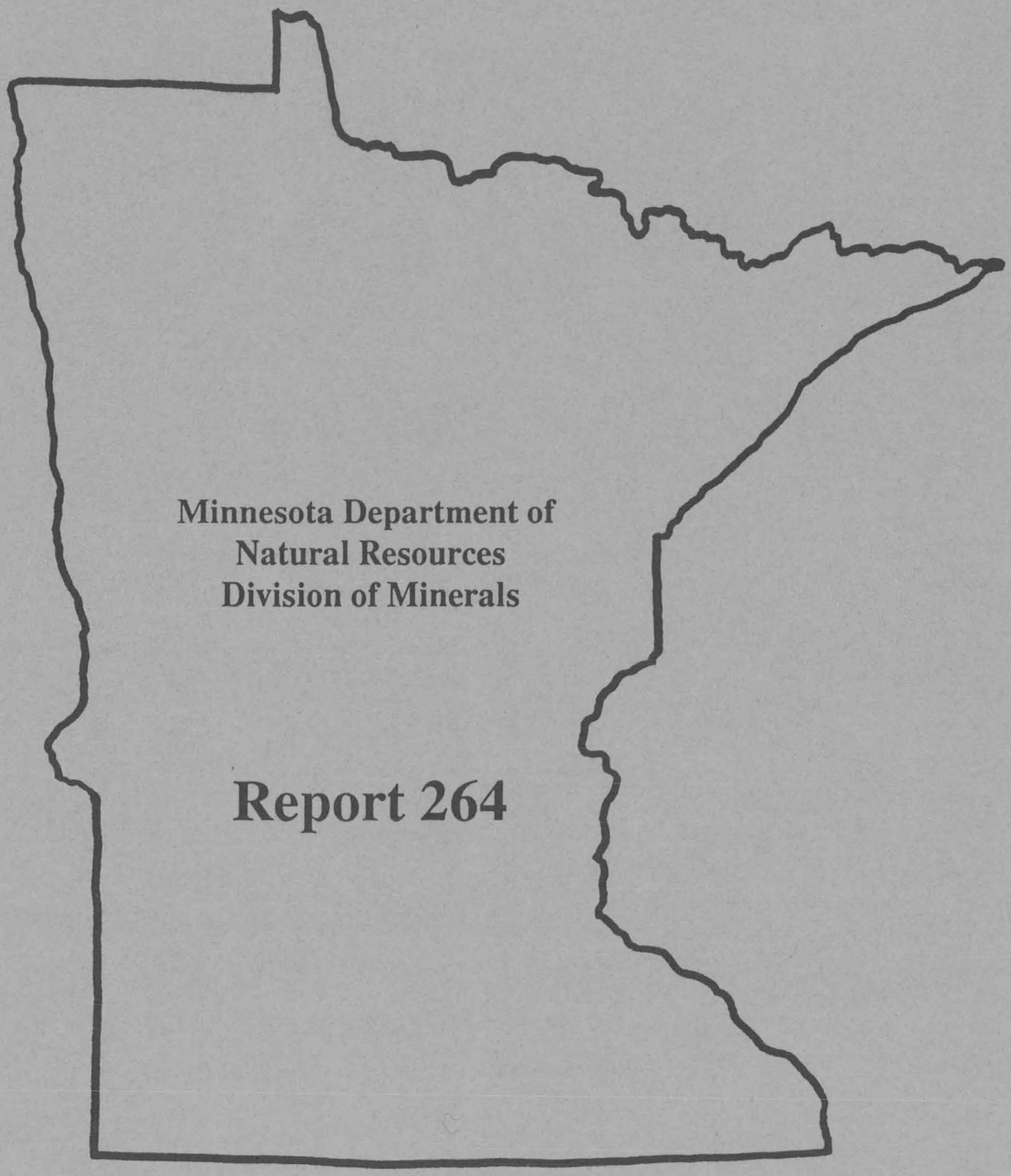
1988-1989
Geodrilling Report



Minnesota Department of
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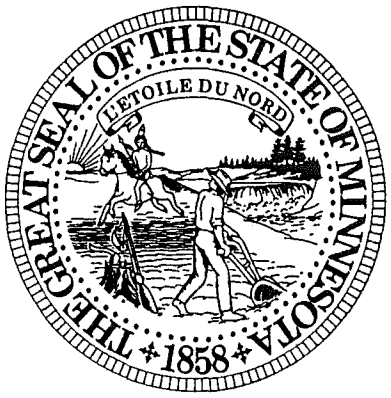
Division of Minerals

Report 264



Minnesota Department of Natural Resources
Division of Minerals
William C. Brice, Director

1988-1989
Geodrilling Report

By:
B. A. Frey and T. L. Lawler

A Minerals Diversification Project

1989

Report 264

This report is on file at various major libraries in Minnesota. It may be purchased at the Hibbing office, DNR Minerals Division. For further information contact Richard Ruhanen at (218) 262-6767

ACKNOWLEDGEMENTS

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The authors would like to thank Pat Geiselman for rock sampling assistance; Michael McKenna and Henk Dahlberg for their critical review of the manuscript; Greg Walsh, Jay Niebuhr and Dave Dahl for the art work; Jacki Jiran, Rick Ruhanen and Jay Niebuhr for computer support; and Coleen Keppel, Jacki Jiran and Diane Williams for word processing and desktop publishing.

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ABSTRACT

The Geodrilling Project (Project 264) is an ongoing program of siting, drilling, logging, sampling and analyzing bedrock drill holes. This report describes 12 drill holes which produced 2,057 feet of drill core from 6,562 feet of total drilling.

Eleven drill holes were located in the Archean granite-greenstone terrane, while one drill hole penetrated hornfelsed Early Proterozoic sediments at the contact with the Middle Proterozoic Duluth Complex.

A total of 232 core samples and 6 outcrop samples were analyzed for Au, Pt, Pd, Ag, As, Sb, Bi, B, Ba, Se, Te, Cu, Ni, Co, Cr, V, TiO2, Fe2O3, MnO, MgO, Al2O3, P2O5, SiO2, K2O, Na2O, CaO, Rb, Sr, S, F, Sn, W, Mo, Pb, Zn, Cd, Li, Be, Ga, Sc, Y, La, Ce, Zr, Nb, Ta.

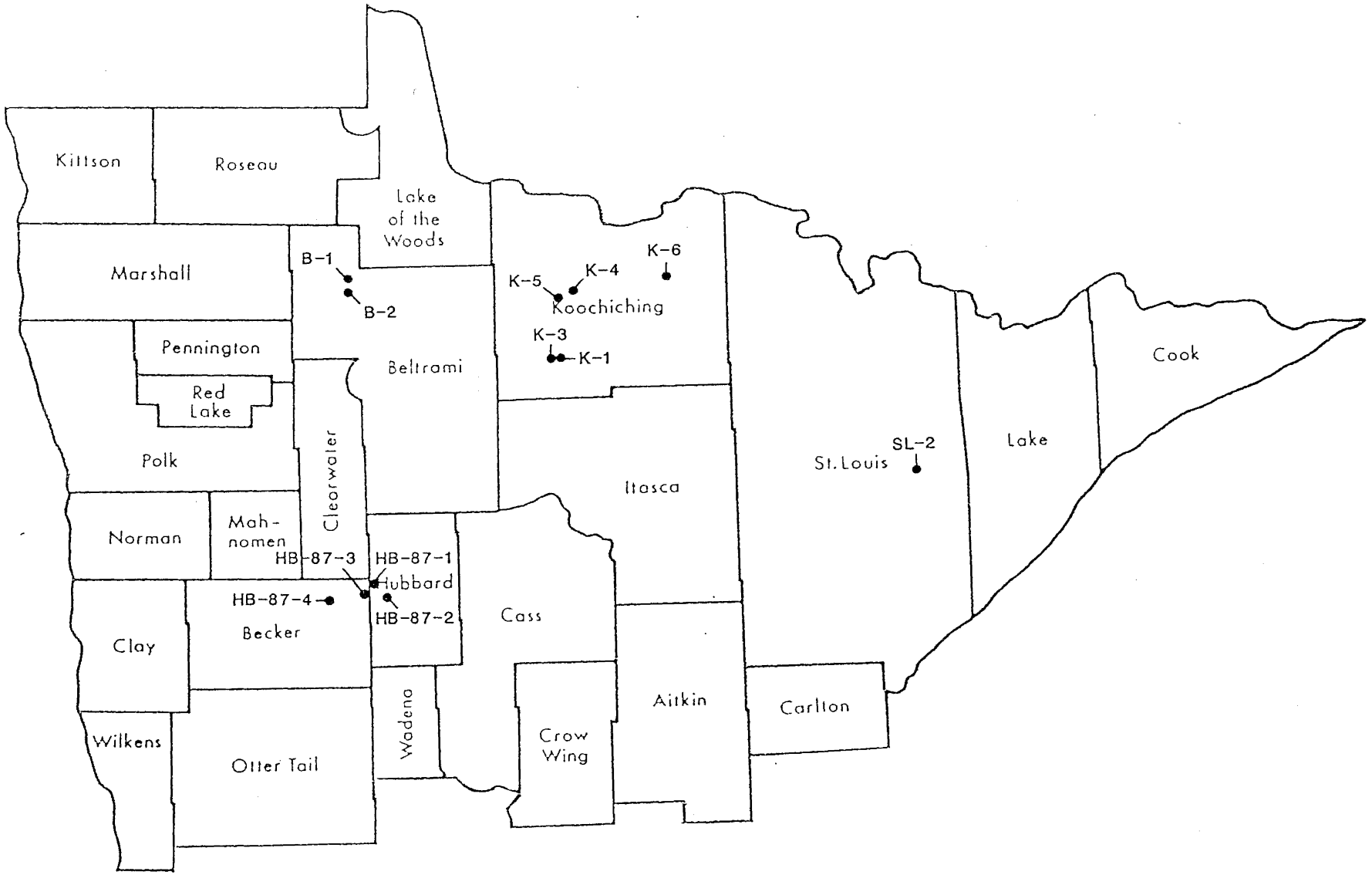

FIGURE 264-1. Map Showing Locations of Project 264 Drill Holes.

INTRODUCTION

Project 264, an ongoing project, resulted in the drilling of 5 holes during 1987 and 7 holes in 1988. These were drilled in areas away from current private company leasing of State of Minnesota administered mineral lands. The object of the program is to aid in mineral resource evaluation for land management purposes, to encourage private company mineral exploration, and to promote leasing of State mineral lands by providing additional descriptive and chemical data on bedrock lithology in areas of sparse outcrop.

A list summarizing the drill holes and their locations is found in Table 1.

TABLE 264-1. DRILL HOLE SUMMARY LIST

DDH #	County	Quadrangle	T-R-S	# Assay Samples	Depth to Precambrian	Total Depth
HB-87-1	Hubbard	Lake Itasca	T.142N., R.35W., Sec. 6, SE-SE	2	670'	680'
HB-87-2	Hubbard	Skunk Lake	T.142N., R.35W., Sec. 22, NE-NW	0	697'	702'
HB-87-3	Becker	Two Inlets	T.141N., R36W., Sec. 13, NE-SE	0	760'?	760'
HB-87-4	Becker	Big Basswood Lake	T.142N., R.37W., Sec. 22, NW-SE	2	724'	734'
SL-2	St. Louis	Allen	T.58N., R.14W., Sec. 16, SE-NE	63	63'	895'
K-1	Koochiching	Ridge	T.153N., R.27W., Sec. 34, SW-NW	34	280'	564'
K-3	Koochiching	Ridge	T.153N., R.27W., Sec. 33, NW-NW	46	269'	571'
K-4	Koochiching	Bigfalls NW	T.155N., R.26W., Sec. 29, NE-NE	12	127.5'	204'
K-5	Koochiching	Ridge NE	T.155N., R.27W., Sec. 27, NE-NE	16	299'	394'
K-6	Koochiching	Ericsburg SW	T.67N., R.24W., Sec. 16, NW-SW	14	129'	213'
B-1	Beltrami	Fourtown	T.156N., R.36W., Sec. 20, SE-SE	21	295'	415'
B-2	Beltrami	Fourtown	T.156N., R.36W., Sec. 32, NE-NE	22	291'	430'

STRUCTURE OF REPORT

This report is broken up into sections and subsections. The following two sections describe "Drill Hole Site Selection" and the "Methodology of Core Logging, Sampling and Analysis." The last section on "Drill Hole Information" contains subsections which relate to a drill hole or group of drill holes and contain the following information:

1. *Figures showing the magnetic setting of the area.*

Then for each drill hole:

2. *Information summary sheet, including a 1:24000 scale location map (north is towards the top of page);*

3. *Ground magnetic traverse (where applicable);*

4. *Lithologic log of drill hole.*

The three appendices at the end of the report are as follows:

Appendix A Sample List

Appendix B Analytical Results

Appendix C Sample Value vs. Sample # Plots

For Appendix B, the WATFILE/PLUS (Watcom Publications, Ltd.) computer database was used to manipulate data files for printing.

For Appendix C, the sample value vs. Sample # Plots were generated using the Mineral Interpretation Program of Technical Service Laboratories.

DRILL HOLE SITE SELECTION

Geophysics

The samples that are produced by a drill hole are, by their nature, relatively site specific. In order to be useful in a regional context, they must be evaluated in conjunction with other complementary information source(s) such as outcrop mapping, geochemistry, and/or geophysics.

In order to select meaningful drill sites for this project, airborne magnetic maps, Meuschke, et al., (1957, 1957a, 1957b, 1957c); Chandler, (1983); and Chandler, (1985) were examined to locate the large scale, more magnetic portions (mafics - iron formations(?)) of greenstone belts and the more magnetic portions (more mafic rock protolith(?)) of granite-gneiss-metasediment belts.

Unfortunately, the line spacing (1 mile) and control of the 1957 aeromagnetic maps was not the best for this purpose, however, the quarter mile line spacing and processing used in the current surveys (in progress) over these areas will be an improvement.

A two-man crew completed six and six-tenths miles of ground magnetic traverses to further aid in site selection. Traverse lines were located along roads or trails which crossed those areas where the airborne magnetic surveys had indicated significant magnetic susceptibility features. These traverses helped to locate the relative position of the drill sites on these larger scale features. One hundred foot station intervals were measured with a calibrated rope measure and intermediate fifty foot stations were paced. Five hundred foot stations were marked with the station number on blaze orange flagging.

The magnetic observations were made using a Scintrex, IGS-2, integrated geophysical system. For this work, total field measurements were recorded. A base station diurnal correction was not used because of the rudimentary nature of the survey.

Measurements were stored in an internal solid-state memory and after each days field work the data was edited on a Compaq PC computer. Hard copy profiles were printed on an Okidata, U92, printer. These profiles are open filed at the Department of Natural Resources, Minerals Division, in Hibbing, Minnesota. *Note: the use of equipment brand names in this report is for identificattion purposes only and does not constitute endorsement by the Minnesota Department of Natural Resources.*

Each of the "K" and "B" series of drill holes include figures based on USGS 1957 Aeromagnetic maps which show their location with respect to the larger magnetic features (Figs. 264-9, 264-12, 264-15 and 264-17), and ground magnetic traverses (Figs. 264-8, 264-10, 264-11, 264-13, 264-14, 264-16, 264-18 and 264-19).

Drill holes SL-2 and the HB series used the more recent magnetic surveys flown by the Minnesota State Geological Survey with funding provided by the Minnesota Legislative Commission on Minnesota Resources. This information is published on both a 1:250,000 and a 1:24000 scale, with the latter scale being used to produce Fig. 264-3, Chandler, 1984a; Fig. 264-4, Chandler, 1984; Fig. 264-5, Chandler, 1984b; Fig. 264-6, Chandler, 1984c; and Fig. 264-7, Chandler, 1980.

Additional Comments

Because drilling was restricted to areas where there was no current State mineral leasing, and for some drill holes, only limited State mineral ownership (such as for SL-2) drill hole placement options were somewhat constrained. All holes were drilled during summer months, and access to wet areas was limited.

All drilling, except the HB series, was performed under contract with the Longyear Co. The HB series of holes were drilled by Thein Drilling Co. under contract with the Minnesota Geological Survey (MGS).

HB Series Drill Holes

Using computers, Chandler (1985) has published shaded maps of aeromagnetic data (Figure 264-2) which can be very useful in identifying faults and/or magnetic breaks. The HB series of drill holes were drilled under contract with the Minnesota Geological Survey, to develop regional information in an area exhibiting an arcurate, large scale, and complex magnetic high that is associated with larger concentric magnetic breaks (Figure 264-2) of problematic origin. Walton (personal communication, 1985, 1989) suggests that this feature may be an astrobleme. Whatever the origin, a model for Sudbury type mineralization may be applicable (Giblin, (1984) and Frey, (1988)). The MGS will also be reporting results in an information circular (in preparation).

