MAP NO.: 105 G 6

ASSESSMENT REPORT X
PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 092950
MINING DISTRICT: WHITEHORSE
TYPE OF WORK: MAPPING,MAG, TRENCHING, SAMPLING

REPORT FILED UNDER: NATHAN MINERALS

DATE PERFORMED: MAY - OCTOBER, 1990

DATE FILED: APRIL 15, 1991

LOCATION: LAT.: 61°20'N

AREA: DUKE RIVER

LONG.: 139°16'W

VALUE $: 85,575

CLAIM NAME & NO.: SUE 1, 9, 11; DEN 6, 8; WEN 1; AND 5, 6; JY 1, 2, 4, 27 28, 33; EL 9, 10, 18, 20, 22-26, 30-42, 44-56, 59-64, 66-74, 76, 79, 81, 103-110; JAN 4, 19, 20, 29, 90, 115-116; JAQ 11-20, 22, 25-27, 32, 33, 37

WORK DONE BY: HALFERDAHL & ASSOCIATES LIMITED

WORK DONE FOR: NATHAN MINERALS INCORPORATED

DATE TO GOOD STANDING:

REMARKS: 48 KM OF MAGNETOMETER SURVEYS. 3526 CUBIC YARDS TRENCHING AND 260 ROCK AND SOIL SAMPLES WERE COLLECTED DURING THE 1990 SEASON. THE MAGNETOMETER SURVEY A 200 METER THICK, SOUTH DIPPING PERIDOTITE BODY FOR A STRIKE LENGTH OF ABOUT 2 KILOMETERS. THE PERIDOTITE WAS TRENCHED AND SAMPLED.

Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

M.R. file no.

R.M.M.R. file no.

Date forwarded 15 April 1991

TRANSMITTAL FORM

From ▶ Mining Recorder at: Whitehorse

To ▶ Regional Manager, Mineral Rights at Whitehorse, Y.T.

For action are:

- ☐ NEW APPLICATION FOR PLACER LEASE TO PROSPECT — Name
- ☐ RENEWAL APPLICATION PLACER LEASE TO PROSPECT — Name — Lease no.
- ☐ AFFIDAVIT OF EXPENDITURE ON PLACER LEASE — Name — Lease no.
- ☐ SECURITY DEPOSIT
- ☐ FINANCIAL ABILITY
- ☐ ASSIGNMENT OF PLACER LEASE NO. — From — To
- ☐ GROUPING APPLICATION UNDER SEC. 52(2) PLACER MINING ACT. — Owner
- ☐ DIAMOND DRILL LOGS — Claims — Claim sheet no.
- ☑ QUARTZ ASSESSMENT REPORT — Claims: EL, Jo, Jaq, JJ, Jan — Claim sheet no.: 115-G-6

Type of report: Geological Linecutting etc. — Submitted by: Nathan Minerals Inc.

Cls. work performed on: EL, Jo, Jan, JJ, Jaq — $ req. for ren. application: 85,575.00

H Saettucek
Signature

Date returned

REPLY ACTION

092950

Signature

802-37 (7-88)

092050

CONFIDENTIAL

NATHAN MINERALS INC.

1990 EXPLORATION OF QUARTZ CLAIMS NEAR BURWASH CREEK, YUKON (GEOLOGICAL MAPPING AND SAMPLING, LINE CUTTING, MAGNETOMETRY, TRENCHING AND SAMPLING, ACCESS TRAILS)

Work on Claims
SUE 1, 9, 11; DEN 6, 8; WEN 1; AND 5, 6; JY 1, 2, 4, 27, 28, 33;
EL 9, 10, 18, 20, 22-26, 30-42, 44-56, 59-64, 66-74, 76, 79, 81, 103-110;
JAN 4, 19, 20, 29, 90, 115-116; JAQ 11-20, 22, 25-27, 32, 33, 37

Whitehorse Mining District

Geographic Coordinates (Centre of Property)
61° 20°N
139° 16°W

NTS Sheet 115 G/6

by

L.B. Halferdahl, Ph.D., P.Eng.
1991 02 28

Work done from 1990 05 17 to 1990 10 25

Halferdahl & Associates Ltd.
18, 10509 - 81 Avenue
Edmonton, Alberta
T6E 1X7

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 $ 85,575.

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

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1. INTRODUCTION

Exploration of the quartz mineral claims along and near Burwasn Creek in southwestern Yukon, held by Nathan Minerals Inc., and other claims recorded on March 2, 1990 held by the undersigned in trust for Nathan Minerals Inc. continued in 1990 with geological mapping and sampling, line cutting and magnetometry, trenching and sampling, minor stripping, and improving and constructing access trails. This report describes these explorations. As accounts of the geographic setting, previous work, the geology, and references are available in previous assessment reports, only changes and new information on these features are included.

Many of the tributaries of Burwash Creek and Duke River have not been formally named. For convenience some of these tributaries or pups have been given informal names, which accord with local use as much as possible. A few other geographic features have also been named informally.

Access to the valleys of Burwash Creek, Duke River, Bea Creek, and parts of the Burwash Uplands was by four-wheel drive vehicles. Access to other parts of the property was by a Honda Fourtrax and a J5 Bombardier, or by walking. Accommodation for the crew was in a trailer camp about 1½ km up Bea Creek from its mouth.

2. SUMMARY

The major structure in the northern part of the property is a westerly trending syncline, observed in previous years near the top of Tatamagouche Mountain and now traced easterly at least as far as Bea Lake. The Ptarmigan fault cuts across this syncline and Burwash Creek, so that strata of the Permian Hasen Creek Formation previously observed near the top of Tatamagouche Mountain, also outcrop and subcrop from Burwash Creek easterly to Bea Lake. A major fault is present in the valley of Burwash Creek, where the Bocks Brook fault is shown on maps prepared by the Geological Survey of Canada, but the direction of its easterly trace is obscured by glacial till.

The bedrock in the southern part of the property is a Triassic peridotite-gabbro intrusion, whose southern contact (upper) has been intruded by Cretaceous granodiorite. Along at least part of Duke River, the contacts of this peridotite are very steep. Dips of layering in another much smaller intrusion of peridotite along Burwash Creek, near the Bocks Brook fault are intermediate. Indications of reefal platinum were observed, but no economic grades have yet been found.

A thick unit of pyritic black tuff, here termed the Gopher Member and placed at the top of the Permian Station Creek Formation contains highly anomalous concentrations of gold, silver, lead, zinc, arsenic, and antimony in a thin interval near its base along Frying Pan Creek, and anomalous concentrations of gold, silver, lead, zinc, and molybdenum near its top at the switchback on the trail along Bea Creek. At least one interval of the Gopher Member at Betz Creek near the west end of the property contains 108 ppb gold.

Tuffs stratigraphically above the Gopher Member on the northern limb of the syncline along Burwash Creek contain up to 933 ppb gold accompanied by galena and sphalerite.

Some 24½ km of lines were cut for geophysical surveying. About 48 km of lines were surveyed by magnetometer, some without being cut. The magnetometer surveys locate the contacts of the peridotite with strata of the Permian Skolai Group and help to define structures within the Skolai Group.

Trenches totalling 3526 cubic yards were excavated with a D8 bulldozer. Most were sampled.

Access trails were constructed and maintained by use of a D8 bulldozer and an International backhoe-loader on wheels: grades were built and improved, culverts and cross drains installed, and parts of the grades ditched.

3. GEOLOGY

As previously indicated, only new information on the geology is presented here, as other accounts of the geology are available in previous assessment reports, and more generally in reports of the Geological Survey of Canada. A stratigraphic column for the Burwash Creek area is in Table 3.1. Of the units in it, only strata of the Paleocene St. Clare and Amphitheatre Formations have not been observed on the property. Some rocks of the thin-bedded limestone-and-shale unit, placed at the top of the Upper Triassic in Table 3.1, are assigned to the Jurassic or Cretaceous in available Geological Survey of Canada maps of the area, but no new data on the age of this unit have been obtained. It is present in an anticline whose axis follows Squirrel Creek at least in its lower part, and appears to overlie volcanic rocks of the Skolai Group with an angular unconformity near the mouth of Squirrel Creek. Similar rocks were observed just north of the Duke River road near the beginning of its descent to the valley of Duke River, several hundred metres downstream from the mouth of Bea Creek. Details on some stratigraphic units of the Skolai Group, the

TABLE 3.1 STRATIGRAPHIC COLUMN FOR THE BURWASH CREEK AREA
(modified after Muller, 1967; Smith and MacKevett, 1970;
Read and Monger, 1976)

Period Epoch Formation	Lithology
Tertiary Paleocene	LATITE, porphyritic
	Intrusive Contact
St. Clare	BASALT and ANDESITE, red-brown; massive or vesicular agglomerate, breccia, tuff
Paleocene or Eocene Amphitheatre	SANDSTONE, sand, conglomerate, gravel, shale, coal
	Angular Unconformity
Cretaceous and Later or Earlier	GRANITE, alaskite, granodiorite, diorite, related hybrid rocks
	Intrusive Contact
Upper Triassic ?	LIMESTONE and SHALE, thin-bedded, dark to black
Chitistone	LIMESTONE, massive
Nikolai	BASALT, purple and dark-green, amgdaloidal; minor interbedded limestone; conglomerate
	Disconformity
Triassic Maple Creek*	INTRUSIONS, gabbroic
	INTRUSIONS, ultramafic and mafic
	Intrusive Contact
Lower Permian Skolai Group	
Hasen Creek	ARGILLITE, tuffs, agglomerate, basic volcanics, chert, limestone, chert-granule limestone
Station Creek	TUFF, agglomerate, rusty-weathering ankerite, limestone, intermediate to basic volcanic flows

* Maple Creek intrusions are not formations.

ultramafic and mafic intrusions, and the Cretaceous granodiorite are included in Sec. 3.1 to 3.5 and 6.1 to 6.4. Details on other stratigraphic units are available in previous assessment reports or reports listed in the references of previous assessment reports.

The major structure on the property is here termed the Tatamagouche syncline, which was first identified on Tatamagouche Mountain. Its axis strikes westerly to southwesterly. This syncline is now known to extend easterly across Burwash Creek between 30 Pup-Frying Pan Creek on the southerly limb and Wyatt-Bea Creeks on the northerly limb at least as far as Bea Lake, all north of the Tatamagouche ultramafic intrusion. Dips in its southern limb near Frying Pan Creek and part of 30 Pup appear to decrease. Along Burwash Creek south of the Zed Canyon, it has been displaced vertically by the Ptarmigan fault, identified in ultramafic rocks near Duke River by aerial magnetometry in 1988, so that stratigraphic units near the contact of the Station Creek and Hasen Creek Formations on Tatamagouche Mountain are present again from Burwash Creek easterly at least to about Bea Lake.

Another important structure is the Bocks Brook fault, which is an easterly trending fault crossing Burwash Creek about 200 m upstream from the mouth of Wyatt Creek, but the position of its easterly trace has not yet been precisely determined in the till-covered terrain.

3.1 Duke River

A traverse along the west side of Duke River (Appendix 1) showed mostly peridotite for almost 500 m south of the conspicuous band of quartz-carbonate which crosses Duke River about 270 m upstream from the mouth of Squirrel Creek (Fig. 3.1). This peridotite is mostly dark-greenish-black, some with large conspicuous pyroxene oikocrysts, locally with 1 to 2 per cent reddish-brown phlogopite, variably serpentinized, and moderately to highly magnetic. Within it is a very steeply dipping layer probably about 80 m thick of tuffs with lesser volcanics, and perhaps gabbro, whose position may be due to faults. A layer of gabbro ½ m thick is present at 304 m and another 20 to 25 cm thick is interlayered with peridotite near 436 m upstream.

Some 21 samples (Appendix 1) were chipped along this part of Duke River to check for any concentrations of metals that may have been overlooked in hand specimens. The analytical results are in Appendix 2. They show that the peridotite carries 18 to 27 per cent MgO, 10 to 12 per cent Fe_2O_3, 0.3 to 0.6 per cent Cr_2O_3, and 200 to more than 900 ppm nickel. The highest gold concentration is 18 ppb. The

highest concentration of platinum (8 ppb) is present in sample 7920, chipped across 2 m, coincident with the highest concentrations of copper (126 ppm) and zinc (164 ppm), just downstream (below) a 50-cm layer of rusty gabbro.

3.2 Frying Pan Creek

The downstream end of the first canyon on the Frying Pan Creek (Fig. 3.2) starts in dark-grey basic volcanics with grain sizes to about 2 mm, 40 to 50 per cent laths and blocks of feldspar, few eyes of quartz to 6 or 7 mm (amygdules?), and narrow veinlets of epidote. The almost right-angled offset of Frying Pan Creek may be caused by a fault. On the upstream side of the fault(?) are a series of tuffs and interlayered basic volcanics or intruded basic igneous rocks. Some of the tuffs are slaty. Some fresh surfaces show laminae about 1 mm thick in slightly different shades of grey, and banded whitish chert-like layers 1 to 1½ cm thick with one thickening to 20 cm for about 1 m. Many joint surfaces have rusty patches. Finely disseminated pyrite is visible locally. The interlayered igneous rocks may be intrusive tongues rather than flows because of their irregular contacts; they are similar to the basic volcanics just downstream. On the north side of Frying Pan Creek is a layer of slightly greenish-grey siltstone or perhaps silty tuff. West of the fault shown, the grain size of the tuffs increases to lapilli and the buff-white and medium-grey bands are up to 3 cm thick.

Between the first and second canyons in Frying Pan Creek[1] are a few outcrops of basic volcanics which appear to underlie greyish tuffs, which underlie at least 50 m of black pyritic tuffs through which the second canyon is cut. This unit of black pyritic tuff is here termed the Gopher Member. Some 32 samples (Appendix 3) of these rocks were collected from eight locations (Fig. 3.1) in this part of Frying Pan Creek. The stratigraphic thickness of the Gopher Member sampled is uncertain because of its uniform appearance, its generally shallow but variable and undulating dips, and faulting. Some of the analytical results (Appendix 2) are shown in Fig. 3.3[2]. The

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1 The preglacial West Bea Channel crosses Frying Pan Creek between its first and second canyons and continues northerly through Bea Lake and Marsh Lake.

2 Gold was determined in most samples of tuffs and volcanics, but not peridotite nor gabbro at Northern Analytical Laboratories Ltd. by fire assay/atomic absorption techniques on 15-g fractions of the samples. Gold was also determined in the same samples at Acme Analytical Laboratories Ltd. by fire assay/inductively coupled plasma techniques on 10-g fractions of the samples. In general, the gold results by the two laboratories agree acceptably for geochemical analytical techniques. All illustrations in this report with concentrations of gold (Fig. 3.3, 6.2, 6.3, 6.7) show the highest concentration in each sample from either laboratory.

concentrations of barium in the Gopher Member (samples 5676-93, 5695-5700, 6670-73, 6675) range from 1226 to 4017 ppm. The composition of sample 6672 chipped across 2¼ m with its base 4 m above the bottom of the Gopher Member is conspicuous: gold 148 ppm, silver 223 ppm, lead 861 ppm, zinc 924 ppm, copper 299 ppm, cadmium 10.8 ppm, arsenic 2465 ppm, antimony 730 ppm. A few other samples contain anomalous concentrations of copper.

3.3 Along and Near Wyatt Creek (Fig. 3.4)

Within 100 m upstream from the fork of Wyatt Creek are a few outcrops of the Skolai Group consisting of tuffs and calcarenite (Appendix 4). Granules of chert or quartz in limestone may indicate correlations with the chert-granule limestone at the base of the Hasen Creek Formation mapped previously at the top of Tatamagouche Mountain and at Betz Creek. The southerly dips indicate that these strata are probably on the north limb of the syncline previously mentioned.

Farther down Wyatt Creek, presumably north of the Bocks Brook fault, are a few outcrops of basic volcanics of the Nikolai Formation.

Basic volcanics presumably in the Skolai Group outcrop on the south valley side of Burwash Creek about 350 m upstream from the mouth of Wyatt Creek about 30 m above the level of Burwash Creek.

3.4 North Side of Burwash Creek near Besner's Camp (Fig. 3.4)

From 25 to 57 m along the north bank of Burwash Creek downstream from Besner's roadside cabin is an outcrop of altered medium-grey rock which may be gabbro: grains 2-3 mm in size with 50 per cent greenish-white feldspar, and rust on joints. This rock is cut by a fault within a partly covered interval of 40 m. A gouge-filled shear or fault up to 20 cm thick of buffish-green-grey material strikes 175° and dips 13° east. Other shears or faults branch off. All rocks observed are weathered schists with one attitude of 158°/6°NE. East of this fault zone are rusty tuffs, some lapilli and some with carbonates, apparently intruded by a porphyry consisting of 20 to 30 per cent whitish feldpsar and quartz phenocrysts to 6 or 8 mm in size in a weathered purplish-grey fine-grained matrix. Locally are 2 to 3 per cent shiny black phenocrysts 2 mm in size. These rocks resemble the latite porphyry intrusions at the mouth of Tatamagouche Creek and along Johnson Creek to the west. This porphyry extends for about 40 m.

Easterly across a minor draw are lapilli tuffs grading to agglomerates with 20 to 30 per cent weathered pale-yellow partly rounded to angular clasts to 8 cm in a fine-grained dark-grey matrix. Locally up to 3 to 5 per cent pyrrhotite is present in aggregates and elongated masses to 1 cm or more in size. Lapilli tuffs extend for 190 m along the bottom of the north valley side of Burwash Creek becoming dark-grey to dark-greenish-grey with variable amounts of sulfides to five per cent, mostly pyrite. Locally they are highly epidotized.

3.5 Granodiorite

Outcrops of the Cretaceous granodiorite were observed on claim JAN 116 (Fig. 3.5). This granodiorite is generally a massive light-greyish rock spotted with about 25 per cent black hornblende, some in laths to 2 by 6 mm or even 2 cm long. Grain size is mostly 1 to 2 mm, with about 40 per cent glassy quartz and 35 per cent milky feldspar. Up to 5 or 10 per cent dark xenoliths to 20 cm in size were observed at the north end of the large outcrop which crosses from claim JAN 116 to JAN 118.

4. LINE CUTTING

Some 24.5 km of lines were cut (Fig. 3.1, Appendix 5) by means of chain saws and axes for magnetometer and other geophysical surveys. Stakes were placed at intervals of 100 m along the base lines, and 40 m along the offsets, with 10-m intervals along the offsets marked by flagging. Between Bea and Frying Pan Creeks and some adjacent ground, thick forests slowed the cutting of lines.

5. MAGNETOMETER SURVEYS

5.1 Equipment and Methods

A Scintrex MP2 proton magnetometer was used for all magnetometer surveys without a base station. This instrument is capable of reading to one nanotesla, but reproducibilities of three to five nanoteslas were common during the surveys. When reproducibilities exceeded seven or eight, no surveys were run on that day because of the probability of a magnetic storm. At least three readings were made at each station and averaged or the modal reading selected.

Before extending the grid lines cut in 1989 to the lower parts of Frying Pan and Bea Creeks, the 1983 magnetometer traverses along some of the claim location lines and half way between were extended northerly (Fig. 3.4, 5.1, Appendix 6), for a total surveyed length of 23.68 km. Diurnal corrections were applied by

re-occupying stations in loops, and each profile adjusted to the magnetic base of the lines surveyed in 1983.

Lines 100W Sue and 200W Sue (Fig. 5.2) totalling 1800 m, were surveyed by magnetometer in a similar manner to obtain further information on the peridotite near drillholes 89-9 and 89-10.

The 1989 geophysical grid between Bea and Frying Pan Creeks was incompletely extended easterly and northerly with 22660 m surveyed (Fig. 3.1, Appendix 6). Diurnal corrections were made by surveying each baseline at least five or six times with the differences between stations at 100-m intervals used to establish a magnetic reading for each baseline station relative to that at 1000N, 2700W (Table 5.1). The readings on the surveyed offset lines were corrected diurnally by the use of readings from re-occupied stations at intervals of 120 m in loops.

5.2 Interpretations

The results of the magnetometer surveys are shown as profiles (Fig. 3.4, 5.1, 5.2, Appendix 7). The most conspicuous features on the widely spaced traverses (lines 122 to 132 on Fig. 3.4 and 5.1) are the high magnetic readings corresponding to the West Bea peridotite, which is exposed locally along the extreme upper part of West Bea Creek above Bea Lake. On line 127 the West Bea peridotite appears to be about 200 m thick, and to dip steeply to the south. It can be traced along strike from line 125 to 127, east of which its magnetic response is obscured by thick surficial cover in the preglacial West Bea Channel. A weaker response is present along strike on line 129, east of the West Bea Channel, so that its total strike length is about 2 km.

Magnetic responses on adjacent widely spaced traverses may be correlatable from near Wyatt Lake to near Lake 8 (Fig. 3.4). They may be related to

1) the Bocks Brook fault,
2) uneroded patches of Nikolai volcanics remaining on top of strata of the Skolai Group,
3) stratigraphic variations in magnetic intensity of strata in the Skolai group, or
4) some other feature.

Traverses at intervals of 100 m may permit the correct interpretation. Farther east along strike, these magnetic features are obscured apparently by thick glacial till. They reappear again on lines 129 to 131 (Fig. 5.1) in the lower part of Bea Creek east of the West Bea Channel, where the overburden is thinner.

TABLE 5.1 MAGNETOMETER READINGS ALONG BASELINES CORRECTED FOR DIURNAL VARIATIONS AND ADJUSTED TO THE READING AT 1000N, 2700W.

Station	Reading (nT)	Station	Reading (nT)	Station	Reading (nT)	Station	Reading (nT)
Baseline at 1000N (Golden Gopher Baseline)							
700W	56450	1700W	56818	2700W	56580	3600W	56898
800W	56511	1800W	56779	2800W	56725	3700W	56844
900W	56463	1900W	56788	2900W	56987	3800W	56834
1000W	56438	2000W	56800	3000W	57115	3900W	56838
1100W	56548	2100W	56821	3100W	57169	4000W	56760
1200W	56690	2200W	57147	3200W	57154	4100W	56782
1300W	56730	2300W	57064	3222W(L)	57150	4200W	56795
1400W	56795	2400W	56781	3200W	57392	4300W	56793
1500W	56784	2500W	56773	3400W	57099	4400W	56763
1600W	56752	2600W	56706	3500W	56925	4229W(K)	56748
Baseline at 2200N							
800W	56888	1300W	57130	1800W	56957	2300W	56913
900W	56813	1400W	57151	1900W	56891	2400W	56866
1000W	56881	1500W	57056	2000W	56995	2500W	56880
1100W	56976	1600W	57070	2100W	57130	2515W	56882
1200W	57084	1700W	57009	2200W	57181		
Baseline at 2600N							
2600W	57056	3200W	57074	3900W	57222	4600W	56971
2700W	57043	3300W	57070	4000W	57201	4700W	56996
2800W	56993	3400W	57083	4100W	57223	4800W	56964
2900W	56938	3500W	57045	4200W	57151	4900W	56934
3000W	56923	3600W	56989	4300W	57443	5000W	56927
3050W	56969	3700W	56995	4400W	57265	5050W	56986
3100W	56999	3800W	57077	4500W	57032	5100W	57064

Magnetometer traverses 100W and 200W west of the Sue baseline (Fig. 5.2) confirm the lower magnetic responses adjoining south of drillhole 89-10. If they are due to an interlayer of gabbro, rather than serpentinization or the masking of high magnetic responses by very thick overburden, they enhance the possibility of reefal platinum producing the anomalous concentrations of platinum in the 1987 percusion drillholes just to the north. The dip of layering in this part of the Tatamagouche ultramafic intrusion has not yet been determined.

Interpretations of the magnetic traverses run on some of the cut lines in the Golden Gopher grid are in Appendix 7. The quartz-carbonate layer previously mapped along Duke River produces a prominent magnetic low on line 800W. The lows from this layer become less pronounced to the west, but may be present just north of the peridotite contact as far as line 1400W or 1500W. The band of peridotite north of the main peridotite comprising the Tatamagouche ultramafic intrusion mapped along Duke River is clearly shown on line 900W, and may be present as far west as line 1400W.

Lines 1100W and 1200W were surveyed across from the south limb to the north limb of the Tatamagouche syncline. They both show a southerly dipping magnetic layer, perhaps an extension of the West Bea peridotite offset slightly to the north, near what is assumed to be the axis of this syncline. A steeply dipping magnetic layer is present more or less along Bea Creek on lines 1100W, 1200W, 1300W, and 1700W, the only lines surveyed there.

Some of the lines which cross Frying Pan Creek show it to be following a magnetic low, probably a fault, but Frying Pan Creek seems to depart from such a fault in places. The gabbro, previously mapped on the Golden Gopher Slope seems to produce a broad modest high on lines 2700W and 2600W. The almost flat-lying to shallow-dipping Gopher Member does not produce a diagnostic pattern.

6. TRENCHING AND SAMPLING, STRIPPING

A D8 bulldozer was used for the trenching and stripping described here.

6.1 South Side of Burwash Creek

About 200 m upstream from the mouth of Wyatt Creek, a trench was bulldozed along the south valley side of Burwash Creek to expose the peridotite there better for sampling (Fig. 6.1, Appendix 8). This peridotite is here termed the Wyatt peridotite. In both Fig. 6.1 and Appendix 8, which includes details on the samples

and some geological observations, metrages along the trench are measured easterly from its west end. Along the trench, peridotite and a few interlayers of gabbro are exposed for about 68 m. The peridotite is variably serpentinized and cut by a few faults, mostly with clayey gouge. The gabbro layers range from 25 cm to more than 100 cm thick. Most are easily identified, but the designation of one constituting sample 7810 is based on its chemical composition. Dips of the gabbro layers of 45^{o} or 46^{o}E are essentially constant; the variations in their strikes in Appendix 8 may not be real as the compass readings were probably affected by magnetite in the peridotite. Unless the Wyatt peridotite is overturned, stratigraphic tops in the layering are easterly. In addition to the gabbro layers, a gabbro dyke apparently cuts the interlayered peridotite and gabbro. Some of the peridotite is faulted against basic volcanic rocks.

Analyses of the samples collected are in Appendix 2, with some plotted in Fig. 6.2. The higher concentrations of copper, nickel, and chromium in peridotite compared to gabbro are evident. If the interpretation of the attitude of the layering is correct, the concentrations of platinum, palladium, and gold increase toward the top of the section sampled to reach maximum concentrations of 76, 25, and 24 ppb, respectively, perhaps accompanying increases in the concentrations of nickel. The highest concentrations of copper of 569 and 636 ppm are also in the upper part of the sampled section but not near the top. The concentrations of boron, lanthanum, and perhaps niobium also increase towards the top of the stratigraphic section sampled.

Near the east end of this trench is a major fault with a breccia zone at least 3 m wide. Breccia fragments are variably coated with red hematite. This fault appears to be the Bocks Brook fault. Its attitude could not be definitely observed where it was excavated in the trench, but a planar feature adjacent to the fault strikes 142^{o} and dips 86^{o}NE. If this is its correct attitude, the easterly trace of the Bocks Brook fault coincides with the northerly fork of Wyatt Creek and probably follows more or less along Wyatt and Bea Creeks to Duke River and perhaps beyond. If the location of this trace is correct, then the Bocks Brook fault crosses both Burwash Creek and Duke River a short distance above major canyons on both. It is obvious that the last movement on the Bocks Brook fault is later than the intrusion of the Wyatt peridotite, but the Wyatt peridotite may have originally intruded along the Bocks Brook fault, with renewed movement much later. It is also possible that the Wyatt peridotite may be a faulted segment of the Tatamagouche ultramafic intrusion.

The trench, mostly in peridotite, shown in Fig. 6.1 was continued westerly along the base of the south valley side of Burwash Creek for 148 m: in permanently frozen slumped clayey till for 140 m, then to expose hard, medium-grey basic volcanics or gabbro with grain sizes to 1 or 2 mm for 8 m. Samples of this till were collected at intervals of 10 m beyond the western end of the peridotite exposed in the peridotite trench for 130 m, with the samples prefixed 80 and the second number corresponding to the number of metres westerly from the end of the peridotite trench. These samples were treated as soil samples with the -40 mesh fractions being analyzed; the analytical results are in Appendix 9. They show concentrations of gold from 14 to 97 ppm, and up to 351 ppm copper. Sample 80-10 contains 25 ppm antimony. The concentrations of the other constituents appear to be background or average. Perhaps the antimony in sample 80-10 is related to the antimony near the base of the Gopher Member in Frying Pan Creek, as the Gopher Member was observed in the bed of Burwash Creek near here in an area being stripped by Henry Besner at the time of his death in 1977.

Similar basic igneous rocks, probably volcanics, appear to form a subcropping cliff about 10 m high for 18 m beyond this trench. Similar rocks are present intermittently, some high up the valley side for 92 m farther west along Burwash Creek from the previous trench sampled.

About 130 m westerly from the previous trench, another trench was excavated westerly along the base of the south valley side of Burwash Creek for 120 m. Green-grey basic volcanics or tuffs with up to 10 per cent disseminated pyrite, some in cubes to 2-3 mm, were observed at one place.

On the south side of Burwash Creek almost along strike from the trench described in Sec. 6.2, a trench about 26 m long was excavated obliquely to the strike of the tuffs near the base of the south valley side. Samples from this trench are described in Appendix 10, with analyses in Appendix 2. The analyses by Acme Labs show 1 to 3 ppb gold in all four samples, whereas those by Northern Analytical show 58 and 41 ppb gold in the two stratigraphically lowest samples, of which sample 6947 contains 1425 ppm barium. The barium concentratons in the other three samples range from 464 to 775 ppm. Strontium in all four samples ranges from 295 to 391 ppm. The stratigraphically lowest sample, 6948, contains 165 ppm niobium, compared with 177 ppm niobium in sample 6936 in the trench opposite on the north side of Burwash Creek. Perhaps these higher than normal niobium concentrations are stratigraphically controlled in these tuffs.

6.2 North Side of Burwash Creek

A trench 96½ m long was bulldozed along the steep north bank of Burwash Creek just above water level on claim JAQ 37 (Fig. 3.4) in rusty tuffs to expose material suitable for sampling. The rocks exposed in the trench are pyritic tuffs with somewhat more calcite as laminae and in narrow veinlets in the stratigraphically upper part. Small amounts of galena and sphalerite are also present locally in the upper part of the section sampled. Sample details are in Appendix 11 and analytical results in Appendix 2. Selected analyses are shown in stratigraphic sequence in Fig. 6.3 with the gold analyses treated as explained in Sec. 3.2.

Except for sample 6935, the highest gold concentrations are in the upper 25 m sampled, generally coincident with the higher concentrations of silver, lead, zinc, and cadmium. Thinner intervals lower in the stratigraphic section show coincident concentrations of silver, lead, zinc, and cadmium higher than the background concentrations. High arsenic concentrations coincide with those of gold and to a lesser extent with the anomalous concentrations of lead, zinc, and cadmium in stratigraphic intervals lower in the section. The calcite noted in the upper part of the section results in generally coincident higher concentrations of lime and higher LOIs. Strontium concentrations may be inversely related to gold concentrations. Antimony, not shown in Fig. 6.3, appears to correlate with the higher gold concentrations in sample 6935, and generally with some of the gold in the upper part of the section.

6.3 Switchback on Bea Creek Trail

A rock face at the switchback on the trail up Bea Creek was exposed for about 45 m (Fig. 6.4) in an excavation 53 m long. It shows various units of tuffs dipping southerly; they appear to be on the northern limb of the Tatamagouche syncline referred to in Sec. 3. Below the tuffs at the easterly end of the trench is a coarse-grained basic igneous rock labelled gabbro. Some units of the exposed tuffs are black and rusty, and resemble the Gopher Member. The uppermost exposed unit is a rusty tuff resembling some of those trenched and sampled on the north side of Burwash Creek (see Sec. 6.2).

The exposed rock face was sampled as shown in Fig. 6.4, with sample details in Appendix 12, and analytical results in Appendix 2. What are considered anomalous concentrations (without statistical calculations) of some constituents in some samples are as follows:

gold*	26 to 59 ppb	molybdenum	18 to 34 ppm
silver	1.0 to 2.3 ppm	barium	499 to 1546
lead	24 to 95	arsenic	23 to 49
zinc	223 to 741	boron	98
cadmium	3.3 to 10.4	niobium	59

If this trench exposes the upper contact of the Gopher Member with overlying pyritic tuffs, as seems likely, then some units of tuff near the top of the Gopher Member contain anomalous concentrations of silver, molybdenum, zinc, and cadmium. Anomalous concentrations of gold, lead, arsenic, and barium are present in tuffs both below and above this contact. The 59 ppm niobium in sample 6978 may be in the same stratigraphic interval with high concentrations of niobium in the tuffs trenched and sampled on both sides of Burwash Creek (Sec. 6.1, 6.2).

6.4 Betz Creek

Two trenches were excavated near the mouth of Betz Creek on claim JY 27 (Fig. 6.5), one on the east side of Betz Creek about 31 m northerly from the washed-out crossing on the old high road and the other about 30 m westerly across Betz Creek. The faces exposed are sketched in Fig. 6.6. In the easterly trench is a structurally complex series of mostly rusty-weathering pyritic black tuffs, which appear to be correlatable with the Gopher Member on the Golden Gopher Slope and in Frying Pan Creek. Between the road and the section sampled are banded grey-weathering tuffs with attitude $115^{o}/72^{o}$N. Ten samples were collected with details in Appendix 13. Some of the analytical results (Appendix 2) are shown in Fig. 6.7. Sample 6949 across 1.7 m contains 108 ppb gold according to the analysis by Northern Analytical Laboratories Ltd. All these samples except 7767 contain considerably less barium than those from the Gopher Member along Frying Pan Creek. Sample 6951 from the fault contains 291 ppm zinc, 214 ppm nickel, 336 ppm cobalt, and 2948 ppm manganese. The considerable thickness of the Gopher Member exposed in the lower part of Betz Creek requires additional trenching and sampling.

The trench on the west side of Betz Creek (Fig. 6.6) exposed a series of greyish tuffs with local brownish-green alteration. Grain sizes vary from very fine to coarse lapilli fragments up to 2-3 mm. These tuffs are in an overturned fold whose axis plunges 23^{o} at an azimuth of 350^{o}. They were not sampled.

6.5 Stripping near Frying Pan Creek

An area on claim EL 40 near where the trail across the Burwash Uplands crosses Frying Pan Creek (Fig. 3.1), was stripped to permit easy access to gravel for future improvements to the Uplands trail.

