26 SEPT. 90
23 AUG. 90
18 JULY 90
20 APR. 90
31 JAN. 90
19 SEPT. 89
29 AUG. 89
7 AUG. 89
24 JULY 89
7 JULY 89
14 MAY 89
23 JAN. 89
21 SEPT 88
30 AUG 88
29 AUG 88
10 AUG 88
24 JUNE 88
20 MAY 88
4 MAR. 88
26 JAN. 88
18 DEC. 87
11 SEPT. 87
21 JULY 87

105G-12
QUARTZ & PLACER

LATITUDE 61° 30′ TO 61° 45′
LONGITUDE 131° 30′ TO 132° 00′

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SCALE 1:30,000

METRES 1000 0 1000 2000 METRES
FEET 1500 0 1500 3000 4500 6000 7500 9000 10500 FEET