SL-2

This hole was drilled at the intrusive contact between the Duluth Complex and Virginia Formation. Even though the drill hole never did bottom in the Duluth Complex, it does provide information on skarn type processes associated with the intrusion. The Virginia Formation sediments appeared to be fairly sideritic at this location.

K-1 and K-3

Additional work concerning stratigraphic drilling (Jirsa, et al., Information Circular in preparation), and overburden drilling (Martin, et al, 1989) has been done in this area under the auspices of the Minnesota Mineral Coordinating Committee. Their respective drill site locations are shown in Fig. 264-9.

METHODOLOGY OF CORE LOGGING, SAMPLING AND ANALYSIS

All drill logs, analytical results, and other data were placed in open file for public examination on a monthly basis as they were received. This included the duplicate and standard sample analyses.

Logging and Sample Selection

The core of each drill hole was laid out in its entirety whenever possible. A general examination was made, after which temporary markers were used to indicate lithologic breaks of distinct units and to mark areas of interest, including those to be sampled.

Drill core was examined in both wet and dry states, however, colors were recorded when it was wet. Color names were taken from the Geological Society of America Rock Color Chart. Core samples were sawed and bagged in accordance with the Department of Natural Resources core sampling procedures.

The following criteria were used when selecting samples for analysis:

1. *presence of sulfide or sulfosalt minerals;*
2. *presence of veining, especially with quartz, carbonate, sulfides;*
3. *chemical sediments such as cherts (especially with disseminated sulfides), iron formation (especially when sulfidized), carbonates (especially iron dolomites), tourmalinites, sulfides and graphitic rocks (?);*
4. *fractured-faulted intervals and adjacent rocks;*
5. *brittle-ductile deformation transitions;*
6. *lithologic contacts or transitions, including intrusive contacts;*
7. *oxidation-reduction, or other apparent chemical or process transitions;*
8. *unknown, dubious or unusual mineralogy or rock types.*

Since Archean rocks often exhibit at least one of the above features, the overall philosophy was one of attempting to sample those intervals exhibiting the greatest variety of geologic processes.

During sample compositing, every attempt was made to keep the major lithotype of the subsamples the same.

Appendix A contains a listing of the sample numbers, drill holes, footages and lithologic descriptions.

Sample Preparation

Technical Service Laboratories, Ltd. of Mississauga, Ontario was awarded the contract for sample preparation and the analytical work.

Samples were crushed to 1/4 inch in a jaw crusher and further reduced to 1/10 inch in a cone crusher. Each sample was then split and a 1/2 pound portion was pulverized to -150 mesh in a shatter box.

Some analytical samples were actually composites of subsamples. This involved

taking equal weights of pulps from each of the subsamples, combining, and thoroughly mixing them before analysis. The majority of pulps, however, were not mixed (i.e., identities kept separate) and were reserved for separate analysis in the event interesting results came back from the analysis of the corresponding composite sample.

Analyses

Table 264-2 describes the analytical package used for greenstone - granite terrane rocks. Overlimit value refers to the highest analytical value for which quality results can be produced for a given analytical method and element. The following abbreviations are used in this table:

% = percent (parts per hundred)

PPM = parts per million

PPB = parts per billion

FA = fire assay

ICP = inductively coupled plasma emission spectrometry

AA = atomic absorption

SP ION EL = specific ion electrode

WR = whole rock (inductively coupled argon plasma emission spectrometry)

INAA = instrumental neutron activation analysis

This table indicates the detection limits, the sample weight used, the analytical method, and the overlimit values for the elements (and some oxides) analyzed for.

Other procedures involved with whole rock (WR) analyses include the following:

Fusion

Each gram sample was fused with a flux mixture of lithium carbonate and boric acid. Each fusion was carried out in a graphite crucible using a proprietory procedure.

Sample Dissolution

The molten sample and flux mixture were poured directly into a nitric acid solution contained in a plastic bottle. The molten slag shatters on impact and as a result, dissolves quite readily. Each bottle was then placed on a shaker for 4 hours to insure complete dissolution.

Internal Standard

After dissolution, each sample solution was diluted with water containing an internal standard. All dilutions used in this procedure were made to a constant or recorded weight. The samples were mixed and a portion filtered prior to analysis on the ICAP.

Standardization

An individual standardization by TSL is carried out by using five international standard samples. These samples have been obtained from the Canadian Certified Reference Material Project, United States Geological Survey, National Bureau of Standards (USA), Centre De Recherches Petrographics Et Geochmiques (France) and the National Institute for Metallurgy (South Africa). Standard samples are treated in the same manner as are samples. In the event that a sample is outside the range of the standards used (i.e., a limestone sample with silicate rock samples), it is rerun on the ICAP with the appropriate solution standards. Solution standards

mean that samples with extremes of one element can be accommodated by the addition of that element in solution to appropriate standards. TSL has a standard group of approximately 35 standards that can be used as a routine. Standardization for the secondary elements (Zr, Sr, Ba, Sc, Y) is carried out in much the same manner in that known reference materials are used to control the analysis.

For ICP or AA work, a multi acid digestion was used. For each sample, 1.0 gram of pulp was treated with a combination of HF, HCl04, HNO3 and HCl. Samples were digested, taken to HCl04 fumes, diluted and analyzed by ICP or AA as required.

Instrumental Neutron Activation Analysis (INAA) was performed by Activation Laboratories, Ltd. Activation Laboratories, Ltd. is a joint venture company owned by Technical Service Laboratories and Dr. Eric Hoffman.

Several "duplicate" gold samples were run for Project 265 in conjunction with this project. See Project 265 in Dahlberg, Peterson and Frey (1989) for a discussion on the results of these gold determinations. While initial results were disappointing, further work indicated the erratic results were probably due to an irregular distribution within the samples.

Analytical results are presented in Appendix B. Appendix C contains "sample number" vs. "sample value" plots. These allow for an overview of elemental trends in the analytical results.

Table 264-2. ANALYTICAL PACKAGE FOR GREENSTONE-GRANITE TERRANE ROCKS, SOILS, AND OTHER GEOLOGIC MATERIALS.

ELEMENT	DETECTION LIMIT	SAMPLE WEIGHT grams	ANALYTICAL METHOD	OVERLIMIT VALUE
MgO	.01 %	.2	WR	30 %
MnO	.01 %	.2	WR	20 %
Fe2O3	.01 %	.2	WR	60 %
TiO2	.01 %	.2	WR	20 %
V	1 ppm	.2	WR	10 %
Cr	5 ppm	.2	WR	10 %
Co	1 ppm	.2	WR	10 %
Ni	5 ppm	.2	WR	10 %
Cu	5 ppm	.2	WR	10 %
Pt	10 ppb	30	FA-ICP	50 ppm
Pd	1 ppb	30	FA-ICP	50 ppm
Ag	0.5 ppm	1	AA	30 ppm
Au	1 ppb	30	FA-ICP	50 ppm
As	1 ppm	1	HYDRIDE ICP	1 %
Sb	0.2 ppm	1	HYDRIDE ICP	1 %
Bi	3 ppm	1	HYDRIDE ICP	1 %
B	2 ppm	1	ICP	10 %
Ba	1 ppm	.2	WR	20 %
Te	10 ppm	1	HYDRIDE ICP	1 %
Se	5 ppm	1	HYDRIDE ICP	1 %
S	100 ppm	.5	LECO	20 %
F	20 ppm	.1	SP ION EL	1 %
Sn	50 ppm	.2	WR	10 %
W	30 ppm	.2	WR	10 %
Mo	1 ppm	1	AA	1 %
Pb	4 ppm	1	AA	1 %
Zn	5 ppm	.2	WR	10 %
Cd	1 ppm	.2	WR	10 %
Li	10 ppm	1	AA	10 %
Be	1 ppm	.2	WR	10 %
K2O	.01 %	.2	WR	30 %
Na2O	.01 %	.2	WR	30 %
CaO	.01 %	.2	WR	50 %
Rb	20 ppm	1	AA	10 %
Sr	1 ppm	.2	WR	10 %
P2O5	.01 %	.2	WR	30 %
Al2O3	.01 %	.2	WR	40 %
SiO2	%	.2	WR	-
Ga	25 ppm	1	ICP	10 %
Sc	1 ppm	.2	WR	10 %
Y	1 ppm	.2	WR	10 %
La	1 ppm	1	INAA	2 %
Ce	5 ppm	1	INAA	10 %
Zr	1 ppm	.2	WR	10 %
Nb	10 ppm	1	ICP	10 %
Ta	2 ppm	1	INAA	2 %

Project 264

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Drill Hole Information Sheets, Magnetic Survey Maps/Sections, and Drill Logs

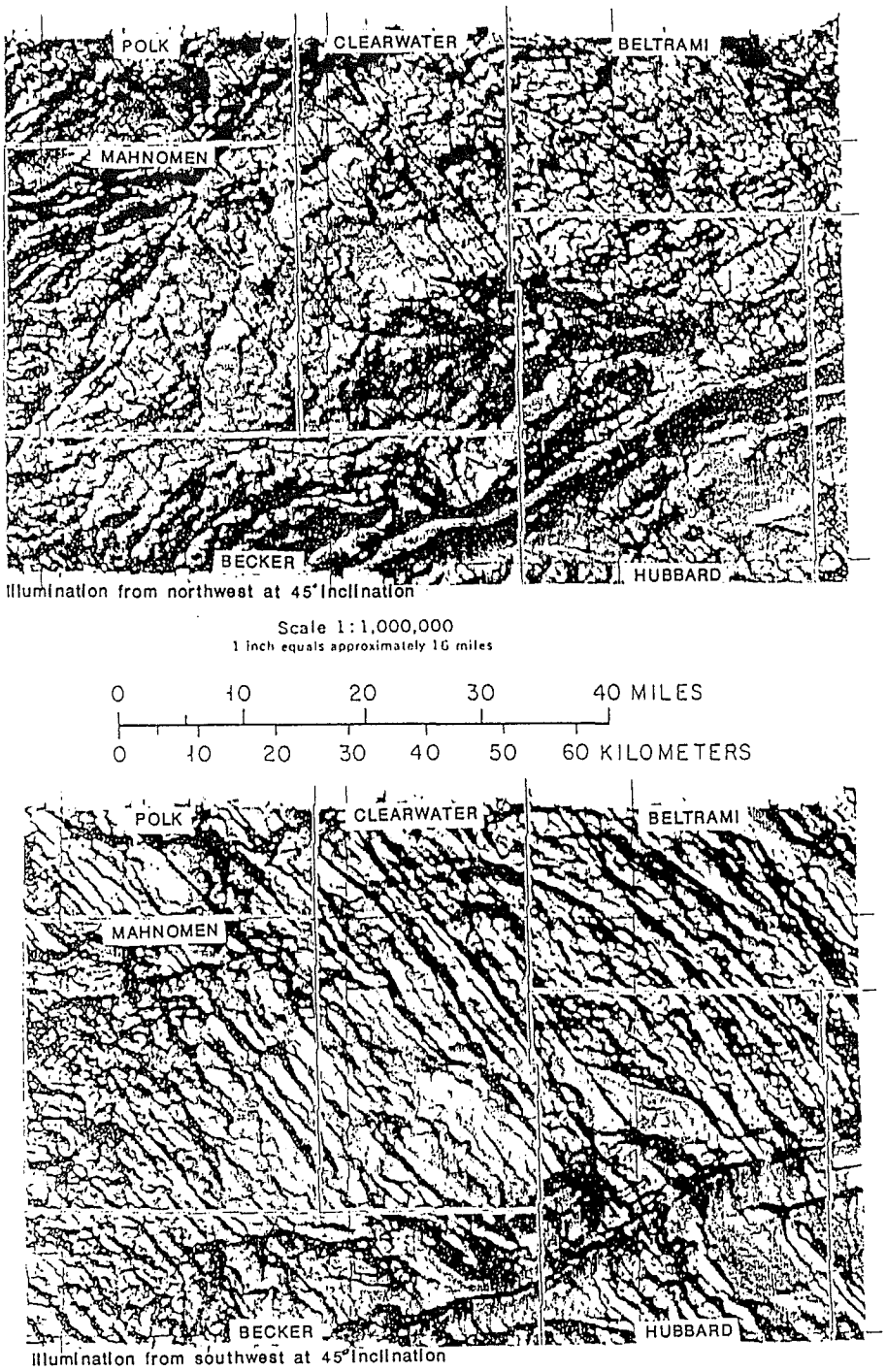


FIGURE 264-2. Shaded Relief Magnetic Maps with Drill Hole Locations of HB Drilling Area, with Different Illumination Directions . (after Chandler,1985.)

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

HB-87-1

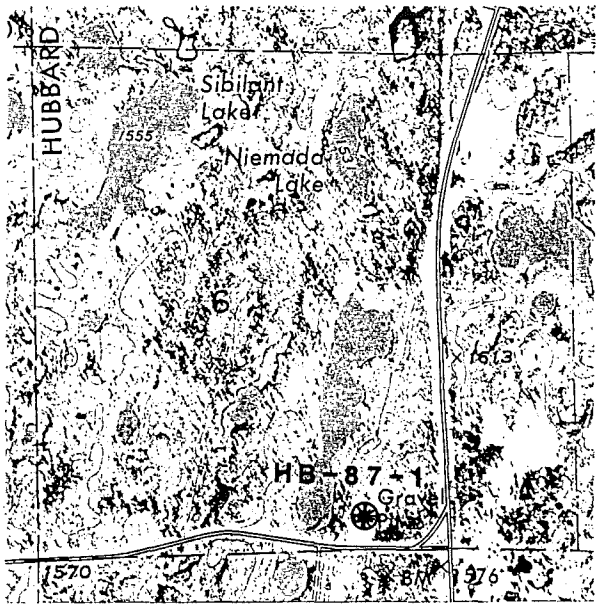
LOCATION INFORMATION

County:
HUBBARD

Legal Description T-R-S:
T.142N., R.35W., SEC. 6,
NE SW NE SW SE SW SE SE

Abbreviated T-R-S:
T.142N., R.35W., SEC. 6, DDCDCA

7-1/2' U.S.G.S. Quadrangle:
LAKE ITASCA



SCALE = 1:24000

DRILL HOLE PARAMETERS

Core Size:
HQ (2.5" diameter)

DNR Core Storage Interval:
670'- 680'

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1575'

Depth to Precambrian Bedrock:
670'

Total Depth:
680'

Elevation of Precambrian Bedrock:
905'

Drill Hole Inclination:
-90 degrees

Acid Tests:
NONE

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core, thin sections (at DNR, Minerals Division, Hibbing).
Gamma, SP, resistivity logs (at the Minnesota Geological Survey, St. Paul, MN).
Information provided by Dave Southwick, Minnesota Geological Survey.

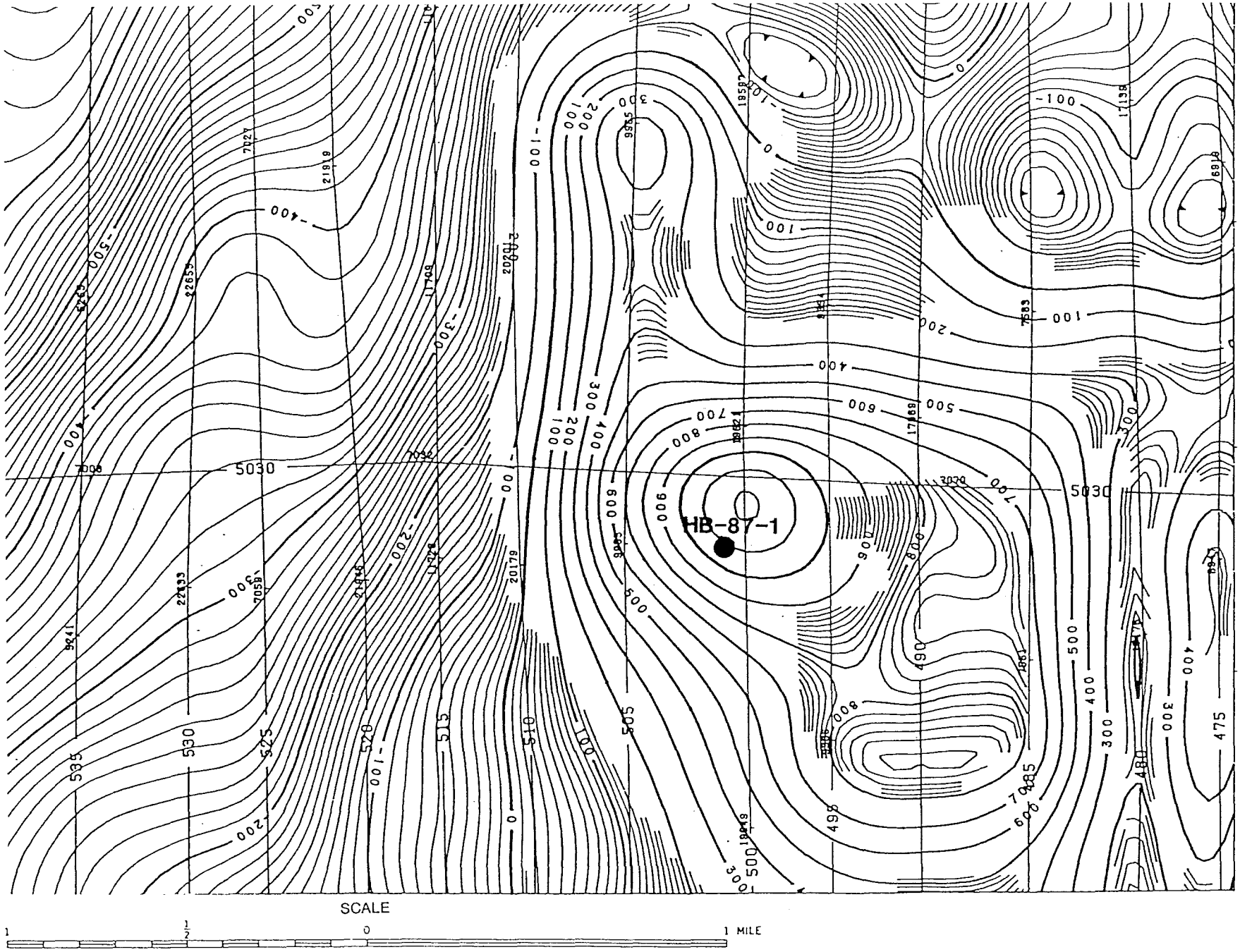


FIGURE 264-3. Portion of Aeromagnetic Map of Minnesota-Lake Itasca Quadrangle with Locaton of Drill hole HB-87-1. (modified from Chandler,1984.)