---

* Analyses by Northern Analytical Laboratories Ltd.

7. IMPROVEMENTS TO AND CONSTRUCTION OF ACCESS TRAILS

Both a Caterpillar D8 bulldozer and an International backhoe-loader on wheels were employed as appropriate in improving and constructing access trails.

7.1 Along Duke River (Fig. 3.1)

A grade about 5 yards wide was constructed for 700 yards along an old winter road south from the mouth of Frying Pan Creek on the west side of Duke River. The grade on the first part of the old winter road on the east side of Duke River was improved for 100 yards.

7.2 Up Bea Creek (Fig. 3.1, 3.4)

Work on the extension of the trail up Bea Creek beside Wyatt Lake was filed earlier this year on placer claims. This trail was extended about 1200 yards past the part filed on the placer claims by building a grade averaging 5 yards wide by 1 yard high. Ditches and side slopes along the Bea Creek trail were improved in selected places for 200 to 300 m below the trailer camp in the lower part of Bea Creek.

7.3 Branch to Burwash Creek (Fig. 3.1, 5.2)

The grade of the trail from the log culvert constructed across Bea Creek in 1989 to Martin Creek was improved by filling in several low and soft places and by smoothing and back blading. A ditch 126 yards long on the west side of the trail past Martin Creek was excavated in very soft ground. Near Gopher Creek three cross drains were installed and a ditch 80 yards long was excavated on the high side of the trail. Beyond the Golden Gopher Slope, two cross drains were installed. The very steep grade on the south side of the valley of Frying Pan Creek was reduced in one place, and beyond on the gravel ridges the trail was widened and straightened.

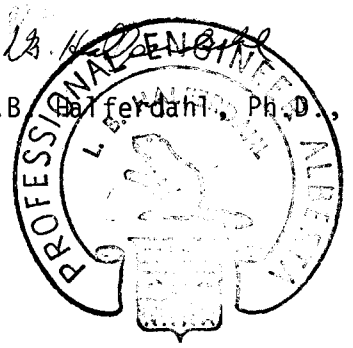
A cross drain was installed on the trail about 500 m past Lake Three, and a log culvert constructed across a tributary to 30 Pup. A grade about 100 m long at the east approach to 30 Pup was constructed in the then thawed permafrost. The grade at the west side of 30 Pup was rebuilt for 500 m. From there to Lake Two, the then thawed permafrost permitted widening and smoothing of the previously constructed grade.

7.4 Along Burwash Creek (Fig. 6.7, 7.1)

Several slides were cleared from the old trail along the north side of Burwash Creek between 105 Pup and the mouth of Tatamagouche Creek. The lower trail up Burwash Creek from Lori Creek to Betz Creek was rehabilitated to a very rough standard; this was the first work on this part of the trail since the 1988 floods.

To facilitate access for trenching and sampling some improvements were made in the Zed Canyon, and in the part of the First Canyon as far up as the hump.

Respectfully submitted,



L.B. Halferdahl, Ph.D., P.Eng.

Edmonton, Alberta
1991 02 28

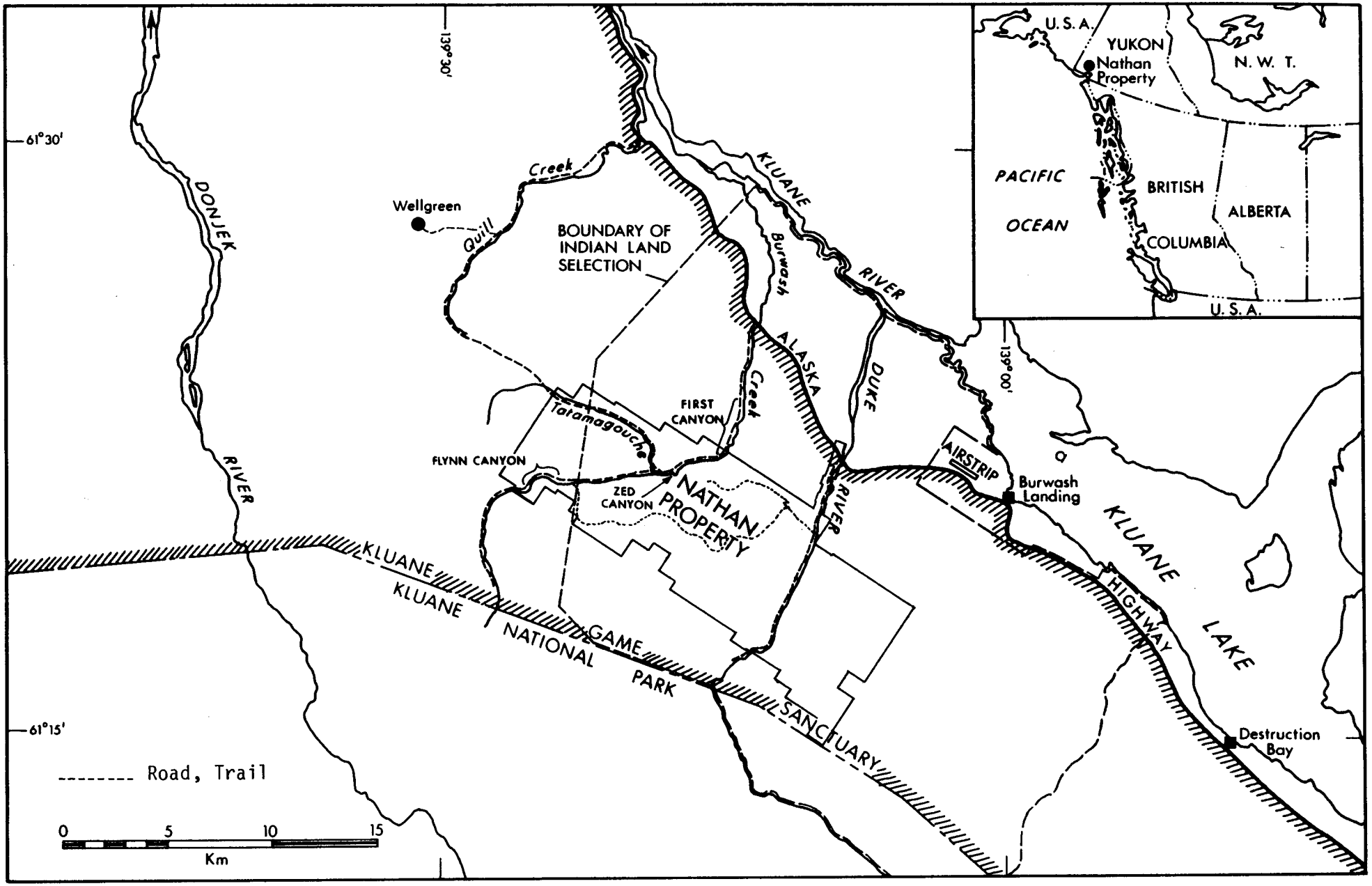
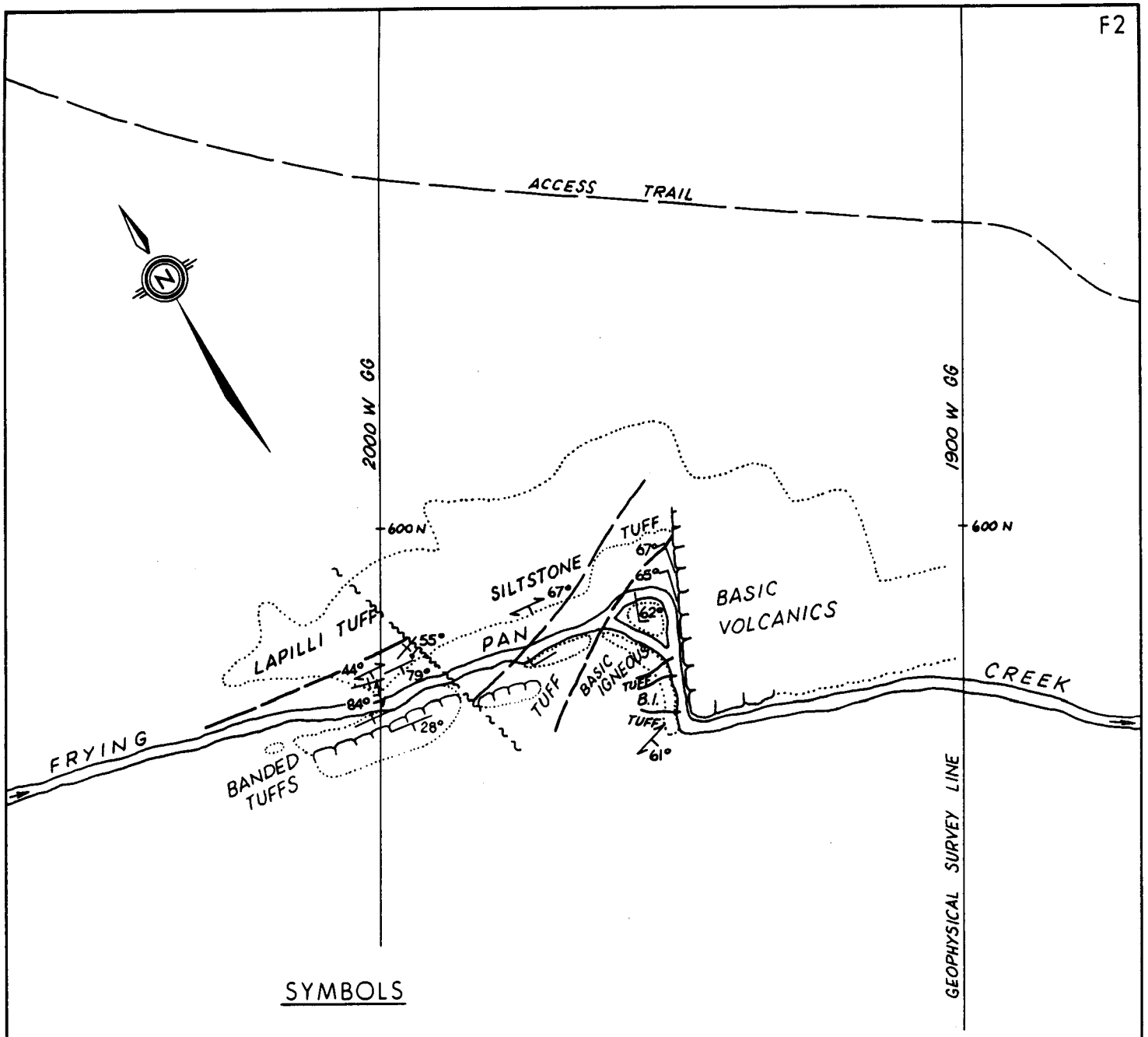


Fig. 1.1 Location and Index Map

F1



SYMBOLS

Geological boundary (defined).....
(approximate).....

Fault (defined, approximate).....

Area of outcrop.....

Bedding, strike and dip.....

Shearing, cleavage, strike and dip.....

Jointing, strike and dip.....

Cliff face.....

0 40 80 m

SCALE: 1:1000

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Fig. 3.2 Geology in First Canyon of Frying Pan Creek.

BURWASH CREEK AREA, YUKON

LBH 1990.12

SYMBOLS

- Black pyritic tuff
- Tuff
- Basic volcanics
- Sheared rocks .....

NOTES

- See Fig. 3-1 for numbered locations along Frying Pan Creek.
- See Appendix 3 for detailed sample descriptions.

0 5 10 15 20 m

SCALE: 1:400

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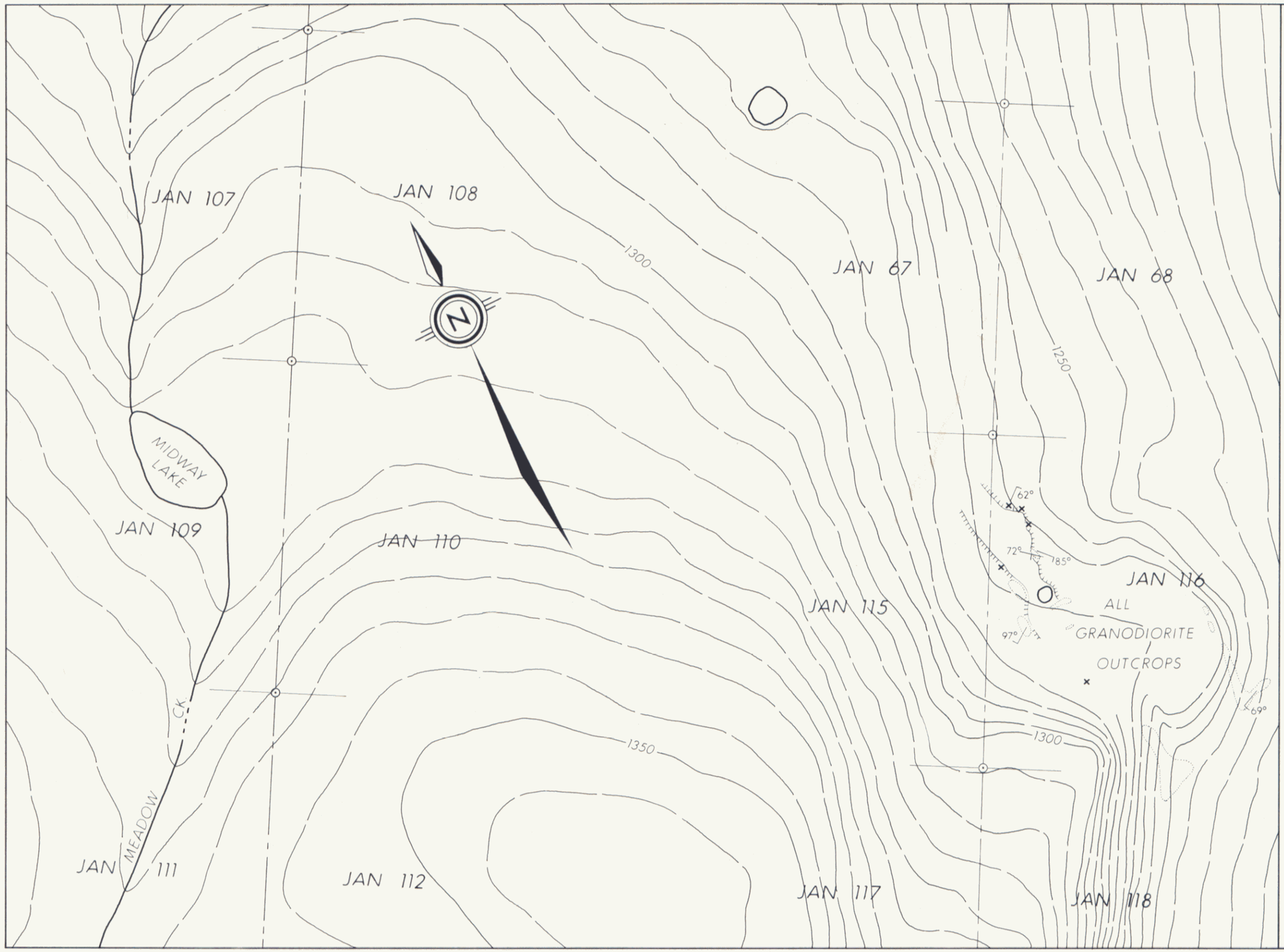
Fig. 3-3 Selected Analyses of Outcrop Samples of Gopher Member Along Frying Pan Creek.

BURWASH CREEK AREA, YUKON

LBH 1990-12



SYMBOLS

- Rock outcrop, area of outcrop ×
- Planar structure, strike and dip 72°
- Joint, strike and dip 85°
- Escarpment
- Lake or pond
- Creek
- Elevation contour (interval: 5m)
- Quartz claim post ⊙
- Claim line

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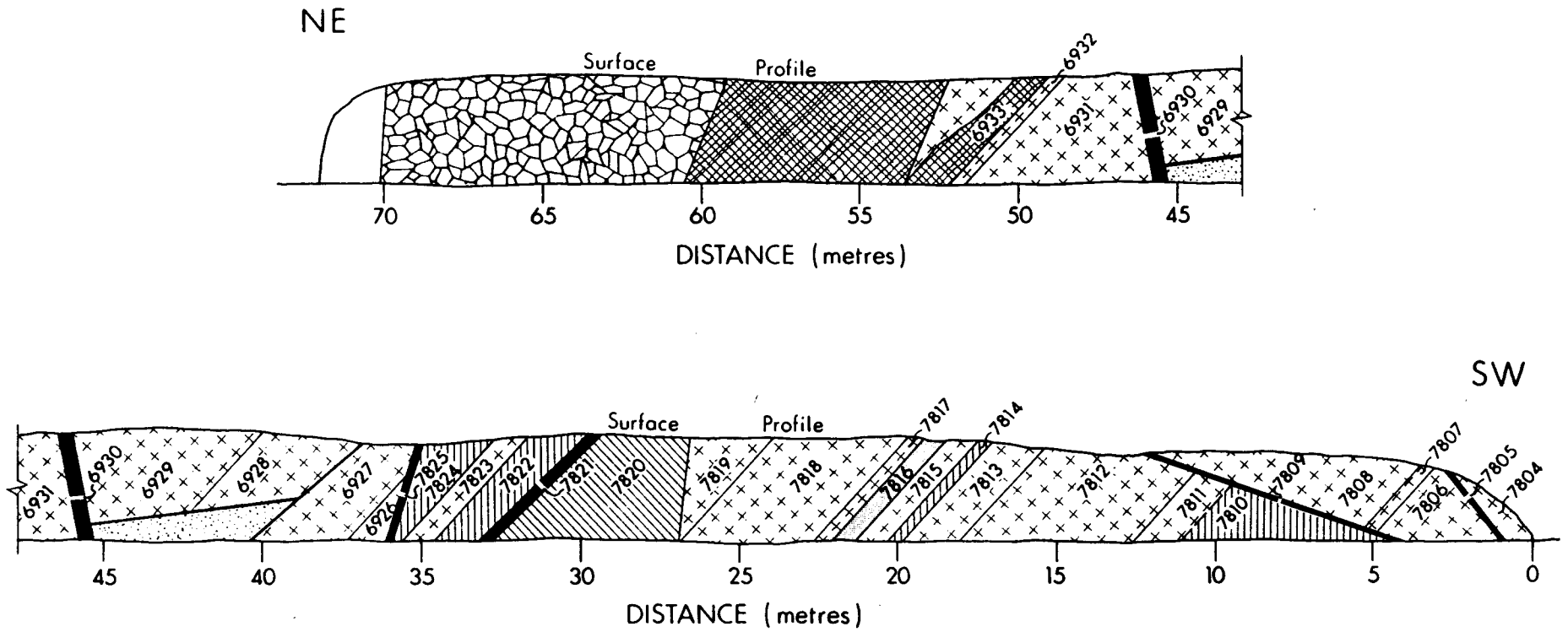
Fig. 3.5 Geology on Claims JAN 116 and 118.

BURWASH CREEK AREA, YUKON

0 100 200 300 m

Scale: 1:5000

LBH 1990.12



SYMBOLS

- Peridotite
- Gabbro
- Gabbro dyke
- Basic igneous rocks
- Tuffs, white to medium-grey
- Clay
- Fault breccia
- Fault
- 6927 Sample number

NOTES

- See Appendix 8 for detailed sample descriptions.
- Azimuth along face is approximately 55°.
- See Fig. 6-2 for selected sample analyses.
- See Fig. 3-4 for location of trench.

Scale: 1:200

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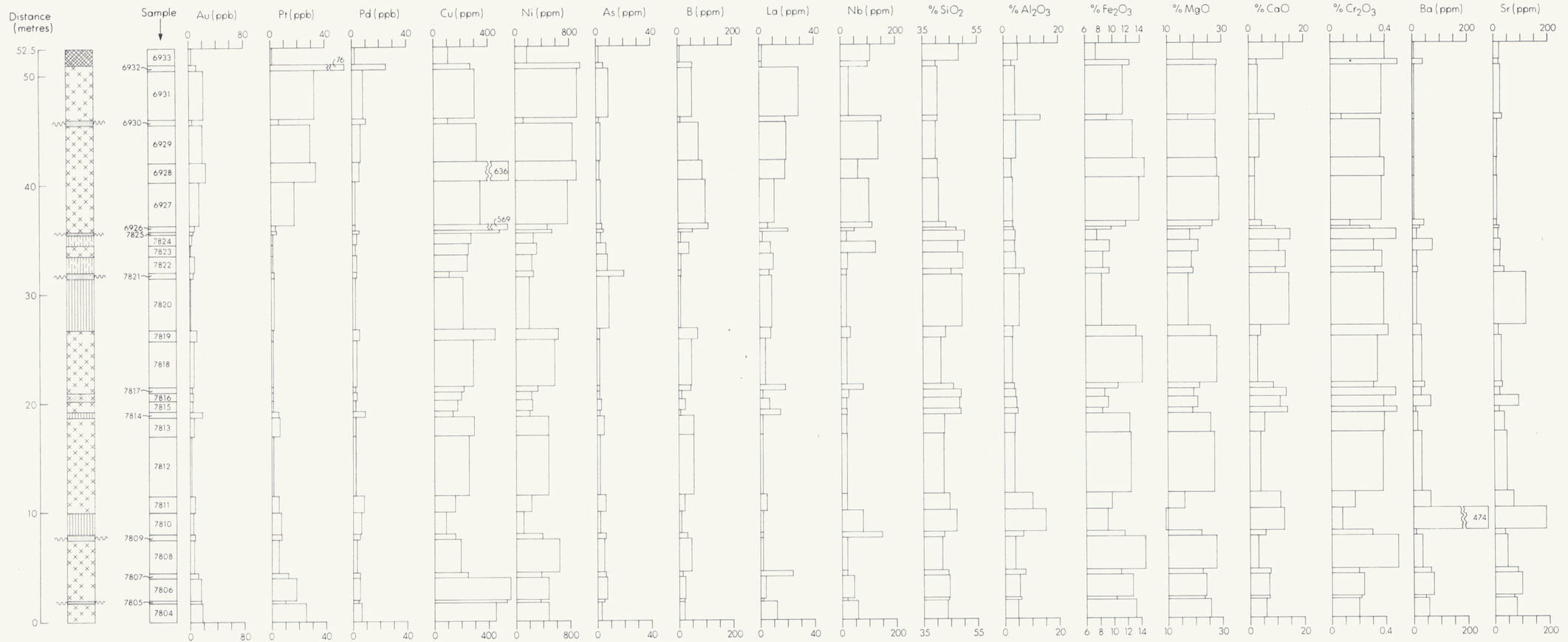
Fig. 6-1 Face of Trench in Peridotite on South Side of Burwash Creek.

BURWASH CREEK AREA, YUKON

LBH 1990-12

F5



SYMBOLS

- Basic igneous rocks
- Peridotite
- Serpentinized peridotite
- Gabbro
- Serpentinized gabbro
- Clay
- Clayey (fault) material
- Fault

NOTES

- See Appendix 8 for detailed sample descriptions.

0 5 10 15 m

SCALE: 1:250

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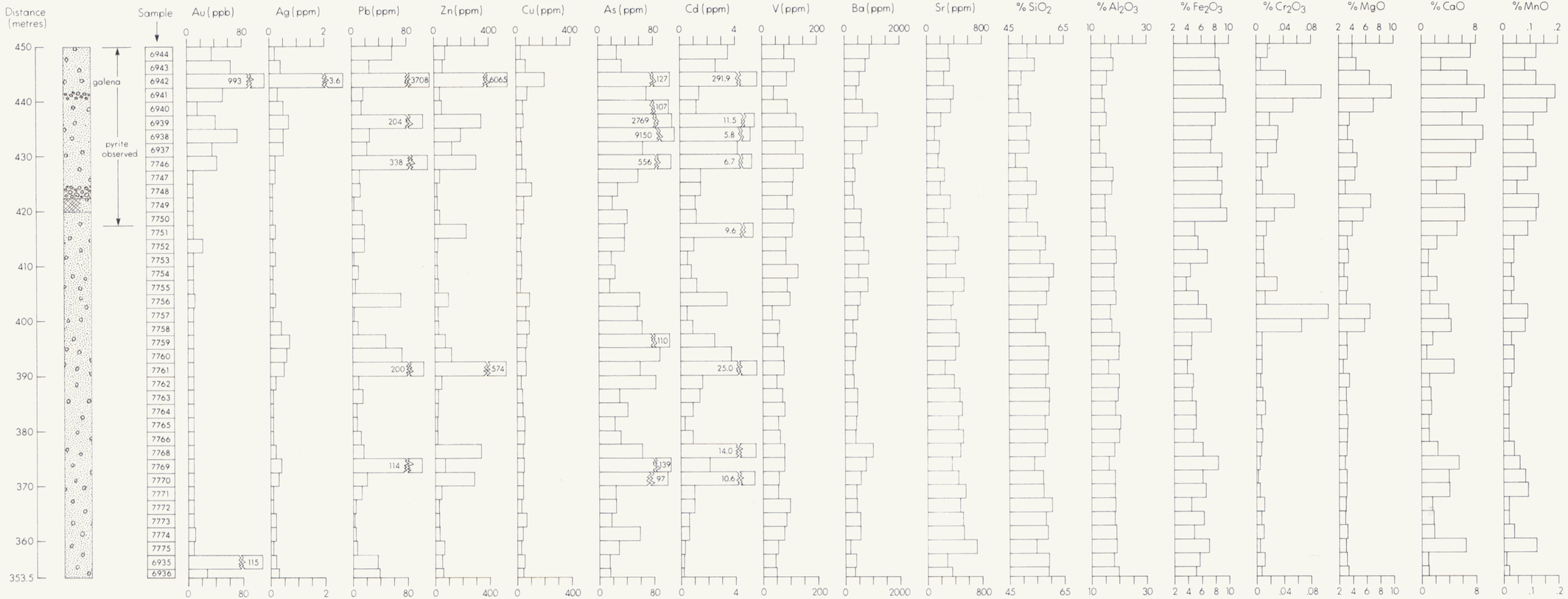
Fig. 6-2 Selected Analyses of Samples from Trench in Peridotite on South Side of Burwash Creek.

BURWASH CREEK AREA, YUKON

LBH 1990-12



SYMBOLS

- Tuff, grey
- Tuff, lapilli
- Volcanics

NOTES

- Distances were measured from an arbitrary point along the north side of Burwash Creek with samples arranged in stratigraphic order with tops up.
- See Appendix II for detailed sample descriptions.

0 10 20 30 m

SCALE: 1:500

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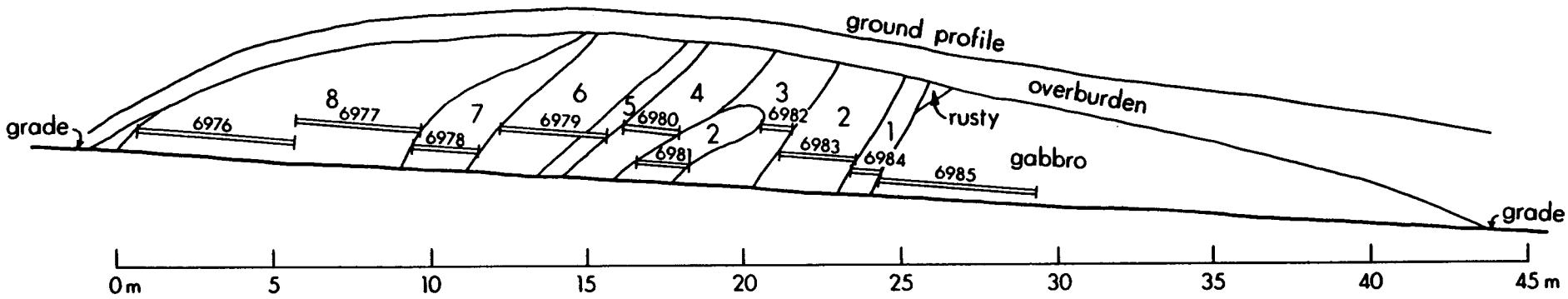
Fig. 6-3 Selected Analyses of Samples from Trench on Claim JAQ 37.

BURWASH CREEK AREA, YUKON

LBH 1990-12



LEGEND

1. Rusty black tuff, locally silicified.
2. Light green-grey weathering tuff with quartz grains rounded to 2 - 3 mm., 10 - 20% rusty patches, minor pyrite.
3. Rusty black tuff.
4. Well banded very rusty weathering black tuff.
5. Green-grey weathering tuff.
6. Rusty banded tuff.
7. Pale green-grey weathering, black very fine grained rock.
8. Highly pyritic, rusty, medium grey tuff grain size: 1/2 mm.

SYMBOLS

Lithogeochemical sample location with number 6976

NOTES

- Face bears 53°, 53m long x 1.5m (ave.) x 5m wide
- Contact between 1. and 2: 270°/67°S
- Banding in 2: 258°/35°S
- Banding in 4: 295°/48°S
- Banding in 6: 310°/58°S
- See Appendix 12 for detailed sample descriptions.

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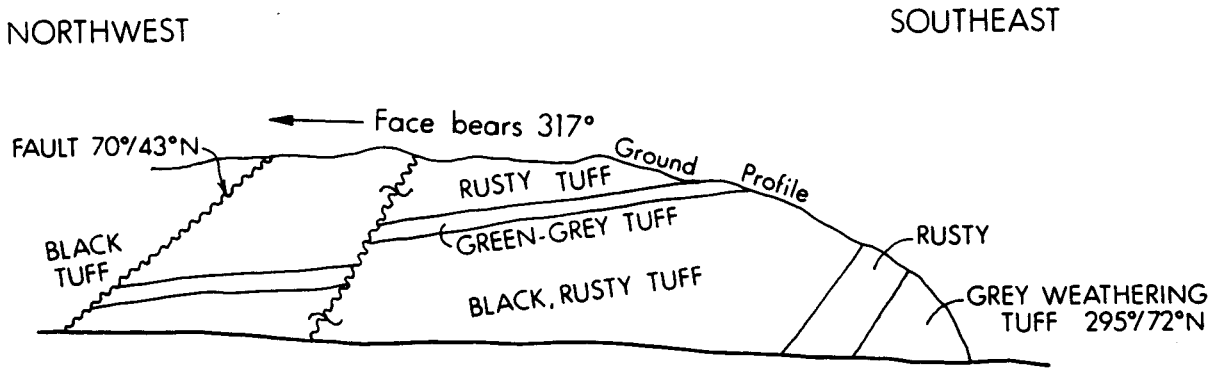
Fig. 6.4 Face of Trench at Switchback on Trail up Bea Creek

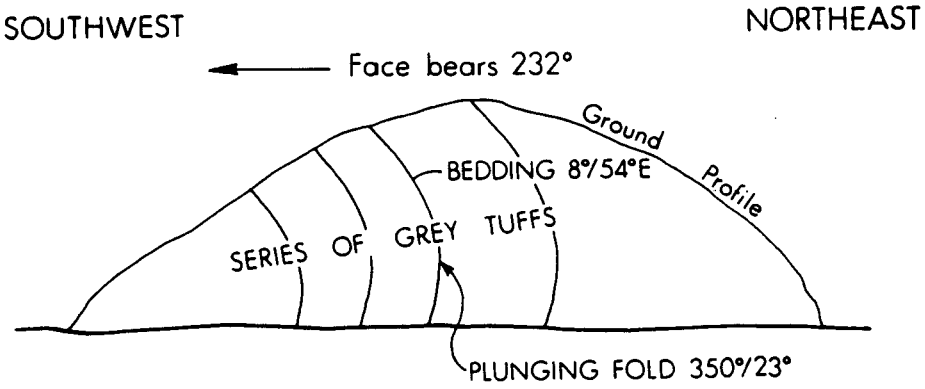
BURWASH CREEK AREA, YUKON

LBH 1990 12

F88



Vertical Section of Trench on East Side of Betz Creek



Vertical Section of Trench on West Side of Betz Creek

NOTES

See Appendix 13 for detailed sample descriptions.

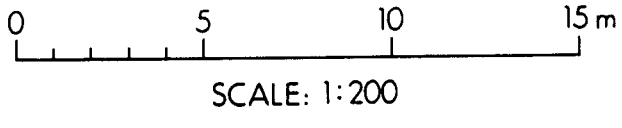


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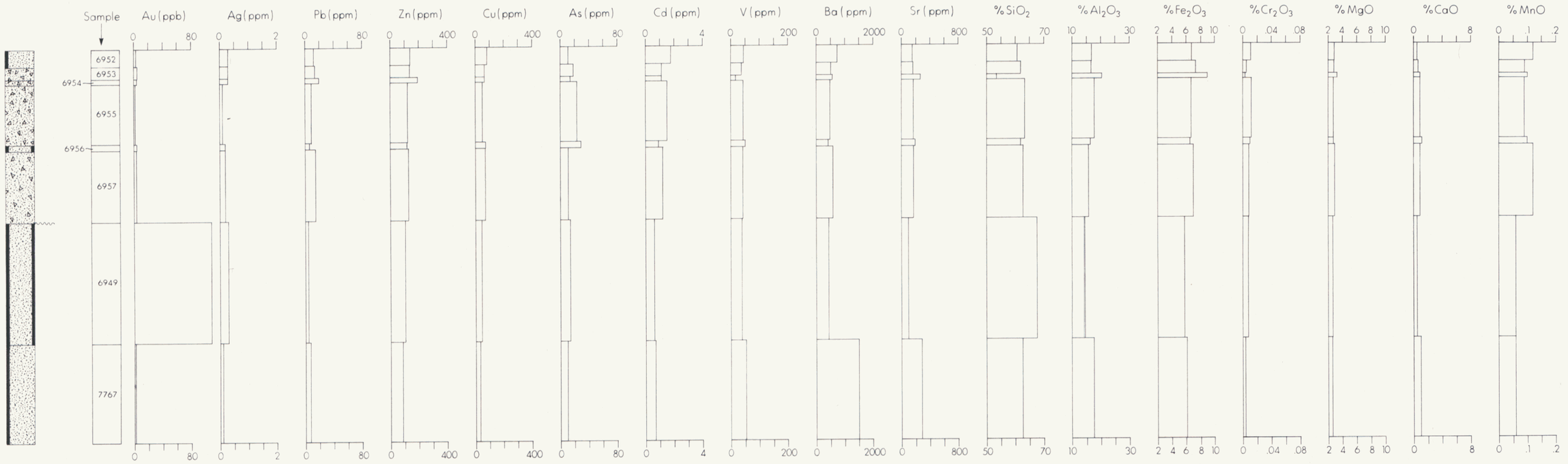
Fig. 6.6 Trenching on Betz Creek.
BURWASH CREEK AREA, YUKON
LBH 1990-12



SYMBOLS

- Black pyritic tuff
- Black tuff
- Tuff, dark grey to greenish-grey

0 .5 1 2 3m

SCALE: 1:40

NOTES

See Appendix 13 for detailed sample descriptions.

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Fig. 6.7 Selected Analyses of Trench Samples near Betz Creek.

BURWASH CREEK AREA, YUKON

LBH 1990.12

APPENDIX 1: TRAVERSE UP WEST SIDE OF DUKE RIVER

Metrages are measured upstream from upstream end of conspicuous band of buff-rusty quartz-carbonate with near vertical dip.

Metrage	Description
10	peridotite, dark-greenish black, small serpentine veinlets, highly magnetic, in outcrop 1½ m wide 3 m above river; more or less continuous outcrop on east side of river
14	veins(?), two light-colored buff-white about 1 m apart on east side, strike and dip as measured from west side $140^{o}/66^{o}$NE with strike approximately the same as quartz-carbonate band
28-158	peridotite, poikilitic, grain size 2-3 mm except for up to 20% pyroxene oikocrysts, odd grain of phlogopite or biotite, not as magnetic as outcrop at 10 m
	42 somewhat more magnetic
	59 some outcrops 2-3 m wide with surface covered with serpentine
	81 magnetic, up to 20% olivine in rounded greenish grains 1-3 mm in size
	86 wavy (1-2 cm wavelength) serpentinized slickensided surface with average attitude $310^{o}/16^{o}$NE; strike and dip of intersecting serpentinized surface $208^{o}/52^{o}$E
	101 block of gabbro about 1½ m wide with strike and dip $261^{o}/71^{o}$N, covered by river at east end, grain size 1-2 mm with pale-greenish blobs to 3-4 mm in size, medium-grey, weathers greyish green, 30% whitish feldspar with rest dark minerals, displaced about 3 m by fault with attitude $343^{o}/75^{o}$W, with south side higher up river bank
	108-115 much serpentine on slip surfaces, moderately magnetic
	130 highly magnetic
	138 20-30% pale-green olivine with network serpentine and magnetite grains 1-2 mm in size, 10-20% pyroxene oikocrysts, highly magnetic, south end of outcrop on east side of Duke
	147 SAMPLE 7919 highly magnetic random chips, some with up to 3-4% disseminated chalcopyrite in masses 1-2 cm in size
164	start of outcrop entending south on east side
169	peridotite in outcrop of 1 m^2 6 m west of water's edge
176-240	peridotite, similar to previous outcrop
	180 prominent serpentinized surface with attitude $260^{o}/37^{o}$N
	183 odd patch with up to 3-5% disseminated chalcopyrite and pyrrhotite(?)
	184 attitude of prominent serpentinized joint $200^{o}/26^{o}$W
	200 very prominent intersecting serpentinized joints, highly magnetic

APPENDIX 1: CONTINUED

Metrage	Description
202	undulating contact with average attitude $294^{o}/53^{o}S$ of green-black magnetic peridotite with very fine-grained to aphanitic tuff layer about 60 cm thick with few green chlorite masses to ½ mm in size
205	many serpentinized joints with attitude $332^{o}/47^{o}W$, disseminated chalcopyrite and pyrrhotite but not visible in massive rock only along fractures
209	prominent intersecting serpentinized fractures, disseminated pyrrhotite, highly magnetic
224	mouth of small stream tributary to Duke River
225	more even grained peridotite with grain size about 2 mm, somewhat less magnetic and much less serpentinized, although locally chloritic, grey to black matrix with no serpentine, locally with 3% disseminated pyrrhotite
233	fault with attitude $330^{o}/78^{o}W$; gouge 12-14 cm thick
238	more typical peridotite with greenish-black color from serpentine
253	south end of outcrop entending north on east side; if covered intervals correlate trend in layering strikes 153^{o}
255-257	peridotite, similar to previous
259-304	peridotite, similar to previous, pyroxene oikocrysts to 1-2 cm, 1-2% reddish phlogopite
263	gabbro in layer about 35 cm thick with attitude 304^{o}/vertical light-grey, grain size 1-3 mm, 60% or more whitish-grey feldspar with black pyroxene(?), 60-cm layer of peridotite adjoining to south
264	gabbro in layer 120 cm thick, grey, weathers whitish
265½	contact with gabbro and peridotite to south
265½-268½	peridotite, typical, with 40 cm of non-magnetic gabbro at south side
268½-270	basic igneous dyke about 140 cm thick, whitish to greyish, grain size 3 mm or more, attitude $250^{o}/74^{o}S$
270	peridotite, serpentinized, poikilitic, magnetic
270	north end of outcrop entending south on east side
280	peridotite, grain size to 1 mm, not poikilitic
286	rusty patches on serpentinized joints, pyrrhotite and chalcopyrite but not noticeable for more than 1-2 m
291-293	rusty weathering, shearing trending right across river to similar looking rocks on east side, attitude of serpentinized shears $307^{o}/81^{o}SW$

APPENDIX 1: CONTINUED

Metrage	Description
	296 more magnetic; outcrop extends 8 m wide along river
	296-304 rusty serpentinized surfaces
	302 south end of outcrop extending north on east side
	SAMPLE 7920 302-304 m 2 m, chips at 30 cm
304-304½	gabbro, rusty, grain size 2-3 mm
304½-310	volcanics, light- and dark-grey, very fine grained to aphanitic
	SAMPLE 7921 304-307 m 3 m, chips at 20 cm
	307-310 dark- to light-grey, rusty, very fine grained to aphanitic, cherty(?)
	SAMPLE 7922 307-310 m 3 m, chips at 15-20 cm
310	fault $340^{o}/83^{o}$W cut by second fault $308^{o}/86^{o}$S
310-312½	gabbro? lighter-grey, weathers with some rust, grain-size 2-3 mm, perhaps a dyke intruded between two faults
	SAMPLE 7923 310-312½ m 2½ m, chips at 20 cm
312½-313½	sheared rock, rusty
	SAMPLE 7924 312½-313½ m 1 m, chips at 15 cm
313½-388	tuff(?), medium-grey, weathers greenish-grey with rust on joints, grain size 1/10 - 1/4 mm, 30-40% subrounded whitish-green grains in pale-green-grey matrix, 20% very finely disseminated black specks, conchoidal fracture, three sets of joints $230^{o}/87^{o}$S, $247^{o}/21^{o}$S, $285^{o}/38^{o}$N
	313½-319 green-grey, rust on joint surfaces, grain size 1 mm decreasing to south, primary banding $294^{o}/84^{o}$S
	SAMPLE 7925 313½-319 m 5½ m, chips at 20 cm
	319-335 cliff 6 m high 5 m back from river
	326 slightly coarser-grained, about 40% tiny white specks in greenish matrix, few angular limy white grains 1-2 mm in size, very minor disseminated sulfides, attitude of primary banding $295^{o}/58^{o}$N
	355-391 inaccessible cliff, few chips from top indicate tuff similar to above; old cat trail at top of cliff
	360 old placer claim posts opposite on east side of river, no cliff there
388-391	gabbro, medium-grey with greenish tints, grain size 2-3 mm, hypidiomorphic, 30-40% whitish feldspar in darker minerals, at base of inaccessible cliff
391	fault, zone from very narrow to 5-20 cm, attitude $315^{o}/85^{o}$SW

APPENDIX 1: CONTINUED

Metrage	Description
391-424	peridotite, greenish-black, coarse-grained with some grains 1-2 cm in size, few per cent brownish phlogopite, ~20-30% serpentinized with some along seams or irregular veins, rough weathered surface, moderately magnetic
	SAMPLE 7729 391-397 m 6 m, chips at 30-50 cm horizontally along river
	397-402 numerous slickensided and serpentinized surfaces
	SAMPLE 7730 397-402 m 5 m, chips at 30-50 cm horizontally along river
	402-407 coarse-grained, olivine, poikilitic pyroxenes
	407 poikilitic pyroxenes to 3 cm in size, up to 30% greenish-olivine, more magnetic
	SAMPLE 7731 402-407 m 5 m, chips at 30-50 cm horizontally along river
	SAMPLE 7732 407-412 m 5 m, chips at 30-50 cm horizontally along river
	SAMPLE 7733 412-417 m 5 m, chips at 30-50 cm horizontally along river
	417-424 coarse-grained, poikilitic
	SAMPLE 7734 417-424 m 7 m, chips at 30-50 cm horizontally along river
424-435½	covered interval
435½-437	peridotite and gabbro, interlayered; gabbro: medium-grey, grain size about 1 mm, hypidiomorphic granular, 40-50% altered whitish feldspar, rest nondescript dark minerals, in layer 20-25 cm thick, joints or perhaps layers $299^{0}/58^{0}$S; peridotite: magnetic, grain size 3-4 mm with 1 cm or more for poikilitic pyroxenes
	SAMPLE 7735 435½-437 m 1½ m, chips at 15-20 cm horizontally along river
437-447	covered interval
447-461½	peridotite, grain size to 5 mm near downstream end, not very magnetic, no poikilitic pyroxene, towards upstream end grain size to 1 cm with poikilitic pyroxenes to 2 cm or more, more magnetic
	SAMPLE 7736 447-452 m 5 m, chips at 30-50 cm horizontally along river
	SAMPLE 7737 452-457 m 5 m, chips at 30-50 cm horizontally along river
	457-461½ joints less prominent and spaced 30-50 cm apart
	SAMPLE 7738 457-461½ m 4½ m, chips at 30-50 cm horizontally along river
461½-463	covered interval
463-468½	peridotite, coarse, pyroxene to 1 cm, 20-30% green olivine, knobby on weathered surface, fairly magnetic, very hard and tough

APPENDIX 1: CONTINUED

Metrage	Description
	SAMPLE 7739 463-468½ m 5½ m, chips at 30-50 cm horizontally along river
468½-476	mostly covered interval
476 -491	peridotite, coarse, poikilitic pyroxene, green olivine, magnetic, hard, tough
	SAMPLE 7740 476-481 m 5 m, chips at 30-50 cm horizontally along river
	SAMPLE 7741 481-486 m 5 m, chips at 30-50 cm horizontally along river
	SAMPLE 7742 486-491 m 5 m, chips at 30-50 cm horizontally along river

Northern Analytical Laboratories ltd.

APPENDIX 2: ASSAY AND GEOCHEMICAL ANALYSIS CERTIFICATES

September 10,1990

Work Order # 08338

Halferdahl & Associates Ltd.
18 - 10508 - 81 Ave.
Edmonton, Alta.
T6E 1X7

Assay Certificate For Samples Provided

Sample	ppb Au
5676	<10
5677	<10
5678	<10
5679	<10
5680	<10
5681	10
5682	<10
5683	<10
5684	<10
5685	<10
5686	<10
5687	<10
5688	<10
5689	<10
5690	<10
5691	<10
5692	<10
5693	<10
5694	<10
5695	14
5696	<10
5697	<10
5698	<10
5699	<10
5700	<10
6669	22
6670	<10
6671	<10
6672	148
6673	<10
6674	<10
6675	<10

Au -- 15g Fire Assay/AAS

Applied Science Technologists and Technicians of British Columbia
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A.Sc.T.

Northern Analytical Laboratories ltd.

APPENDIX 2: CONTINUED

September 14,1990

Work Order # 08358

File # 08358a

Halferdahl & Assoc. Ltd.
18 - 10509 - 81 Ave.
Edmonton, Alta.
T6E 1X7

Assay Certificate For Samples Provided

Sample	ppb Au
6935	115
6936	27
6937	36
6938	73
6939	41
6940	15
6941	52
6942	858
6943	24
6944	36
6945	<10
6946	<10
6947	58
6948	41
6949	108
6950	14
6951	<10
6952	<10
6953	<10
6954	<10
6955	<10
6956	<10
6957	<10
7743	<10
7744	<10
7745	<10
7746	43
7747	<10
7748	<10
7749	<10

Au -- 15g Fire Assay/AAS

Applied Science Technologists and Technicians of British Columbia
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GERALD F. HAYES
A.Sc.T.

A8

Northern Analytical Laboratories ltd.

APPENDIX 2: CONTINUED

September 14,1990

Work Order # 08358

Halferdahl & Assoc. Ltd.
18 - 10509 - 81 Ave.
Edmonton, Alta.
T6E 1X7

File # 08358b

Assay Certificate For Samples Provided

Sample	ppb Au
7750	<10
7751	<10
7752	22
7753	<10
7754	<10
7755	<10
7756	10
7757	<10
7758	<10
7759	<10
7760	<10
7761	<10
7762	<10
7763	<10
7764	<10
7765	<10
7766	<10
7767	<10
7768	<10
7769	<10
7770	<10
7771	<10
7772	<10
7773	<10
7774	<10
7775	<10

Au -- 15g Fire Assay/AAS

Applied Science Technologists and Technicians of British Columbia
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CERALD F. HAYES
A.Sc.T.

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

Northern Analytical Laboratories ltd.

APPENDIX 2: CONTINUED

September 25,1990

Work Order # 08398

Halferdahl & Assoc. Ltd.
18 - 10509 - 81 Ave.
Edmonton, Alta.
T6E 1X7

Assay Certificate For Samples Provided

Sample	ppb Au
6976	59
6977	17
6978	27
6979	40
6980	26
6981	45
6982	43
6983	41
6984	44
6985	49

Au -- 15g Fire Assay/AAS

Applied Science Technologists and Technicians of British Columbia
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CERALD F. HAYES
A.Sc.T.

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

Halferdahl & Associates Ltd. File # 90-5050 Page 1

18 - 10509 - 81st Ave, Edmonton AB T6E 1X7

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb
5676	6	81	8	50	.7	29	7	181	2.25	5	5	ND	1	14	.8	2	2	25	.56	.074	6	68	.57	199	.03	2	.64	.02	.24	1	17
5677	7	62	17	78	.9	23	5	85	1.94	5	5	ND	1	13	.5	3	2	24	.29	.041	4	57	.48	167	.03	3	.50	.02	.19	2	4
5678	6	86	10	116	.8	53	10	264	4.24	10	5	ND	1	31	.9	6	2	61	1.19	.235	6	119	1.54	282	.05	4	1.56	.02	.35	1	18
5679	3	182	4	133	.9	54	12	180	2.90	2	5	ND	1	4	1.0	2	2	33	.06	.023	6	64	.92	89	.03	3	1.39	.01	.13	1	7
5680	1	71	7	111	1.0	47	9	300	4.23	4	5	ND	1	4	1.2	2	2	45	.12	.024	5	43	.91	112	.03	2	1.66	.01	.16	2	9
5681	2	64	9	113	1.0	33	6	172	3.28	2	5	ND	1	4	1.0	2	2	36	.04	.023	9	45	.95	125	.03	3	1.50	.02	.18	1	11
5682	1	80	5	88	.6	35	7	202	3.00	7	5	ND	1	5	1.1	2	2	37	.05	.021	6	50	.84	215	.03	3	1.46	.01	.17	1	4
5683	1	80	12	91	.6	41	7	158	2.93	13	5	ND	1	6	.9	2	2	34	.05	.019	7	38	.87	224	.03	2	1.41	.01	.17	1	6
5684	1	51	7	100	.7	37	8	175	2.79	2	5	ND	1	5	.8	2	2	33	.05	.018	8	43	.83	181	.02	2	1.32	.01	.12	1	8
5685	1	55	8	96	.6	42	8	154	2.64	3	5	ND	1	4	.9	2	2	34	.04	.019	4	38	.81	210	.03	2	1.36	.01	.19	1	4
5686	1	62	9	95	.9	31	7	177	2.99	6	5	ND	1	6	1.1	2	2	40	.05	.025	7	46	.89	198	.02	2	1.47	.02	.17	1	6
5687	1	51	10	109	.9	41	8	282	3.36	7	5	ND	1	5	.9	2	2	47	.05	.022	4	49	.92	302	.04	3	1.61	.01	.21	1	3
5688	1	138	16	153	1.1	46	5	191	2.76	3	5	ND	1	12	.8	2	2	49	.95	.020	15	51	.78	396	.06	2	1.53	.02	.34	1	4
5689	1	32	8	78	1.1	19	3	170	3.20	2	5	ND	1	5	.4	2	2	35	.15	.024	7	48	.84	223	.03	4	1.31	.01	.18	1	5
5690	1	714	17	87	1.4	24	8	203	3.62	10	5	ND	1	11	.5	2	2	47	.25	.025	18	52	.89	467	.05	4	1.62	.02	.28	1	9
5691	3	142	5	93	.8	34	6	164	2.67	32	5	ND	1	7	.3	2	2	36	.07	.020	7	65	.85	256	.03	2	1.30	.02	.20	1	8
5692	1	391	10	101	.9	31	7	154	2.82	5	5	ND	1	5	.7	2	2	31	.05	.019	5	46	.83	190	.03	4	1.27	.01	.17	1	8
5693	1	228	12	201	.8	127	13	197	4.44	11	5	ND	1	3	1.4	2	2	57	.05	.020	13	56	1.24	230	.03	3	2.10	.02	.21	1	5
5694	1	140	18	132	2.0	65	8	619	8.50	2	11	ND	1	16	.2	5	2	68	1.38	.463	11	54	1.13	38	.02	4	1.72	.02	.19	1	3
5695	1	84	16	77	.8	20	4	199	2.61	4	5	ND	1	4	.9	2	2	33	.03	.014	3	41	.81	188	.03	2	1.27	.01	.16	1	2
5696	1	56	9	80	.9	28	5	160	2.47	3	5	ND	1	6	.6	2	2	30	.10	.024	7	39	.74	205	.02	6	1.18	.02	.14	1	4
5697	1	76	25	152	1.1	56	10	237	3.14	10	5	ND	1	15	.6	2	2	36	.30	.024	55	45	.89	171	.02	4	1.48	.02	.17	1	8
5698	2	98	16	97	1.1	46	7	179	3.21	9	5	ND	1	6	.3	2	2	40	.09	.025	14	45	.91	187	.02	2	1.45	.02	.20	2	5
5699	1	122	6	129	1.0	54	9	257	3.41	6	5	ND	1	7	.4	3	2	41	.16	.023	17	48	.93	256	.03	2	1.55	.02	.23	1	3
5700	1	82	6	103	.9	46	8	211	2.97	2	5	ND	1	3	.5	2	2	38	.07	.025	11	40	.89	209	.03	5	1.47	.01	.20	1	3
6669	3	90	5	94	.2	74	13	280	3.48	4	5	ND	1	12	1.2	3	2	98	.43	.030	9	107	1.55	605	.09	2	1.79	.02	.21	1	8
6670	2	134	6	222	.4	75	15	232	4.31	4	5	ND	2	6	1.3	4	2	61	.07	.030	6	74	1.37	372	.08	2	2.08	.02	.56	1	4
6671	3	82	2	172	.5	77	12	216	3.94	2	5	ND	2	5	.4	2	2	60	.07	.027	5	73	1.30	253	.05	3	1.87	.02	.31	1	6
6672	1	299	861	924	223.6	119	16	193	4.62	2465	6	ND	1	3	10.8	730	2	53	.06	.025	7	60	1.35	139	.04	2	2.08	.02	.33	1	126
6673	1	90	12	311	2.0	117	14	212	4.12	10	5	ND	1	3	1.0	5	2	53	.08	.023	11	56	1.36	146	.04	3	2.06	.01	.31	1	4
6674	2	45	16	49	.7	54	13	363	3.05	9	5	ND	1	20	.2	4	2	79	1.36	.022	7	63	1.14	98	.03	2	1.32	.02	.10	2	2
6675	5	107	7	72	1.3	55	11	302	2.52	7	7	ND	1	52	1.0	6	2	49	5.95	.082	7	85	.91	116	.02	4	.95	.02	.17	2	4
6935	5	53	36	48	.2	28	15	94	3.73	15	5	ND	1	6	.2	45	2	45	.23	.058	8	41	1.46	60	.01	3	1.50	.03	.17	3	1
6936	5	46	39	60	.3	27	14	113	3.23	16	5	ND	1	7	.2	6	2	49	.27	.052	11	57	1.61	52	.01	4	1.62	.04	.16	1	1
6937	1	42	22	128	.5	16	15	624	4.77	65	5	ND	1	32	4.2	7	2	123	4.20	.055	8	79	1.87	23	.02	4	1.79	.02	.03	1	1
6938	1	33	26	192	.5	13	15	555	5.35	9150	8	ND	1	22	5.8	23	2	150	4.94	.063	6	98	1.71	32	.01	4	1.94	.02	.03	1	39
STANDARD C/AU-R	19	62	43	134	7.3	72	31	1055	3.97	43	24	8	37	52	18.4	15	21	58	.46	.099	40	61	.89	183	.07	35	1.89	.07	.13	11	497

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-P3 ROCK PULP P4-P5 ROCK AU** ANALYSIS BY FA\ICP FROM 10 GM SAMPLE.

DATE RECEIVED: OCT 3 1990 **DATE REPORT MAILED:** Oct 15/90 **SIGNED BY:** .....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb
6939	1	52	204	344	.7	18	20	533	4.94	2769	5	ND	1	23	11.5	8	3	124	3.04	.056	4	77	1.61	28	.03	2	1.73	.02	.03	4	18
6940	1	48	14	53	.5	58	21	564	4.60	107	5	ND	1	40	1.2	4	2	93	2.18	.093	4	135	2.55	32	.07	4	2.21	.05	.04	6	2
6941	1	80	17	42	.3	139	21	437	2.69	70	5	ND	1	44	1.4	2	2	42	1.78	.042	2	254	2.79	36	.06	5	1.99	.08	.03	3	6
6942	1	212	3708	6065	3.6	68	28	499	5.33	127	5	ND	1	25	291.9	4	2	90	2.78	.044	2	151	2.73	26	.05	4	2.46	.04	.05	1	993
6943	1	72	26	63	.4	21	26	446	5.53	34	5	ND	1	14	2.6	2	2	119	.85	.052	2	51	2.33	25	.04	3	2.21	.03	.04	5	64
6944	1	35	59	81	.2	15	17	451	3.87	27	5	ND	1	23	3.5	2	2	80	1.95	.067	4	56	1.43	31	.11	4	1.58	.02	.04	3	19
6945	3	18	12	27	.2	36	11	169	2.35	36	5	ND	1	8	1.2	2	2	111	.40	.054	11	71	1.99	32	.05	3	1.63	.05	.04	2	1
6946	7	37	18	92	.2	44	14	157	1.77	46	5	ND	1	13	3.7	2	2	95	.44	.055	7	77	1.80	26	.09	6	1.47	.06	.05	2	3
6947	9	72	10	21	.1	24	28	172	4.10	23	5	ND	1	12	1.2	4	2	92	.28	.061	4	65	1.80	30	.07	3	1.60	.05	.08	2	1
6948	4	44	4	29	.1	24	17	290	2.35	6	5	ND	1	16	.5	2	2	82	1.09	.048	8	58	1.44	25	.07	4	1.35	.05	.06	1	1
6949	1	45	4	103	.3	32	8	389	3.96	14	5	ND	2	6	.6	3	2	39	.12	.039	14	30	1.39	33	.02	2	2.09	.02	.18	3	2
6950	1	274	20	117	1.1	30	16	444	6.82	29	5	ND	1	6	1.4	4	2	43	.22	.087	6	28	1.30	39	.03	2	1.96	.02	.11	2	3
6951	1	186	17	291	.2	214	336	2948	5.85	35	5	ND	4	4	.7	4	2	12	.05	.029	21	24	1.63	45	.01	2	2.67	.02	.11	2	1
6952	1	86	13	143	.3	64	37	818	4.76	11	5	ND	2	5	1.8	3	2	45	.08	.045	12	35	1.42	26	.01	3	2.57	.02	.12	2	3
6953	1	64	14	138	.3	35	16	607	5.25	18	5	ND	2	5	1.1	3	2	38	.08	.042	6	27	1.44	31	.04	2	2.28	.02	.15	2	5
6954	1	64	20	193	.3	52	10	642	6.62	14	5	ND	8	7	1.1	4	2	16	.05	.056	38	12	1.63	42	.05	2	2.98	.03	.28	1	4
6955	1	48	9	123	.1	28	10	597	4.59	23	5	ND	3	4	1.5	3	2	42	.11	.044	4	29	1.38	28	.06	2	2.11	.02	.17	1	1
6956	4	73	6	117	.2	41	12	665	4.50	29	5	ND	1	6	.9	2	2	50	.17	.046	3	30	1.47	31	.10	2	2.28	.02	.29	1	4
6957	2	69	15	128	.2	43	13	722	4.79	11	5	ND	2	6	1.2	3	2	42	.19	.079	5	30	1.48	28	.06	3	2.28	.02	.18	1	3
6976	5	70	95	40	.5	19	8	278	3.14	49	5	ND	1	15	1.1	2	2	97	.81	.033	6	58	.88	319	.11	2	1.58	.04	.02	1	5
6977	6	92	57	27	.4	19	10	225	3.05	23	5	ND	1	13	.7	2	2	117	.68	.032	7	70	.72	71	.15	2	1.20	.04	.01	1	4
6978	1	60	43	54	.2	175	26	658	4.57	19	5	ND	1	35	1.8	2	2	94	1.22	.032	3	154	4.48	353	.13	2	3.04	.03	.02	1	4
6979	18	48	48	115	.5	20	9	475	2.89	17	5	ND	1	39	1.2	2	2	41	1.65	.039	9	32	.57	538	.05	2	1.13	.03	.05	1	5
6980	29	94	62	741	2.3	78	10	273	3.08	34	5	ND	1	44	10.4	4	2	270	2.92	.059	8	108	.87	104	.12	2	1.68	.04	.04	2	10
6981	7	132	24	389	.6	180	44	782	5.31	9	5	ND	1	25	3.3	2	2	169	2.25	.062	4	258	3.80	125	.15	4	3.39	.02	.02	2	3
6982	34	108	39	321	1.1	46	8	236	3.30	18	5	ND	1	20	8.9	2	2	248	3.57	.089	6	78	.51	39	.11	4	1.69	.03	.03	1	11
6983	3	93	47	366	.4	40	25	1029	6.77	12	5	ND	1	36	3.7	3	2	116	2.12	.065	5	19	1.95	208	.26	6	3.52	.03	.01	4	7
6984	28	110	57	223	1.0	77	10	270	2.76	9	5	ND	1	23	2.6	2	2	301	2.46	.175	11	86	.37	70	.10	7	2.01	.02	.03	1	2
6985	1	69	28	64	.1	176	27	584	4.61	2	5	ND	1	44	1.3	2	2	94	1.74	.045	3	159	3.86	115	.16	98	2.99	.04	.03	1	2
7743	5	46	5	26	.1	8	5	499	2.36	7	6	ND	1	36	.5	2	2	17	2.19	.051	4	62	.28	22	.07	2	.56	.03	.04	1	1
7744	1	10	2	47	.1	32	13	481	3.54	3	5	ND	2	30	.8	2	2	61	1.65	.052	19	40	.79	38	.01	6	.35	.03	.04	1	1
7745	1	223	11	58	.1	62	31	788	7.35	2	5	ND	1	43	.5	2	2	150	1.91	.054	2	169	3.90	12	.15	2	3.74	.03	.02	5	4
7746	1	39	338	305	.2	16	16	660	6.61	556	5	ND	1	20	6.7	4	2	150	4.71	.050	4	83	2.41	13	.01	2	2.73	.02	.02	1	5
7747	1	70	11	37	.2	17	19	457	5.53	58	5	ND	1	24	1.5	3	2	112	2.08	.085	4	55	2.17	12	.03	3	2.43	.02	.04	1	2
7748	1	114	12	19	.1	12	24	307	6.50	28	5	ND	1	14	1.5	2	2	111	.68	.119	7	47	1.51	9	.04	2	1.83	.03	.03	1	2
7749	1	53	2	21	.1	61	21	410	4.16	20	5	ND	1	31	1.1	2	2	90	.97	.061	2	120	2.46	12	.07	2	2.13	.05	.03	1	1
STANDARD C/AU-R	19	63	42	131	7.1	73	31	1055	3.96	41	19	8	38	52	18.5	14	18	58	.46	.100	39	60	.89	182	.07	32	1.89	.06	.13	13	491

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb
7750	1	52	15	37	.1	33	17	477	5.17	42	5	ND	1	29	1.2	5	2	115	1.90	.057	2	92	2.29	10	.03	9	2.24	.03	.03	3	4
7751	2	35	18	231	.2	19	12	518	3.49	38	5	ND	1	29	9.6	5	2	109	3.28	.046	8	65	2.18	14	.01	2	1.57	.03	.04	1	9
7752	1	29	18	25	.1	18	16	237	3.61	38	5	ND	1	14	1.0	5	2	86	.81	.049	4	54	1.77	12	.01	3	1.73	.03	.05	1	2
7753	1	36	2	17	.2	14	11	223	5.02	18	5	ND	1	8	.5	4	2	86	.19	.062	4	58	1.88	17	.01	4	2.08	.03	.08	1	6
7754	2	36	9	21	.1	22	11	183	3.20	24	5	ND	1	7	.8	3	2	130	.42	.056	8	62	1.64	20	.01	2	1.54	.05	.03	1	2
7755	1	28	4	28	.1	43	9	218	2.40	16	5	ND	1	18	1.2	5	2	91	.71	.054	8	93	1.70	19	.01	8	1.58	.05	.05	1	2
7756	4	94	71	100	.2	29	18	207	3.99	60	5	ND	1	8	3.4	3	2	100	.49	.066	9	61	1.70	15	.01	3	1.61	.04	.06	1	1
7757	1	65	2	25	.1	129	19	268	3.34	56	5	ND	1	23	.5	3	2	69	.95	.053	6	238	2.62	17	.03	2	2.12	.07	.06	1	2
7758	5	91	8	28	.4	85	21	244	3.85	63	5	ND	1	27	.9	4	2	62	.88	.050	5	169	2.01	11	.03	3	1.76	.06	.06	1	4
7759	4	73	48	76	.7	23	11	172	2.99	110	5	ND	1	7	2.5	4	2	54	.63	.057	7	38	1.51	18	.01	5	1.58	.03	.12	1	4
7760	5	63	72	121	.6	23	9	244	3.04	89	5	ND	1	5	3.7	4	2	76	.19	.060	10	46	1.73	21	.01	2	1.88	.05	.12	1	2
7761	4	67	200	574	.5	18	9	243	2.70	60	5	ND	1	16	25.0	4	2	78	3.23	.044	9	44	1.43	13	.01	2	1.53	.03	.06	1	3
7762	1	32	9	49	.2	20	9	159	3.14	83	5	ND	1	8	1.6	4	2	51	.48	.052	10	33	1.77	19	.01	4	1.96	.03	.15	1	4
7763	1	37	15	25	.1	27	12	132	3.19	30	5	ND	1	9	1.4	3	2	72	.39	.058	12	46	1.70	19	.01	3	1.82	.04	.12	1	1
7764	1	42	6	24	.1	28	13	130	3.62	42	5	ND	1	8	.9	5	2	80	.27	.055	8	48	1.71	18	.01	4	1.75	.03	.09	1	3
7765	2	55	6	17	.1	30	16	129	3.62	23	5	ND	1	6	.3	3	2	57	.25	.049	10	37	1.73	22	.01	2	1.80	.03	.15	1	6
7766	3	52	12	18	.1	30	16	95	3.27	32	5	ND	1	7	.9	6	2	62	.20	.051	7	40	1.68	21	.01	2	1.68	.03	.14	1	4
7767	1	37	7	84	.1	20	9	383	4.07	10	5	ND	2	6	.7	2	2	52	.22	.064	8	28	1.32	134	.12	2	2.22	.02	.60	1	1
7768	2	44	16	337	.2	24	10	224	3.96	63	5	ND	1	14	14.0	3	2	79	.65	.046	5	52	1.54	26	.03	2	1.74	.04	.08	1	3
7769	2	49	114	73	.4	16	9	370	6.04	139	7	ND	1	17	2.1	3	2	80	3.18	.049	7	44	1.45	24	.03	2	2.23	.03	.14	1	5
7770	2	42	21	286	.3	15	9	386	3.69	97	5	ND	1	26	10.6	4	2	58	1.15	.051	7	32	1.60	20	.02	2	2.07	.03	.12	1	1
7771	1	44	13	48	.1	20	16	388	3.90	24	5	ND	1	32	1.0	5	2	56	.62	.067	9	35	1.64	21	.02	3	1.95	.02	.09	1	1
7772	2	32	4	30	.1	27	13	158	3.20	25	6	ND	1	11	1.0	5	2	99	.54	.061	12	62	1.67	18	.01	2	1.75	.04	.08	1	1
7773	3	69	2	31	.2	31	18	150	4.48	18	8	ND	1	13	.6	3	2	86	.38	.052	6	57	1.56	16	.02	5	1.70	.04	.06	1	1
7774	1	41	4	33	.2	35	13	243	3.51	59	5	ND	1	12	.6	3	2	78	.48	.059	10	58	1.80	27	.02	4	1.92	.05	.10	1	10
7775	2	28	6	68	.1	21	15	482	3.67	29	5	ND	1	60	.3	7	2	54	.88	.068	6	40	1.62	19	.03	7	2.13	.04	.07	2	6
STANDARD C/AU-R	18	63	40	133	7.5	73	32	1056	3.97	41	22	7	39	52	18.4	15	20	58	.45	.095	40	59	.89	183	.07	35	1.90	.07	.14	11	487