LITHOLIGIC LOG FOR DDH HB-87-1

*0'- 590' OVERBURDEN.

Quaternary Glacial Deposit.

*590'- 637' CRETACEOUS SEDIMENTS.

Shale and soft sandstone.

*637'- 670' SAPROLITE.

Weathered Precambrian rock.

670'- 680' Medium dark gray, medium-grained GABBRO with black-olive green CHLORITIC, CLAYEY, SERPENTINITIC(?) FRACTURES.

Approximate mode (unaltered):

35 - 45%	Pyroxene
45 - 55%	Plagioclase
2 - 7%	Oxides
5 - 10%	Olivine

Rock appears relatively fresh away from fractures and is slightly magnetic. Serpentine-sheet silicate fractures are up to 5 mm wide, but are usually about 1 mm. Wider ones are often calcareous. Fracture surfaces sometimes have slickensides. Many fractures are quite irregularly spaced, with spacing width generally on the order of centimeters.

680' E.O.H.

* Information provided by Dave Southwick, Minnesota Geological Survey.

DRILL HOLE #:

HB-87-2

LOCATION INFORMATION

County:
HUBBARD

Legal Description T-R-S:
T.142N., R.35W., SEC. 22,
NE SE SE NW NE NW

Abbreviated T-R-S:
T.142N., R.35W., SEC. 22, BABDDA

7-1/2' U.S.G.S. Quadrangle:
SKUNK LAKE

DDH LOCATION MAP FROM U.S.G.S. QUAD

SCALE 1:24000

DRILL HOLE PARAMETERS

Core Size:
NONE

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1519'

Depth to Precambrian Bedrock:
697'

Elevation of Precambrian Bedrock:
822'

Drill Hole Inclination:
-90

Acid Tests:
NONE

DNR Core Storage Interval:
NONE

LITHOLOGIC LOG FOR : DDH HB-87-2

0'-631'	OVERBURDEN. *Quaternary glacial deposits.*
631'-697'	SAPROLITE. *Weathered Precambrian rock*
697'-702'	MUSCOVITE PHYLLITE. *Cuttings sample. (Coring unsuccessful.)*
702'	E.O.H.

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Gamma, SP, resistivity logs (at the Minnesota Geological Survey, St. Paul).
Information provided by Dave Southwick, Minnesota Geological Survey.

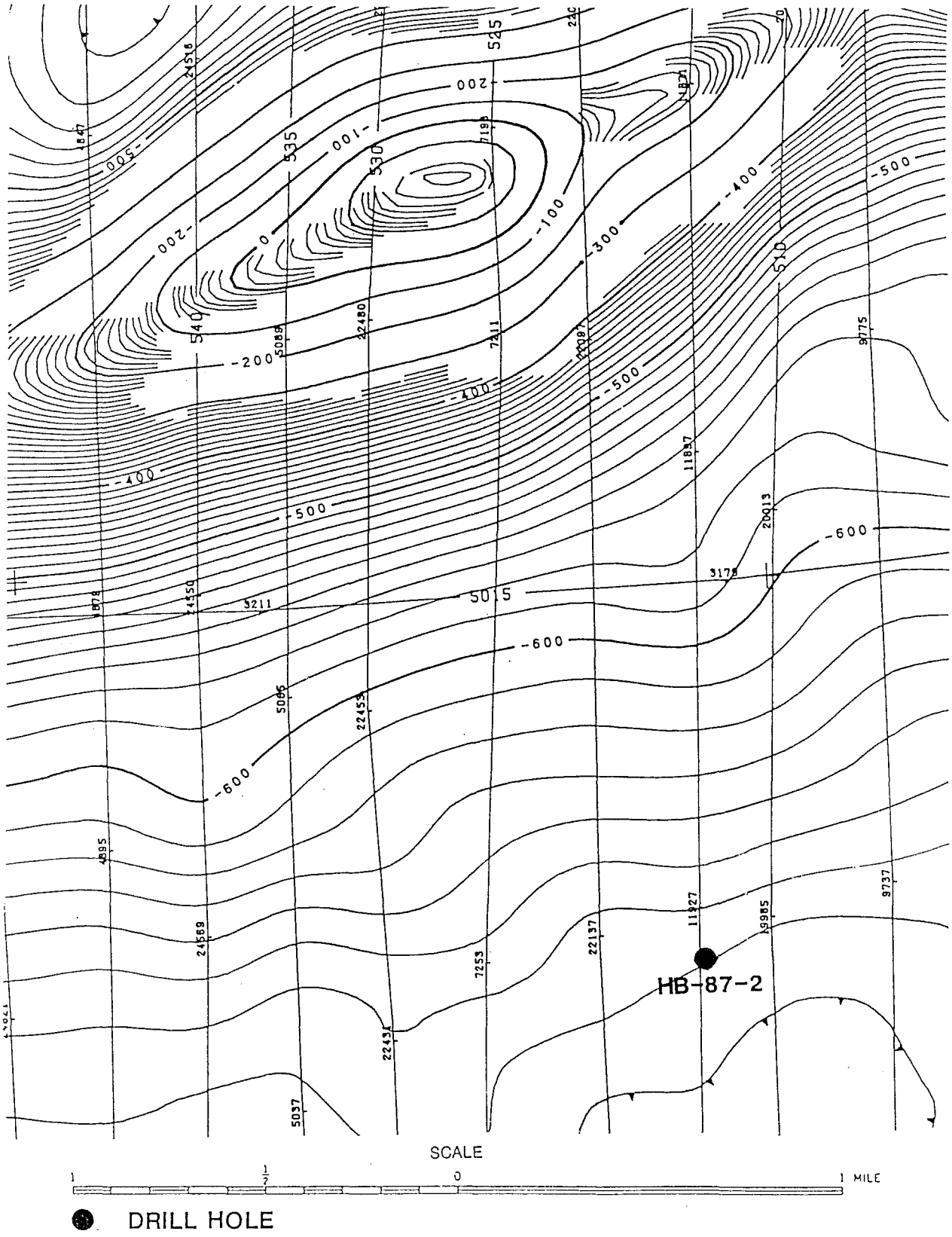


FIGURE 264-4. Portion of Aeromagnetic Map of Minnesota-Skunk Lake Quadrangle with Locaton of Drill hole HB-87-2. (modified from Chandler,1984a.)

DRILL HOLE #:

HB-87-3

LOCATION INFORMATION

County:
BECKER

Legal Description T-R-S:
T.141N., R.36W., SEC. 13,
NE NW NE SE NE SE

Abbreviated T-R-S:
T.141N., R.36W., SEC. 13, DADABA

7-1/2' U.S.G.S. Quadrangle:
TWO INLETS

DDH LOCATION MAP FROM U.S.G.S. QUAD

SCALE 1:24000

DRILL HOLE PARAMETERS

Core Size:
NONE

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1490'

Depth to Precambrian Bedrock:
760'(?)

Elevation of Precambrian Bedrock:
730'(?)

Drill Hole Inclination:
-90

Acid Tests:
NONE

DNR Core Storage Interval:
NONE

LITHOLOGIC LOG FOR: DDH HB-87-3

0'-402'	OVERBURDEN. *Quaternary glacial deposits.*
402'-585'	CRETACEOUS. *Shale.*
585'-714'	CRETACEOUS SEDIMENTS. *Shale and kaolinitic sandstone.*
714'-760'	SAPROLITE. *Derived from granitoid. protolith.*
760'	E.O.H.

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Gamma, SP, resistivity logs (at Minnesota Geological Survey, St. Paul, MN).
Information provided by Dave Southwick, Minnesota Geological Survey.

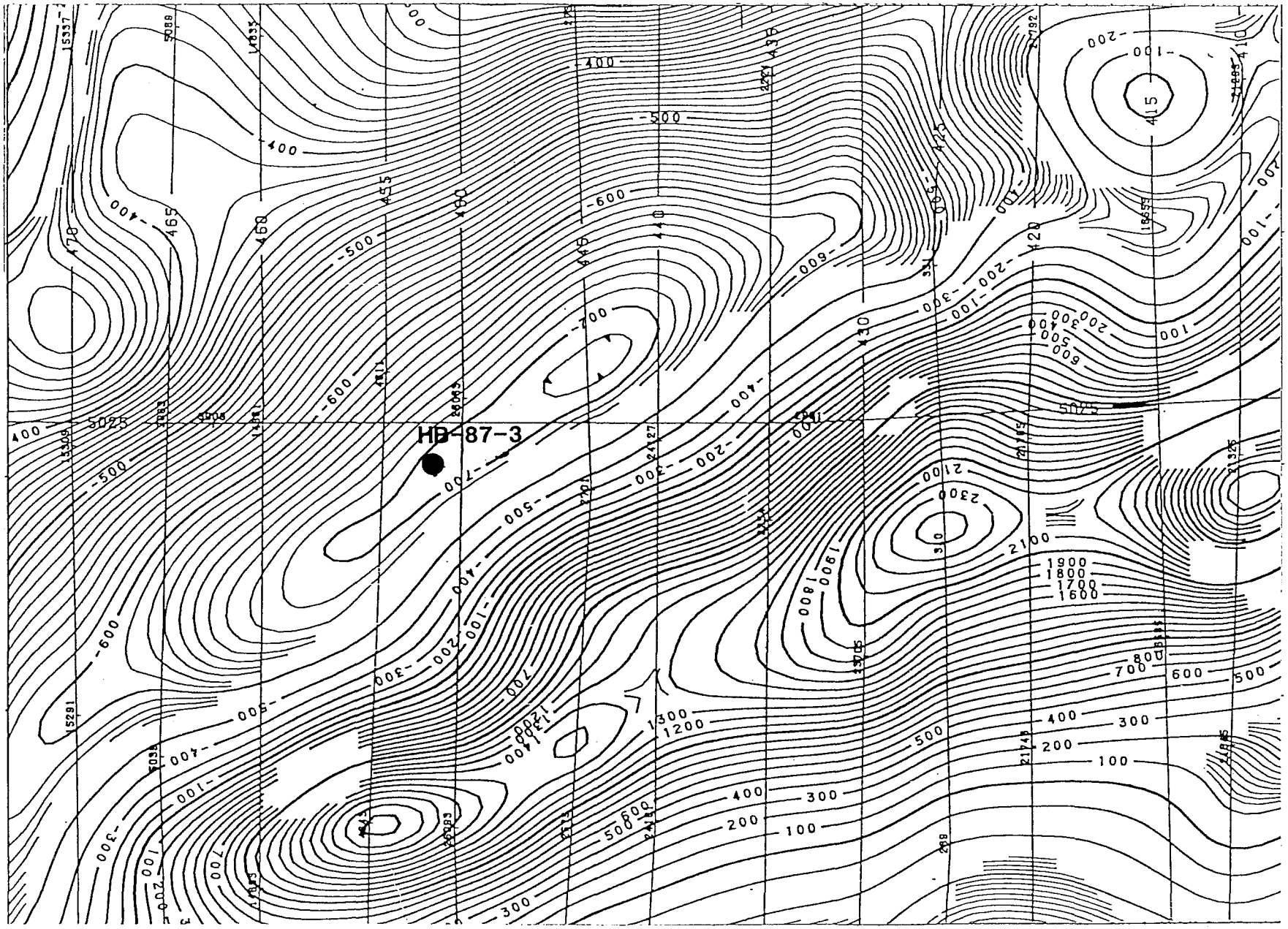


FIGURE 264-5. Portion of Aeromagnetic Map of Minnesota-Two Inlets Quadrangle with Locaton of Drill hole HB-87-3. (modified from Chandler,1984b.)

DRILL HOLE #:

HB-87-4

LOCATION INFORMATION

County:
BECKER

Legal Description T-R-S:
T.142N., R.37W., SEC. 22,
SW NW SW SW NW SE

Abbreviated T-R-S:
T.142N., R.37W., SEC. 22, DBCCBC

7-1/2' U.S.G.S. Quadrangle:
BIG BASSWOOD LAKE

DDH LOCATION MAP FROM U.S.G.S. QUAD

SCALE 1:24000

DRILL HOLE PARAMETERS

Core Size:
HQ (2.5" diameter)

DNR Core Storage Interval:
724'- 734'

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1592'

Depth to Sound Precambrian Bedrock:
724'

Total Depth:
734'

Elevation of Sound Precambrian Bedrock:
868'

Drill Hole Inclination:
-90 degrees

Acid Tests:
NONE

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core, thin sections (at DNR, Minerals Division, Hibbing).
Gamma, SP, resistivity logs (at the Minnesota Geological Survey, St. Paul, MN).
Information provided by Dave Southwick, Minnesota Geological Survey.

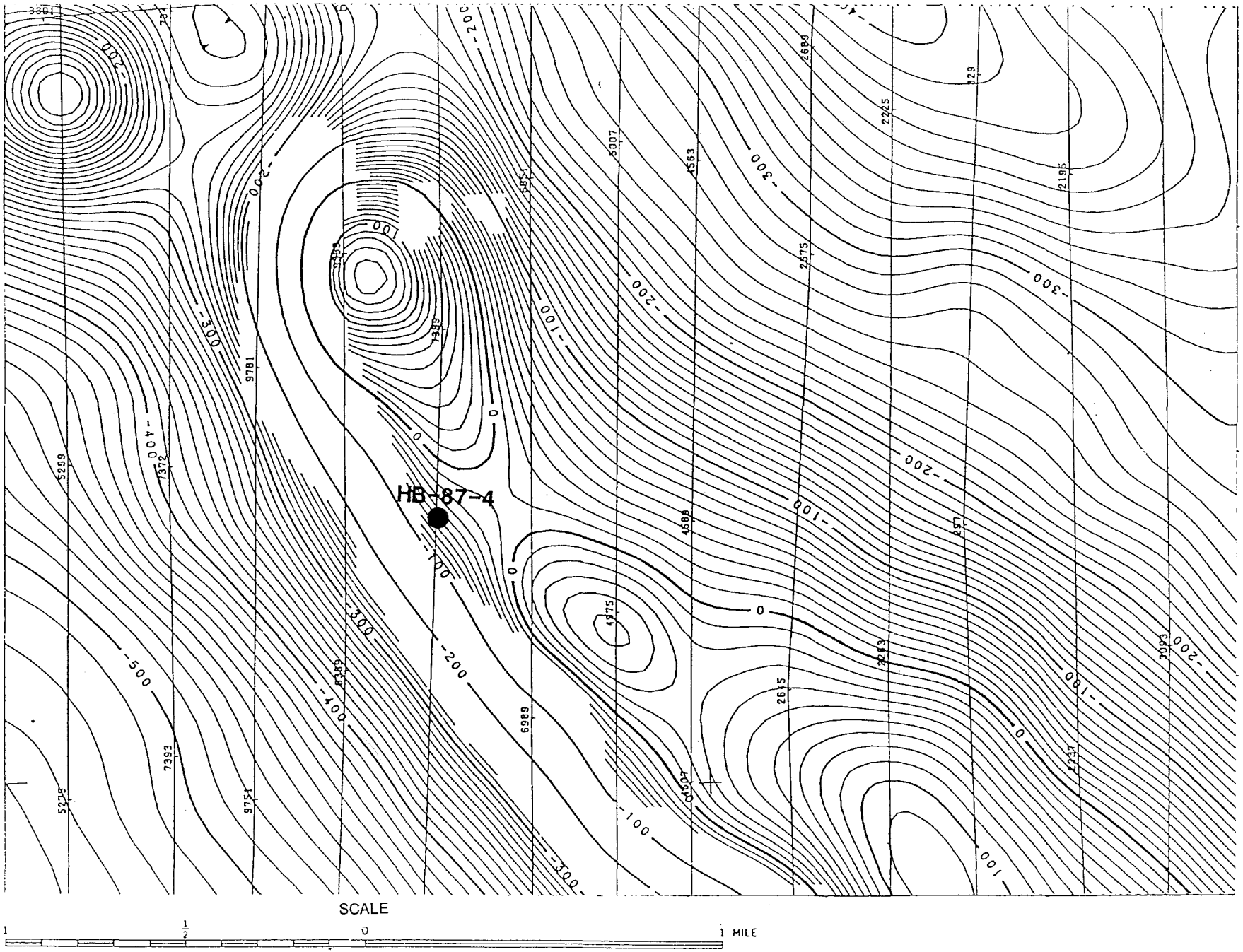


FIGURE 264-6. Portion of Aeromagnetic Map of Minnesota-Big Basswood Lake Quadrangle with Locaton of Drill hole HB-87-4. (modified from Chandler,1984c.)