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb	Pt** ppb	Pd** ppb	Rh** ppb
6926	1	569	2	98	.2	472	90	913	7.40	4	5	ND	1	11	.9	2	2	21	.27	.011	2	187	13.85	61	.03	112	1.32	.01	.07	1	7	3	2	6
6927	1	341	2	53	.1	771	100	863	8.53	3	5	ND	1	9	.9	2	2	14	.22	.013	2	200	16.22	10	.03	101	1.18	.01	.06	1	14	17	2	2
6928	1	636	2	87	.4	894	112	1037	9.04	2	5	ND	1	11	1.0	2	2	19	.50	.010	2	413	15.52	9	.02	90	1.12	.01	.05	1	24	33	5	2
6929	1	312	2	50	.2	845	80	883	7.24	3	5	ND	1	11	.6	2	2	23	.88	.012	2	189	13.56	10	.03	76	1.48	.01	.06	1	19	29	6	2
6930	1	106	2	52	.2	124	26	838	4.60	2	5	ND	1	22	.8	2	2	98	1.55	.044	3	152	7.65	2	.09	8	5.31	.01	.01	3	4	6	10	2
6931	1	300	2	45	.2	913	83	760	6.39	9	5	ND	1	19	.6	2	2	18	.88	.020	4	243	13.80	10	.04	51	1.54	.03	.06	1	21	32	8	2
6932	1	272	2	45	.2	966	91	899	7.33	5	5	ND	1	21	.7	2	2	13	.95	.011	2	242	15.11	40	.03	53	1.08	.07	.06	1	11	76	25	2
6933	1	111	2	23	.2	180	31	359	2.71	2	5	ND	1	15	.3	2	2	26	.69	.012	2	545	5.19	5	.07	7	2.06	.09	.02	1	4	1	2	2
6934	1	599	2	53	.3	510	88	895	8.07	22	5	ND	1	24	.8	2	2	32	1.91	.016	2	331	9.32	53	.02	46	1.45	.01	.06	1	20	28	9	2
7729	1	33	2	40	.1	361	50	428	5.07	9	5	ND	1	9	.3	2	2	60	.31	.013	2	903	6.73	41	.03	13	2.67	.01	.14	1	7	1	2	2
7730	1	22	2	27	.1	328	44	412	4.34	16	5	ND	1	11	.3	2	2	59	.39	.035	2	803	6.58	101	.07	9	2.98	.01	.45	2	18	1	2	2
7731	1	21	2	34	.1	420	56	503	5.10	12	5	ND	1	7	.2	2	2	51	.18	.011	2	719	8.96	68	.03	23	2.96	.01	.30	1	9	1	2	2
7732	1	16	2	34	.1	441	57	542	5.69	16	5	ND	1	5	.3	2	2	51	.16	.010	2	718	9.90	73	.03	29	2.98	.01	.30	1	2	1	2	2
7733	1	25	5	31	.1	404	55	536	5.79	20	5	ND	1	11	.6	2	2	54	.49	.017	2	682	8.89	58	.04	30	2.37	.01	.20	1	4	1	9	2
7734	1	14	2	27	.1	353	51	464	4.92	10	5	ND	1	8	.4	2	2	50	.41	.033	2	656	8.66	46	.03	19	2.68	.01	.19	1	1	1	3	2
7735	1	78	2	18	.1	220	29	745	3.69	7	5	ND	1	78	.3	2	2	57	2.55	.015	2	917	4.85	27	.03	2	1.86	.01	.15	1	11	1	2	2
7736	1	75	6	20	.2	195	26	603	3.24	3	5	ND	1	25	.4	3	4	45	1.73	.014	2	597	3.57	65	.04	2	1.45	.01	.23	1	4	1	2	2
7737	1	26	3	24	.2	343	39	809	4.31	15	6	ND	1	51	.3	2	2	56	1.49	.015	2	998	5.97	26	.03	11	1.75	.01	.10	1	9	1	2	2
7738	1	10	3	22	.1	413	47	655	5.58	4	5	ND	1	48	.4	2	2	51	1.03	.016	2	634	8.18	92	.03	19	2.01	.01	.25	1	5	3	3	2
7739	1	25	2	36	.1	411	49	869	5.62	17	5	ND	1	47	.5	2	2	50	1.20	.018	2	618	8.38	79	.03	12	1.48	.01	.36	1	13	3	3	2
7740	1	15	2	26	.1	476	50	576	5.42	10	5	ND	1	17	.2	2	2	44	.45	.018	2	619	8.70	82	.04	17	1.94	.01	.22	1	6	1	2	2
7741	1	39	3	40	.1	470	52	750	5.73	4	5	ND	1	23	.4	2	2	43	.55	.017	2	591	8.31	71	.04	17	1.85	.01	.18	1	2	1	5	2
7742	1	25	5	32	.1	334	39	917	4.68	4	5	ND	1	159	.5	2	2	44	2.11	.015	2	651	6.47	61	.02	6	1.65	.01	.20	1	2	1	2	2
7804	1	451	2	61	.2	480	85	834	7.33	3	5	ND	1	18	.4	4	2	15	.26	.012	2	120	10.84	49	.03	19	1.40	.01	.12	1	18	25	6	2
7805	1	532	2	35	.2	356	55	642	4.80	5	5	ND	1	20	.3	2	2	17	.39	.010	2	182	8.47	37	.03	20	1.93	.03	.14	1	16	10	4	2
7806	1	560	2	57	.2	477	87	769	7.21	7	5	ND	1	20	.5	2	2	15	.29	.012	2	132	10.01	46	.03	23	1.44	.02	.15	1	16	18	5	2
7807	1	245	2	60	.1	368	64	627	5.72	6	5	ND	1	16	.3	2	2	19	.44	.013	2	193	8.55	46	.03	12	2.79	.01	.16	1	12	12	5	2
7808	1	193	2	56	.1	637	90	886	8.24	5	5	ND	1	15	.6	2	2	13	.34	.014	2	183	13.08	26	.03	46	1.19	.01	.11	1	6	5	3	2
7809	1	153	2	56	.1	386	66	749	6.08	6	5	ND	1	37	.4	2	2	41	1.20	.015	2	381	9.58	21	.06	30	2.56	.01	.09	1	7	7	5	4
7810	1	85	2	43	.1	107	21	376	3.30	2	5	ND	1	56	.3	2	2	67	3.03	.029	2	50	2.43	22	.12	7	3.89	.05	.06	3	5	7	6	2
7811	1	151	2	43	.1	229	41	512	4.12	6	5	ND	1	46	.4	2	2	48	2.90	.021	2	207	5.66	16	.07	21	3.69	.03	.07	2	7	5	8	2
7812	1	255	2	70	.2	479	79	857	6.99	2	5	ND	1	16	.4	2	2	19	.58	.013	2	271	12.88	27	.03	54	1.16	.01	.10	1	2	1	2	2
7813	1	292	2	54	.2	481	80	775	6.73	5	5	ND	1	15	.5	2	2	17	.62	.015	2	237	11.36	20	.03	55	1.32	.01	.09	1	6	6	2	2
7814	1	136	4	22	.1	207	34	315	2.81	2	5	ND	1	6	.2	2	2	18	.54	.012	2	312	4.34	6	.05	6	1.68	.01	.04	1	18	5	9	2
7815	1	169	2	43	.1	243	51	513	4.10	3	5	ND	1	21	.2	2	2	22	.43	.013	2	285	6.27	51	.04	24	1.44	.03	.12	1	4	1	2	2
7816	1	198	2	22	.1	234	44	373	3.26	2	5	ND	1	11	.2	2	2	25	.61	.012	2	402	4.82	31	.05	11	1.52	.01	.04	1	5	1	3	2
STANDARD C/FA-R	18	61	37	131	7.1	73	31	1052	3.95	43	23	7	39	52	18.9	15	21	59	.45	.096	40	61	.89	177	.08	32	1.89	.06	.14	13	504	495	486	98

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au** ppb	Pt** ppb	Pd** ppb	Rh** ppb
7817	1	217	2	51	.1	323	63	741	5.42	2	5	ND	1	21	.4	2	2	28	.84	.013	2	368	8.45	12	.03	44	1.36	.01	.05	1	3	1	2	2
7818	1	285	2	54	.2	575	98	751	7.78	2	6	ND	1	9	.5	2	2	14	.24	.014	2	168	13.62	18	.02	47	.92	.01	.07	1	6	1	3	2
7819	1	447	2	76	.1	627	99	714	7.17	2	5	ND	1	14	.5	2	2	23	.55	.014	2	518	12.82	10	.02	71	1.33	.01	.06	1	10	1	5	2
7820	1	210	2	56	.1	199	34	328	2.69	9	5	ND	1	17	.3	2	2	23	.53	.018	2	347	3.98	8	.06	7	1.74	.01	.02	1	1	2	2	2
7821	1	111	2	47	.1	265	46	609	4.23	20	5	ND	1	28	.3	2	2	60	.80	.020	2	777	6.69	4	.11	10	3.31	.10	.01	1	5	2	3	2
7822	1	246	2	36	.2	243	45	368	3.18	8	5	ND	1	12	.2	2	2	26	.48	.011	2	351	4.74	6	.05	10	1.59	.01	.03	1	7	1	3	3
7823	1	252	2	48	.1	315	60	558	4.54	7	5	ND	1	10	.2	2	2	22	.29	.013	2	254	6.96	18	.04	39	1.37	.01	.07	1	1	1	2	4
7824	1	270	2	15	.2	265	36	287	2.39	3	5	ND	1	6	.2	2	2	22	.49	.012	2	396	4.06	5	.05	8	1.39	.01	.02	1	3	1	3	2
7825	1	486	2	46	.2	539	69	568	4.81	5	5	ND	1	13	.4	2	2	20	.40	.010	2	270	8.29	9	.03	53	1.36	.01	.04	1	5	4	5	3
7919	1	66	2	31	.1	966	67	606	6.19	13	5	ND	1	4	.2	2	2	16	.11	.014	2	243	11.89	14	.03	33	1.60	.01	.04	1	2	4	7	2
7920	1	126	2	164	.1	591	71	1229	6.71	27	5	ND	1	77	5.1	2	2	48	2.37	.024	3	850	6.15	19	.01	23	1.34	.03	.14	1	6	8	6	2
7921	3	10	3	22	.1	40	7	299	2.00	2	5	ND	3	18	.2	2	2	41	.81	.034	12	64	1.08	126	.13	3	.85	.05	.26	1	1	1	4	3
7922	1	9	6	45	.1	31	10	550	3.58	5	5	ND	2	18	.2	2	2	57	.69	.062	12	17	1.53	229	.11	2	1.57	.04	.45	2	1	1	2	3
7923	1	6	2	14	.1	46	8	321	1.63	2	5	ND	1	26	.2	2	2	31	.84	.022	2	81	1.14	37	.09	5	1.10	.02	.08	2	1	1	4	3
7924	1	7	2	50	.1	358	37	855	4.08	30	6	ND	1	27	.2	2	3	63	1.64	.018	4	1375	4.70	43	.05	3	2.87	.02	.15	1	1	1	3	2
7925	1	13	3	51	.1	28	11	540	3.97	2	5	ND	3	11	.3	2	2	54	.52	.058	11	44	1.78	115	.12	2	2.08	.03	.31	1	1	2	8	3
STANDARD C/FA-R	19	63	39	135	7.2	73	32	1052	3.95	40	19	7	40	53	19.0	15	21	61	.46	.100	41	60	.89	182	.08	33	1.89	.06	.13	11	501	489	492	94

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

WHOLE ROCK ICP ANALYSIS

Halferdahl & Associates Ltd. File # 90-5050 Page 1

18 - 10509 - 81st Ave, Edmonton AB T6E 1X7

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
5676	79.24	7.99	3.46	1.20	.81	1.87	1.59	.35	.23	.03	.014	3219	55	2	44	15	20	2.2	99.55
5677	80.03	8.64	2.91	1.13	.48	2.15	1.63	.41	.14	.02	.011	3557	57	13	37	15	20	1.9	100.07
5678	68.00	10.03	5.84	2.77	1.90	2.54	1.96	.45	.62	.04	.034	3889	77	15	49	22	20	4.4	99.27
5679	75.62	10.66	4.40	1.70	.22	2.07	1.98	.59	.08	.03	.014	1532	55	9	71	17	20	2.1	99.74
5680	76.73	9.39	6.26	1.74	.21	.82	1.37	.47	.08	.05	.010	1226	35	12	57	13	20	2.6	99.95
5681	75.79	10.67	4.97	1.80	.16	.91	1.77	.57	.08	.03	.010	1817	40	10	61	14	20	2.8	99.88
5682	78.46	9.39	4.65	1.61	.14	.95	1.52	.52	.09	.03	.012	2700	43	8	62	12	20	1.9	99.75
5683	76.72	10.49	4.59	1.73	.14	.92	1.77	.54	.06	.03	.010	3090	50	3	62	11	28	2.2	99.75
5684	77.99	9.61	4.32	1.64	.18	.90	1.66	.53	.06	.03	.012	2717	42	9	58	13	20	2.3	99.71
5685	79.28	8.77	4.04	1.55	.11	.97	1.53	.45	.08	.02	.010	2034	37	2	45	9	20	2.3	99.47
5686	76.47	10.30	4.46	1.69	.19	1.05	1.90	.60	.06	.02	.013	2484	45	2	66	14	20	2.6	99.79
5687	77.57	9.10	4.95	1.68	.23	.97	1.51	.49	.09	.04	.012	3159	42	6	45	11	24	2.5	99.70
5688	77.08	8.95	4.09	1.47	1.59	1.15	1.40	.47	.09	.03	.010	3563	51	22	55	15	20	3.1	100.05
5689	78.16	9.12	4.86	1.65	.33	.76	1.63	.49	.09	.03	.010	2610	37	6	57	10	20	2.2	99.79
5690	75.35	9.91	5.32	1.74	.45	.97	1.72	.55	.09	.03	.011	4017	44	12	65	20	20	2.9	99.74
5691	79.00	9.00	4.24	1.65	.28	1.07	1.58	.45	.07	.03	.015	2408	76	14	48	10	20	2.0	99.81
5692	78.91	8.72	4.45	1.64	.18	1.04	1.71	.47	.09	.03	.016	2417	52	2	51	10	20	2.2	99.88
5693	68.80	14.16	6.81	2.43	.26	1.70	1.98	.73	.09	.03	.011	3581	73	11	85	17	22	2.5	100.14
5694	66.07	12.65	6.59	2.37	.24	1.65	1.89	.68	.07	.03	.019	3132	64	2	88	15	20	6.3	99.11
5695	61.23	12.55	12.41	2.53	2.59	2.55	1.29	.68	1.46	.11	.008	2846	106	17	95	19	20	1.9	99.82
5696	80.03	8.37	4.25	1.59	.17	.92	1.54	.42	.05	.03	.010	2264	39	7	42	10	20	2.1	99.88
5697	78.92	8.31	4.00	1.49	.27	.97	1.42	.44	.10	.02	.012	2684	40	11	47	11	20	3.4	99.82
5698	74.28	10.83	5.00	1.83	.26	1.07	1.81	.65	.10	.03	.009	2380	53	14	60	13	48	3.2	99.50
5699	76.51	9.69	5.14	1.81	.42	1.08	1.57	.51	.08	.04	.010	2685	45	15	54	14	20	2.6	99.93
5700	77.49	9.84	4.65	1.77	.20	1.12	1.66	.50	.08	.03	.011	2586	40	2	54	12	25	2.4	100.21
6669	74.07	10.23	5.19	2.72	1.48	3.10	.48	.62	.13	.04	.021	1376	138	25	75	18	100	2.0	100.36
6670	70.62	12.28	6.60	2.67	.64	1.57	2.18	.67	.09	.04	.015	2978	101	25	124	17	20	2.5	100.42
6671	72.23	11.21	5.86	2.45	.67	2.19	1.43	.63	.07	.03	.014	1686	98	3	123	16	66	2.5	99.61
6672	69.16	12.41	6.85	2.60	.42	1.46	2.19	.67	.09	.03	.020	1763	60	4	99	11	59	2.7	98.93
6673	70.44	12.06	6.21	2.60	.46	1.63	2.29	.68	.05	.03	.015	2082	57	8	82	10	20	2.6	99.44
6674	75.69	8.27	4.29	2.02	2.46	3.50	.40	.45	.10	.05	.018	370	67	8	44	8	20	2.6	99.93
6675	67.42	5.86	3.42	1.74	9.42	2.67	1.07	.31	.24	.04	.035	2047	80	3	34	11	20	7.3	99.89
6935	59.31	18.00	5.66	3.13	.95	5.23	2.66	.88	.17	.01	.012	400	289	7	78	12	20	3.5	99.63
6936	59.25	19.91	5.14	3.36	1.03	4.97	2.30	.93	.17	.02	.007	348	354	6	91	13	177	3.2	100.43
6937	52.43	13.21	7.37	4.03	8.02	4.46	2.57	.84	.16	.11	.030	647	182	2	36	13	64	6.5	99.88
6938	51.63	13.13	7.51	3.28	9.07	4.92	2.84	.89	.20	.09	.032	834	109	4	35	9	20	5.7	99.45
STANDARD SO-4	68.98	9.74	3.22	.97	1.50	1.28	1.89	.59	.22	.08	.007	739	159	26	312	19	20	11.5	100.17

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.
- SAMPLE TYPE: P1-P3 ROCK PULP P4-P5 ROCK

DATE RECEIVED: OCT 3 1990 **DATE REPORT MAILED:** **SIGNED BY**.....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

APPENDIX 2: CONTINUED

A15

Halferdahl & Associates Ltd. FILE # 90-5050

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
6939	53.10	15.61	8.08	3.57	6.05	3.34	3.51	.91	.18	.11	.019	1215	206	15	45	13	20	5.1	99.82
6940	48.72	15.03	9.58	7.08	8.12	2.37	1.68	1.12	.32	.16	.054	669	346	8	45	11	38	5.3	99.70
6941	48.43	14.13	9.20	9.71	9.32	1.58	1.07	.65	.14	.19	.095	440	392	8	42	12	91	4.9	99.56
6942	49.60	15.61	8.83	6.56	6.76	2.60	1.51	.83	.13	.12	.043	546	248	14	42	9	65	5.5	98.23
6943	54.38	18.05	8.66	4.58	2.91	3.72	1.88	.94	.16	.08	.007	766	336	6	49	8	20	4.4	99.95
6944	51.67	17.24	8.11	3.99	7.26	2.78	2.90	1.08	.21	.12	.017	914	316	11	43	13	99	4.2	99.79
6945	59.70	20.07	3.38	3.28	1.38	6.56	1.72	.84	.15	.03	.011	775	295	16	71	14	64	2.5	99.81
6946	60.03	20.19	2.70	3.05	1.80	6.58	1.41	.92	.16	.03	.014	708	383	19	76	17	20	2.8	99.87
6947	55.51	19.51	5.90	3.30	1.58	5.17	3.07	1.03	.17	.03	.017	1425	284	3	63	16	20	4.1	99.68
6948	58.21	20.22	3.59	2.68	2.93	6.13	1.19	1.02	.14	.05	.014	464	391	9	86	18	165	3.3	99.64
6949	67.71	14.23	5.74	2.64	.47	2.07	2.03	.76	.09	.06	.008	434	96	17	88	14	20	3.6	99.51
6950	62.90	13.88	9.26	2.58	.68	2.64	1.60	.74	.26	.07	.009	900	121	20	81	13	50	5.1	99.91
6951	59.73	16.69	8.15	3.22	.50	2.39	1.90	.55	.08	.44	.002	931	141	43	222	35	42	5.5	99.37
6952	60.70	16.84	6.78	2.82	.50	2.55	3.25	.78	.10	.12	.011	739	149	19	87	15	20	5.3	99.91
6953	61.88	16.52	7.33	2.77	.60	2.17	2.35	.77	.11	.09	.005	516	159	11	112	10	20	4.7	99.42
6954	53.47	20.39	8.96	3.18	.90	2.97	2.80	.76	.16	.10	.003	563	268	51	371	30	27	5.3	99.18
6955	63.19	15.54	6.66	2.73	.90	2.30	2.23	.82	.12	.09	.012	488	164	14	89	8	20	4.3	99.01
6956	61.94	16.30	6.47	2.78	1.22	2.40	2.27	.84	.12	.10	.010	421	194	10	75	12	20	4.5	99.06
6957	62.76	15.72	7.00	2.87	.91	2.13	2.21	.77	.22	.12	.008	592	170	13	81	16	20	4.5	99.35
6976	71.81	11.57	4.46	1.58	1.99	3.86	.06	.49	.08	.04	.016	499	158	16	66	16	20	3.3	99.38
6977	73.32	10.81	4.18	1.24	1.61	4.61	.05	.45	.09	.03	.016	146	141	16	59	15	25	3.3	99.71
6978	51.49	12.35	8.55	10.09	7.48	1.70	.23	.62	.11	.17	.161	922	218	4	35	11	59	6.6	99.75
6979	69.68	11.11	4.10	1.23	2.94	3.94	.58	.43	.09	.07	.005	1546	251	12	71	14	20	5.1	99.58
6980	70.22	8.05	4.36	1.66	4.62	1.86	.29	.34	.19	.04	.027	595	162	7	62	21	20	7.9	99.69
6981	55.15	12.54	7.78	7.15	6.10	1.88	.05	.61	.22	.15	.100	343	150	18	49	20	20	7.9	99.68
6982	66.74	9.27	4.64	1.07	6.16	2.01	.24	.44	.28	.04	.014	584	111	11	67	21	20	8.7	99.73
6983	52.64	16.97	9.39	3.78	6.15	3.72	.05	1.03	.19	.19	.004	382	327	4	53	19	20	5.3	99.53
6984	73.08	8.60	3.99	.73	4.83	1.56	.08	.37	.51	.04	.016	149	92	13	64	30	20	5.8	99.66
6985	48.65	13.34	9.24	9.59	9.08	1.56	.45	.75	.19	.17	.132	499	270	2	36	13	20	6.3	99.58
7743	58.83	10.14	10.02	1.73	11.78	2.63	.10	.46	.16	.30	.015	45	264	7	28	9	20	3.3	99.51
7744	65.73	12.59	4.72	1.35	2.63	3.81	.95	.61	.15	.07	.013	415	178	21	101	15	20	6.8	99.53
7745	46.68	15.66	11.21	8.18	5.15	4.27	.18	.95	.21	.16	.036	151	388	5	26	16	20	6.8	99.56
7746	47.48	15.36	9.05	4.72	7.26	4.15	1.14	.83	.17	.12	.017	313	164	8	36	9	20	8.9	99.28
7747	51.68	18.02	8.38	4.36	5.13	4.04	1.34	.87	.28	.09	.007	383	258	7	44	12	20	5.6	99.90
7748	55.07	17.49	9.07	2.96	2.25	6.02	1.08	.82	.36	.05	.009	285	197	10	51	15	32	4.7	99.97
7749	51.93	15.02	8.83	6.64	6.35	3.45	1.33	.78	.20	.13	.056	337	344	9	52	11	20	4.6	99.42
STANDARD SO-4	67.87	10.44	3.39	.98	1.63	1.23	1.75	.60	.22	.08	.008	785	163	27	303	18	23	11.5	99.90

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
7750	51.44	15.07	9.83	5.56	6.39	2.88	1.91	.91	.20	.12	.027	617	251	6	40	15	20	5.2	99.68
7751	55.54	15.44	5.08	3.96	5.30	5.12	1.64	.89	.17	.09	.015	582	303	16	47	17	20	6.6	99.99
7752	58.36	18.67	5.48	3.25	2.32	5.32	2.00	.91	.15	.04	.011	704	465	12	57	13	37	3.1	99.80
7753	56.33	19.06	6.88	3.41	1.04	5.08	2.72	.94	.20	.04	.011	876	416	12	72	15	20	4.0	99.92
7754	61.26	18.27	4.40	2.73	1.04	6.90	1.59	.88	.18	.03	.012	512	276	17	65	11	20	2.3	99.72
7755	59.62	18.31	3.83	3.32	2.30	6.23	1.90	.79	.17	.04	.031	848	471	5	69	14	20	2.8	99.55
7756	58.82	18.94	5.49	3.06	1.28	6.40	1.65	.85	.18	.03	.013	563	384	18	62	14	35	2.9	99.77
7757	55.45	16.82	6.72	6.55	3.97	4.10	1.42	.78	.17	.09	.105	479	348	5	42	12	20	3.6	99.91
7758	54.58	17.29	7.41	5.73	4.35	4.22	1.50	.84	.16	.08	.066	303	425	8	54	15	30	3.3	99.64
7759	58.25	20.18	4.59	3.15	1.68	5.23	2.38	.92	.18	.03	.008	434	467	5	68	14	77	3.0	99.75
7760	59.42	19.84	4.48	3.22	.85	6.28	1.86	.94	.16	.04	.008	396	415	13	66	14	20	2.6	99.83
7761	59.21	16.14	3.91	2.64	4.81	5.81	1.09	.73	.15	.04	.008	295	260	3	47	13	24	5.3	99.93
7762	58.24	20.15	4.77	3.49	1.21	5.04	2.55	.87	.15	.03	.006	339	392	16	85	15	22	3.2	99.83
7763	59.65	19.58	4.63	3.12	1.39	5.20	2.11	.88	.15	.02	.009	465	476	6	69	14	21	3.0	99.89
7764	59.49	18.69	5.15	3.12	1.46	5.83	1.95	.87	.15	.02	.013	451	511	10	63	12	20	3.0	99.89
7765	58.06	20.52	5.17	3.33	1.11	4.74	2.49	.90	.16	.02	.007	416	454	5	77	12	20	3.5	100.14
7766	58.96	20.12	4.74	3.24	1.14	4.90	2.30	.91	.13	.02	.009	390	528	6	76	12	34	3.4	100.02
7767	62.66	17.53	6.11	2.61	.98	2.82	3.02	.85	.20	.06	.003	1504	284	16	76	17	20	2.9	100.05
7768	57.95	18.35	6.15	3.15	2.40	4.96	2.45	.87	.13	.04	.007	1029	486	4	61	15	54	2.8	99.51
7769	53.96	16.19	8.42	2.88	5.49	4.39	1.87	.76	.13	.06	.005	765	360	31	59	15	20	5.7	100.04
7770	57.28	18.53	6.09	3.15	4.04	3.81	2.20	.74	.16	.08	.002	576	455	4	71	16	20	3.6	99.85
7771	57.53	18.54	6.63	3.12	4.10	3.96	1.77	.80	.19	.09	.005	422	555	7	58	16	20	3.0	99.88
7772	60.47	18.73	4.50	2.99	1.61	6.71	1.43	.90	.14	.02	.011	431	477	18	64	15	20	2.3	99.95
7773	58.26	18.51	6.30	2.92	1.82	5.76	1.60	.84	.17	.02	.007	544	519	8	66	14	20	3.5	99.87
7774	58.87	19.04	4.92	3.26	1.87	5.92	1.79	.86	.16	.04	.010	559	535	9	64	15	20	3.0	99.91
7775	54.76	19.09	7.06	3.03	6.52	3.99	.70	.77	.23	.12	.005	181	722	6	53	15	64	3.4	99.81
STANDARD SO-4	67.80	9.96	3.60	.99	1.57	1.28	1.98	.59	.25	.08	.009	772	181	33	322	19	25	11.3	99.62

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
6926	43.71	3.33	11.87	26.51	4.48	.12	.40	.26	.14	.19	.143	43	11	6	29	5	115	8.7	99.88
6927	40.86	3.28	13.84	28.89	2.04	.16	.26	.30	.13	.19	.372	5	12	11	29	6	104	9.5	99.84
6928	40.55	2.82	14.64	28.25	1.95	.07	.12	.25	.14	.21	.394	5	10	19	32	6	63	10.3	99.71
6929	39.88	4.46	12.92	27.67	3.74	.05	.15	.29	.16	.22	.362	5	13	20	33	7	138	9.9	99.81
6930	41.05	13.49	9.12	17.65	9.43	.05	.13	.65	.20	.22	.081	5	32	19	54	14	149	7.9	99.99
6931	41.05	4.17	11.50	27.83	3.34	.10	.06	.35	.14	.18	.374	5	24	29	48	10	29	10.6	99.71
6932	39.91	2.82	12.54	28.33	2.85	.15	.13	.25	.16	.19	.493	42	20	2	31	5	100	11.9	99.75
6933	48.39	5.24	7.56	19.57	12.74	.30	.22	.53	.12	.18	.402	5	22	2	23	8	108	4.8	100.07
6934	41.57	3.68	13.57	23.42	5.21	.08	.30	.33	.15	.19	.172	66	40	25	44	7	111	11.1	99.81
7729	46.11	6.82	11.16	22.34	5.92	.23	.23	.44	.13	.19	.415	14	14	17	37	9	20	5.9	99.90
7730	46.48	7.75	10.15	21.00	6.71	.36	.51	.85	.17	.18	.372	132	65	24	52	14	137	5.3	99.89
7731	44.82	6.84	10.61	23.98	5.09	.18	.52	.35	.12	.20	.446	64	15	10	41	6	100	6.7	99.89
7732	43.62	6.84	11.24	24.91	4.34	.15	.35	.40	.12	.20	.478	94	10	15	29	8	160	7.1	99.79
7733	44.12	5.80	11.65	24.77	4.80	.17	.05	.50	.15	.21	.464	61	16	18	43	9	24	7.1	99.80
7734	43.58	6.82	11.33	24.48	4.47	.14	.26	.67	.19	.20	.422	42	13	34	64	15	75	7.2	99.80
7735	45.85	5.12	9.75	22.05	6.96	.18	.57	.47	.15	.19	.335	51	30	36	46	11	112	8.2	99.87
7736	43.58	4.94	9.89	23.36	5.63	.08	.27	.46	.12	.16	.419	31	74	47	47	10	64	10.9	99.85
7737	44.40	5.22	10.23	22.85	7.28	.28	.06	.52	.13	.24	.484	19	53	12	33	10	30	8.2	99.91
7738	42.91	5.42	11.17	24.58	5.21	.28	.12	.51	.14	.19	.473	98	50	25	32	7	71	8.9	99.94
7739	41.97	4.47	11.71	25.31	3.97	.50	.59	.53	.13	.22	.473	94	48	41	45	6	151	10.0	99.93
7740	43.74	5.79	11.26	25.27	4.31	.16	.20	.50	.16	.19	.484	93	22	49	61	10	189	7.8	99.92
7741	43.84	5.83	11.68	24.51	4.97	.28	.17	.48	.13	.23	.476	47	30	12	33	6	165	7.2	99.84
7742	41.44	4.97	10.98	24.47	5.17	.07	.12	.39	.15	.21	.442	73	163	2	21	5	58	11.4	99.86
7804	43.83	4.81	13.27	25.55	5.94	.13	.33	.41	.13	.20	.201	56	80	12	26	5	58	5.0	99.83
7805	44.42	6.08	10.39	23.36	7.23	.11	.05	.38	.10	.18	.218	45	71	2	21	5	20	7.4	99.89
7806	44.58	5.37	12.75	23.98	7.08	.12	.14	.38	.10	.19	.235	74	101	4	8	5	44	4.9	99.86
7807	44.26	7.46	11.03	22.60	7.57	.09	.05	.36	.11	.17	.203	64	84	24	24	5	20	6.0	99.88
7808	41.88	3.73	14.61	27.64	3.08	.06	.14	.34	.12	.20	.490	32	47	2	5	5	20	7.6	99.90
7809	42.59	6.75	11.55	22.26	5.69	.09	.05	.34	.12	.18	.300	9	38	2	13	5	148	10.1	100.00
7810	47.19	15.01	9.08	9.18	12.54	1.18	.44	.49	.13	.17	.078	474	189	2	9	11	78	4.5	100.10
7811	44.64	10.25	9.78	16.18	11.27	.13	.14	.42	.14	.18	.172	63	70	5	26	10	20	6.7	100.03
7812	42.62	3.64	12.55	27.12	4.00	.05	.05	.34	.12	.19	.381	32	46	2	19	5	20	8.9	99.91
7813	42.78	3.93	12.37	25.69	5.35	.08	.25	.34	.11	.19	.391	15	37	2	12	5	20	8.4	99.89
7814	48.85	5.06	8.36	19.15	13.90	.10	.17	.52	.11	.17	.484	8	18	15	32	9	20	3.2	100.09
7815	48.41	4.56	9.26	20.86	11.33	.18	.05	.53	.10	.18	.386	65	89	7	20	7	20	4.2	100.05
7816	49.05	4.21	8.73	19.43	13.47	.18	.05	.51	.09	.17	.473	29	21	2	16	5	27	4.0	100.33
STANDARD SO-4	68.54	10.57	3.16	.94	1.40	1.10	1.89	.56	.26	.08	.008	743	164	32	297	21	23	11.4	100.10

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
7817	46.16	3.76	10.68	21.68	8.73	.20	.05	.43	.12	.19	.311	43	31	19	34	12	79	7.5	99.81
7818	41.48	3.12	14.24	27.98	2.92	.11	.11	.32	.15	.20	.342	32	26	4	18	8	20	8.7	99.68
7819	43.41	3.27	13.37	25.67	4.07	.07	.05	.33	.14	.16	.423	30	16	8	23	8	33	8.9	99.83
7820	49.37	5.55	8.14	17.54	14.49	.31	.05	.53	.12	.18	.389	14	117	9	22	13	20	3.3	99.97
7821	45.40	7.46	9.43	19.48	9.70	.28	.12	.51	.13	.20	.322	18	38	7	16	11	20	6.8	99.84
7822	49.71	4.33	8.48	18.78	13.30	.24	.05	.49	.11	.18	.377	13	23	10	28	10	24	3.8	99.81
7823	48.02	3.95	9.51	21.22	10.81	.19	.13	.49	.12	.18	.316	36	25	8	21	11	128	4.8	99.77
7824	50.36	4.16	7.63	18.29	15.04	.22	.05	.55	.12	.17	.482	13	17	2	18	11	20	2.8	99.84
7825	47.36	3.72	9.76	22.05	9.65	.22	.12	.34	.13	.17	.288	25	21	21	31	10	49	5.9	99.73
7919	41.60	4.42	12.46	27.62	3.16	.05	.06	.35	.13	.18	.675	19	10	9	18	8	144	9.0	99.73
7920	44.76	3.54	11.57	18.07	4.07	.10	.05	.39	.14	.22	.525	9	74	10	21	6	38	16.5	99.91
7921	69.97	13.27	3.02	2.14	2.10	5.53	.33	.51	.09	.05	.017	304	107	16	93	29	22	3.0	100.11
7922	64.18	14.84	5.49	2.83	2.26	5.28	.54	.75	.23	.09	.006	421	134	15	84	29	70	3.4	100.01
7923	51.15	15.31	7.51	7.31	11.85	1.43	.26	.76	.14	.16	.054	413	148	8	43	14	20	3.8	99.83
7924	46.42	8.27	9.50	16.44	7.73	.68	.13	.51	.11	.22	.334	132	49	16	41	14	60	9.5	99.89
7925	62.93	15.73	6.49	3.79	2.52	4.58	.39	.83	.23	.10	.021	240	90	16	89	22	98	2.3	99.99
STANDARD SO-4	69.06	9.85	3.27	.88	1.40	1.18	1.68	.56	.25	.08	.007	726	161	34	305	25	22	11.5	99.91

APPENDIX 3: OUTCROP SAMPLES OF GOPHER MEMBER ALONG FRYING PAN CREEK

Sample	Chip Interval (cm)	Stratigraphic[1] Thickness (m)	Description
Location 1 - on south side of Frying Pan Creek 29-60 m upstream from 690N 2300W; at 29 m in 5-m cliff; at 50-60 m in 10-m steep bank			
6673[2]	20	2	Tuff, black, pyritic, weathers rusty, up to 5% or more fine sulfides
6672[2]	10-20	2¼	Tuff, black, pyritic, as in sample 6673
6671[2]	10-20	2	Tuff, black, pyritic, as in sample 6673
6670[2]	10-20	2	Tuff, black, pyritic, as in sample 6673
6674[2]	random	~2	Tuff, dark-grey, lapilli with some fragments to 4-5 mm in size, conspicuous rusty patches to 20 cm in size; covered contact with overlying black pyritic tuff
6669[3]	random	~5	Tuff, dark-grey, weathers medium-greenish-grey with rusty patches to 10 cm in size, lapilli of quartz, feldspar, volcanics to 1 cm in size, up to 3-4% finely disseminated sulfides mostly pyrite, irregular joints with attitude 190°/74°W, some surfaces with chlorite or serpentine, some black surfaces
-	-	~1	Basic volcanics, medium-grey, very fine grained, few white calcite stringers to 5 mm thick, blobs of white calcite to 5 cm or more in size, some with patches and blobs of pyrrhotite to 4 cm in size, curved layer of chlorite 5-10 mm thick resembling a pillow selvedge, attitude of closely spaced joints 342°/75°SW, from 3X3 m outcrop in creek bed, not sampled
Location 2 - exposure from tree slipping down steep bank about 10 m north of north bank and 6-7 m above Frying Pan Creek 58 m upstream from 690N, 2300W			
5678	continuous	1	Tuff, black, pyritic, with some more graphitic layers up to 10 cm thick, bedding 330°/23°NE; sequence of layers: black rusty-weathering 1-2 cm thick, few buff layers 5 cm thick, black layers (graphitic?) to 1 cm thick but mostly less
5677	continuous	1	Tuff, black, pyritic, as in sample 5678
5676	continuous	1	Tuff, black, pyritic, as in sample 5678
6675	continuous	1	Tuff, black, pyritic, as in sample 5678

[1] At each location, samples are in stratigraphic order from the top down

[2] 50-60 m upstream

[3] 29 m upstream

APPENDIX 3: CONTINUED

Sample	Chip Interval (cm)	Stratigraphic Thickness (m)	Description
Location 3 - on south side of Frying Pan Creek near base of largely inaccessible 30-35-m cliff 30 m upstream from 2400 W crossing			
5693	15	2	Tuff, black, pyritic, bedding 323°/45°SW; joints 305°/43°NE
5694	10-15	1	Contact of black pyritic tuff and grey tuff-medium-grey with very fine angular fragments in an aphanitic matrix, locally with blobs of pyrrohite and chalcopyrite in ratio of 5 or 10: 1 up to 5-8 mm long; greyish-white chert? at contact, below contact abundant pyrite in, along, and near contact, local rusty mass about 50 cm across from weathering of irregular masses of pyrite
Location 4[4] - on north side of Frying Pan Creek starting 126 m downstream from 2600W crossing almost at creek level			
5695	15-20	3	Tuff, black, pyritic
5696	15-20	3	Tuff, black, pyritic; includes shearing or fault 15-20 cm wide with attitude 327°/63°SW
5697	15-20	3	Tuff, black, pyritic; includes a sheared interval 35 cm wide with attitude 325°/55°SW
5698	15-20	3	Tuff, black, pyritic
5699	15-20	4	Tuff, black, pyritic
5700	15-20	4	Tuff, black, pyritic
Location 5 - on north side of Frying Pan Creek at 77 m downstream from 2600W crossing, almost at creek level			
5692	10-15	2	Tuff, black, pyritic, alternating beds 4 to 40 cm thick 36°/17°NW
5691	10-15	2	Tuff, black, pyritic
Location 6 - on south side of Frying Pan Creek at 62 m downstream from 2600W crossing, almost at creek level			
5690	continuous	0.2	Fault in black pyritic tuff, sheared, rusty and weathered, attitude 150°/73°SW; attitude of upstream beds cut by fault 5°/13°W
5689	10	2	Tuff, black, graphitic(?), between faults
5688	continuous	0.4	Fault in black pyritic tuff, sheared, graphitic, attitude 130°/53°SW, attitude of downstream beds cut by fault 133°/73°NE; probable displacement - west side up

[4] Some sample intervals seem to contain more fissile graphitic zones than others.

APPENDIX 3: CONTINUED

Sample	Chip Interval (cm)	Stratigraphic Thickness (m)	Description
Location 7 - on south bank of Frying Pan Creek starting opposite partly filled-in pit excavated by Al Dendys in early 1984 from about 20 to 40 m downstream from 2600W crossing, bottom at creek level			
5687	10	1½	Tuff, black, pyritic, weathered
5686	10	3	Tuff, black, pyritic, weathered, attitude of minor shearing 125°/88°SW, sample offset 4-5 m downstream
5685	10	2	Tuff, black, pyritic, weathered
5684	10	3	Tuff, black, pyritic, weathered, bedding 285°/17°N, sample offset about 20 m downstream
5683	10	2	Tuff, black, pyritic, rusty and weathered, bedding 105°/27°N
5682	10	3	Tuff, black, pyritic, rusty and weathered, similar to sample 5681, offset about 15 m upstream
-	-	3	inaccessable
5681	10	2	Tuff, black, pyritic, coated with yellow effluorescence, massive beds 20-50 cm thick separated by more fissile material up to 1 cm thick, bedding almost flat
Location 8 - on south bank of Frying Pan Creek 3½ m downstream from 2600W crossing, bottom at creek level			
5680	10	2	Tuff, black, pyritic, weathers rusty, very fine grained, bedding 148°/22°NE
5679	10	2	Tuff, black, pyritic, weathers rusty

APPENDIX 4: TRAVERSE DOWN WYATT CREEK

Outcrop Side	Location Elev.(m)	Description
east	1100	tuff, pale-greyish-green, locally pale-greenish-white, weathers medium-grey with rusty patches 30 cm or so in size, very fine grained to aphanitic and chert-like, few clots of pyrite to 1 cm in size, most pyrite along fractures, attitude of joints $100^{o}/11^{o}W$ SAMPLE 7743 random chips
east	1090	calcarenite, dark-flesh-color with 20-30% rusty-brown cement, calcite grains up to 2-3 mm but mostly 1-2 mm, cut by white calcite vein with a stringer of very fine sphalerite and galena(?), some clasts to 5-10 mm in size of rounded quartz or chert (perhaps chert-granule limestone), lens of black shaly material 40 cm long by 5 cm thick with attitude $115^{o}/24^{o}S$, attitude of slaty joints $160^{o}/46^{o}SW$ parallel to layering of buffish very fine grained to micritic limestone in layer 1-2 m thick with more greyish-white calcarenite below
west	1100	tuff, whitish-grey or greenish-whitish-grey, weathers brownish, mostly very fine grained but some to 1 mm, sucrosic, local harder layers of light-grey aphanitic with disseminated pyrite SAMPLE 7744 chips at 15-20 cm across 2½ m
west	1050	basic volcanics(?), medium-grey, grain size to ¼ mm, many joints and fractures coated hematite red - probably Nikolai Formation
in bed	1035	basic volcanics, medium-greyish-green, weathers greenish, grain size 1-2 mm but mostly less, highly epidotized, up to 10% dark-reddish grains and stringers, few larger grains to 5 mm with good cleavage (amygdules?) - probably Nikolai Formation
east	970	basic volcanics, medium-greyish-green, weathers epidote green, very fine grained, irregular epidote veinlets, quartz amygdules to 1 cm, shearing with attitude $115^{o}/40^{o}S$ - Nikolai Formation
about 350 m along south side Burwash Creek from mouth of Wyatt Creek elev. 940		basic volcanics, grey, sparse very fine pyrite and chalcopyrite - probably Skolai Group SAMPLE 7745 grab

APPENDIX 5: CUT LINES

Offsets from Baseline at 1000N

800W	600N - 1240N	640 m
1000W	470N - 1000N	530
1300W	240N - 1000N	760
1400W	250N - 1000N	750
1500W	240N - 1000N	760
1600W	190N - 1000N	810
1800W	200N - 1000N	800
1900W	200N - 1000N	800
2000W	290N - 1000N	710
2100W	280N - 1000N	720
2200W	260N - 1000N	740
2300W	280N - 1000N	720
2400W	280N - 1000N	720
2500W	280N - 1000N	720
2600W	180N - 1000N	820
2700W	80N - 1000N	920
3300W	0 - 1000N	1000
3400W	0 - 1000N	1000
4300W	1400N - 2700N	1300
		15220 m
2200N Baseline	880W - 2600W	1720

Offsets from Baseline at 2200N

1200W	2240N - 2400N	160
1300W	1800N - 2400N	600
1500W	1800N - 2500N	700
1900W	1700N - 2600N	900
2100W	1700N - 2700N	1000
2300W	1700N - 2700N	1000
2500W	1900N - 2200N	300
2515W	2200N - 2600N	400
		5060 m
2600N Baseline	2600W - 5100W	2500
Total		24500 m

APPENDIX 6: LINES SURVEYED BY MAGNETOMETER

Widely Spaced Lines.

Line	Length	Line	Length	Line	Length
122	2610 m	126	2600 m	129	2040 m
123	2360	127	2560	130	2370
124	2530	128	2460	131	2070
125	2080				

Total length 23680 m

Near Sue Location Line

100W	620S - 1520S	900 m
200W	620S - 1520S	900
		1800 m

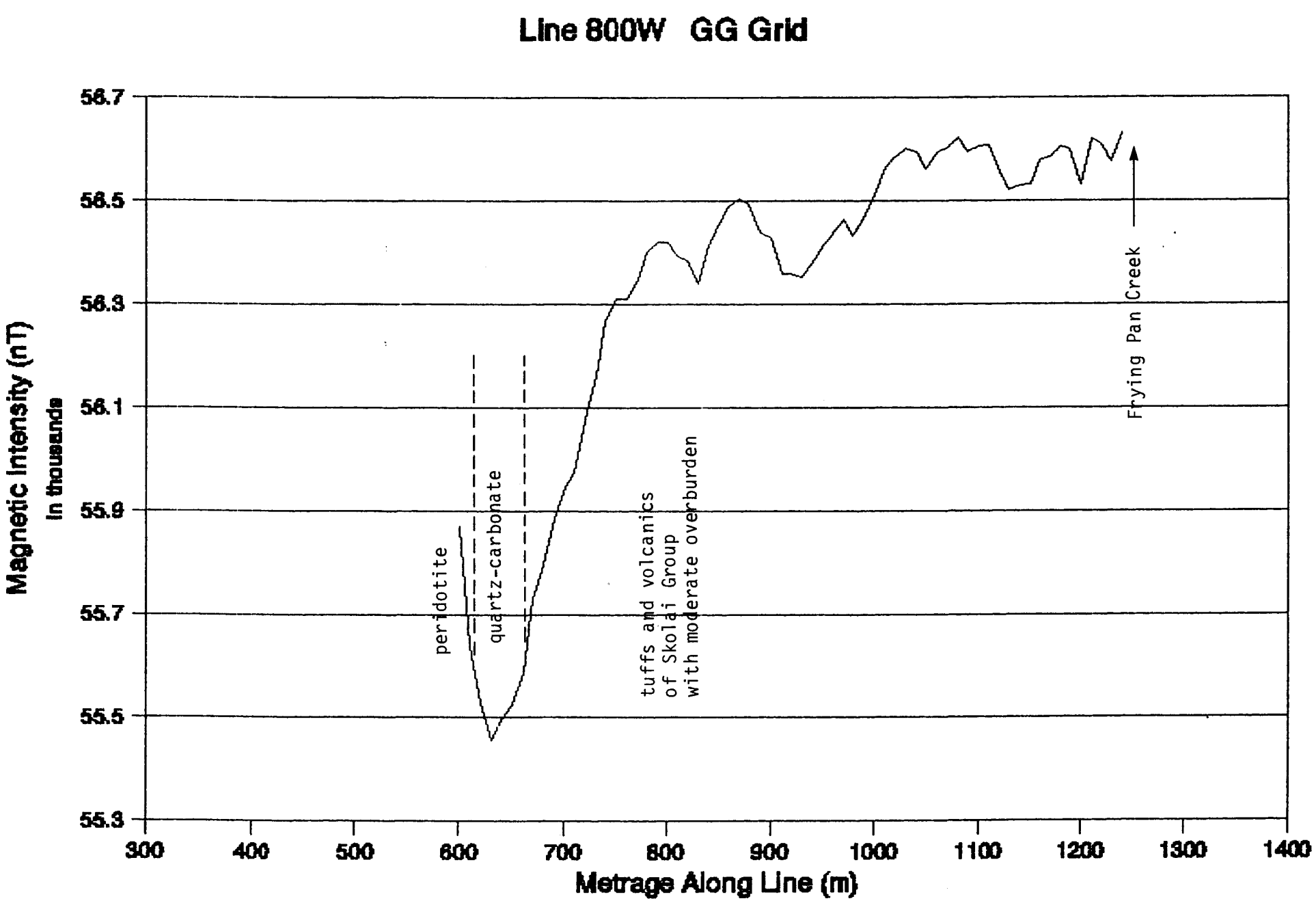
1000N Baseline and Offsets

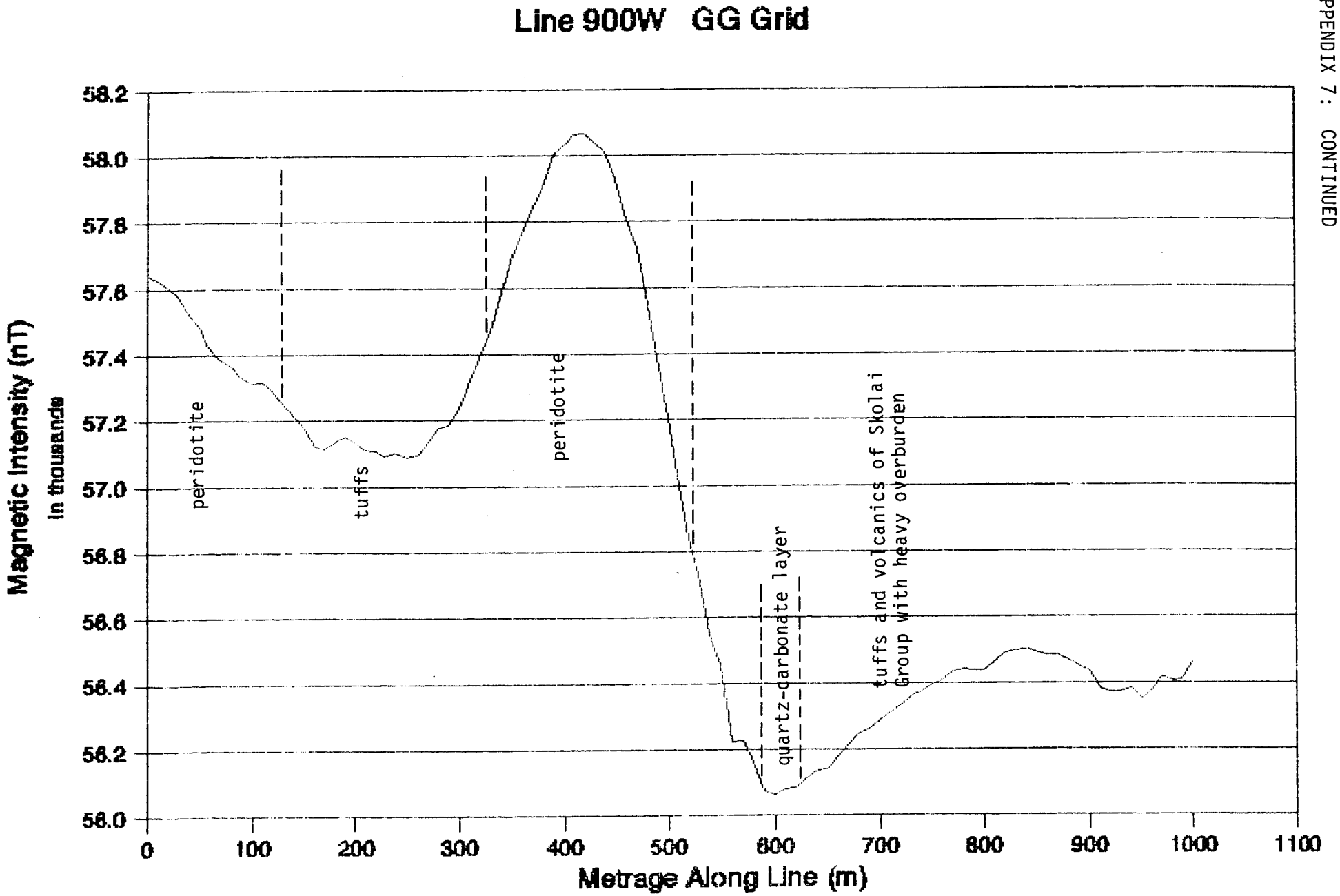
1000N	700W - 2700W	2000 m
800W	600N - 1240N	640
900W	0 - 1000N	1000
1000W	470N - 1000N	530
1100W	1000N - 2250N	1250
1200W	1000N - 2240N	1240
1300W	240N - 1000N	760
1400W	250N - 1000N	750
1500W	240N - 1000N	760
1600W	190N - 1000N	810
1700W	470N - 2500N	2130
2000W	290N - 1000N	710
2100W	280N - 1000N	720
2200W	260N - 1000N	740
2300W	280N - 1000N	720
2400W	280N - 1000N	720
2500W	280N - 1000N	720
2600W	180N - 1000N	820
2700W	80N - 1000N	920
		17940 m

2200N, 2600N Baselines and Offsets

2200N	880W - 2500W	1620 m
2600N	2600W - 5100W	2500
1300W	1800N - 2400N	600
		4720 m

Total surveyed 48140 m


Line 800W GG Grid
Magnetic Intensity (nT)
In thousands
56.7
56.5
56.3
56.1
55.9
55.7
55.5
55.3
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
Metrage Along Line (m)
peridotite
quartz-carbonate
tuffs and volcanics
of Skolai Group
with moderate overburden
Frying Pan Creek


Line 900W GG Grid
Magnetic Intensity (nT)
In thousands
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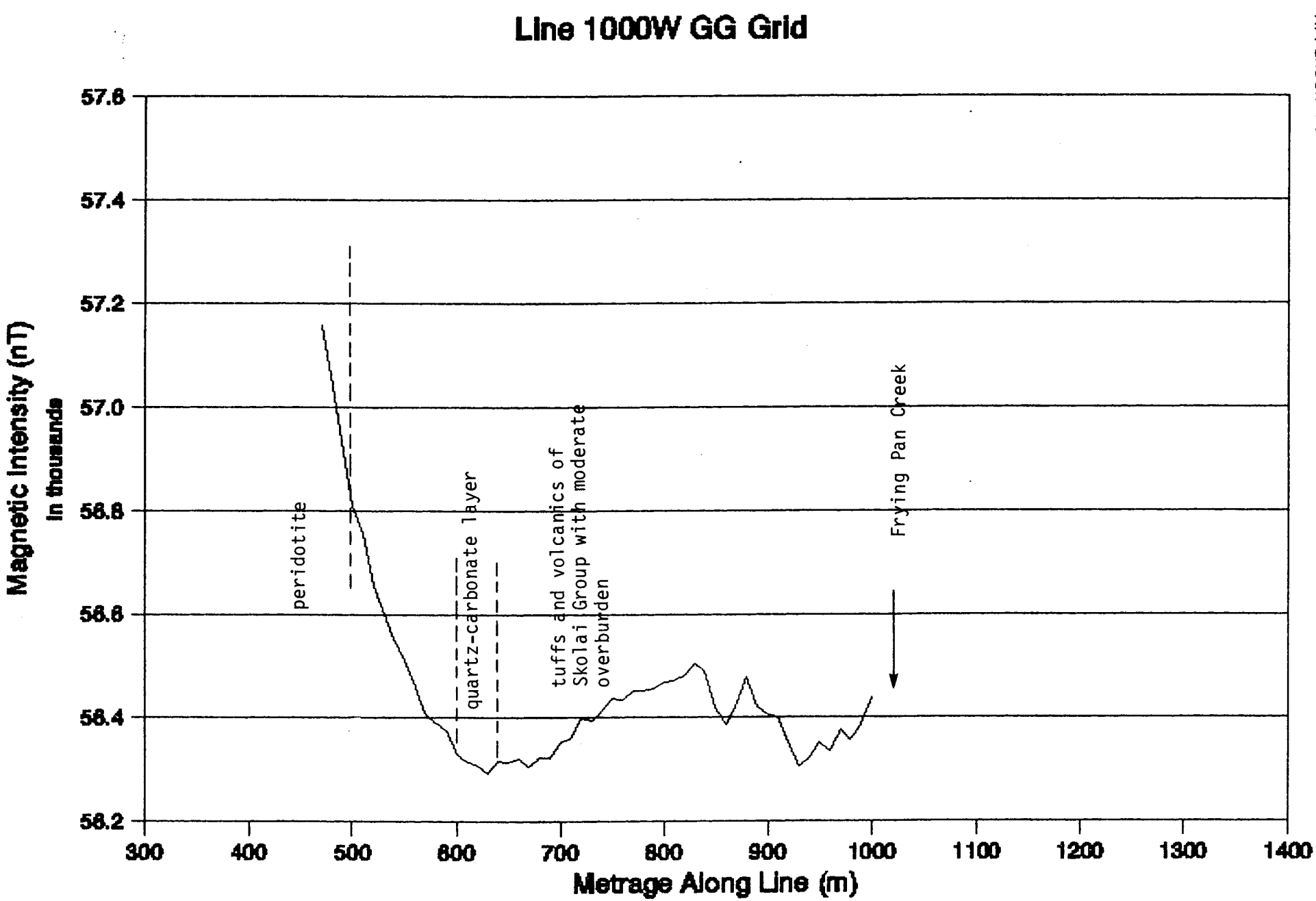
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
56.2
56.0
0
100
200
300
400
500
600
700
800
900
1000
1100
Metrage Along Line (m)
peridotite
tuffs
peridotite
quartz-carbonate layer
tuffs and volcanics of Skolai Group with heavy overburden


Line 1000W GG Grid
Magnetic Intensity (nT)
In thousands
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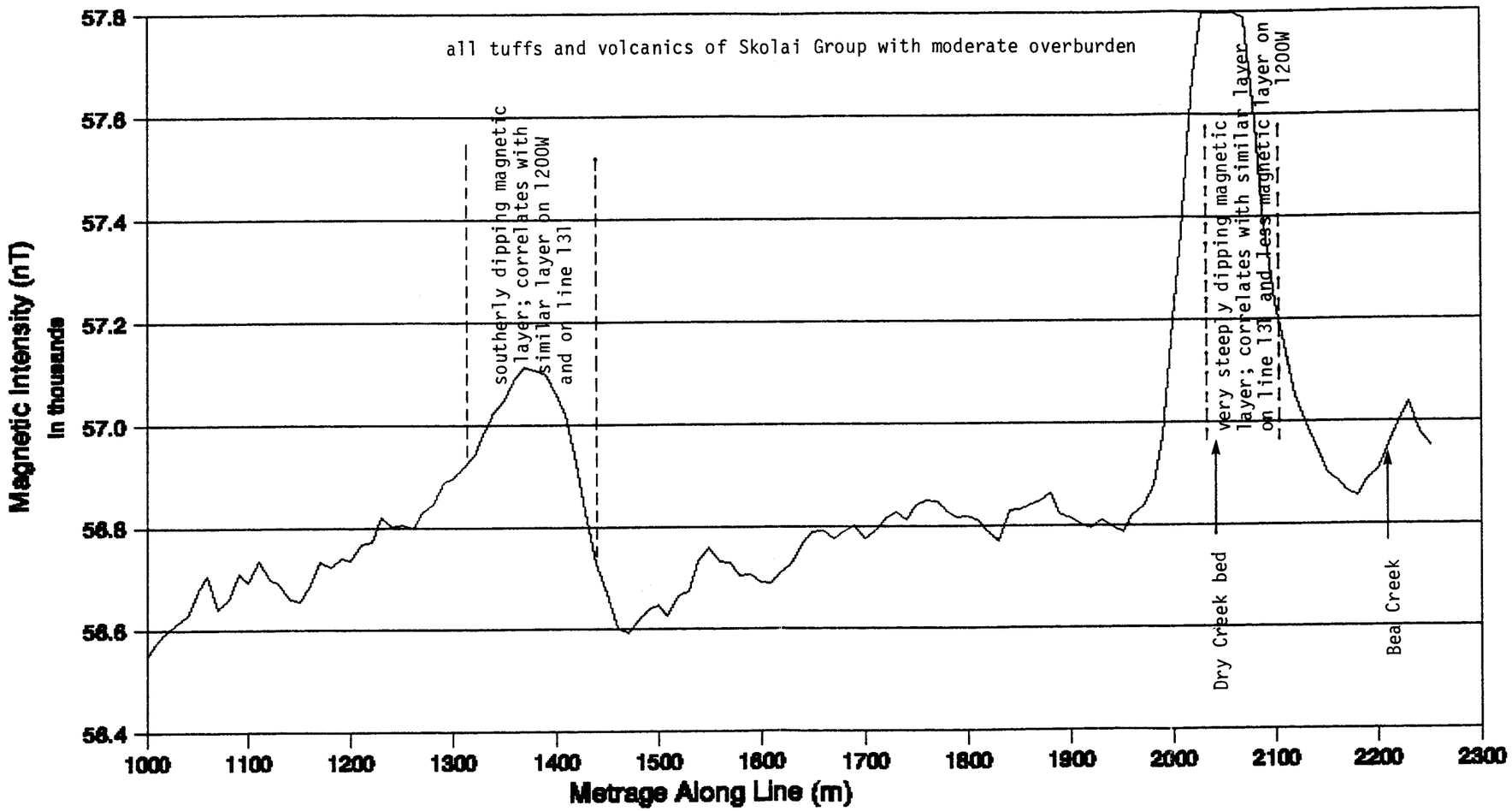
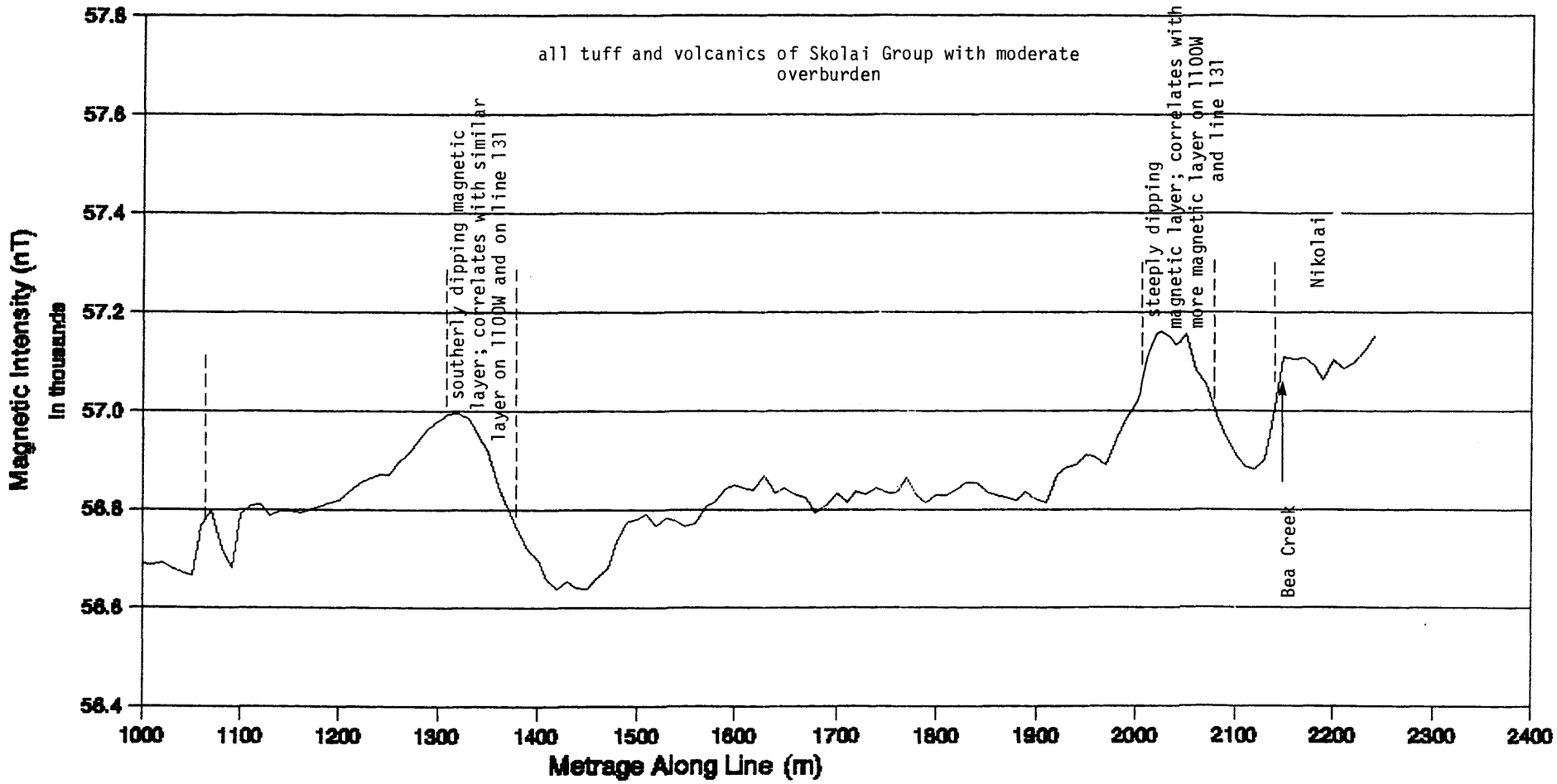
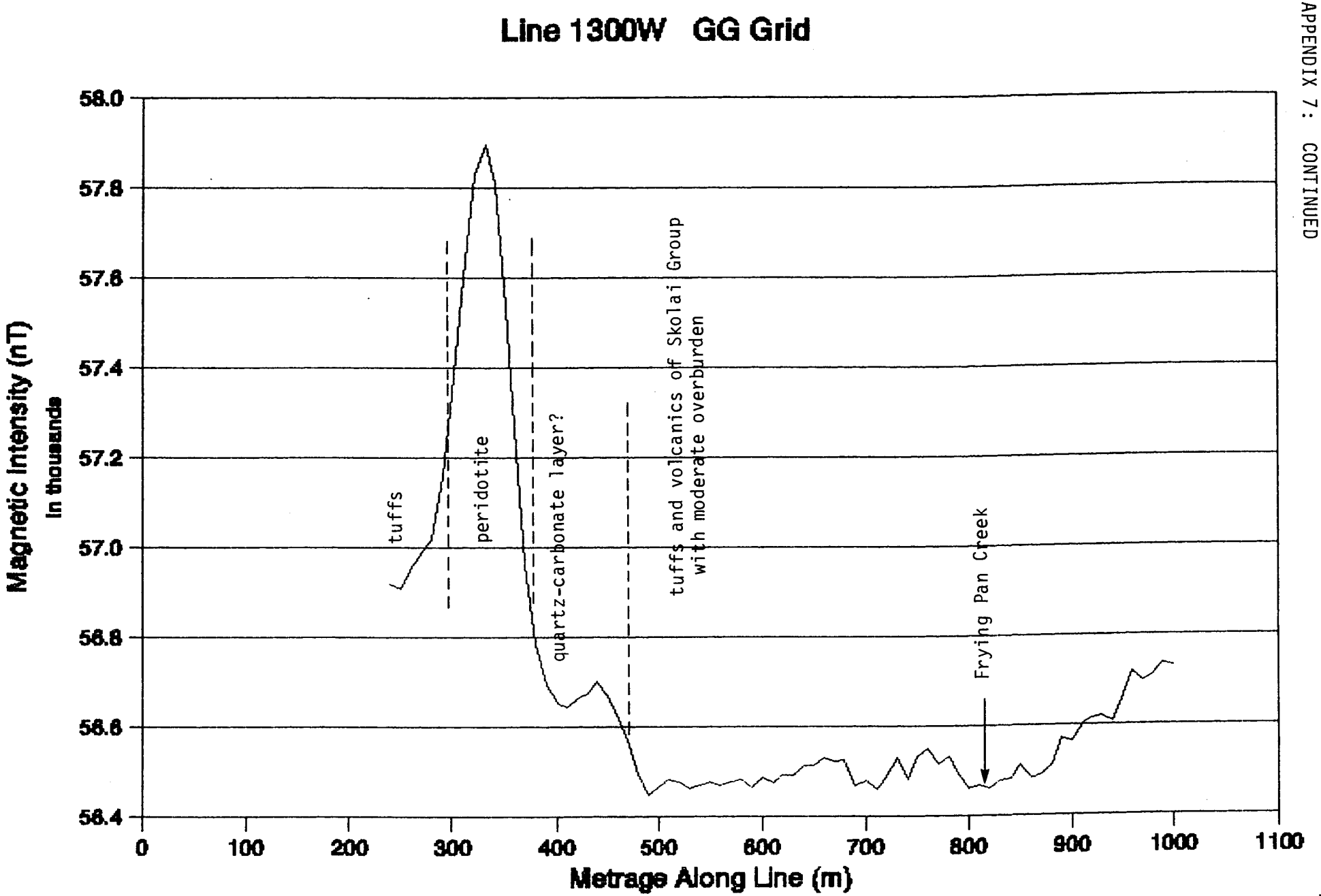
57.4
57.2
57.0
56.8
56.6
56.4
56.2
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
Metrage Along Line (m)
peridotite
quartz-carbonate layer
tuffs and volcanics of Skolai Group with moderate overburden
Frying Pan Creek