LITHOLOGIC LOG FOR DDH HB-87-4

0'- 537' OVERBURDEN.

Quaternary glacial deposits.

537'- 662' CRETACEOUS SEDIMENTS.

Shale, soft sandstone.

662'- 724' SAPROLITE.

Weathered Precambrian rock

724'- 734' MAFIC CONTAMINATED, medium-grained, reddish-pink SYENITE(?).

Approximate mode:

50 - 80%	pink-red K-feldspar
5 - 25%	pale pink-white plagioclase
0 - 5%	quartz
2 - 5%	leucoxene
0 - 40%	(35% average) mafic minerals or mafic mineral clumps

Mafic minerals-clumps are predominantly augite(?) and/or hornblende(?) with lesser magnetite. Rock is slightly magnetic. Mafic minerals are typically evenly peppered throughout the rock and are typically 1-2 mm with larger clots-mafic xenoliths? up to 1 cm in size.

The syenite is weakly foliated (mafics and feldspars?). The foliation appears variable, with the fabric oriented 35-55 degrees to the core axis.

Rock is cut by hairline fractures-shears with local epidote, calcite, limonitic sheet silicates, and a trace of pyrite. Rock is somewhat cataclastic locally, and is distinctly so adjacent to some shears - fractures. A relatively mafic free, 2 cm band occurs at about 725.3'.

734' E.O.H.

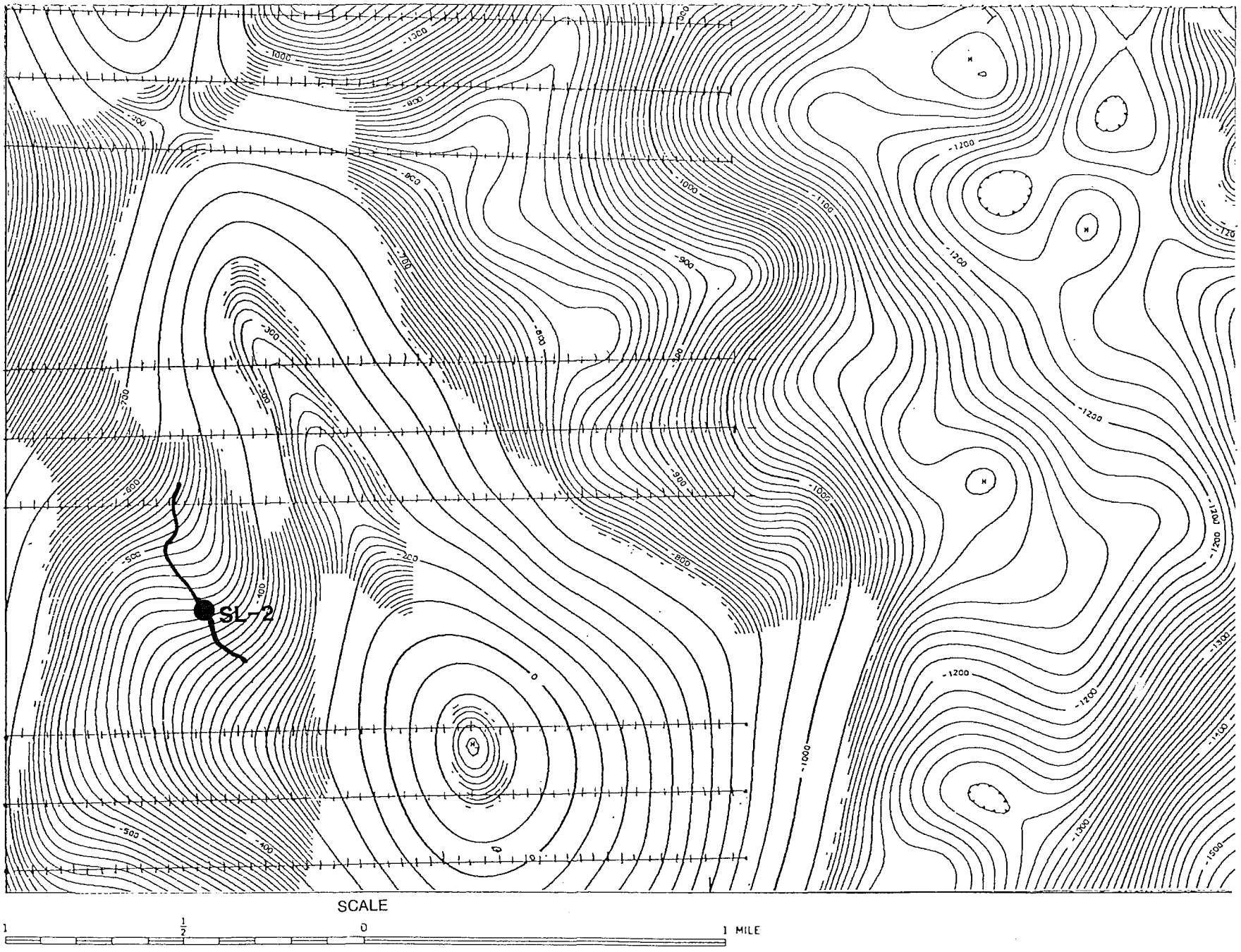


FIGURE 264-7. Portion of Aeromagnetic Map of Minnesota-Allen Quadrangle with Locaton of Drill Hole SL-2. (modified from Chandler,1980.)

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

SL-2

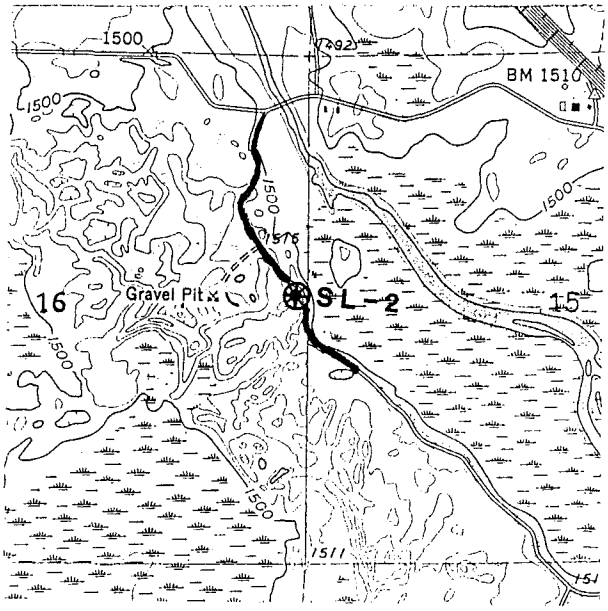
LOCATION INFORMATION

County:
ST. LOUIS

Legal Description T-R-S:
T.58N., R.14W., SEC. 16,
SE SE SE SE NE

Abbreviated T-R-S:
T.58N., R.14W., SEC. 16, ADDDD

7-1/2' U.S.G.S. Quadrangle:
ALLEN



SCALE 1:24000
MAGNETIC TRAVERSE

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
60'- 895'

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1520'

Depth to Precambrian Bedrock:
63'

Total Depth:
895'

Elevation of Precambrian Bedrock:
1457'

Drill Hole Inclination:
-90

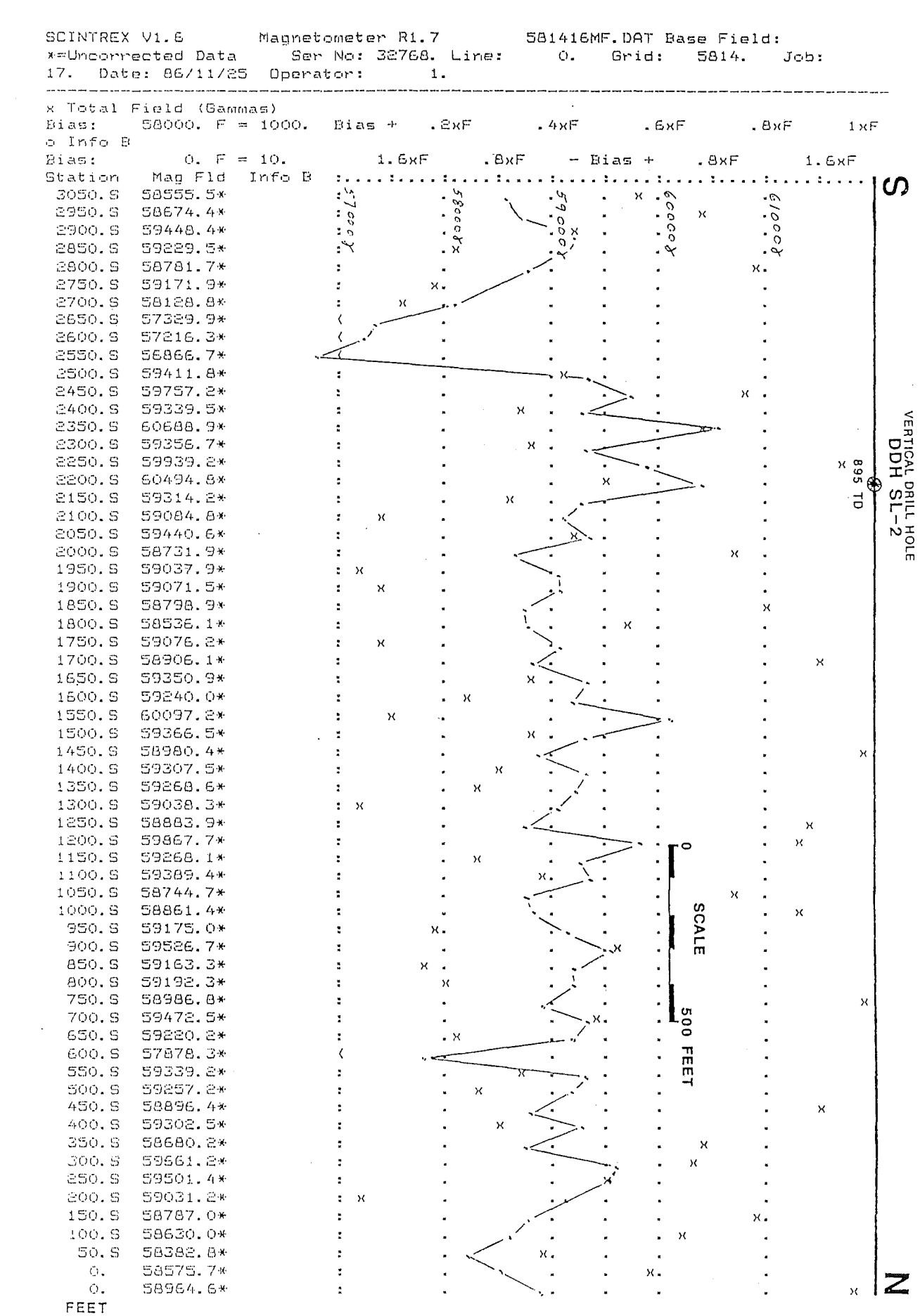
Acid Tests:

Depth Footage	Corrected Angle
445'	82 degrees
894'	72 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core, thin sections.

FIGURE 264-8. Ground Magnetic Traverse with Drill Hole Location for DDH SL-2.



LITHOLOGIC LOG FOR DDH SL-2

0'- 60' OVERBURDEN.

No samples.

60'- 63.2' OVERBURDEN.

Boulder lithologies include hornfelsed Biwabik Iron Formation, hornfelsed Virginia Formation, medium-grained troctolite (Duluth Complex), biotite-quartz-feldspar gneiss, pink-red fine to medium-grained granite-granophyre(?), and medium-grained granodiorite. Unit also contains pebbles and cobbles.

63.2'- 283.5' VIRGINIA FORMATION; dusky yellow brown to medium gray LAMINATED HORNFELS.

Unit is predominantly fine to very fine-grained biotitic quartz hornfels. Rock is recrystallized and massive with original bedding laminations oriented 0-25 degrees to the core axis. Rock is very slightly magnetic locally (magnetite? pyrrhotite?) and may also be slightly graphitic. More brownish laminae are somewhat more sideritic(?), with the gray intervals being more siliceous.

Rock contains scattered "joints" oriented 5-25 degrees to the core axis. These are often surfaced with pyrite, chlorite; and lesser serpentine(?), carbonate, and quartz(?). Some have local slickensides. These occur notably at 91', 120', 138', 141'- 142', 178'- 179', 204', 236.5', 238.4', 250.7'- 252.2', 260.7', 262.3', 263.8' and 279.8'- 280.5'.

Local 1-3 cm, medium-grained quartz, carbonate (dolomite?), calc-silicate "veins" occur at 100.3' and 217'- 219'.
These may contain minor breccia, pyrite, slickensides, serpentine?-chlorite?, ilmenite?, zeolites, magnetite?, amphiboles, igneous material? fayalite? cordierite? and vugs.

A dark gray, 2 cm diabase dike occurs at 282.8'.

283.5'- 285.2' Medium gray, fine to medium-grained, slightly CALCAREOUS GABBRO(?) DIKE.

Mineralogy appears to include titanaugite, amphibole, plagioclase and calcite.

Minor chilling and calcsilicates occur at the contact, with cordierite and hornfels xenoliths locally.

285.2'- 895' Dusky yellow brown to olive black to medium gray, laminated to massive, HORNFELSED VIRGINIA FORMATION, with scattered CALCSILICATE ZONES.

Unit is predominantly fine to very fine-grained biotite-quartz hornfels. Rock is recrystallized and massive except where broken by fractures-veins. Original bedding is oriented from 5 to 35 degrees to the core axis with it averaging generally 20 to 30 degrees. Unit tends to be more quartz rich and less laminated down hole. Unit is fairly sideritic and these areas are typically the dusky yellow-brown.

The 3 cm contact zone with the dike is composed of quartz, calcsilicates, carbonate, and cordierite.

More intensely fractured-veined intervals are 343'- 370', 378'- 400', 438'- 450', 507'- 523', 535'- 539', 577'- 579', 678.5'- 679.5', and 748'- 751'. Most are hairline fractures with variable amounts of pyrite-marcasite, chlorite, carbonates, quartz, serpentine(?), calcsilicates and slickensides.
Larger ones typically are white quartz-carbonate, with chlorite fragments, slickensides or vugs with pyrite crystals. Larger ones are located at 342.7'- 343.4' (1 cm); 356'- 357' (1 cm); 456.3'- 456.7' (3 cm); 476.4'- 478.5' (1 cm); 481.8'- 482.5' (5 cm, with pyrite crystals in vugs and abundant pink carbonate and wollastonite?); 511.5'- 512.5' (1 cm, with wollastonite); 679.6' (7 mm vein in calcsilicate zone); 757.5' (7 mm vein); and 761.1'- 761.8' (porous white vein-calcsilicate zone).