Line 1100W GG Grid



Line 1200W GG Grid




Line 1300W GG Grid
Magnetic Intensity (nT)
In thousands
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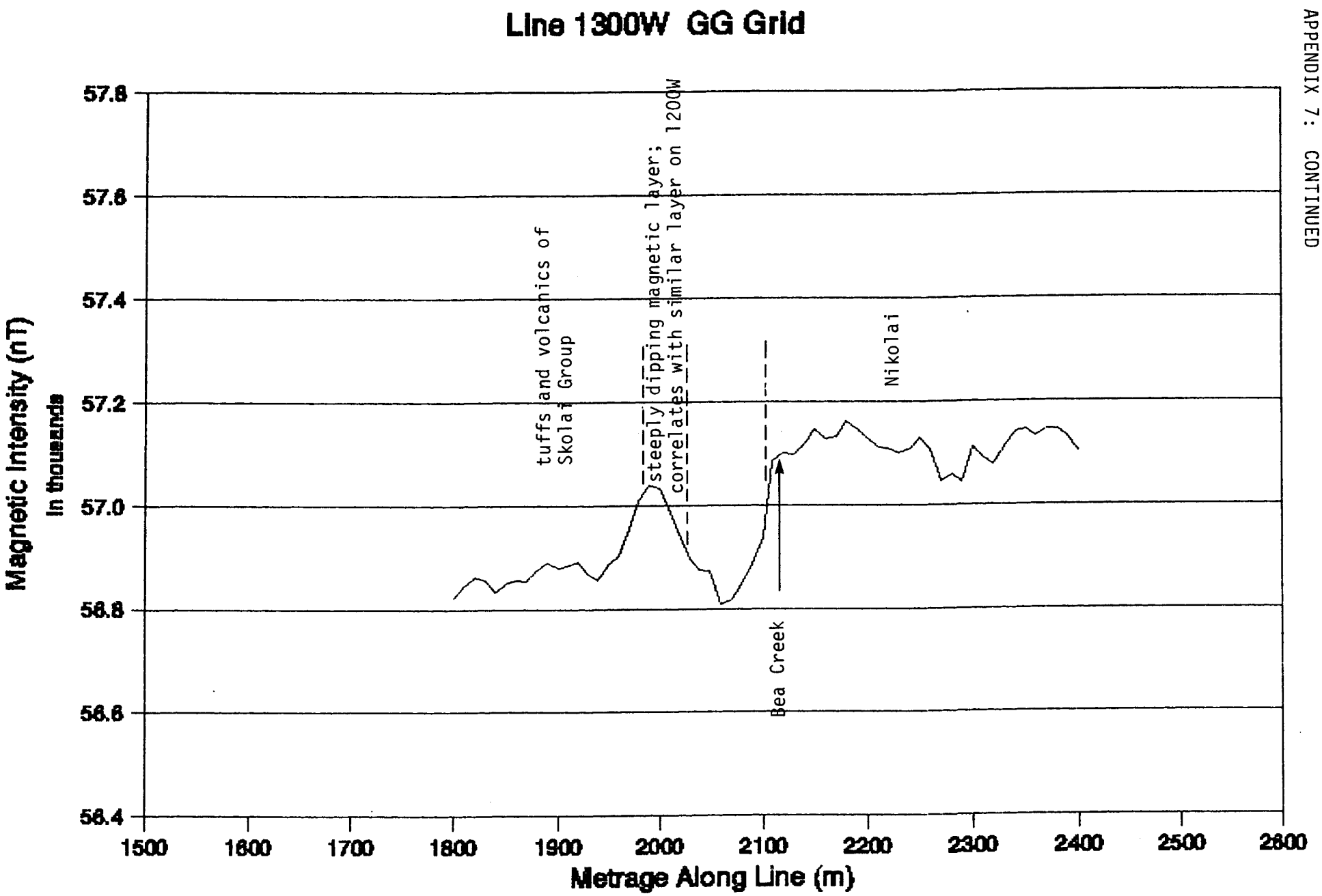
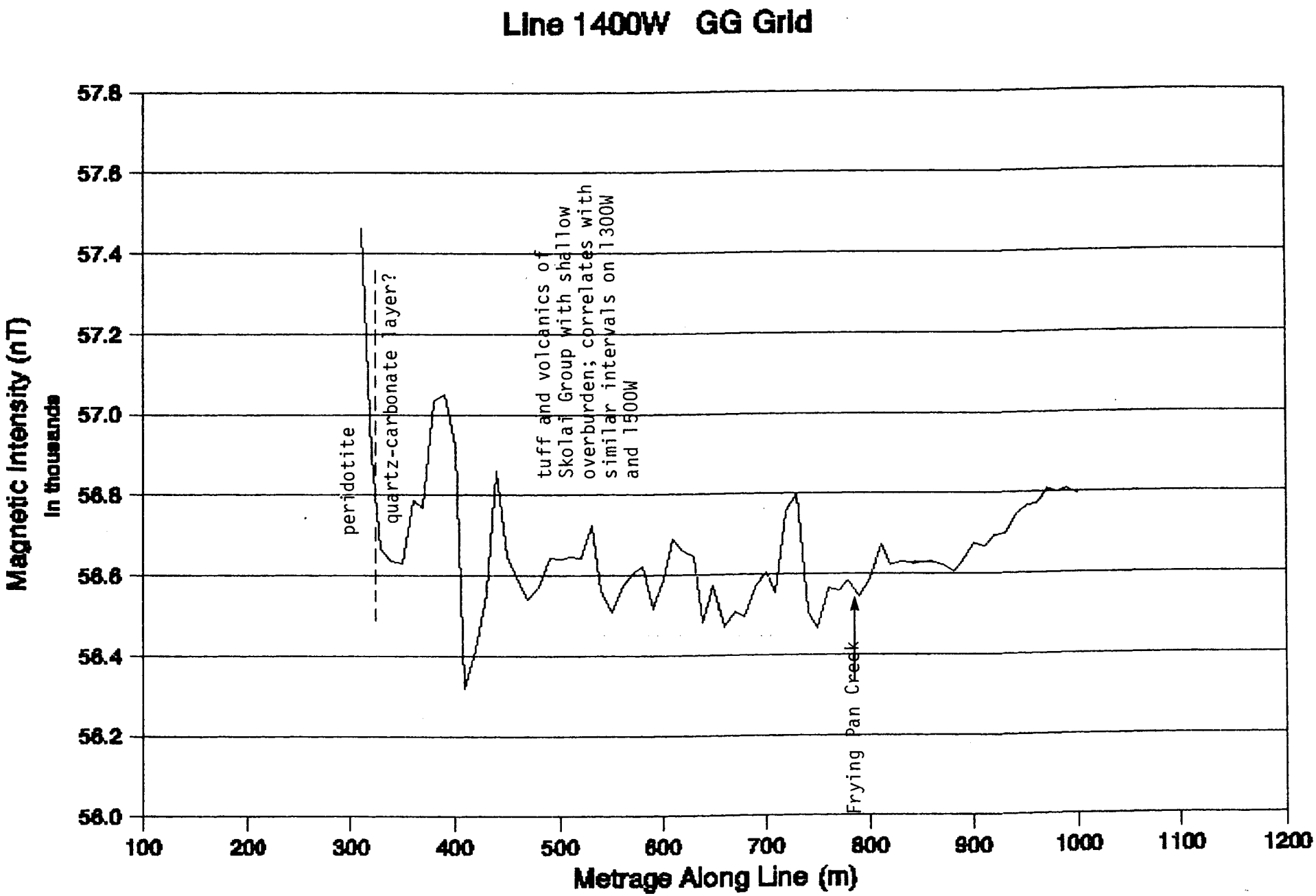
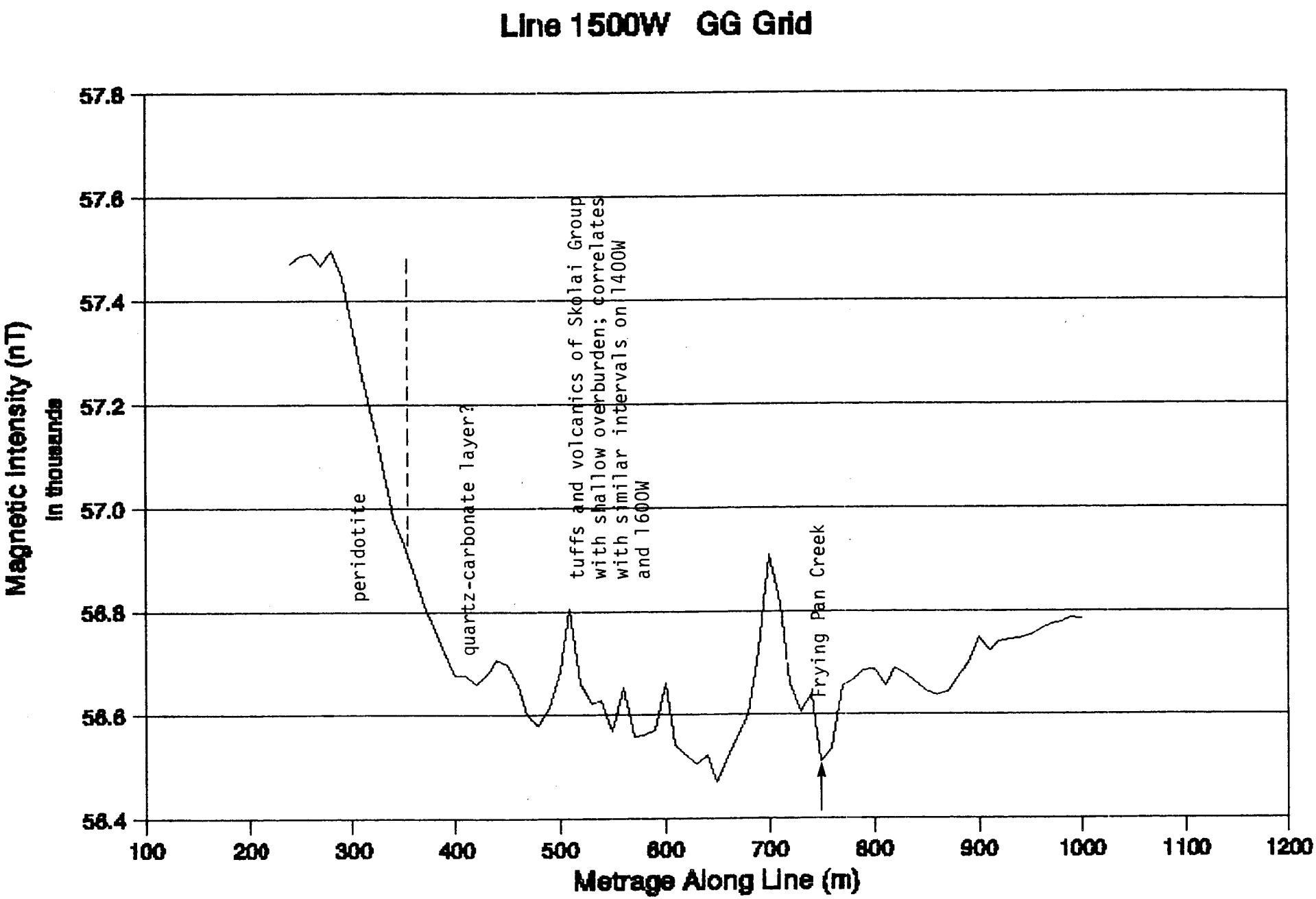
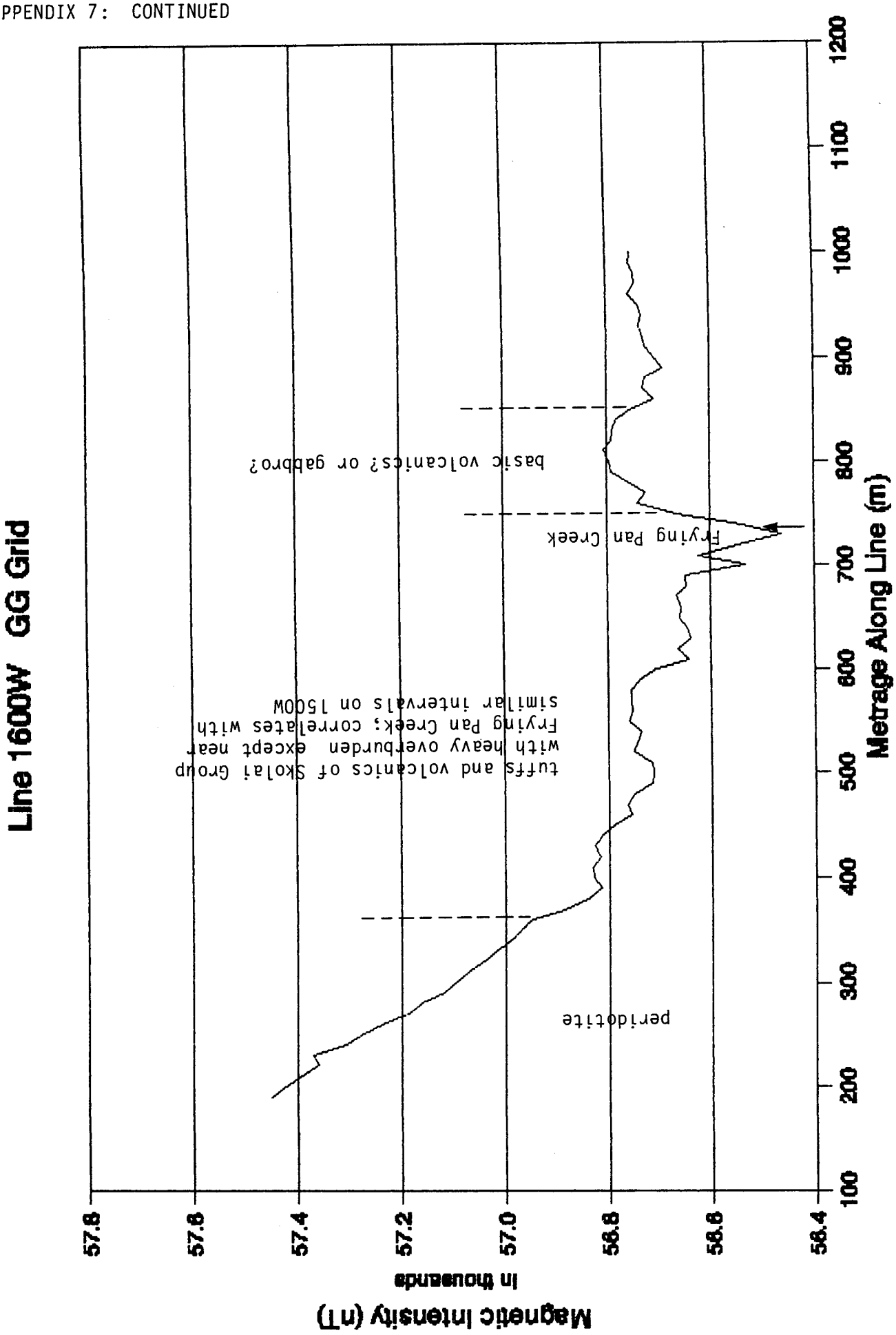
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
0
100
200
300
400
500
600
700
800
900
1000
1100
Metrage Along Line (m)
tuffs
peridotite
quartz-carbonate layer?
tuffs and volcanics of Skolai Group
with moderate overburden
Frying Pan Creek

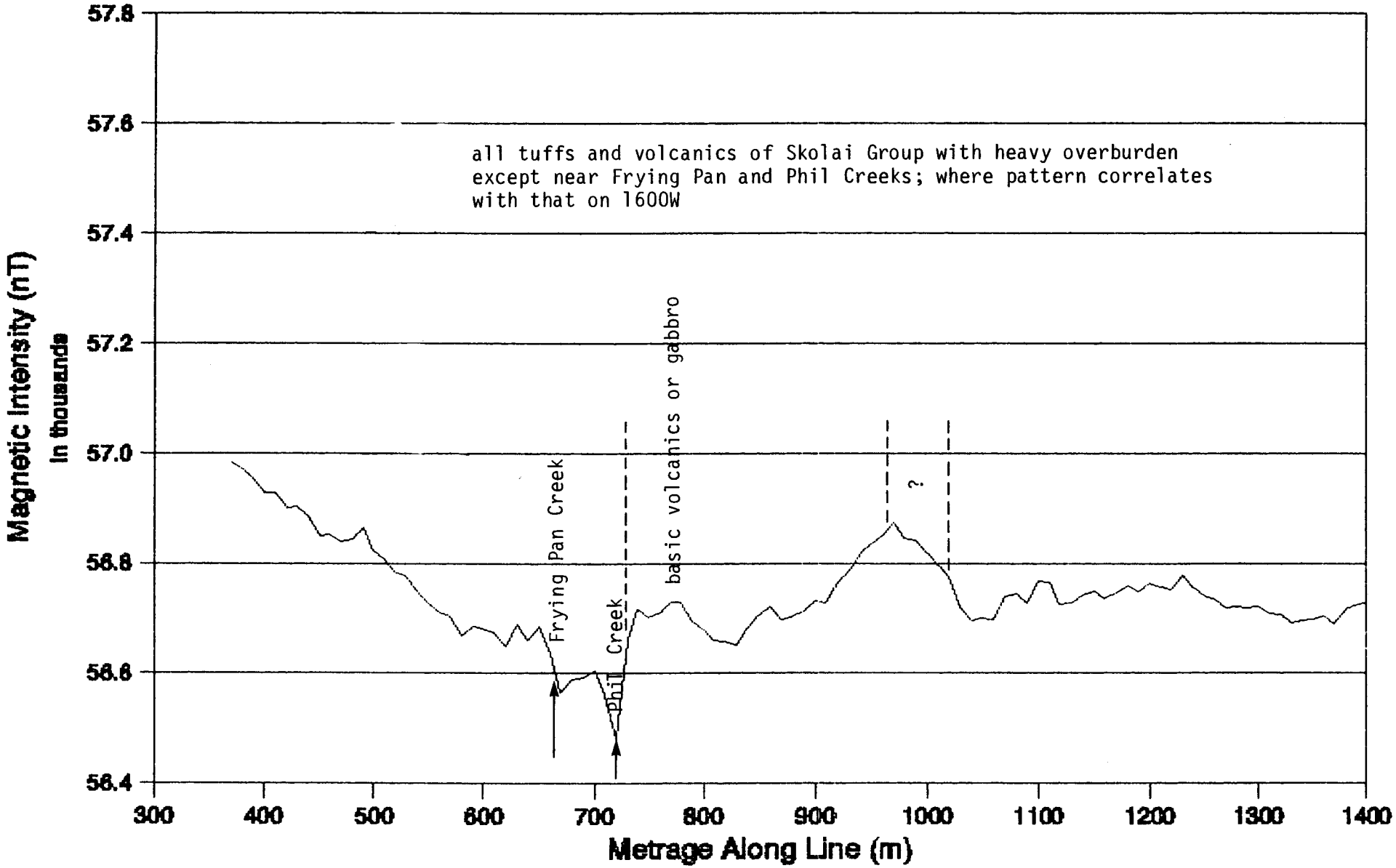

Line 1300W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
Metrage Along Line (m)
tuffs and volcanics of Skolai Group
steeply dipping magnetic layer; correlates with similar layer on 1200W
Bea Creek
Nikolai

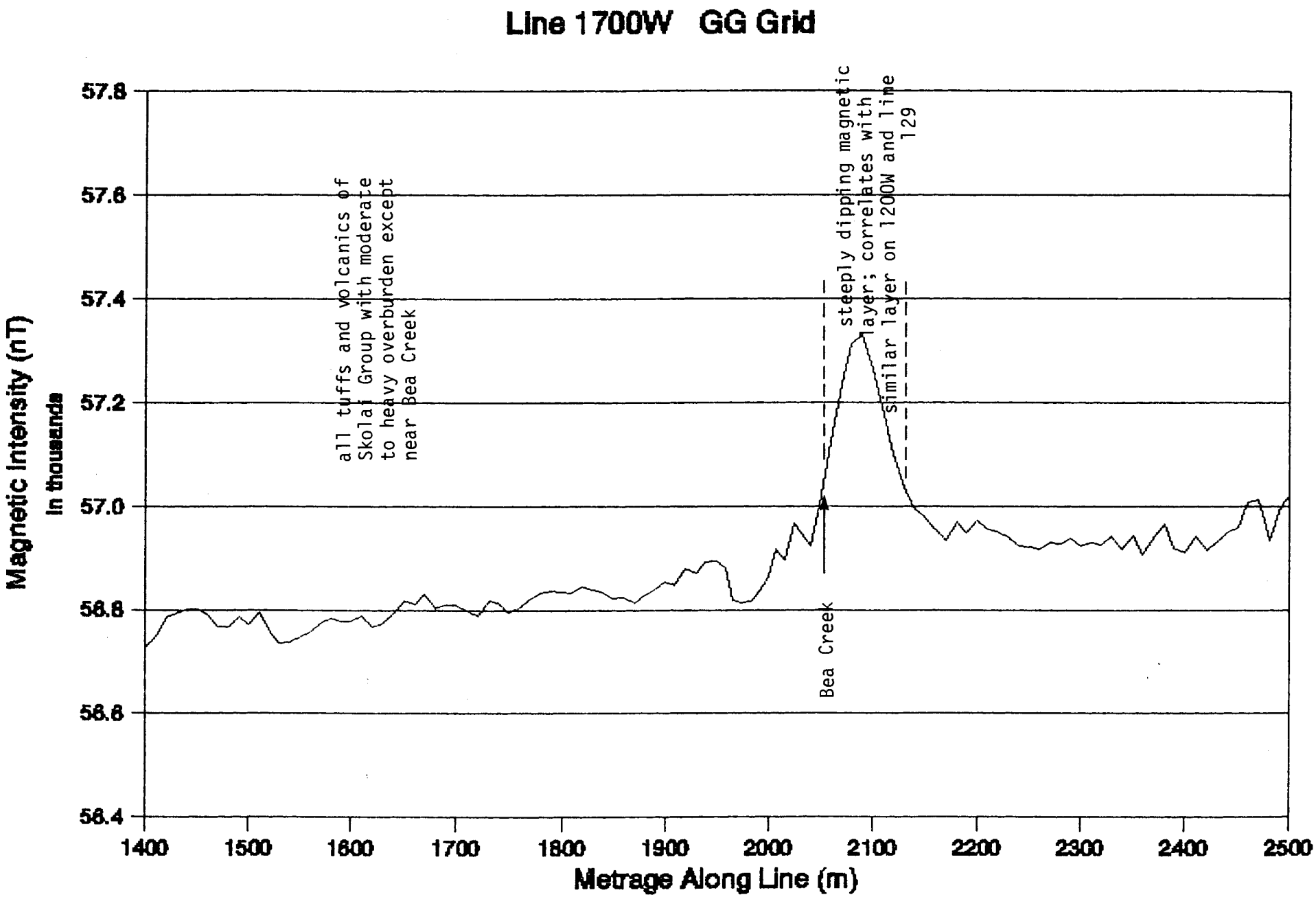

Line 1400W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
56.2
56.0
100
200
300
400
500
600
700
800
900
1000
1100
1200
Metrage Along Line (m)
peridotite
quartz-carbonate layer?
tuff and volcanics of Skolai Group with shallow overburden; correlates with similar intervals on 1300W and 1500W
Frying Pan Creek

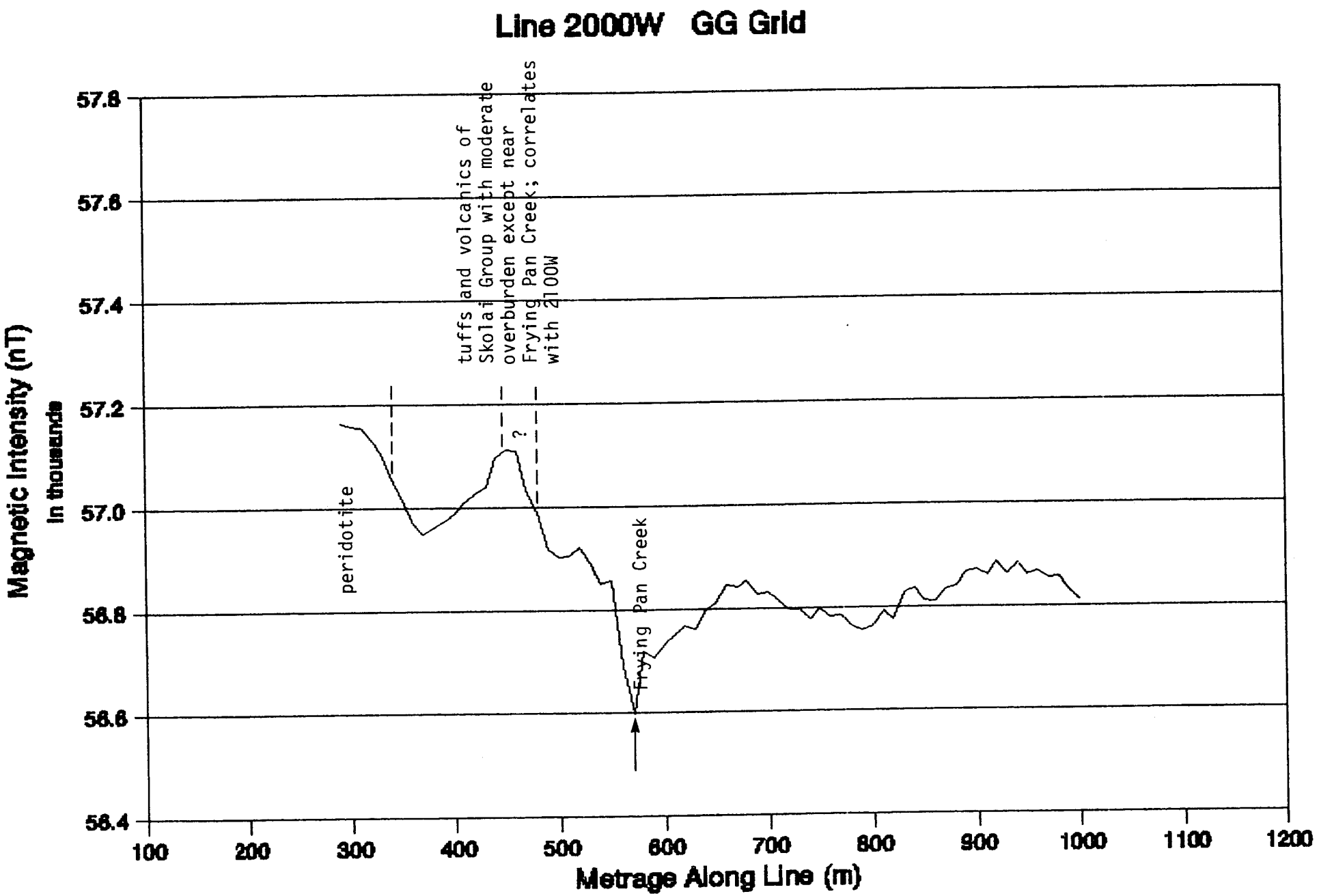

Line 1500W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
100
200
300
400
500
600
700
800
900
1000
1100
1200
Metrage Along Line (m)
peridotite
quartz-carbonate layer?
tuffs and volcanics of Skolai Group with shallow overburden; correlates with similar intervals on 1400W and 1600W
Frying Pan Creek


Line 1600W GG Grid
Magnetic Intensity (nT)
in thousands
57.8
57.8
57.4
57.2
57.0
56.8
56.6
56.4
100
200
300
400
500
600
700
800
900
1000
1100
1200
Metrage Along Line (m)
peridotite
tuffs and volcanics of Skolai Group
with heavy overburden except near
Frying Pan Creek; correlates with
similar intervals on 1500W
Frying Pan Creek
basic volcanics? or gabbro?

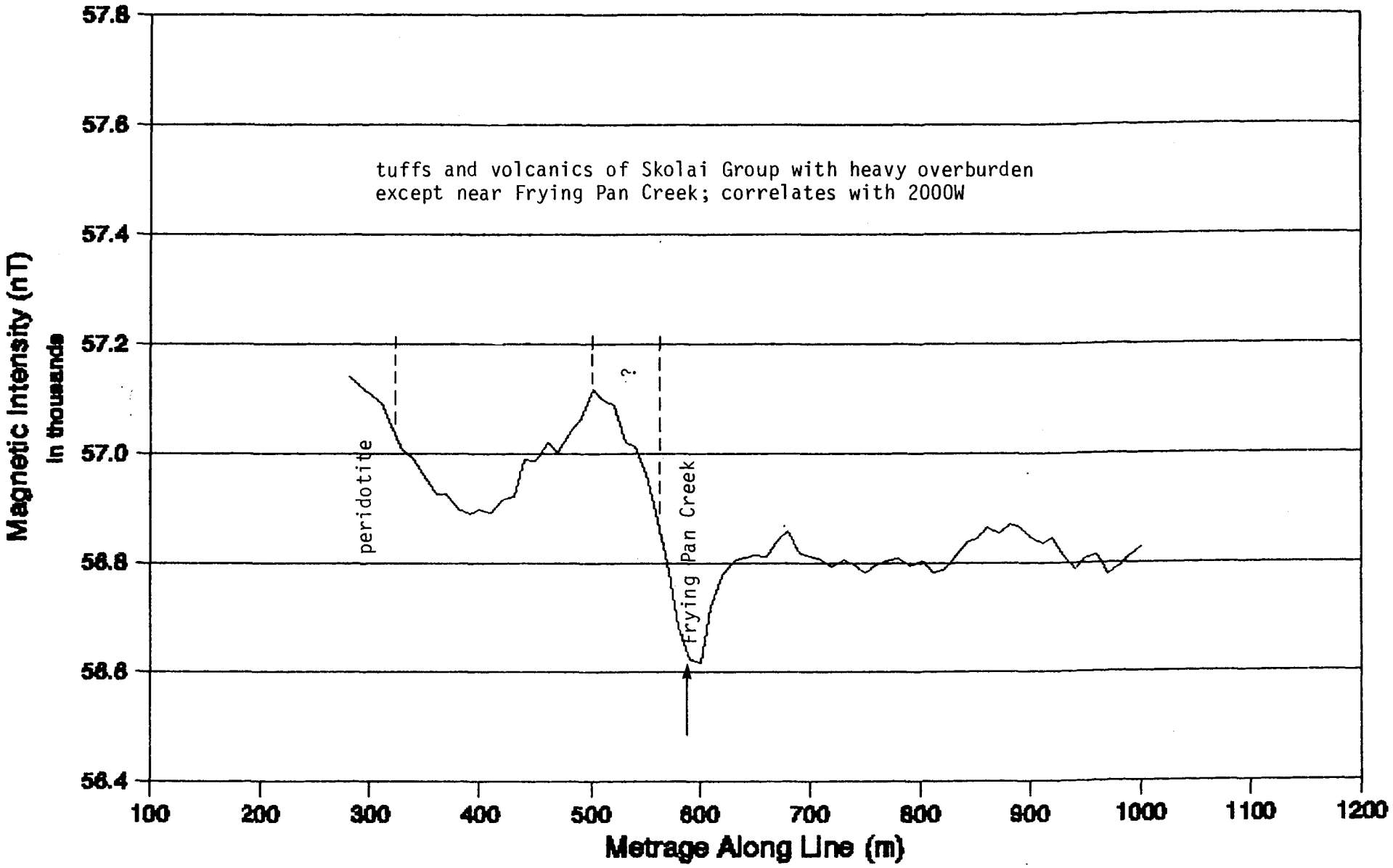
Line 1700W GG Grid

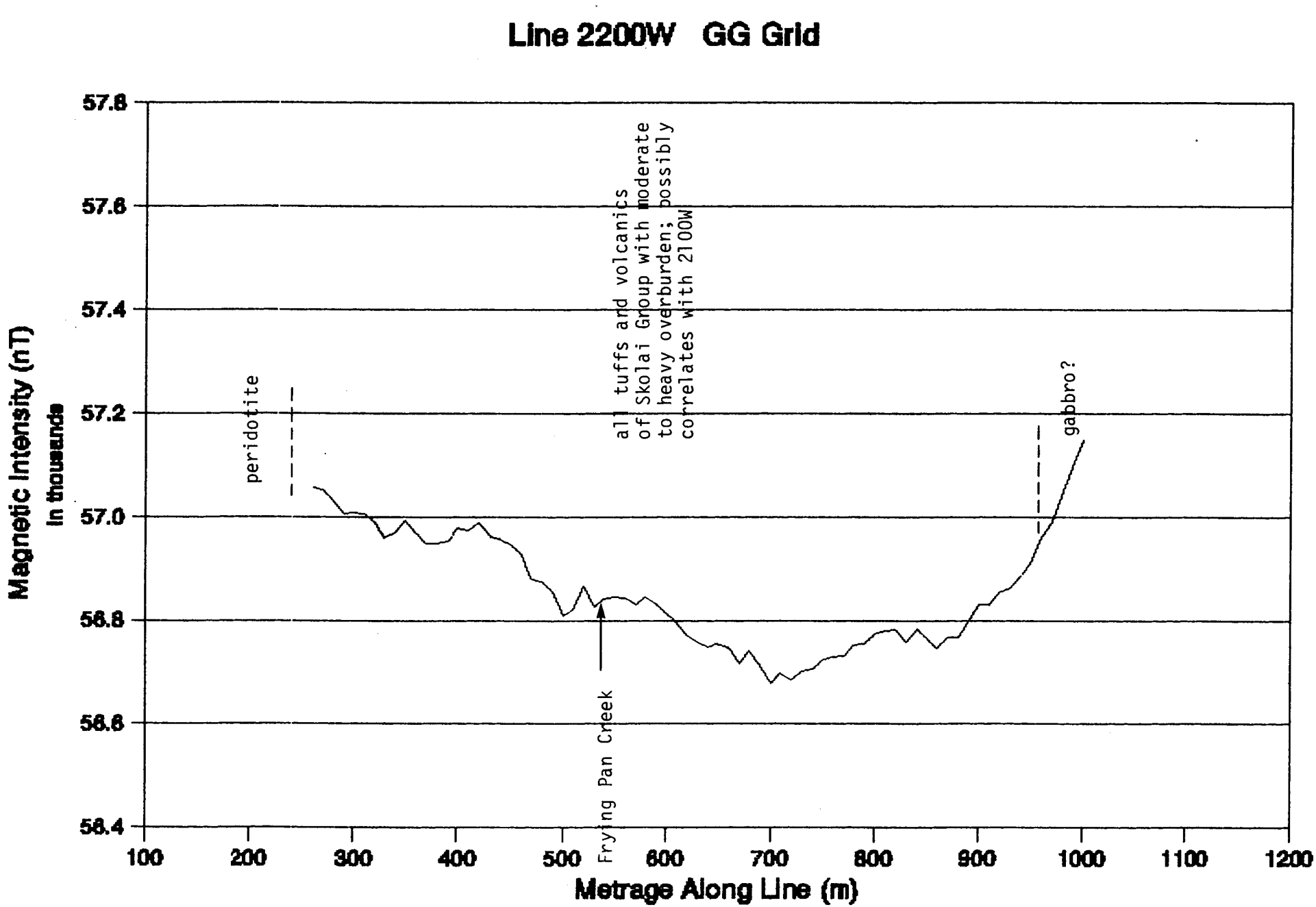


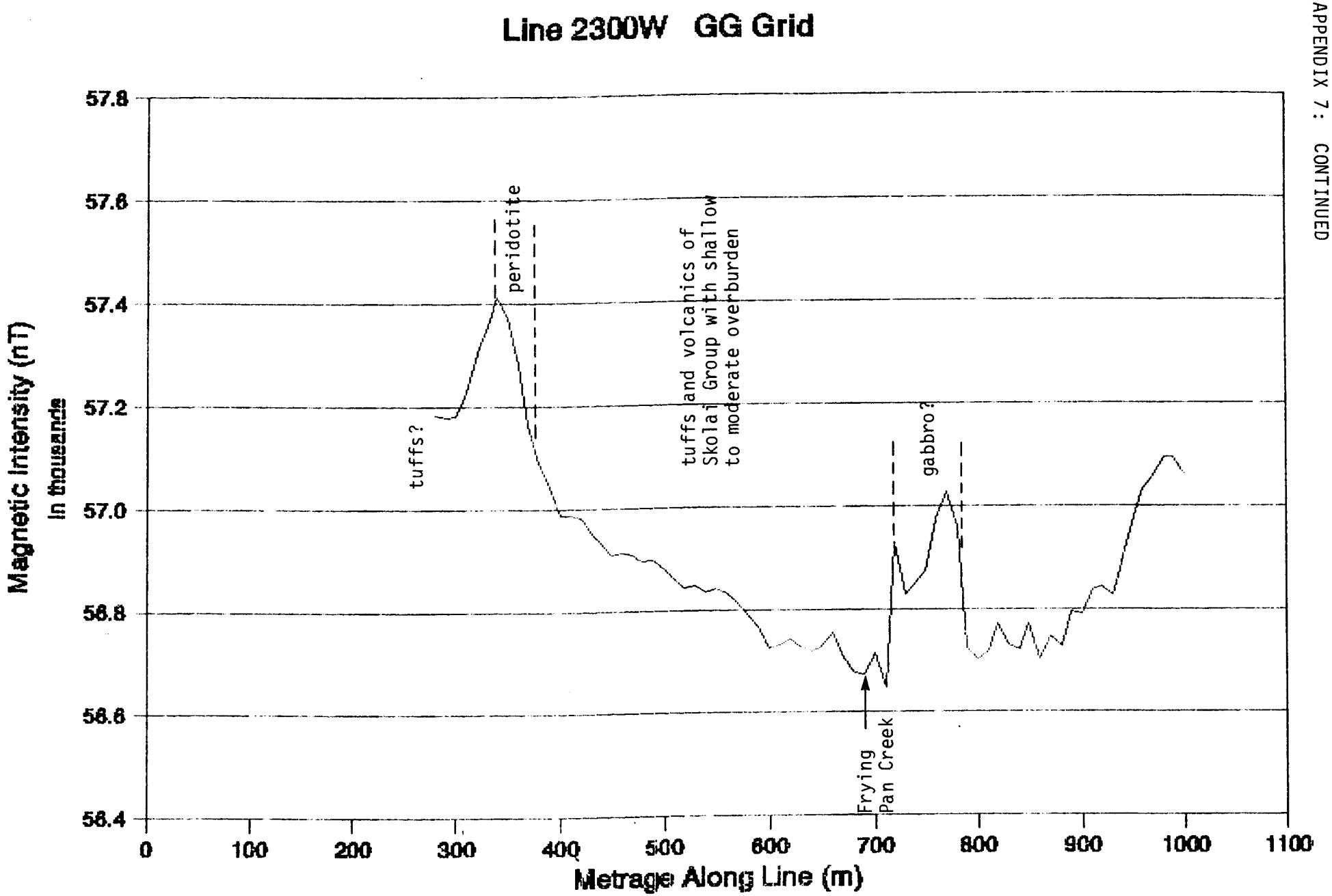

Line 1700W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
Metrage Along Line (m)
all tuffs and volcanics of Skolai Group with moderate to heavy overburden except near Bea Creek
steeply dipping magnetic layer; correlates with similar layer on 1200W and line 129
Bea Creek