Calcsilicate zones are variable and irregular, but appear to be skarn type reacion zones of the hornfels with presumed gabbro or troctolite of the Duluth Complex. Material is generally aphanitic to medium grained, with variable amounts of contamination of the hornfels. Mineralogy includes calcite and other carbonates, cordierite, quartz, fayalite, amphiboles(?), garnet(?), idocrase(?), sulfides, pyroxenes, minor magnetite, chlorite, biotite, muscovite, and small blebs of granophyric melt. Responsible mafic rock is not present in a non-altered form, if at all.
Calcsilicate zones are at 314.2'- 319.8'; 367.5'- 369.3'; 486.5'- 488.1'; 539.7'- 541.3'; 583.2'- 583.8'; 602.6'- 603.2'; 654.9'- 655.3'; 662'- 662.3' with small muscovite veinlets; 666.9'- 667.3' with hairline calcsilicate vein with remaining interval constituting an alteration selvage-envelope; 679.1'- 680'; 750.6'- 751.1'; 761.1'- 761.8' porous quartz(?) vein with porphyroblastic calcsilicates; 768.8'- 769.9', 786.3'- 786.4'; 796.8'- 797.0'; 806.4'- 806.5'; 812.3'- 812.5' (small light gray with carbonate removed?); 819.9'- 820' (folded, light gray with carbonate removed); 828.7'- 831.6' (with several light gray thin zones with carbonate removed); 847.8'- 847.9' (light gray, carbonate removed);

854.8'- 855.3'; 868.2' (thin leached gray layer); 888.7'- 888.8' (blobby calcsilicate zone); and at 889.1' (vein with calcite, paragonite? talc?).

Most calcsilicate zones are banded or zoned, sometimes rather synmetrically, sometimes assynmetrically. Other hairlike veins occur with these. Nebulous, discolored areas also occur as if calcsilicate zones were extremely close.

Granophyric blebs are believed to have formed in place and are usually on the order of mm's.

Other than hairline fractures, notable sulfides occur at 318.7'- 319.3' (irregular stringers - blebs of massive "magmatic" type pyrrhotite-chalcopyrite (ratio 7:1 po:cpy); 366.9'- 367.8' disseminated, 1-2 mm porphyroblastic nodules of pyrite(?); 381'- 396' scattered 1-2 cm nodules of pyrite(?); 476.4'- 478.5'; 481.8'- 482.5' euhedral pyrite crystal groupings in vugs in veins.

895' E.O.H.

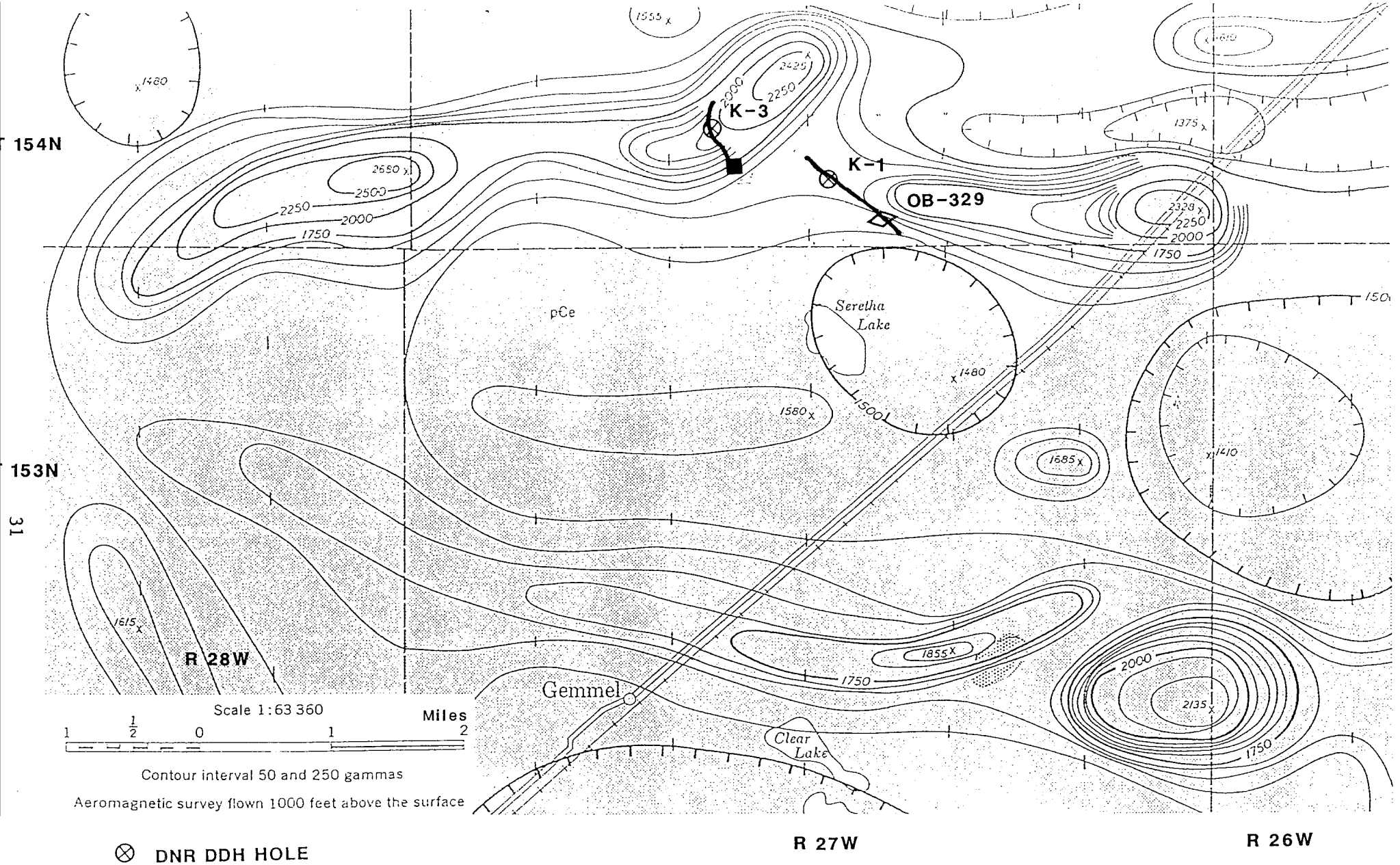
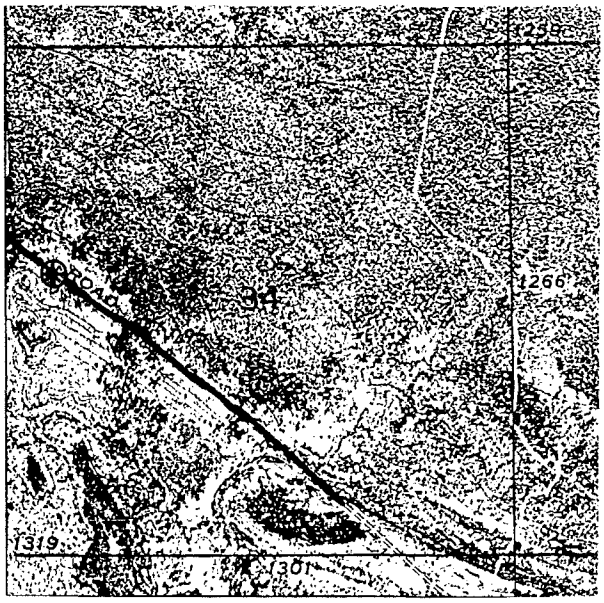


FIGURE 264-9. Aeromagnetic Map of a Portion of Koochiching County with Locations of DDH's K-1 and K-3, and Ground Magnetic Traverses (modified from Meuschke et al ,1957b).

DRILL HOLE #:

K-1

DDH LOCATION MAP FROM U.S.G.S. QUAD



SCALE 1:24000

MAGNETIC TRAVERSE

LOCATION INFORMATION

County:
KOOCHICHING

Legal Description T-R-S:
T.153N., R.27W., SEC. 34,
NW SE SW SW NW

Abbreviated T-R-S:
T.153N., R.27W., SEC. 34, BCCDB

7-1/2' U.S.G.S. Quadrangle:
RIDGE

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
280'- 564'

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1294'

Depth to Precambrian Bedrock:
280'

Total Depth:
564'

Elevation of Precambrian Bedrock:
1014'

Drill Hole Azimuth:
131 degrees

Drill Hole Inclination:
-45 degrees

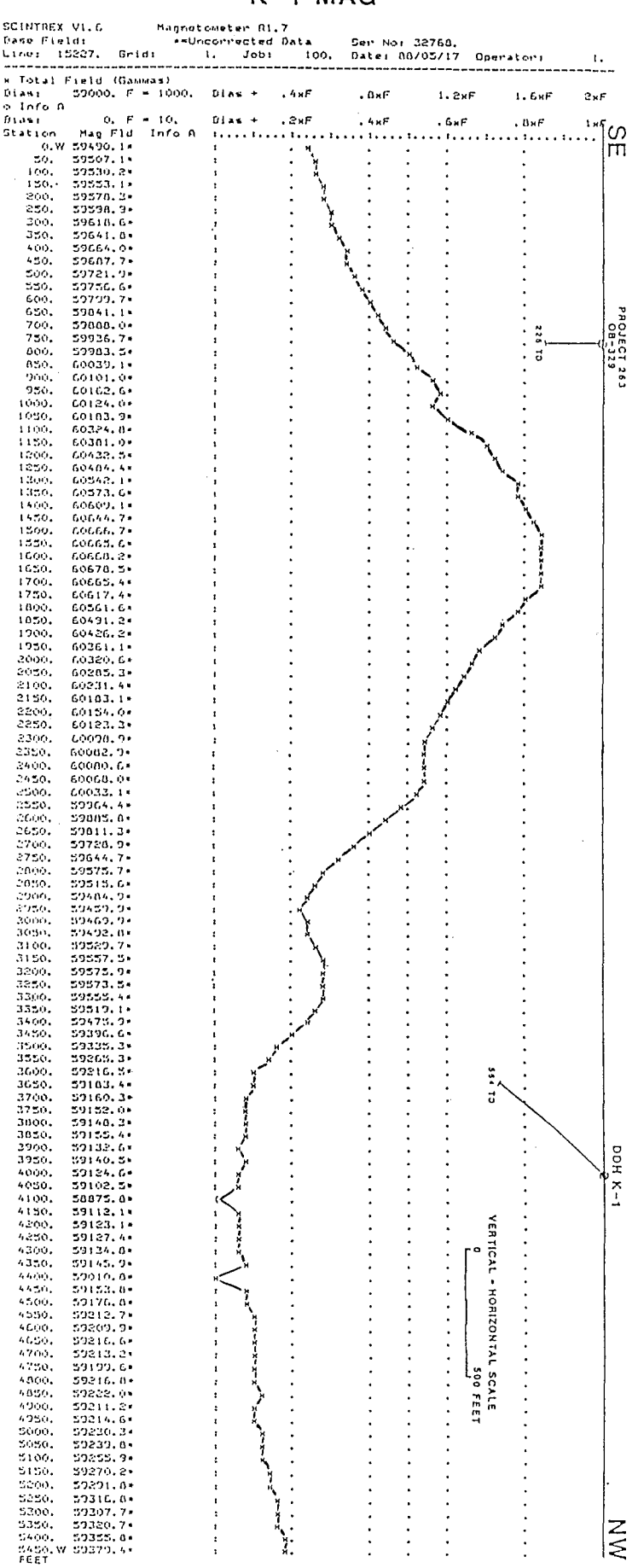
Acid Tests:

Depth Footage	Corrected Angle
280'	-49 degrees
564'	-50 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-10. Ground Magnetic Traverse with Drill Hole Location for DDH K-1.



LITHOLOGIC LOG FOR DDH K-1

0'- 280' OVERBURDEN

No sample.

280'- 328.5' Greenish gray to dusky yellow green to grayish red, variably broken and weathered, variably laminated, CLAYEY, DOLOMITIC TUFFACEOUS PHYLLITIC SCHIST.

Unit becomes less broken and clayey and more sericitic(?) and dolomitic with depth. Rock is phyllitic with thin dark gray laminae, where the finest grained sediment is located. Fine to medium-grained intervals (crystal tuff?) have more massive bedding and are less phyllitic. Foliation and bedding are generally subparallel and are oriented 30-37 degrees to the core axis.

The core is pitted (from leached out fine-grained phenocrysts?). The tuffaceous component is intermediate to felsic, although the rock is presently not very siliceous.

Less broken intervals are from 286'- 287.5', 289'- 296', 303'- 312' and 319'- 325'. Scattered clayey (fault gouge?) intervals are scattered within 280'- 286', 312'- 314', 317'- 319', 325'- 327' and 328'- 328.5'.

Unit contains 0-2% scattered deformed cubes of pyrite (to 8 mm) with quartz strain shadows. In more heavily oxidized zones, the pyrite is completely replaced by red oxides.

Rock color changes appear to reflect the iron oxidation state associated with solution influxes. Oxidized (grayish red) intervals are located approximately at 285'- 285.5', 286.5'- 288', 292.5'- 294.6', 296.5'- 297.5', 303'- 304', 307'- 308.5', 309.5'- 311' and 320.5'- 321.5'. Oxidized (grayish red) and reduced (dusky yellow green) intervals are often coupled together or form mottled-mixed zones. Other areas are a more neutral gray.

Slickensides occur on some fracture surfaces.

328.5'- 391.0' Light olive gray to grayish red to grayish olive, locally PHYLLITIC, fine to medium-grained, DOLOMITIC SILICEOUS TUFFACEOUS SCHIST.

Most of the rock has fine-grained pits where iron bearing, creme-tan colored carbonate grains-phenocrysts(?), as in 351'- 357', have been leached out. Schist is locally calcareous, but dolomite is believed to be the predominating carbonate. Rock is somewhat clayey toward the top and more sericitic(?)-feldspathic(?)-siliceous toward the base. Hairline, fine-grained sericite laminae are scattered locally. The rock contains 1-2% scattered pyrite cubes with quartz strain shadows.

More reddish and greenish areas are typically coupled and probably reflect an influx of iron rich solutions with the color reflecting the iron oxidation state. Reddish areas are 332'- 334.2', 338.2'- 338.7', 344.3'- 345', 346.2'- 348', 357.2'- 359', 363'- 364.5', 381.3'- 382.1'. These areas usually have iron oxides partially filling the pits mentioned above.

A few, thin (3 mm) vuggy quartz veins occur locally. More solid quartz veins with calcite, siderite(?), and limonite occur within 350'- 356' and 372'- 381'. These are also the areas without pits. These veins appear to be pre-schistosity. Core is locally broken with fault gouge, with only one foot of recovery from 382.5' to 391'. Slickensides occur on some fracture surfaces. Bedding-schistosity is oriented 25-35 degrees to the core axis.

391.0'- 421.0' Greenish gray to light gray, fine to medium-grained DOLOMITIC TUFFACEOUS SCHIST.

Unit is locally more siliceous-feldspathic(?) (lighter colored), or argillaceous-sericitic(?) (darker). The rock contains scattered darker gray argillaceous laminae and 1-2% coarse pyrite cubes with quartz strain shadows.

The unit contains scattered, pre-schistosity quartz veins. The largest (1 cm) is brittlely deformed and is found within 412'- 412.5'. The core is locally broken.

Tuffaceous component is probably dacitic, with scattered quartz eyes evident. Bedding and schistosity are typically subparallel, and oriented 25-55 degrees to the core axis. Occasionally the schistosity is at a larger(?) angle than the bedding, where separable.

421.0'- 425.8' Medium gray, fine to medium-grained DOLOMITIC, somewhat ARGILLACEOUS, TUFFACEOUS(?) SCHIST.

A 5 mm black argillite occurs at the upper contact.

Schistosity is poorly to moderately developed. Unit is more siliceous, less dolomitic than most of the previous intervals. Bedding schistosity runs 35-45 degrees to core axis.

425.8'- 461.9' Greenish gray, very fine-grained, locally laminated, TUFFACEOUS SCHISTOSE DOLOSTONE.

Laminated character and argillaceous-micaceous material increases with depth, especially below 451'. Unit contains 1/2-1% pyrite cubes with quartz-siderite strain shadows. Unit is locally broken, with slickensides on some fractures. Local dolomitic fault gouge occurs at 443.2', 443.7', 445', 449'- 451', and 459'. The more argillaceous sections are often pitted. The unit contains scattered thin (1 mm) siderite-dolomite veins and also a few small kink bands. Bedding-schistosity is oriented 30-45 degrees to core axis.

461.9'- 468.9' Dark gray to dark greenish gray, very fine to fine-grained SERICITIC - CHLORITIC TUFFACEOUS PHYLLITIC, SOMEWHAT DOLOMITIC(?) SCHIST with local QUARTZ EYES.

More greenish intervals lack quartz eyes, and are chloritic(?) with porphyroclastic, fine-grained epidote(?). Gray intervals are locally pitted and also locally feel abnormally heavy. Fault gouge occurs locally, especially between 461.9'- 463'.

The unit contains scattered 1-3 mm deformed pyrite cubes and may also be somewhat dolomitic. A 5 mm deformed early quartz vein occurs at 468.7'.

468.9'- 518.9' Light olive gray, and lesser grayish olive green and pale red brown, fine to medium-grained DOLOMITIC SILICEOUS TUFFACEOUS SCHIST WITH BROKEN ZONES AND FAULT GOUGE.

Unit contains scattered gray argillaceous-sericitic partings (especially toward base) and is otherwise somewhat sericitic. The unit contains scattered deformed pyrite crystals to 1 cm in size, with quartz strain shadows, along with scattered more siliceous (tuffaceous) laminae. Reddish and greenish areas tend to be coupled and probably represent an influx of iron rich solutions. These are found within 468.9'- 479' and 509'- 512.5'.

Unit is locally broken within the upper 35', and the lowest 3'. Fault gouge and local core loss occurs within 473'(?)- 480', 482'- 493', 495'- 497' and 500'- 501'.

Bedding - schistosity is oriented 15 to 35 degrees to the core axis.

Unit is slightly sideritic, but this increases to 2-5% in the basal 10' where it also becomes locally limonitic (disseminated and in veins?).

Scattered crosscutting hairline fractures - veins occur throughout the unit, with these veins in the reddish-greenish areas appearing argillitic - limonitic. Another, thicker set are white siliceous-dolomitic(?) with light yellow colored mica (muscovite??). These appear early, are folded-deformed, and may be 1-2 cm wide.

518.9'- 526.0' BROKEN, BRECCIATED to MYLONITIC, SCHISTOSE FAULT ZONE.

Rock is variable, starting with greenish gray dolomitic, argillaceous, siliceous tuffaceous(?) schist with brecciated quartz veins and orange brown limonite and siderite (518.9'- 520.0').
This grades into dark gray-olive gray-red gray chloritic - hematitic mylonitic phyllite (520'- 521').
This grades into dark gray green tuffaceous phyllite and mylonite with a boudinaged quartz vein layer cut by sideritic? - limonitic boxwork (521'- 522').
The interval 522'- 523.6' is dark greenish gray (with graphite?) to moderate olive brown (with limonite) chloritic - serpentinitic mylonite - fault gouge; with graphitic(?) partings, limonite, disrupted siliceous veins or beds with limonitic - chloritic boxwork, and local slickensides. This interval contains yellowish gray quartz masses.
The interval 523.6'- 526.0' is variably altered and cataclasised; grading into brecciated, and then into broken, gabbro. Deformation and alteration to chlorite and serpentine decreases (from 100% to 90%?) downward.
The last foot 525'- 526' is highly broken with dolomite and muscovite(?) along fractures.

Slip surfaces are oriented 30-35 degrees to the core axis.

526.0'- 564' Olive gray to dark greenish gray, medium-grained, VARIABLE ALTERED METAGABBRO with a few thin greenish black ULTRAMYLONITES.

Rock is largely saussuritized and uralized in the upper 6', with overall alteration decreasing downhole. At least partial alteration of the rock does occur throughout.

Rock is slightly calcareous and contains a trace amount of pyrrhotite and chalcopyrite. Core is variably broken with hairline fractures (often with chlorite) and thin calcite-chlorite veins.

Ultramylonites are dark siliceous, chloritic(?) and are typically 1-2 cm wide. They occur at 530.3' (with limonite, quartz, carbonate); 541.2' (with limonite, quartz); 547.3' (almost entirely quartz and limonite); and 555.6' (limonitic, with limonite and quartz at the margins).

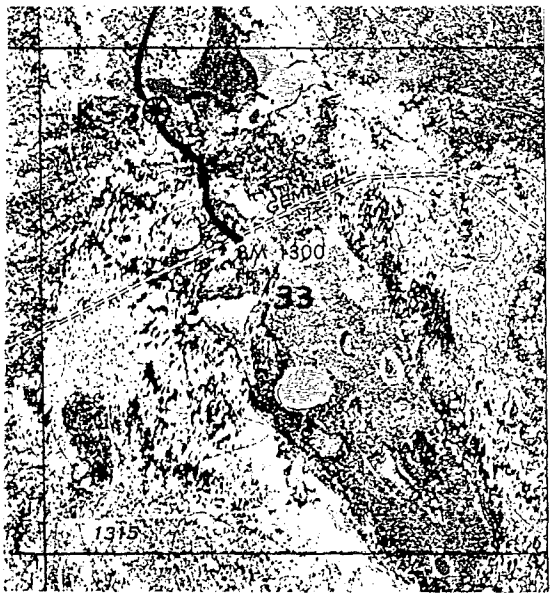
Metagabbro appears to have originally varied from anorthositic gabbro(?) to troctolitic gabbro(?).

564' E.O.H.

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

K-3



SCALE 1:24000
MAGNETIC TRAVERSE

LOCATION INFORMATION

County:
KOOCHICHING

Legal Description T-R-S:
T.153N., R.27W., SEC. 33,
NE NE SE NW NW

Abbreviated T-R-S:
T.153N., R.27W., SEC. 33, BBDAA

7-1/2' U.S.G.S. Quadrangle:
RIDGE

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)
BQ (1.432" diameter)

DNR Core Storage Interval:
219' - 388'
388' - 571'

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1297'

Depth to Weathered Precambrian Bedrock:
242'

Depth to Precambrian Bedrock:
269'

Elevation of Precambrian Bedrock:
1028'

Total Depth:
571'

Drill Hole Azimuth:
136 degrees

Drill Hole Inclination:
-45 degrees

Acid Tests:

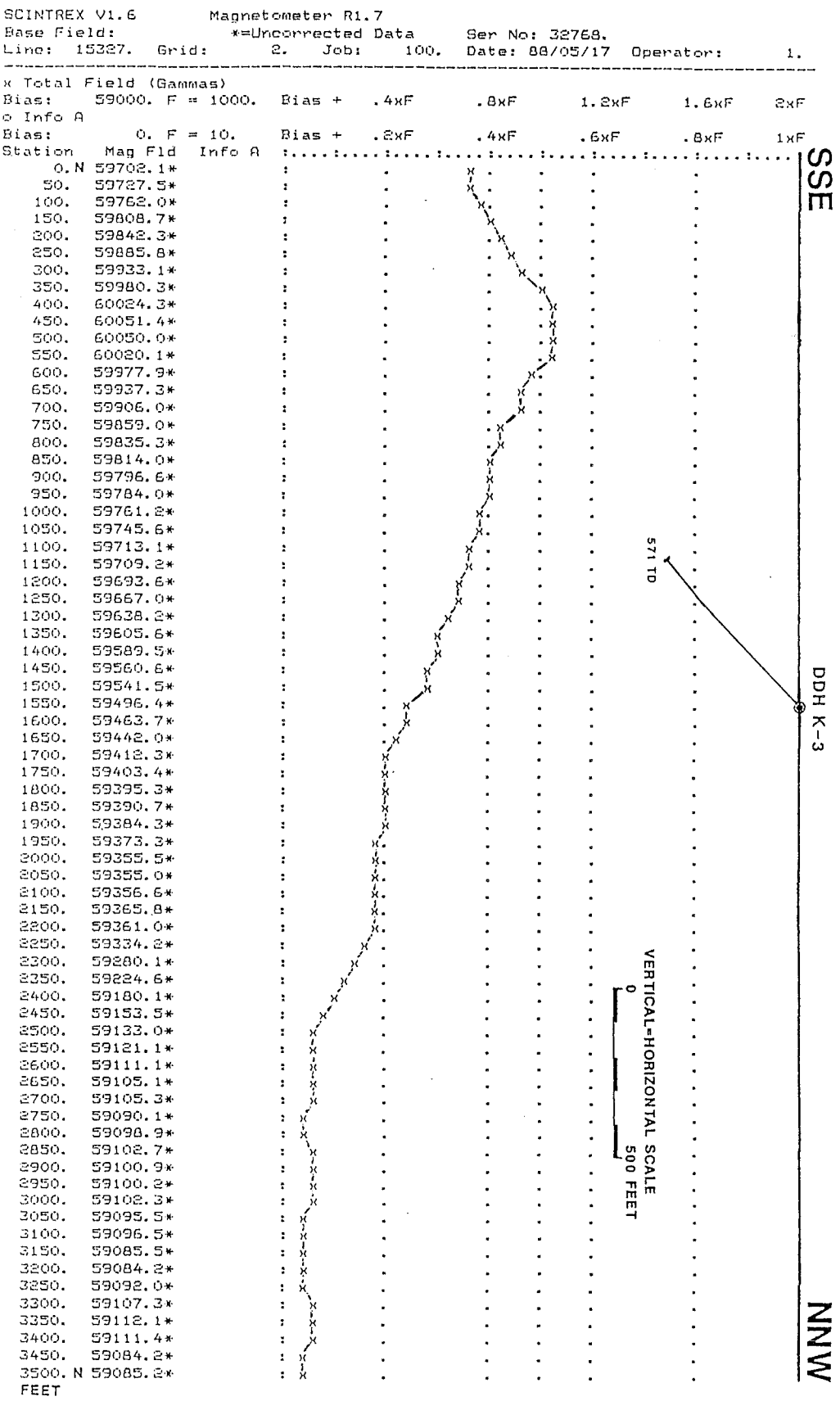
Depth Footage	Corrected Angle
220'	-44 degrees
400'	-41 degrees
571'	-41 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-11. Ground Magnetic Traverse with Drill Hole Location for DDH K-3.

K-3 MAG



LITHOLOGIC LOG FOR DDH K-3

0'- 219' OVERBURDEN.

No samples.

219'- 223' OVERBURDEN. (COBBLES, BOULDERS and PEBBLES recovered.)

The following lithologies of larger clasts were observed:

219'- 219.3'	Pale to moderate reddish brown, medium-grained, granitic protomylonite gneiss (fresh).
219.3'- 221.1'	Cobbles and pebbles of fresh amphibolite (like boulder below), blackish amphibole-chlorite(?) schist (fresh), quartz biotite gneiss (fresh), and metagabbro (weathered).
221.2'- 223.0'	Dark greenish gray, medium-grained, amphibolite-sheared metagabbro (fresh).

223'- 242' OVERBURDEN. Dark greenish gray to olive gray to dark yellow brown, SILTY CLAYEY, somewhat CALCAREOUS TILL with scattered sand, granules, pebbles.

Rounded pebbles at 224' include amphibolite (fresh), quartz biotite garnet schist (fresh), and somewhat weathered, deformed metagabbro.

Rounded pebbles at 239.2' include fresh tonalite gneiss, weathered metadiabase(?), fossilferous dolostone and quartz.

Rounded pebbles at 242' include metabasalt and dolostone.

Unit is locally limonitic in upper foot. Contact with next unit (highly weathered) is somewhat nebulous.

242'- 269' Broken, weathered, dark yellowish brown, grayish red to moderate brown SAPROLITIC METABASALT(?) with clay, shearing(?), minor sand, local limonite and breccia.

Unit is slightly calcareous.

Brecciation is prominent within 248'- 255', and may be the result of glaciation, solution collapse, and/or tectonism.
Schistose fabric is oriented 55 degrees to the core axis, with brecciation surfaces being oriented 0-30 degrees (overturning?).

269'- 320' Grayish olive to dark greenish gray to grayish green, variably weathered METABASALT and METAGABBRO.

Unit varies from medium to very fine-grained with original mineralogy replaced by saussurite, carbonate, epidote, amphiboles and sheet silicates(?). Besides metamorphism and recrystallization, unit has been variably deformed with the original grain size, textures and contact relationships being modified by cataclasis. Metabasalt is typically fine-grained mineralogically, and often contains irregular and somewhat parallel leucoxene grains. At least locally the rock appears to be fragmental with irregular angular fragments to 1 cm packed together in an identical, or nearly identical, matrix (breccia flows?). The fine-grained material is also found in a few thin dikes (293.4') which are not quite as altered as the "breccia flow" material, which is pitted sometimes in this unit. These rocks could also be tuffs(?), (such as, 290'- 294.7' and 302.1'- 304.3') or possibly gabbro cataclasites.

The unit lacks schistosity and it is believed that recrystallization has made the fabric more massive.

Note the symmetry around the interval 290'- 294.7' of sulfides and metagabbro undergoing "cataclasis?".

Unit is also locally broken, with the amount generally decreasing below 306'.

More severe weathering is limited to certain broken intervals, namely, 271'- 279', 298'- 304', and 311'- 318'. These areas typically have more chlorite and clays along fractures. Some surfaces have slickensides.

Unit is locally somewhat calcareous with some thin calcareous veins within 284.5'- 286', and 296'- 300'. Other fractures-broken core intervals with chlorite or clays may have had the calcite leached out.
Coarser, metagabbro intervals include 269'- 273'?, 284'- 290'? (cataclastic), 294.7'- 302.1' (cataclastic), and 312'- 320'. Some of the coarser textured material occurs as patches in the finer metabasalt.

Rock is somewhat magnetic.

Sulfide content varies from a trace to 3%, and occurs as imperfect or partial pyrite cubes with golden to orangish oxidation(?). Highest amounts are within 284'- 290', 294.7'- 302.1', 304.3'- 315.5' and at 279.9'. A one cm, fibrous appearing epidote-chlorite(?)-amphibole tension vein occurs within 281'- 282.4'.

Unit is locally finely pitted (leaching? weathering?) with some larger ones to 5 mm (vesicles??) as in 302.1'- 305'.

Lithologic breaks run from 40 to 50 degrees to the core axis. Cleavage is rarely developed and runs about 15 degrees to the core axis. The basal foot of the unit shows increasing alteration.

320'- 325' Variably altered SAPROLITIC, SHEARED and BRECCIATED, dark greenish yellow to olive gray to light olive gray METAGABBRO-METABASALT and white QUARTZ VEINS(?).

Unit is very limonitic and clayey with original texture largely destroyed, especially within 320.5'- 324'. Local fault gouge occurs at 320.5' and within 323'- 324'.

The interval with chlorite and brecciated quartz (veins?) is at 321.7'- 322.1'. This may also contain a small amount of carbonate, pyrite, and a trace of sphalerite(?).

The interval 324'- 325' is altered, but has the original metagabbro textures intact. Alteration may be due to accentuated surficial weathering along shears.

Local slip surfaces have slickensides and manganese(?) oxides.

325'- 571' Dark greenish gray to olive black to greenish black fine-grained METABASALT and medium-grained METAGABBRO with LOCAL QUARTZ-CALCITE veins and light olive gray QUARTZ CARBONATE ALTERATION-REPLACEMENT.

Lithologies are similar to 269'- 320', but with decreasing breakage and pitting, and increasing veining (filled fractures) downward (from less surficial weathering and leaching?).

Rock is largely saussurite, amphiboles, sheet silicates, local epidote, blue quartz and variable carbonate. Some original ferromagnesian minerals may still exist. The metabasalts(?) may be flow breccias, with lesser tuffs and intrusives or perhaps finer-grained cataclastic gabbro (this latter is favored) except for the extreme

basal part of the drill hole. Metagabbro is probably intrusive although it may also occur as local coarser blebs in the basalt. Some of the medium-grained texture may result from recrystallization (accentuated by blue quartz and leucoxene?). Every gradation of textures exist, and contacts may be extremely gradational. No or little schistosity exists, and it is believed that later recrystallization has made the rock more "massive." The nature of the contacts is obscured by the cataclasis and local shearing.

Small shear zones occur within 334'- 338' (this is also the most broken interval of the unit) and at 342.1', 412.8', 416.3', 422.1', 424.1', 428', 431.8', 434.1', 438'- 440', 452', 452.8', 455'- 456', 478.7', 486'- 487', 489.5'- 490', 515.5'- 516.4', 531.6', and 549'- 549.5'. Intervals adjacent to the more mylonitic parts of the shears, and/or the finer grained intervals, tend to be slightly more pyritiferous (to 3%?). Some veins have been emplaced along shears, and have then subsequently been further sheared and brecciated.

Approximate intervals of the coarser (medium-grained) metagabbro are 325'- 340.5', 352.3'- 420.5'?, 421.5'?- 452.8', 456'- 480'?, and 487'- 498'.

The interval 452.8'- 454.5' contains predominantly round carbonate quartz blebs to 1 cm in size that may be amygdales or tectonic fragments(?).

The interval 325'- 365.5' contains scattered, mostly hairline quartz veins with vugs and ocassionally chlorite. The largest vein at 338' is 1 cm thick with elongate, oriented amphibole in the margins (tension vein).

Local silicification (with minor dolomite?) occurs from 352.5' to 357' and 361' to 363.5', and seems to be vein-fracture controlled.

The interval 365.5' to 571' sees an increasing amount of calcite in the quartz veins (infilling fractures, and brecciation of the quartz) along with a proportional decrease in quartz. The more major veins are located at 375', 383.6', 384', 387.7', 401.7', 410.5', 414.3', 452.8', 486'- 487', 490.1', 501.4'- 502', 522.7', 530.6'- 531.2', 531.5'- 531.8', 538.5', 548.3'- 558' scattered, 565.7'- 566.7' and 569'- 569.6'. Some veins have chlorite segregations (often angular, brecciated). These have the only well developed schistose fabric. Some are tension veins with calcite and chlorite(?) fibers(?) growing perpendicular to the vein walls.

The shear-chlorite, quartz, calcite vein (segregation?) at 486'- 487' has some crystalline hematitie in thin veins near its margins.