Line 2000W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
100
200
300
400
500
600
700
800
900
1000
1100
1200
Metrage Along Line (m)
peridotite
tuffs and volcanics of Skolai Group with moderate overburden except near Frying Pan Creek; correlates with 2100W
?
Frying Pan Creek

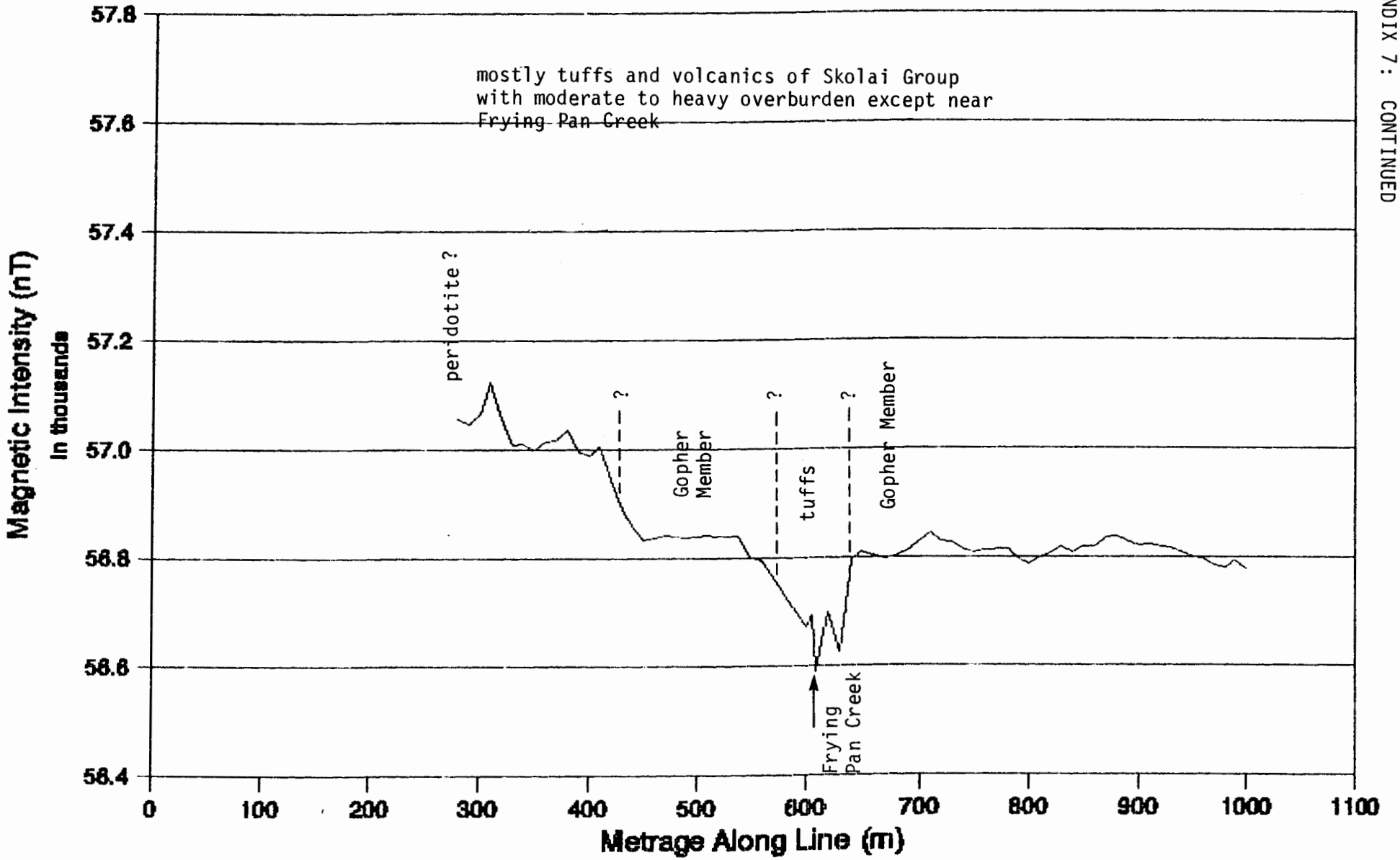
Line 2100W GG Grid



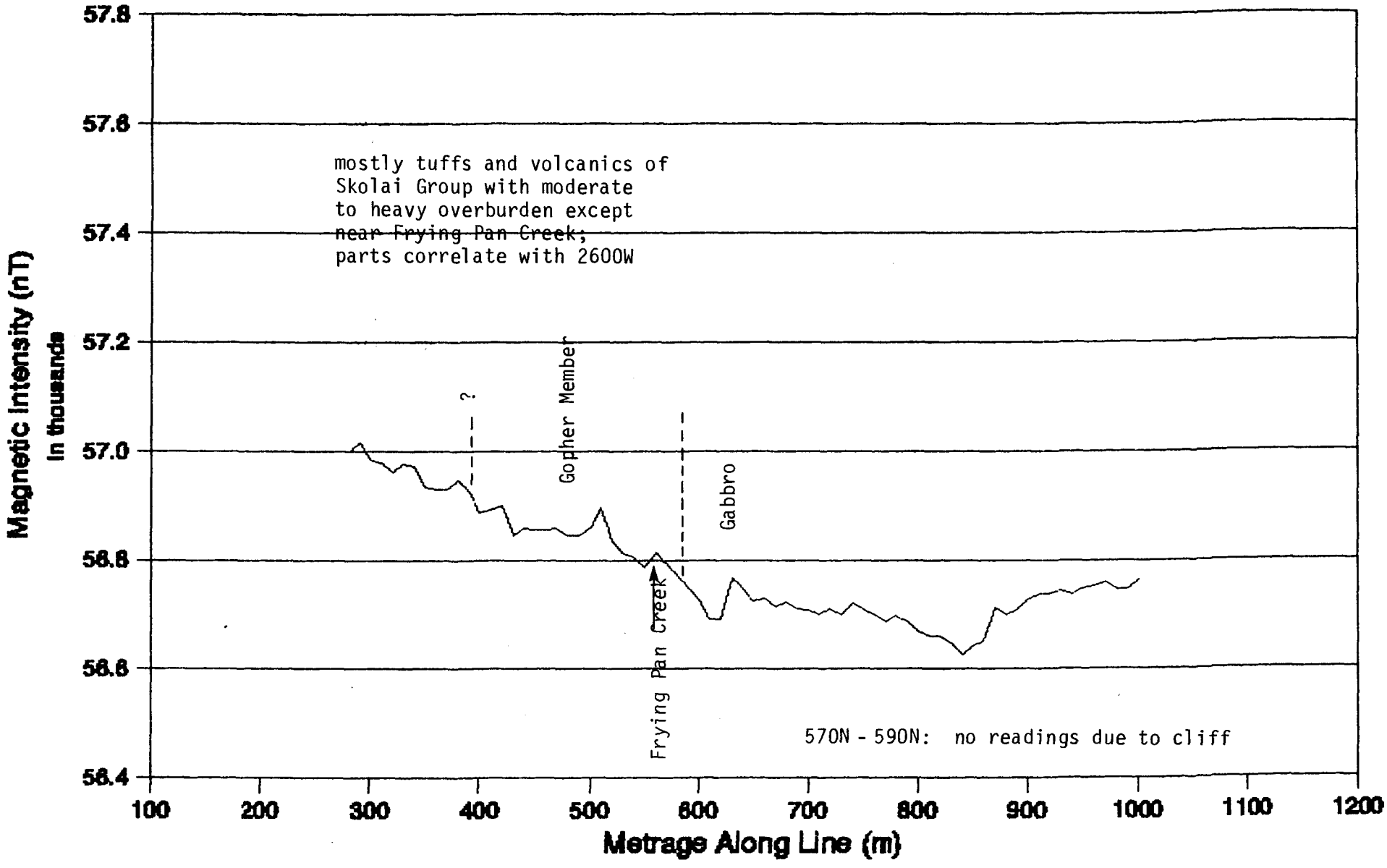

Line 2200W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
peridotite
all tuffs and volcanics
of Skolai Group with moderate
to heavy overburden; possibly
correlates with 2100W
gabbro?
Frying Pan Creek
100
200
300
400
500
600
700
800
900
1000
1100
1200
Metrage Along Line (m)


Line 2300W GG Grid
Magnetic Intensity (nT)
In thousands
57.8
57.6
57.4
57.2
57.0
56.8
56.6
56.4
0
100
200
300
400
500
600
700
800
900
1000
1100
Metrage Along Line (m)
tuffs?
peridotite
tuffs and volcanics of
Skolai Group with shallow
to moderate overburden
gabbro?
Frying
Pan Creek

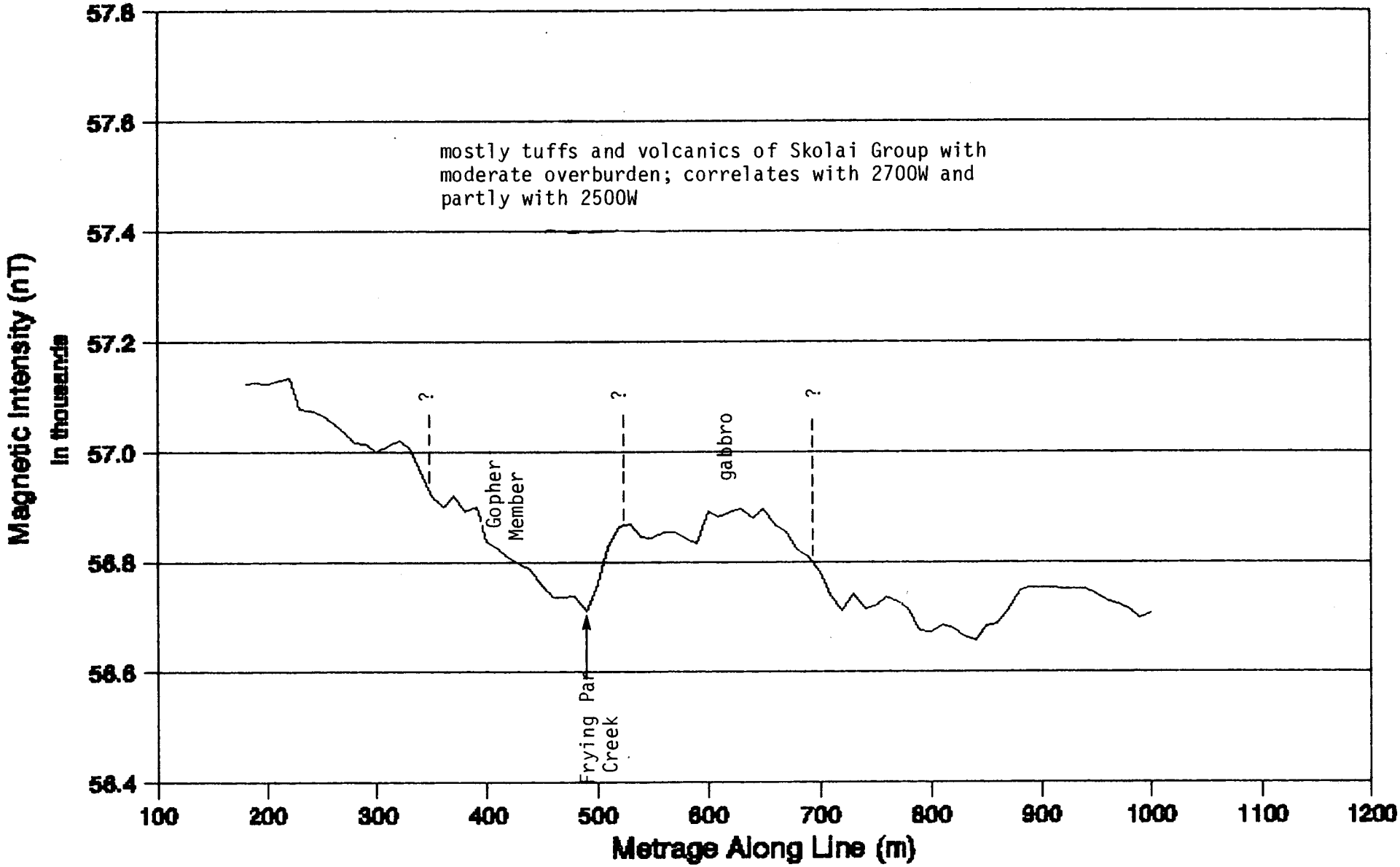
Line 2400W GG Grid



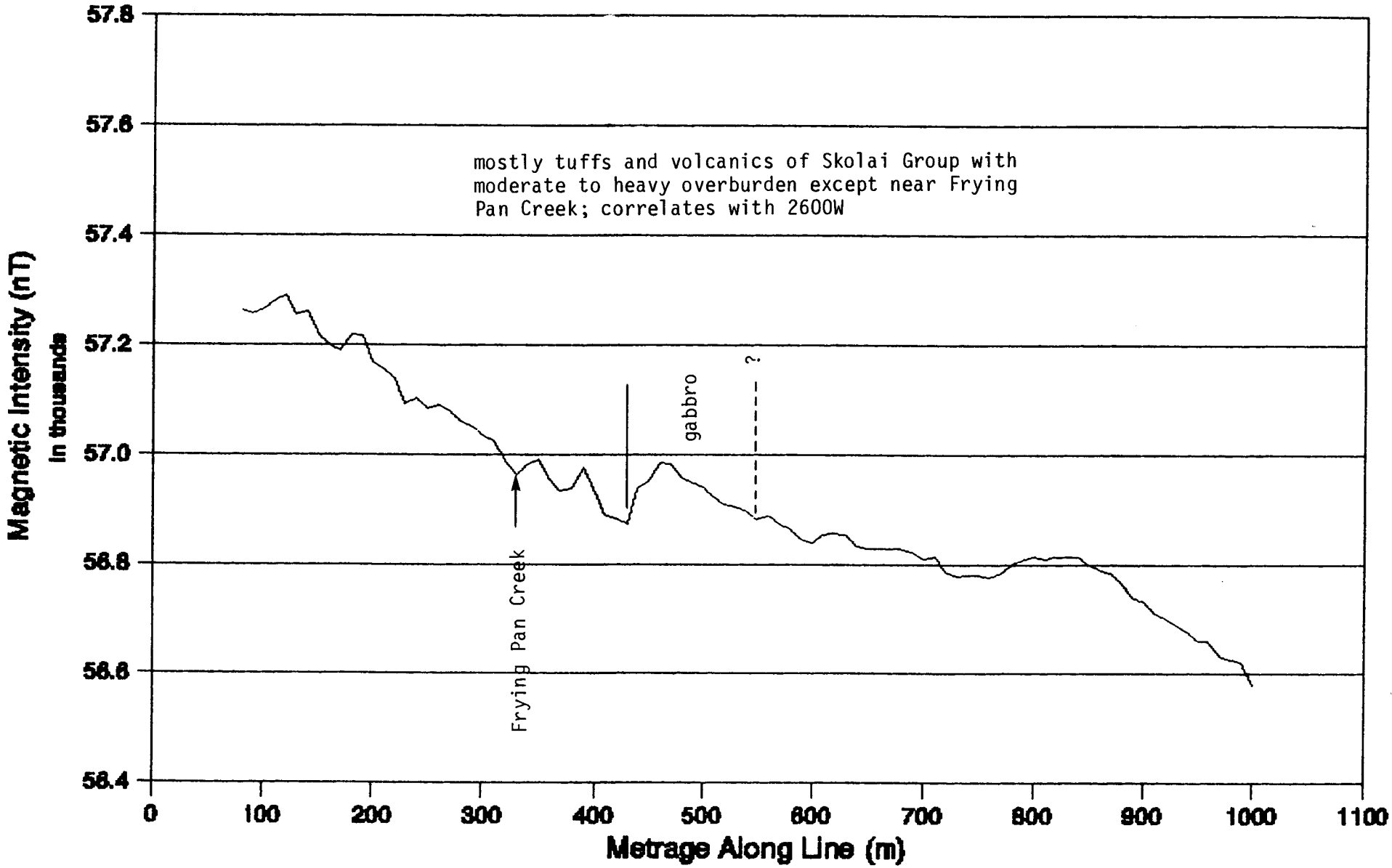
Line 2500W GG Grid



Line 2600W GG Grid



Line 2700W GG Grid



APPENDIX 8: TRENCH SAMPLES FROM CLAIM JAQ 32 (Fig. 6.1)

(Magnetic peridotite may affect the attitudes below, which were measured with a compass.)

Sample	Chip Interval (cm)	Metrage	Sampled Interval (m)	Description
7804	30	0 - 1 3/4	1 3/4	peridotite, black, serpentinized, magnetic, blocky
7805	cont*	1 3/4- 2	1/4	fault zone, greenish-blue clay, attitude of fault $100^{o}/65^{o}$S at 45^{o} to excavated face
7806	35	2 - 4	2	peridotite, black, serpentinized, magnetic, blocky
7807	15	4 - 4 1/2	1/2	peridotite, highly serpentinized
7808	35	4 1/2- 7 1/2	3	peridotite, altered
7809	cont	7 1/2- 8	1/2	fault zone, clayey, attitude $43^{o}/69^{o}$SE, true width 25 cm
7810	cont	8 -10	2	gabbro, 25 cm, fairly blocky
7811	cont	10 -11 1/2	1 1/2	peridotite, serpentinized, joints $40^{o}/81^{o}$SE
7812	5	11 1/2-17	5	peridotite, fresher, fairly blocky
7813	10	17 -18 3/4	1 3/4	peridotite, moderately serpentinized
7814	10	18 3/4-19 1/4	1/2	gabbro, attitude $155^{o}/45^{o}$NE, true width 35 cm
7815	10	19 1/4-20 1/4	1	peridotite, partly serpentinized, true width 90 cm
7816	cont	20 1/4-21	3/4	clay, brown, alternating with non-magnetic peridotite, attitude $178^{o}/46^{o}$E, true thickness 60 cm
7817	cont	21 -21 1/2	1/2	peridotite, clayey, highly serpentinized
7818	20	21 1/2-25 3/4	4 1/4	peridotite, black, moderately fresh, magnetic, blocky, 1-2% fine sulfides
7819	cont	25 3/4-26 3/4	1	peridotite, black, more serpentine, magnetic, contact with gabbro $100^{o}/85^{o}$N with 6-cm clayey zone
7820	20	26 3/4-31 1/2	4 3/4	gabbro, up to 10% feldspar in greyish-white grains to 5 mm or more in size, dyke
7821	cont	31 1/2-32	1/2	fault zone, attitude $10^{o}/60^{o}$E, true width 30 cm, 12 cm of sticky blue-green clay on east side, rest altered gabbro
7822	10	32 -33 1/2	1 1/2	gabbro, altered, highly serpentinized, greenish-white crystals to 1 cm, not magnetic, prominent joints $25^{o}/46^{o}$E perhaps parallel to layering

* cont = continuous

APPENDIX 8: CONTINUED

Sample	Chip Interval (cm)	Metrage	Sampled Interval (m)	Description
7823	10	33 1/2-34 1/2	1	peridotite, black, magnetic, finely disseminated sulfides
7824	10	34 1/2-35 1/2	1	gabbro, highly altered and serpentinized, large greenish-white crystals
7825	cont	35 1/2-35 3/4	1/4	fault(?), clayey material with conspicuous rust at contact of altered gabbro and magnetic black peridotite, attitude of contact $132^{o}/72^{o}$NE
6926	cont	35 3/4-36 1/4	1/2	peridotite, black, highly altered, magnetic, true width ~30 cm
6927	15	36 1/4-40 1/4	4	peridotite, black, magnetic, blocky, many serpentinized joints with rust on slips; at 39 m prominent rusty shear $70^{o}/65^{o}$N
6928	15	40 1/4-42	1 3/4	peridotite, black, partly serpentinized, magnetic, rust on some shears, non-rusty slip surface $101^{o}/60^{o}$N, at 41 m contact slip surface with whitish and medium-grey tuffs below
6929	15	42 -45 1/2	3 1/2	peridotite, moderately blocky above (sampled) with light-colored tuff at base
6930	cont	45 1/2-46	1/2	fault zone, light-greenish, clayey attitude $25^{o}/69^{o}$W
6931	15	46 -50 1/2	4 1/2	peridotite, black, partly serpentinized
6932	cont	50 1/2-51	1/2	peridotite, black, partly serpentinized, rusty hematite-red on joints
6933	10	51 -52 1/2	1 1/2	basic igneous rock, grain size ~1 mm, copious red hematite along joints
-	-	51 -53	-	peridotite(?), black, not magnetic, hematite on joints, partly above basic igneous rock
-	-	53 -60	-	volcanic(?), dark-greenish-grey, fine-grianed, hematite-red on joints
-	-	60 -70	-	fault breccia, angular fragments of medium-greenish-grey basic volcancis with grain size ~1 mm, 10-20% grains coated hematite-red, attitude of planar feature $142^{o}/86^{o}$NE
		Outcrop on north side of Burwash Creek 378 m upstream from Wyatt Creek, at water level		
6934	random	-	7	peridotite, black, magnetic

A48

Northern Analytical Laboratories ltd.

APPENDIX 9: ASSAY CERTIFICATE AND CERTIFICATE OF ANALYSIS FOR TILL SAMPLES FROM TRENCH ON CLAIM JAQ 32

September 14,1990

Work Order # 08358

File # 08358c

Halferdahl & Assoc. Ltd.
18 - 10509 - 81 Ave.
Edmonton, Alta.
T6E 1X7

Assay Certificate For Samples Provided

Sample	ppb Au
80 - 10	36
80 - 20	14
80 - 30	19
80 - 50	28
80 - 60	33
80 - 70	25
80 - 80	97
80 - 90	21
80 - 100	24
80 - 110	33
80 - 120	31
80 - 130	52

Au -- 15g Fire Assay/AAS

Applied Science Technologists and Technicians of British Columbia
6992
GERALD F. HAYES
A.Sc.T.

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

CAVENDISH ANALYTICAL LABORATORY LTD.

2225 S. Springer Ave., Burnaby,
British Columbia, Can. V5B 3H1
Ph:(604)299-2560 Fax:299-6252

CERTIFICATE OF ANALYSIS

TO : NORTHERN ANALYTICAL LAB LTD.
105 COPPER RD.
WHITEHORSE YUKON
PROJECT : WO #8358
TYPE OF ANALYSIS : ICP

CERTIFICATE # : 90-914A
INVOICE # : NAL-90914A
DATE ENTERED : SEPT 14, 1990
FILE NAME : P914A
PAGE # : 1

PREFIX	SAMPLE NAME	PPM MO	PPM CU	PPM PB	PPM ZN	PPM AG	PPM NI	PPM CO	PPM MN	% FE	PPM AS	PPM U	PPM AU	PPM HG	PPM SR	PPM CD	PPM SB	PPM BI	PPM V	% CA	% P	PPM LA	PPM CR	% MG	PPM BA	% TI	PPM B	% AL	% NA	% SI	PPM W	PPM BE
***	STD S	21	796	479	487	18.3	230	301	995	3.37	325	5	58	632	727	163	855	310	112	0.38	2.71	1080	99	0.48	241	0.13	542	1.56	0.10	0.01	306	51
	80-10	1	316	18	68	0.3	221	59	639	4.31	15	5	ND	ND	21	1	25	2	41	0.52	0.01	5	277	5.40	59	0.05	5	1.73	0.01	0.01	1	1
	80-20	1	194	23	89	0.7	165	59	686	4.46	21	5	ND	ND	28	1	4	2	61	0.75	0.03	6	224	4.31	79	0.08	35	2.28	0.01	0.02	1	1
	80-30	1	225	19	67	0.7	218	66	566	4.79	12	5	ND	ND	21	1	2	2	43	0.59	0.01	4	240	5.93	59	0.06	9	2.35	0.01	0.01	1	1
	80-50	1	196	20	65	0.5	148	38	460	3.42	20	5	ND	ND	34	1	2	2	53	0.97	0.03	7	135	3.33	68	0.06	5	1.76	0.01	0.01	1	1
	80-60	1	208	19	71	0.9	156	44	525	3.71	21	5	ND	ND	34	1	4	2	58	0.95	0.04	7	132	3.52	66	0.06	5	1.83	0.01	0.01	1	1
	80-70	1	351	20	69	1.3	257	68	549	4.58	19	5	ND	ND	21	1	2	2	58	1.01	0.01	5	256	5.87	41	0.05	14	2.48	0.01	0.02	1	1
	80-80	1	73	10	78	0.3	64	22	613	2.98	18	5	ND	ND	33	1	6	2	63	0.67	0.06	9	42	1.43	93	0.08	5	1.52	0.01	0.01	1	1
	80-90	1	208	18	78	0.4	150	40	730	3.71	20	5	ND	ND	28	1	4	2	66	0.81	0.04	9	117	3.03	69	0.06	7	1.95	0.01	0.01	1	1
	80-100	1	313	16	62	0.9	223	65	645	4.06	23	5	ND	ND	14	1	3	2	61	0.69	0.01	4	253	5.54	22	0.05	5	2.89	0.01	0.02	1	1
	80-110	1	318	16	70	1.1	229	65	684	5.01	26	5	ND	ND	24	1	3	2	64	0.85	0.01	6	234	5.63	32	0.06	5	3.01	0.01	0.02	1	1
	80-120	1	236	9	69	0.2	133	38	775	3.87	25	5	ND	ND	36	1	6	2	68	1.10	0.05	7	155	2.84	66	0.04	7	2.07	0.01	0.01	1	1
	80-130	1	314	10	65	0.6	208	59	704	4.77	24	5	ND	ND	23	1	2	2	62	0.91	0.02	5	234	5.33	50	0.07	30	2.80	0.01	0.02	1	1

CERTIFIED BY : W Pemo

APPENDIX 10: TRENCH SAMPLES FROM SOUTH SIDE OF BURWASH CREEK ON CLAIM JAQ 37
Samples in stratigraphic order from top to bottom.

Sample	Chip Interval (cm)	Stratigraphic Thickness (m)	Description
6945	35	~5	Tuffs, alternating grey and rusty layers 1 to 1½ m thick
6946	35	3½	Tuffs, as in sample 6945, mostly not rusty
6947	35	1½	Tuffs, as in sample 6945, mostly rusty
6948	35	~1	Tuffs, as in sample 6945, mostly not rusty, beds 30-80 cm thick separated by shaly parting ½ cm thick, bedding $140^{o}/76^{o}$ SW, clay seam $125^{o}/76^{o}$SW with some attitude variations in other seams

APPENDIX II: TRENCH SAMPLES ON NORTH SIDE OF BURWASH CREEK ON CLAIM JAQ 37 (Rusty Tuffs)

Sampled section consists of a series of light- to medium-grey tuffs, some very fine grained, some chert-like, others with coarse lapilli, most with variable pyrite, some with galena and sphalerite, some almost devoid of sulfides, all variably veined with white calcite, some with galena, probably some basic volcanics. Samples in stratigraphic order from top to bottom but sampled thicknesses are not necessarily stratigraphic thicknesses, but are close.

Sample	Chip Interval (cm)	Metrage*	Sampled Interval (m)	Description
6944	15	447½-450	2½	Tuffs, grey, locally pyritic
6943	15	445 -447½	2½	Tuffs, as sample 6944
6942	15	442½-445	2½	Tuffs, as sample 6944, 2-cm calcite vein with 5-10% galena
6941	15	440 -442½	2½	Tuffs, as sample 6944, medium-grey, partly lapilli
6940	15	437½-440	2½	Tuffs, as sample 6944
6939	15	435 -437½	2½	Tuffs, as sample 6944
6938	15	432½-435	2½	Tuffs, as sample 6944
6937	15	430 -432½	2½	Tuffs, as sample 6944, prominent joints $285^{0}/77^{0}N$
7746	15	427½-430	2½	Tuffs, light- to medium-grey, soft, (claystone?)
7747	15	425 -427½	2½	Tuffs, greyish, silicified, veined with calcite, disseminated pyrite and galena
7748	15	422½-425½	2½	Tuffs, lapilli, disseminated sulfides - mostly pyrite
7749	15	420 -422½	2½	Volcanics, with tuff, sparse disseminated pyrite cubes
7750	15	417½-420	2½	Tuffs, grey, fine-grained, finely disseminated pyrite
7751	15	415 -417½	2½	Tuffs, grey, rusty
7752	15	412½-415	2½	Tuffs, similar to sample 7751
7753	15	410 -412½	2½	Tuffs, similar to sample 7751
7754	15	407½-410	2½	Tuffs, similar to sample 7751
7755	15	405 -407½	2½	Tuffs, similar to sample 7751
7756	15	402½-405	2½	Tuffs, similar to sample 7751
7757	15	400 -402½	2½	Tuffs, similar to sample 7751
7758	15	397½-400	2½	Tuffs, similar to sample 7751
7759	15	395 -397½	2½	Tuffs, similar to sample 7751, planar feature possibly bedding $325^{0}/25^{0}SW$
7760	15	392½-395	2½	Tuffs, similar to sample 7751

APPENDIX 11: CONTINUED

Sample	Chip Interval (cm)	Metrage*	Sampled Interval (m)	Description
7761	15	390 -392½	2½	Tuffs, similar to sample 7751
7762	15	387½-390	2½	Tuffs, similar to sample 7751, prominent joint set $280^{o}/72^{o}N$
7763	15	385 -387½	2½	Tuffs, similar to sample 7751
7764	15	382½-385	2½	Tuffs, similar to sample 7751
7765	15	380 -382½	2½	Tuffs, similar to sample 7751
7766	15	377½-380	2½	Tuffs, similar to sample 7751
7768	15	375 -377½	2½	Tuffs, similar to sample 7751
7769	15	372½-375	2½	Tuffs, similar to sample 7751
7770	15	370 -372½	2½	Tuffs, similar to sample 7751
7771	15	367½-370	2½	Tuffs, similar to sample 7751
7772	15	365 -367½	2½	Tuffs, similar to sample 7751
7773	15	362½-365	2½	Tuffs, similar to sample 7751
7774	15	360 -362½	2½	Tuffs, similar to sample 7751
7775	15	357½-360	2½	Tuffs, similar to sample 7751
6935	15	355 -357½	2½	Tuffs, similar to sample 7751
6936	15	353½-355	1½	Tuffs, similar to sample 7751, possible bedding $333^{o}/37^{o}SW$

* Measured from arbitrary point on north side of Burwash Creek

APPENDIX 12: SAMPLES FROM EXCAVATION AT SWITCHBACK ON TRAIL UP BEA CREEK

Samples are in stratigraphic order from top to bottom. (See Fig. 6.3)

Sample	Chip Interval (cm)	Metrage along Trail	Sampled Interval (m)	Description
6976	30	0-5	5	Tuff, medium-grey, weathers rusty, highly pyritic
6977	30	5-9	4	Tuff, as above
6978	15	9-11	2	Tuff, black, weathers pale-green-grey
6979	15	11-15	4	Tuff, rusty banded, with green-grey weathering below
6980	15	15-17	2	Tuff, black, weathers very rusty, well banded
6981	15	17-19	2	Tuff, weathers light-green-grey, 10-20% rusty patches, rounded quartz grains to 2-3 mm, pyrite
6982	15	19-20½	1½	Tuff, black, rusty
6983	15	20½-23½	3	Tuff, as for sample 6981
6984	15	23½-24½	1	Tuff, black, rusty, locally silicified
6985	30	24½-29½	5	Gabbro, greenish-grey

APPENDIX 13: TRENCH SAMPLES OF GOPHER MEMBER NEAR BETZ CREEK

(East side of Betz Creek just north of old high road.)