The core itself becomes more calcite rich with depth, especially 452'- 458' and 523'- 571' (with small relatively noncalcareous intervals).

The unit contains local intensive epidote alteration (in and around some veins and shears) within 378.8' to 439'. This is most prominent at 379.6'- 380', 393'- 404' (scattered), 409'- 410.5', 412'- 412.5', 414.5'- 415.5', and 422'- 439' (scattered).

Unit is nonmagnetic to very slightly magnetic.

571' E.O.H.

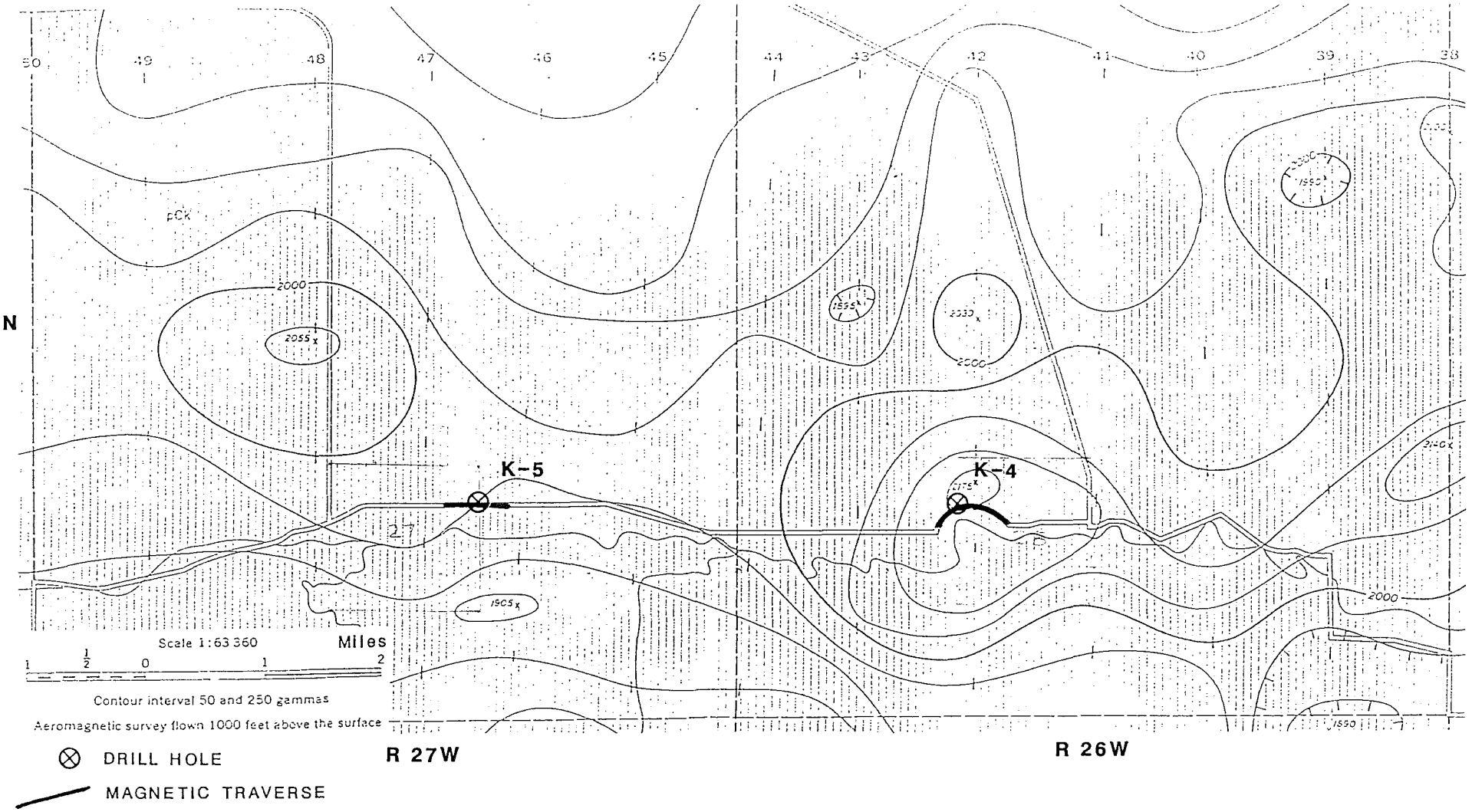


FIGURE 264-12. Aeromagnetic Map of a Portion of Koochiching County with Locations of DDH's K-4 and K-5, and Ground Magnetic Traverses (modified from Meuschke et al ,1957b).

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

K-4

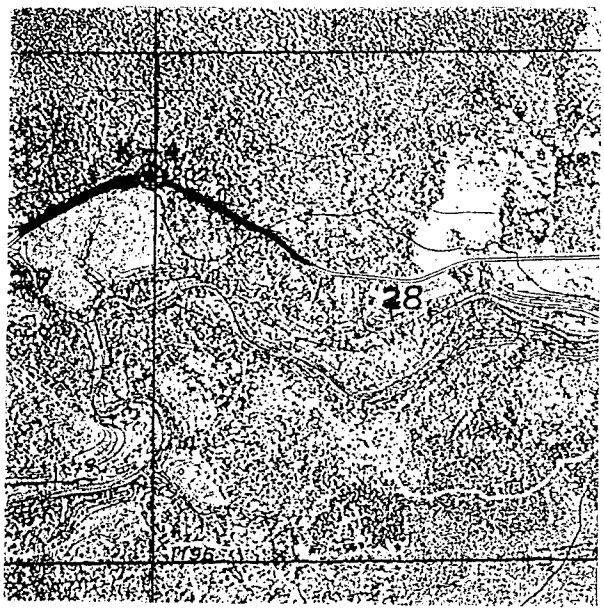
LOCATION INFORMATION

County:
KOOCHICHING

Legal Description T-R-S:
T.155N., R.26W., SEC. 29,
SE SE SE SE NE NE

Abbreviated T-R-S:
T.155N., R.26W., SEC. 29, AADDDD

7-1/2' U.S.G.S. Quadrangle:
BIGFALLS NW



SCALE 1:24000
MAGNETIC TRAVERSE

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
127'- 204'

Surface Elevation: (from 7-1/2' U.S.G.S. Quad)
1201'

Depth to Precambrian Bedrock:
127.5'

Total Depth:
204'

Elevation of Precambrian Bedrock:
1073.5'

Drill Hole Azimuth:
0 degrees

Drill Hole Inclination:
-75 degrees

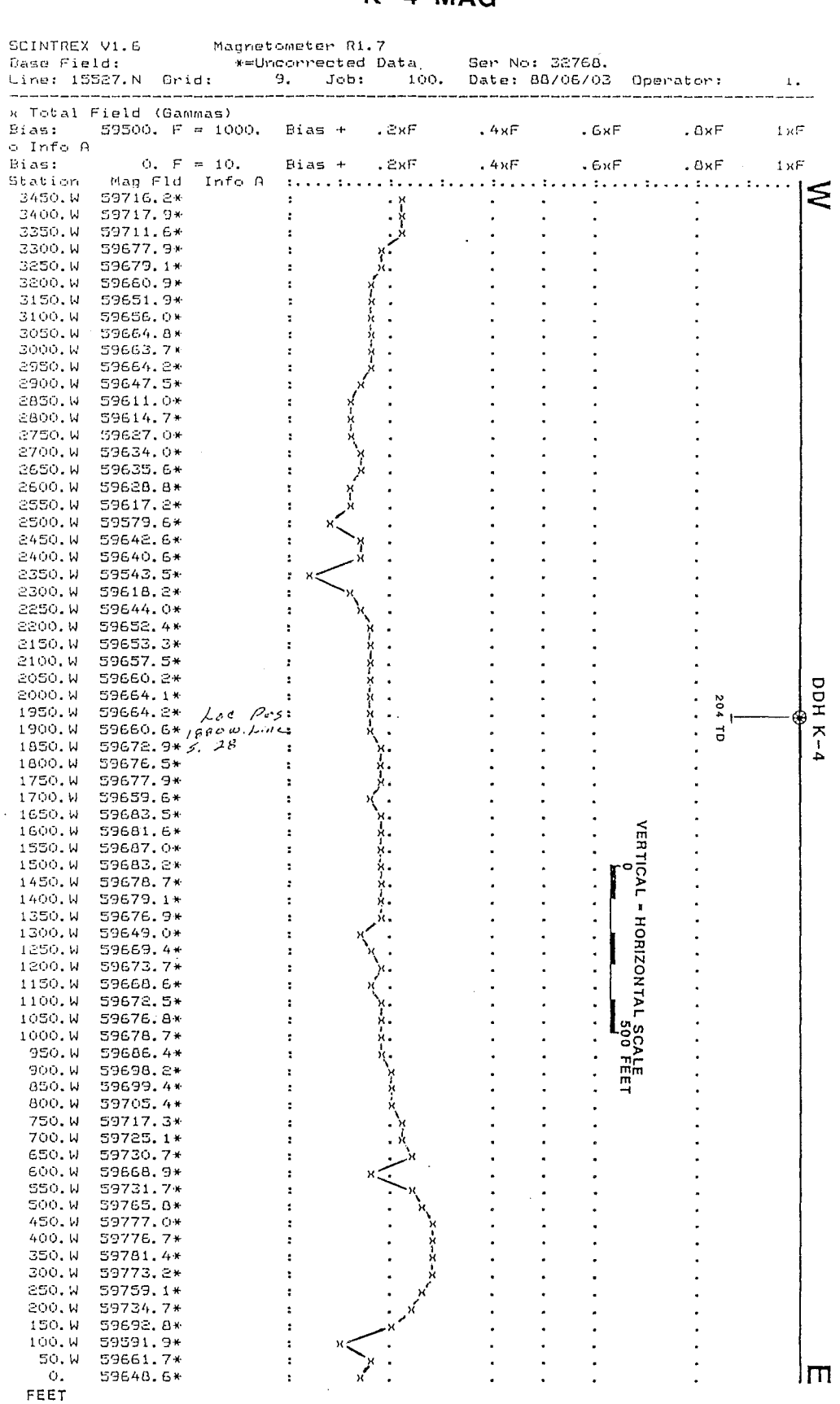
Acid Tests:

Depth Footage	Corrected Angle
124'	-75 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-13. Ground Magnetic Traverse with Drill Hole Location for DDH K-4.



LITHOLOGIC LOG FOR DDH K-4

0'- 127' OVERBURDEN.

No sample.

127'- 127.5' OVERBURDEN.

Cobbles of chloritic metavolcanics.

127.5'- 140.8' Medium light gray, fine to medium-grained BIOTITIC TONALITE GNEISS; with medium to coarse-grained, pale brown ADAMELLITE GNEISS LAYERS and dark gray, fine-grained BIOTITE-QUARTZ SCHIST-GNEISS XENOLITHS-LAYERS.

Biotite-quartz schist-gneiss is at 128.0'- 128.5' and 133.8'- 134.9'. These intervals are relatively melanocratic, while the remaining rock is leucocratic. Biotite SCHIST-GNEISS mode is:

40%	biotite
50%	quartz
10%	Na plagioclase
?%	cordierite(?)

Adamellite is found at 127'- 131.5' locally and 133'- 134'(?). The mode is:

35-40%	quartz
0-5%	biotite
25-30%	perthite
25-30%	Na plagioclase

The K-feldspar-perthite can be several cm in size, with the rock having a good igneous texture locally.

The mode of the tonalite (which is the predominant rock type) is:

30-40%	quartz
40-55%	Na plagioclase
5-10%	biotite
0-10%	cordierite?

The plagioclase is very white, with the quartz being slightly smokey and the perthite being pale pink.

Large quartz-plagioclase (and perthite?) veins occur at 128.5'- 129.2' and 139.8'- 140.8'.

140.8'- 150.7' Dark gray, fine-grained BIOTITE-QUARTZ SCHIST-GNEISS PALEOSOME with coarser crystalline QUARTZ-PLAGIOCLASE STREAKS.

Mode is similar to the more melanocratic rock in the above unit. Unit contains a trace to 1/2%(?) very fine disseminated pyrite?-pyrrhotite? and chalcopyrite.

Quartz-plagioclase stringers-veins are oriented 35 degrees to the core axis (some of this may be original compositional banding of rock before metamophism).

Basal contact is oriented 35 degrees to core axis.

Unit is very slightly magnetic(?).

150.7'- 175.0' Moderate reddish-brown, medium-grained to PEGMATITIC, BIOTITIC, locally GNEISSIC, GRANITE-ADAMELLITE.

Unit has good igneous texture locally.

Mode:

3-30%	biotite
25-40%	quartz
0-60%	K-feldspar
10-40%	plagioclase

More micaceous places also tend to be more quartz rich and to be finer-grained.

The least plagioclase (and the most K-feldspar) is within 157'- 160', and the plagioclase proportionately increases with depth below that.

The basal contact is oriented 25 degrees to the core axis.

175.0'- 178.3' Dark gray, fine-grained BIOTITE-QUARTZ SCHIST-GNEISS PALEOSOME, with minor QUARTZ PLAGIOCLASE STREAKS.

Unit is similar to 140.8'- 150.7'.

The unit contains a trace of sulfides, and may contain minor cordierite.

The basal contact is oriented 45 degrees to the core axis.

178.3'- 204' Mixed medium light gray, fine to medium-grained variably BIOTITIC TONALITE and pale brown, medium-grained to pegmatitic ADAMELLITE and ADAMELLITE GNEISS.

More adamellitic intervals are 179'- 185' and 191'- 204', especially 198'- 204'.

The mode is:

30-60%	K-feldspar (size to 6 cm).
20-50%	Na plagioclase
20-50%	quartz
2-10%	biotite
trace - 1%(?)	sulfide

The more biotitic intervals are within 185'- 191', where the rock is quite streaky (oriented 35 degrees to core axis) with compositional variations. This is largely paleosome, with the following mode:

3-50%	biotite
40-60%	quartz
10-30%	Na plagioclase

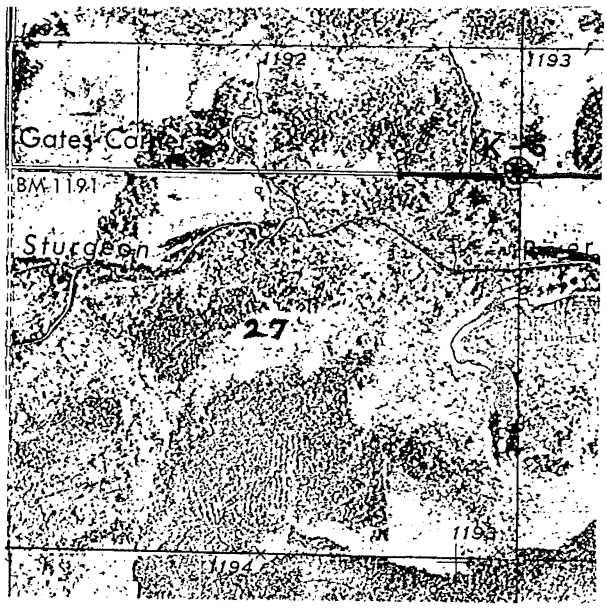
Minor pyrrhotite occurs on hairline fractures within the adamellitic intervals.

204.0' E.O.H.

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

K-5



SCALE 1:24000

MAGNETIC TRAVERSE

LOCATION INFORMATION

County:
KOOCHICHING

Legal Description T-R-S:
T.155N., R.27W., SEC. 27,
SE SE SE NE NE

Abbreviated T-R-S:
T.155N., R.27W., SEC. 27, AADDD

7-1/2' U.S.G.S. Quadrangle:
RIDGE NE

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
299'- 394'

Surface Elevation:(from 7-1/2' U.S.G.S. Quad)
1191'

Depth to Precambrian Bedrock:
299'

Total Depth:
394'

Elevation of Precambrian Bedrock:
892'

Drill Hole Azimuth:
356 degrees

Drill Hole Inclination:
-60 degrees

Acid Tests:

Depth Footage	Corrected Angle
294'	-61.5 degrees
394'	-64 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-14. Ground Magnetic Traverse with Drill Hole Location for DDH K-5.