Sample	Chip Interval (cm)	Stratigraphic Thickness (m)	Description
6952	continuous	0.25	Tuff, black, graphitic or carbonaceous layer with rusty lenses 5-6 cm thick about 10-12 m in elevation above base, bedding(?) 290°/16°NE
6953	continuous	0.17	Tuff, 2 cm of greyish-green layer weathering orange-yellow rust above 15-cm layer of grey with rust on joints
6954	continuous	0.06	Tuff, green-grey almost all altered to rusty material or buff clay
6955	continuous	0.85	Tuff, dark-grey with rust on joints, graphitic in lowest 15 cm
6956	continuous	0.08	Tuff, black, pyritic, blocky
6957	continuous	1.00	Tuff, dark-grey, very crumbly with rust on joints, pyritic and black in lower part
6951	continuous	0.05	Fault zone, weathered; from west end of bulldozed cut
6950	random	~24*	Tuff, black, pyritic; from west end of bulldozed cut
6949	10	1.7	Tuff, black, pyritic, weathered, less rusty in upper part, very fine grained, faulted at top with fault attitude 315°/20°SW
7767	random	1.4	Tuff, black, weathers grey, very fine grained, banding 295°/72°NE

* not stratigraphic

APPENDIX 14: FIELD AND OFFICE PERSONNEL

Field

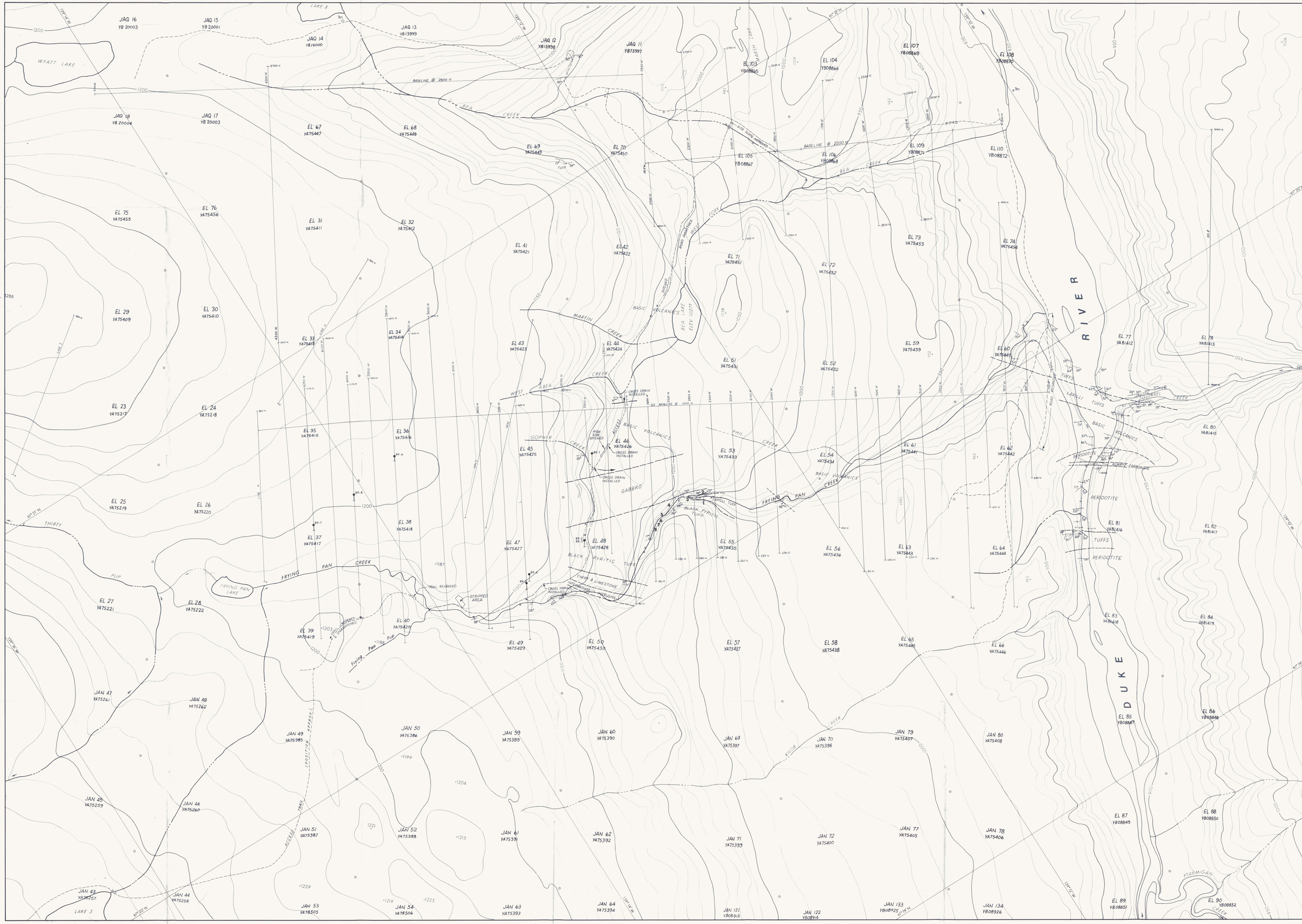
Stan Bradasch, Line Cutter General Delivery Haines Junction, Yukon YOB 1LO	7 days in July 1990
Owen Brown, Assistant & Laborer Box 567 Golden, B.C. VOA 1HO	24 days in June, July, August, September, October 1990 plus days operating D8 and backhoe
Shawn Germaine, Line Cutter/Laborer General Delivery Burwash Landing, Yukon YOB 1HO	30 days in June, July, August 1990
L.B. Halferdahl, Geological Engineer 11539 - 73 Avenue Edmonton, Alberta T6G OE2	25 days in May, July, August, September, October 1990
Nancy Halferdahl, Assistant 1709 - 50 Street, S.E. Calgary, Alberta T2A 1S7	13 days in August and September 1990
Johnnie Joe, Line Cutter General Delivery Haines Junction, Yukon YOB 1LO	20 days in July, August, and September 1990 plus days operating backhoe
Peter Johnson, Line Cutter General Delivery Burwash Landing, Yukon YOB 1HO	3 days in September 1990

Office

L.B. Halferdahl, Geological Engineer 11539 - 73 Avenue Edmonton, Alberta T6G OE2	16 days in December 1990 and January, and February 1991
W. McGuire, Draftsman 5315 - 145 Avenue Edmonton, Alberta T5A 4E9	251 h from June 1990 to February 1991

APPENDIX 15: QUALIFICATIONS

L.B. Halferdahl obtained degrees in geological engineering and geology from Queen's University and The Johns Hopkins University. He has had more than 30 years experience as a practising engineer and geologist in research and mining exploration, including consulting since 1969. He is a member of the Canadian Institute of Mining and Metallurgy, and is registered as P. Eng. and P. Geol. in the Association of Professional Engineers, Geologists, and Geophysicists of Alberta, and registered as P. Eng. in the Association of Professional Engineers of British Columbia.

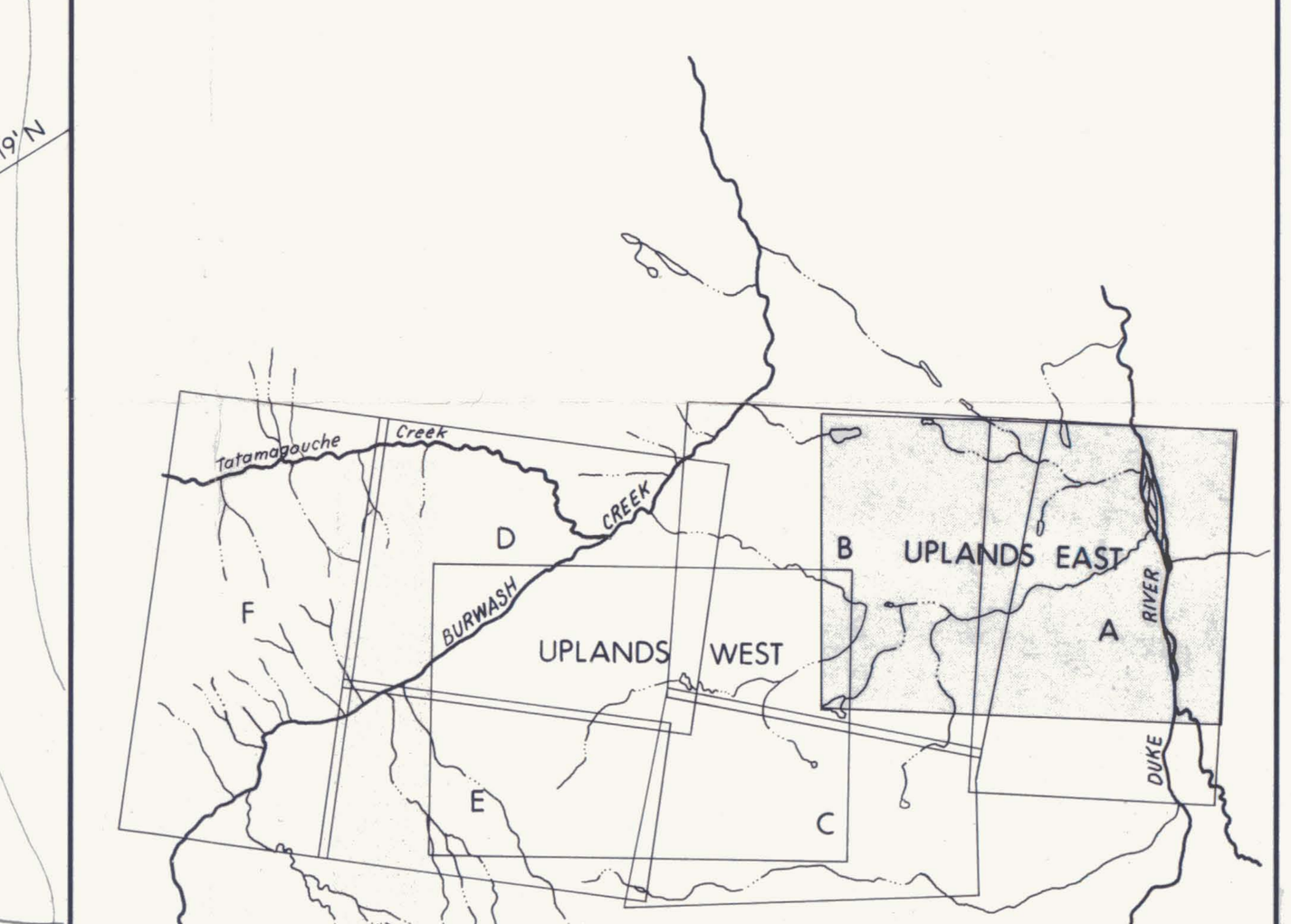


SYMBOLS

Road
Quartz claim post
Diamond drill hole location with number 89-3
Geophysical survey line with number 1700 W
Geological boundary (defined, approximate)
Area of outcrop, isolated outcrop
Strike and dip of bedding (inclined, vertical) 28°
Fault (observed, inferred)

NOTES

Elevation contours are metres a.m.s.l. Contour interval is 10 metres.
Some claim posts are not shown due to uncertainties in locating accurately on the map.



INDEX MAP
Scale: 1:104 000

MAP # 115 G/6 Doc # 4 092950

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

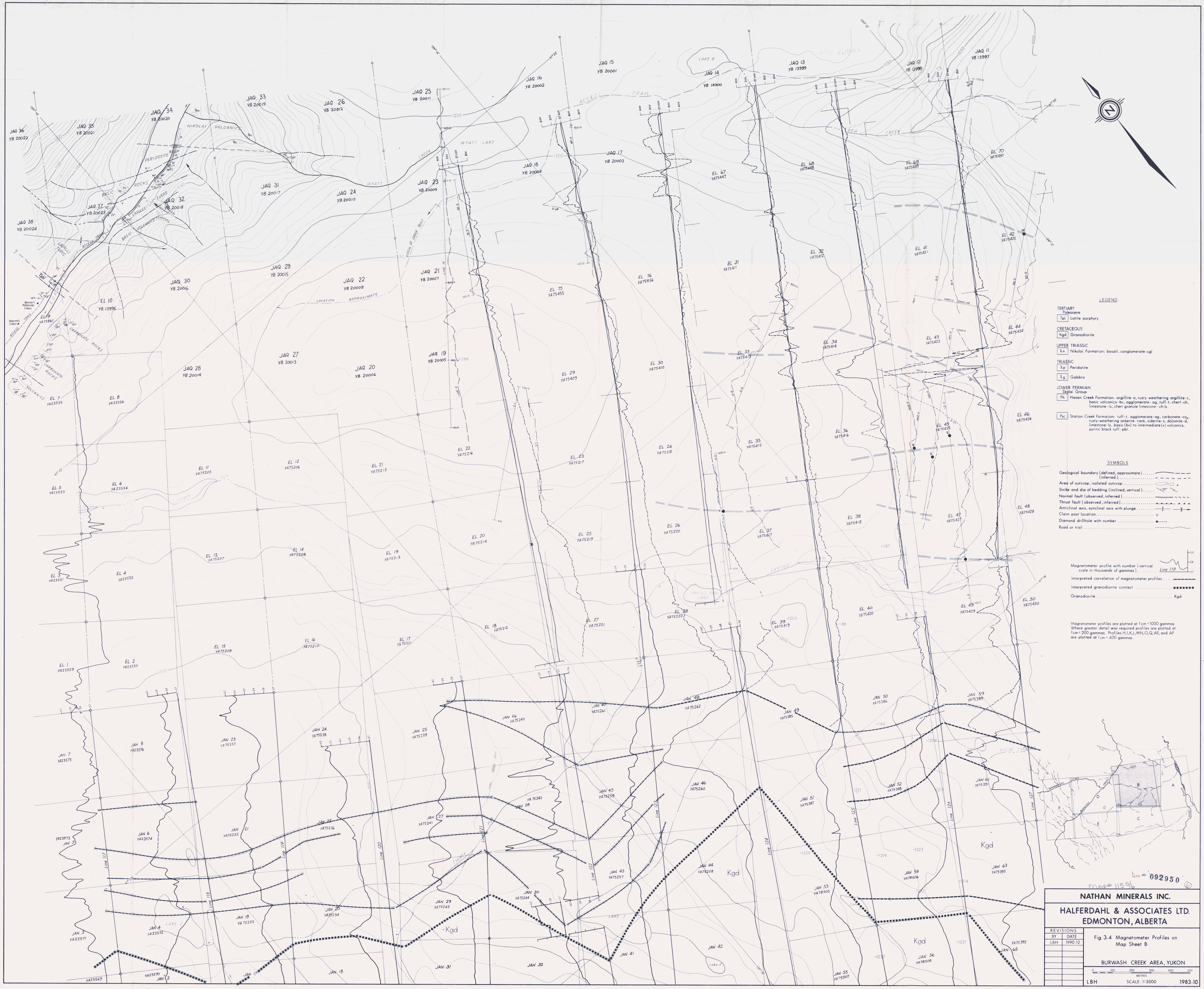
REVISIONS	
BY	DATE
LBH	1990-12

Fig. 3-1 Geophysical Lines, Access Trails, and Diamond Drillholes on Uplands East Sheet.

BURWASH CREEK AREA, YUKON

0 100 200 300 400 500 m
SCALE: 1:5000

TY 1990-01

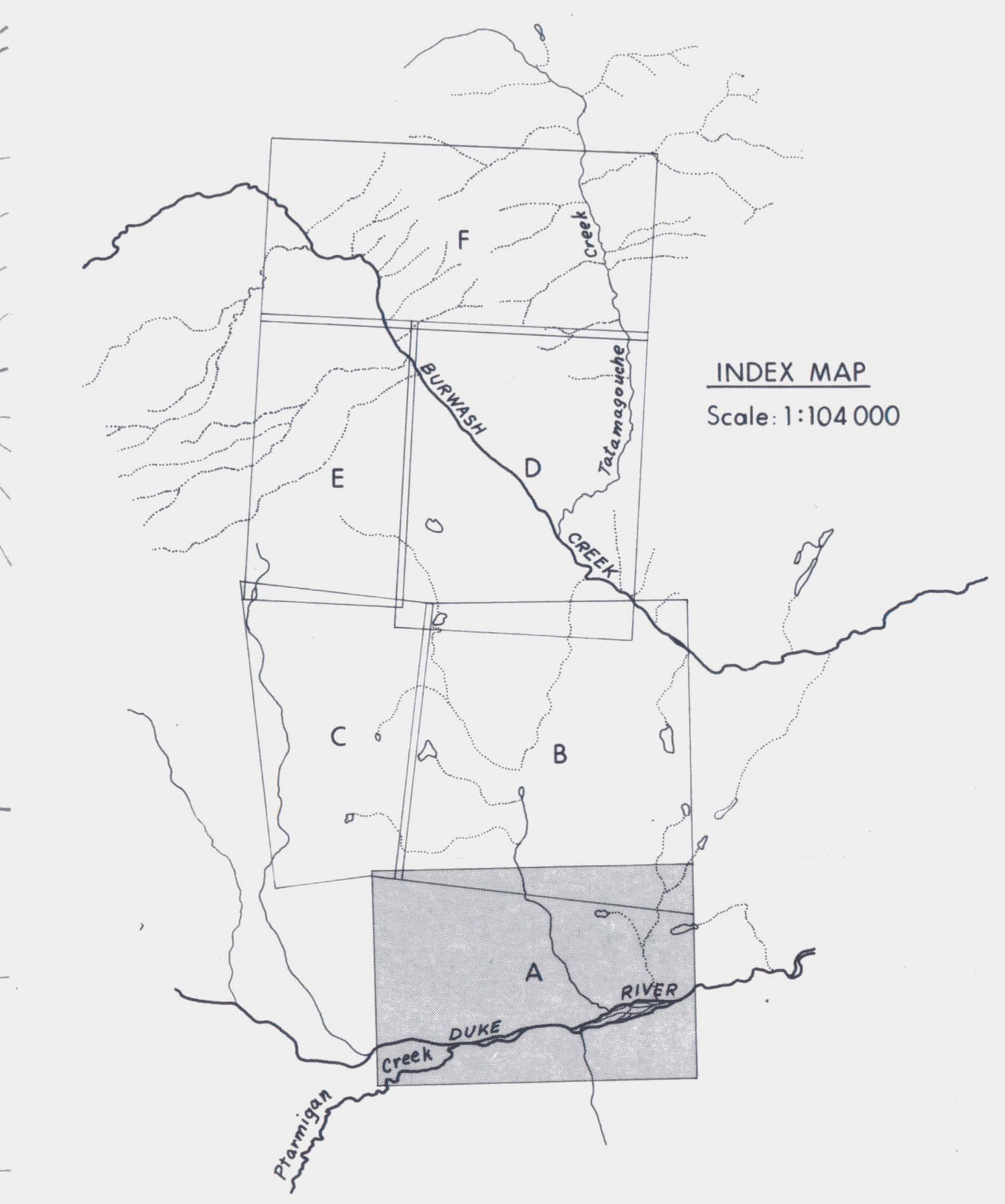


LEGEND
TERTIARY
Paleocene
Tpl Latite porphyry
CRETACEOUS
Kgd Granodiorite
UPPER TRIASSIC
T̄n Nikolai Formation: basalt, conglomerate-cgl
TRIASSIC
T̄p Peridotite
T̄g Gabbro
LOWER PERMIAN
Skolai Group
Ph Hasen Creek Formation: argillite-a, rusty weathering argillite-r, basic volcanics-bv, agglomerate-ag, tuff-t, chert-ch, limestone-ls, chert granule limestone-ch-ls.
Psc Station Creek Formation: tuff-t, agglomerate-ag, carbonate-co3, rusty-weathering ankerite-rank, siderite-s, dolomite-d, limestone-ls, basic (bv) to intermediate (v) volcanics, pyritic black tuff-pbt.
SYMBOLS
Geological boundary (defined, approximate)
(inferred)
Area of outcrop, isolated outcrop
Strike and dip of bedding (inclined, vertical)
Normal fault (observed, inferred)
Thrust fault (observed, inferred)
Anticlinal axis, synclinal axis with plunge
Claim post location
Diamond drillhole with number
Road or trail
Magnetometer profile with number (vertical scale in thousands of gammas)
Line 119
Interpreted correlation of magnetometer profiles
Interpreted granodiorite contact
Granodiorite ... Kgd
Magnetometer profiles are plotted at 1cm = 1000 gammas. Where greater detail was required profiles are plotted at 1cm = 200 gammas. Profiles H, I, K, L, MN, O, Q, AE, and AF are plotted at 1cm = 400 gammas.
NYATT LAKE
ACCESS TRAIL
NIKOLAI VOLCANICS
PERIDOTITE
BASIC VOLCANICS
LAPILLI TUFFS
CARBONATE ROCKS
LOCATION APPROXIMATE
LAKE 8
LAKE 3
Kgd
Doc# 092950
MAP# 115G/6
NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA
REVISIONS
BY DATE
LBH 1990.12
Fig. 3.4 Magnetometer Profiles on Map Sheet B
BURWASH CREEK AREA, YUKON
0 100 200 300 400 500
METRES
LBH SCALE: 1:5000 1983.10

Expanded scale magnetometer profiles (vertical scale in gammas)

Magnetometer profile with number (vertical scale in thousands of gammas) .... Line 129

Interpreted correlation of magnetometer profiles ......



Doc# 092950

MAP# 115G/6

(5)

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EDMONTON, ALBERTA

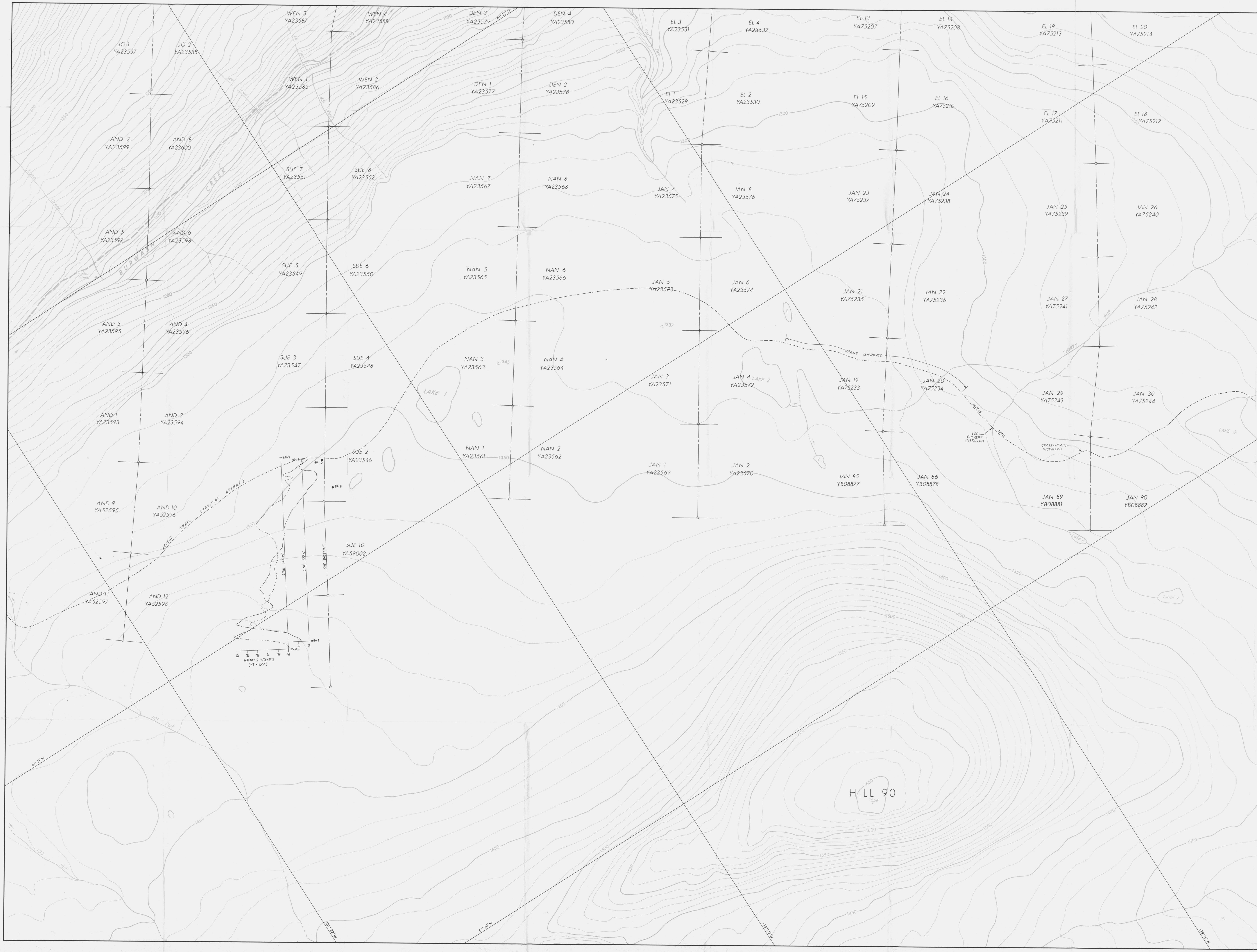
REVISIONS	
BY	DATE
LBH	1984-10
LBH	1990-12

Fig. 5-1 Magnetometer Profiles on Map Sheet A

BURWASH CREEK AREA, YUKON

0 100 200 300 400 500
METRES

LBH SCALE: 1:5000 1983-10



SYMBOLS

Road .... — — — — —

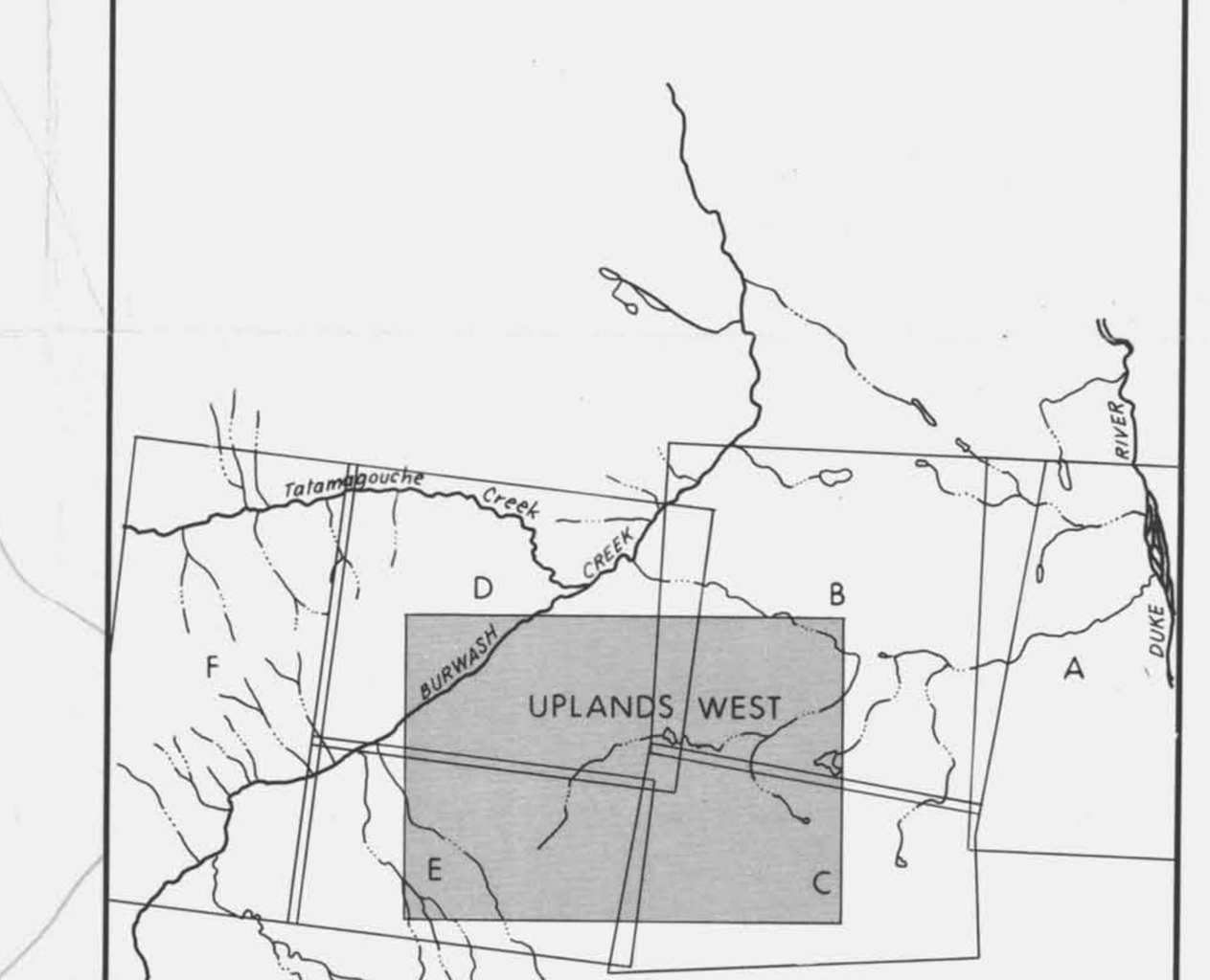
Quartz claim post .... ⊙

Claim line .... ——— – ———

Diamond drillhole location with number ... ● 89-3 ●89-9

NOTES

Elevation contours are metres a.m.s.l. Contour interval is 10m.



INDEX MAP
Scale: 1:104000

MAP# 115 G/6   Doc# 092950   (9)

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REVISIONS	
BY	DATE
LBH	1990-12

Fig. 5-2 Diamond Drillholes and Access Trail on Uplands West Sheet.

BURWASH CREEK AREA, Y.T.

0 100 200 300 400
METRES
Scale: 1:5000

TY   1990-02

LEGEND

TERTIARY
Paleocene
Tpl | Latite porphyry

CRETACEOUS
Kgd | Granodiorite

UPPER TRIASSIC
Trn | Nikolai Formation: basalt, conglomerate - cgl

PERMIAN-TRIASSIC
Pp | Peridotite | Pg | Gabbro - g

LOWER PERMIAN
Skolai Group
Ph | Hasen Creek Formation: argillite - a, rusty weathering argillite - r, basic volcanics - bv, agglomerate - ag, tuff - t, dark tuff - td, chert - ch, limestone - ls, light tuff - tl, chert granule limestone - ch-ls, black pyritic tuff - pbt, black tuff - bt, cherty tuff - tc, basic intrusion - bi,
Station Creek Formation:
Psc | Volcaniclastic Member
Psf | Volcanic Flow Member
Psr | Rust Member

SYMBOLS

Geological boundary, defined
approximate
Area of outcrop
Isolated outcrop
Strike and dip of bedding
Fault (defined, approximate)
Diamond drillhole with number 70-3
Claim post
Anticlinal axis
Synclinal axis
Trenching

INDEX MAP
Scale: 1:104 000

Doc # 092950
MAP # 115 G/6 (B)

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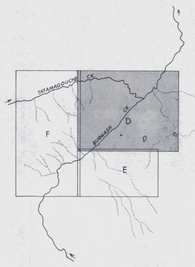
REVISIONS	
BY	DATE
LBH	1984-10
LBH	1985-10
LBH	1986-10
JG	1987-12
LBH	1990-12

Fig. 6-5 Geology of Map Sheet F

BURWASH CREEK AREA, YUKON

METRES 0 100 200 300 400 500

LBH SCALE: 1:5000 1984-04



LEGEND

TERTIARY
Paleocene
Tpl Latite porphyry

CRETACEOUS
Kgd Granodiorite

UPPER TRIASSIC
Tn Nikolai Formation: basalt; cgl-conglomerate

PERMIAN-TRIASSIC
Pp Peridotite Pg Gabbro

LOWER PERMIAN
Skolai Group
Hasen Creek Formation
Phm Main Member: argillite; r-rusty weathering argillite; ch-chert; ls-limestone

Station Creek Formation
Psc Volcaniclastic Member
Psf Volcanic Flow Member, Basic dyke
Psr Rust Member

SYMBOLS

Geological boundary, defined
approximate
Area of outcrop
Isolated outcrop
Strike and dip of bedding
Strike and dip of schistosity
Strike and dip of joint
Strike and plunge of lineation
Fault, defined
Road (graded, winter)
Contour line, interval 10 metres
Spot elevation in metres
Claim post
Claim boundary, location line
other
Claim name WEN 3
Abandoned adit
Anticlinal axis
Location of percussion drillhole

Claim posts and claim boundaries are only approximate.

Doc# 092950
Map# 1156/6 (7)

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REVISIONS	
INITIALS	DATE
BH	1980-08
LBH	1981-04
DBN	1981-11
LBH	1984-10
LBH	1985-12
LBH	1987-02
LBH	1988-09
LBH	1990-04
LBH	1990-12

Fig. 7.1 Geology of Sheet D.

BURWASH & TATAMAGOUCHE CREEKS, Y.T.

0 100 200 300 400 500
Metres
SCALE: 1:5000

RB 1979.08