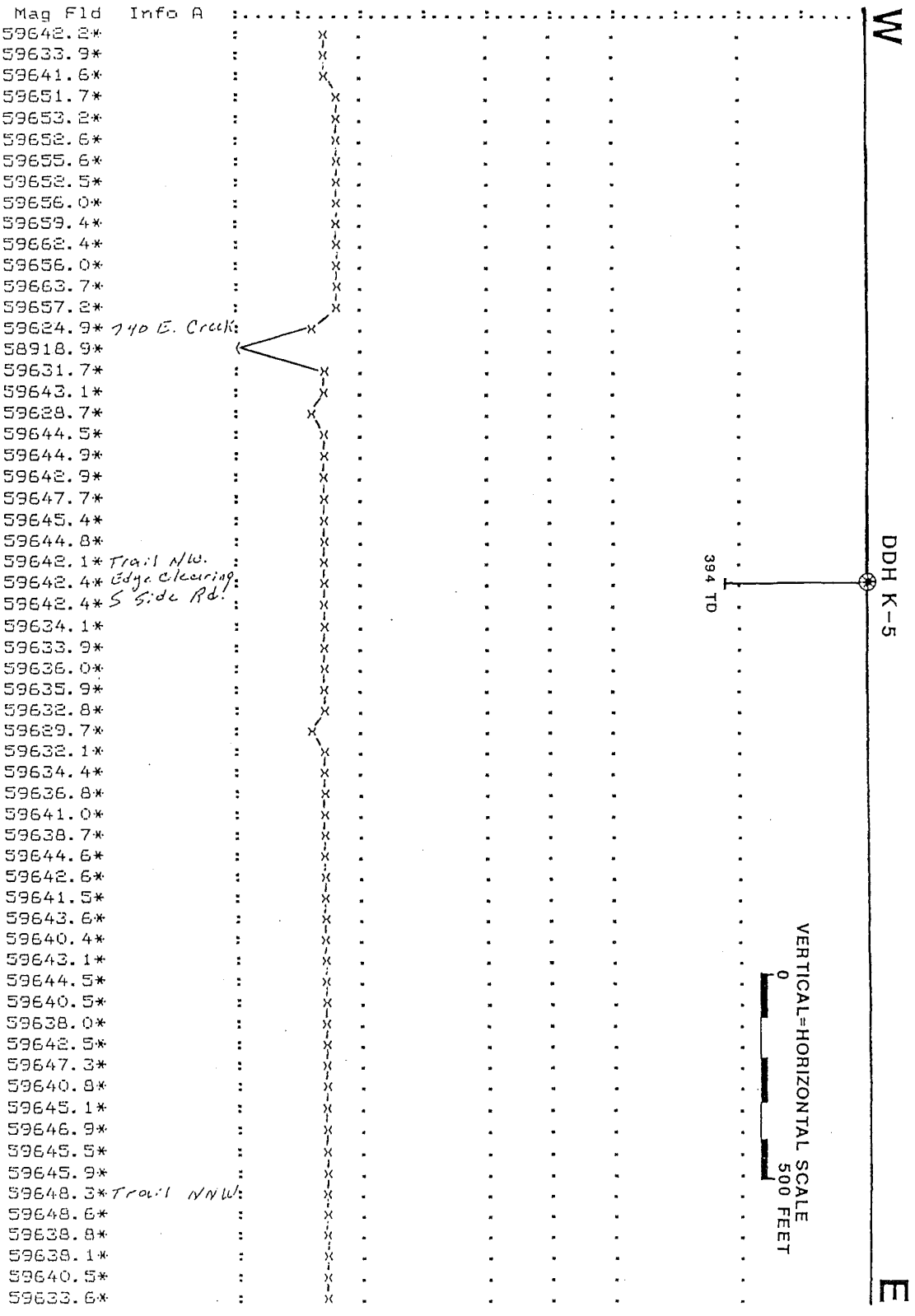
K-5 MAG

SCINTREX V1.6 Magnetometer R1.7
Base Field: *=Uncorrected Data Ser No: 32768.
Line: 15527.N Grid: 8. Job: 100. Date: 88/05/19 Operator: 1.

x Total Field (Gammas)
Bias: 59500. F = 1000. Bias + .2xF .4xF .6xF .8xF 1xF
o Info A
Bias: 0. F = 10. Bias + .2xF .4xF .6xF .8xF 1xF

Station	Mag Fld	Info A
0.	59642.2*	
50.E	59633.9*	
100.E	59641.6*	
150.E	59651.7*	
200.E	59653.2*	
250.E	59652.6*	
300.E	59655.6*	
350.E	59652.5*	
400.E	59656.0*	
450.E	59659.4*	
500.E	59662.4*	
550.E	59656.0*	
600.E	59663.7*	
650.E	59657.2*	
700.E	59624.9*	740 E. Creek
750.E	58918.9*	
800.E	59631.7*	
850.E	59643.1*	
900.E	59628.7*	
950.E	59644.5*	
1000.E	59644.9*	
1050.E	59642.9*	
1100.E	59647.7*	
1150.E	59645.4*	
1200.E	59644.8*	
1250.E	59642.1*	Trail N/W.
1300.E	59642.4*	Edge clearing
1350.E	59642.4*	S Side Rd.
1400.E	59634.1*	
1450.E	59633.9*	
1500.E	59636.0*	
1550.E	59635.9*	
1600.E	59632.8*	
1650.E	59629.7*	
1700.E	59632.1*	
1750.E	59634.4*	
1800.E	59636.8*	
1850.E	59641.0*	
1900.E	59638.7*	
1950.E	59644.6*	
2000.E	59642.6*	
2050.E	59641.5*	
2100.E	59643.6*	
2150.E	59640.4*	
2200.E	59643.1*	
2250.E	59644.5*	
2300.E	59640.5*	
2350.E	59638.0*	
2400.E	59642.5*	
2450.E	59647.3*	
2500.E	59640.8*	
2550.E	59645.1*	
2600.E	59646.9*	
2650.E	59645.5*	
2700.E	59645.9*	
2750.E	59648.3*	Trail NNW
2800.E	59648.6*	
2850.E	59638.8*	
2900.E	59638.1*	
2950.E	59640.5*	
3000.E	59633.6*	

FEET



LITHOLOGIC LOG FOR DDH K-5

0'- 299' OVERBURDEN.

No sample.

299'- 309.9' Variably weathered, mixed medium-grained CHLORITIC TONALITE GNEISS PALEOSOME, TONALITE GNEISS (PALEOSOME?), and pink CHLORITIC GRANITE PEGMATITE NEOSOME.

Rock is variably weathered, and locally broken (especially from 307'- 309.9'). Chlorite and clays predominate on fracture surfaces (from altering mica), with local limonite. Variation in the chlorite (originally biotite?) within the tonalite paleosome may reflect original bedding - compositional layering or perhaps neosome intrusion of the less biotite rich member. Chlorite varies from 3 to 25%, and is blue-green in color.

Neosome is predominantly microcline with lesser quartz and plagioclase, and up to 20% interstitial or veinlet controlled blue-green chlorite. The feldspar is often 1-2 cm, and contains quartz intergrowths. This lithology may also contain minor hornblende associated with saussuritized plagioclase (near the contacts with the tonalite).

Lithologic contacts are oriented 0-20 degrees to the core axis within the unit. The basal contact (shear?) is oriented 40 degrees to the core axis.

309.9'- 325.3' Medium dark gray, medium-grained CHLORITIC AMPHIBOLITE with IRREGULAR GRANITIC BLEBS, STRINGERS and VEINS.

Approximate mode of amphibolite is:

45-60%	hornblende (partially altered?)
5-15%	chlorite (grayish)
35-45%	plagioclase (saussuritized)
1-2%	leucoxene
1%	pyrite
2-5%?	quartz

Upper contact and other local shears (some associated with granite contacts) are serpentinitic and limonitic. These and hairline fractures control the pyrite distribution.

Some "granite" veins are 80% quartz.
The unit appears deformed, based on the local schistose nature of the rock and the irregular nature of granite which in some places looks like it was sweated out. Plagioclase is hematitically stained over much of the interval.

Most interval structures including shears are oriented 0-20 degrees to the core axis.

325.3'- 335.3' Variably altered, mixed grayish red, medium-grained CHLORITIC ADAMELLITE or CHLORITIC TONALITE GNEISS(PALEOSOME), and locally CHLORITIC GRANITE PEGMATITE NEOSOME.

The paleosome is predominant within 325.3'- 329.5' and 333'- 335' and is cut by hairline fractures (oriented 0-20 degrees to the core axis) with associated epidote, chlorite and pyrite (1-2%?) alteration with minor limonite. Chlorite may be altered biotite.

Feldspar is altered to sericite below 333'.

The neosome is pegmatitic with graphic quartz K-feldspar intergrowths. Interstitial chlorite (and/or veinlet controlled?) tends to form partings. There are also hairlike veins with pyrite (1-2%?), limonite staining and chlorite in areas adjacent to the paleosome, however, alteration effects are not as pronounced as they are in the paleosome. There are color variations in the feldspar from pink to red (veinlet controlled, hematitically altered); to white (partial albitization?) with local pale green saussuritization? and later apparent silicification. Some granite veins are oriented 50-70 degrees to the core axis.

335.3'- 371.3' Pink CHLORITIC, locally ALBITIZED GRANITE PEGMATITE NEOSOME.

Unit contains 3-20% chlorite, with the highest amounts near the top of the unit, where the core is also fairly broken. Core is also broken at 350', 355.5', 357.8', 364', 364.5', 365.5', 367' and 368'. Chlorite appears to be interstitial to the feldspar and quartz locally, and veinlet controlled otherwise. In extreme cases, chlorite appears to form the matrix where minor brecciation has occurred as at 368.5'- 369'. Slickensides are present on some chloritic fractures.
Feldspar is probably microcline and varies in color from reddish-pink to white, where it may have been albitized (veinlet controlled but irregular) and then partially saussuritized and silicified.
Graphic intergrowths with quartz are common. Quartz

(30% of the rock) distribution may also be fracture-veinlet influenced.

Most chloritic veinlets are irregular, but the more planar ones are oriented 15 to 30 degrees to the core axis. The basal contact is oriented 18 degrees to the core axis.

371.3'- 390.4' Medium gray, medium-grained BIOTITIC-CHLORITIC TONALITIC GNEISS, with few CHLORITIC GRANITE and QUARTZ VEINS.

Mode:

75%	plagioclase
10%	quartz
15%	chlorite (and actinolite?)

Feldspar is relatively fresh except for local veinlet controlled hematitic staining and hairline chloritic fractures-shears. These are oriented 0-30 degrees to the core axis, along with the thicker veins described next.

Quartz-chlorite-granitic veins occur at 374.1' (2 cm quartz chlorite vein), 376.5' (2 cm granitic material developed along chloritic shear), and similarly at 387'.

Chlorite may have been biotite. Some actinolite(?) may also be present.

The lower contact is oriented 33 degrees to the core axis.

390.4'- 394.0' Pink CHLORITIC, LOCALLY ALTERED GRANITE PEGMATITE NEOSOME.

Chloritic (5-10% of rock), albite (5-10% of rock) and quartz (5-15%) alteration appear to be fracture - vein controlled as far as distribution, although some quartz is found as intergrowths with the K-feldspar. Albitic feldspar appears to be locally saussuritized-chloritized, but silicification has replaced(?) these softer minerals.

Some chloritic fractures-shears have slickensides, and are oriented 40-50 degrees to the core axis. Others are quite irregular.

The rock contains partially assimilated tonalitic layers (oriented 40 degrees to core axis) or xenoliths at 392.0'- 392.1', which also has a trace of pyrite.

394' E.O.H.

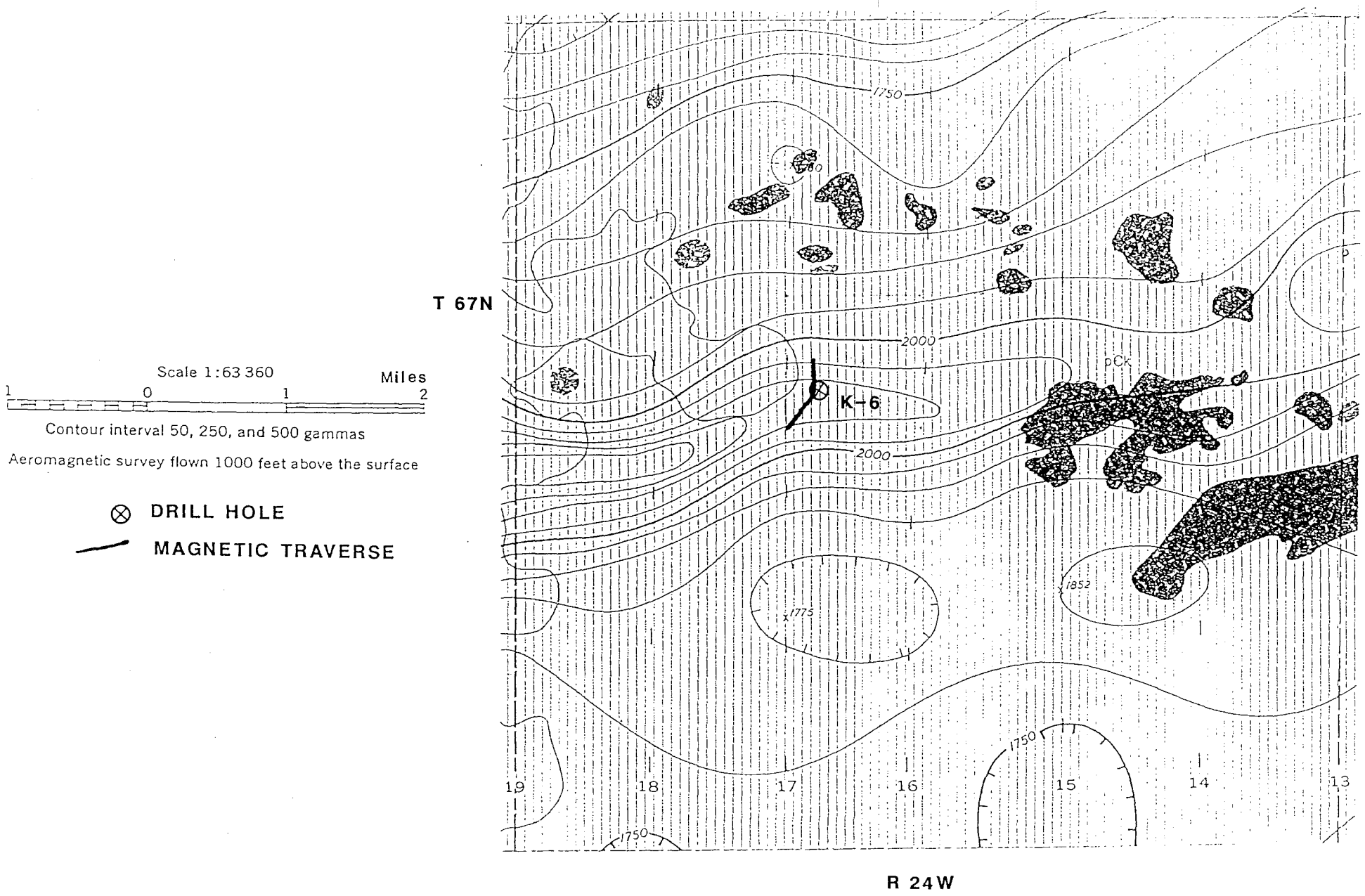


FIGURE 264-15. Aeromagnetic Map of a Portion of Koochiching County with Location of DDH K-6 and Ground Magnetic Traverse (modified from Meuschke et al ,1957c).

DRILL HOLE #:

K-6

LOCATION INFORMATION

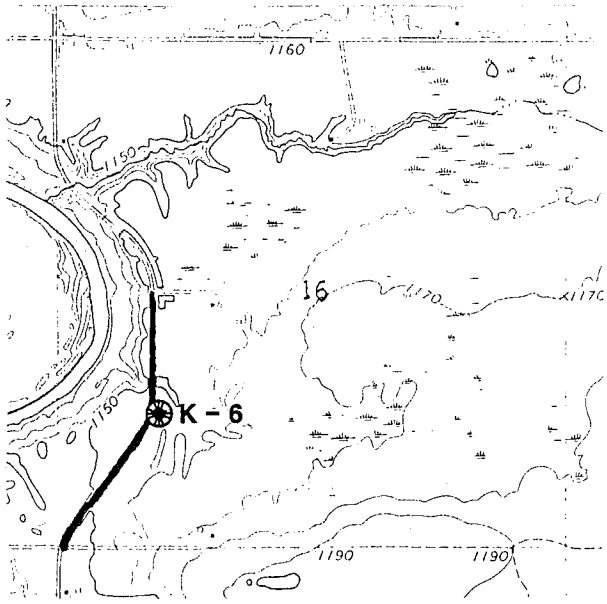
County:
KOOCHICHING

Legal Description T-R-S:
T.67N., R.24W., SEC. 16,
SW SE SE NW SW

Abbreviated T-R-S:
T.67N., R.24W., SEC. 16, CBDDC

7-1/2' U.S.G.S. Quadrangle:
ERICSBURG SW

DDH LOCATION MAP FROM U.S.G.S. QUAD



SCALE 1:24000
MAGNETIC TRAVERSE

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
129' - 213'

Surface Elevation:(from 7-1/2' U.S.G.S. Quad)
1152'

Depth to Precambrian Bedrock:
129'

Total Depth:
213'

Elevation of Precambrian Bedrock:
1023'

Drill Hole Azimuth:
--

Drill Hole Inclination:
-90

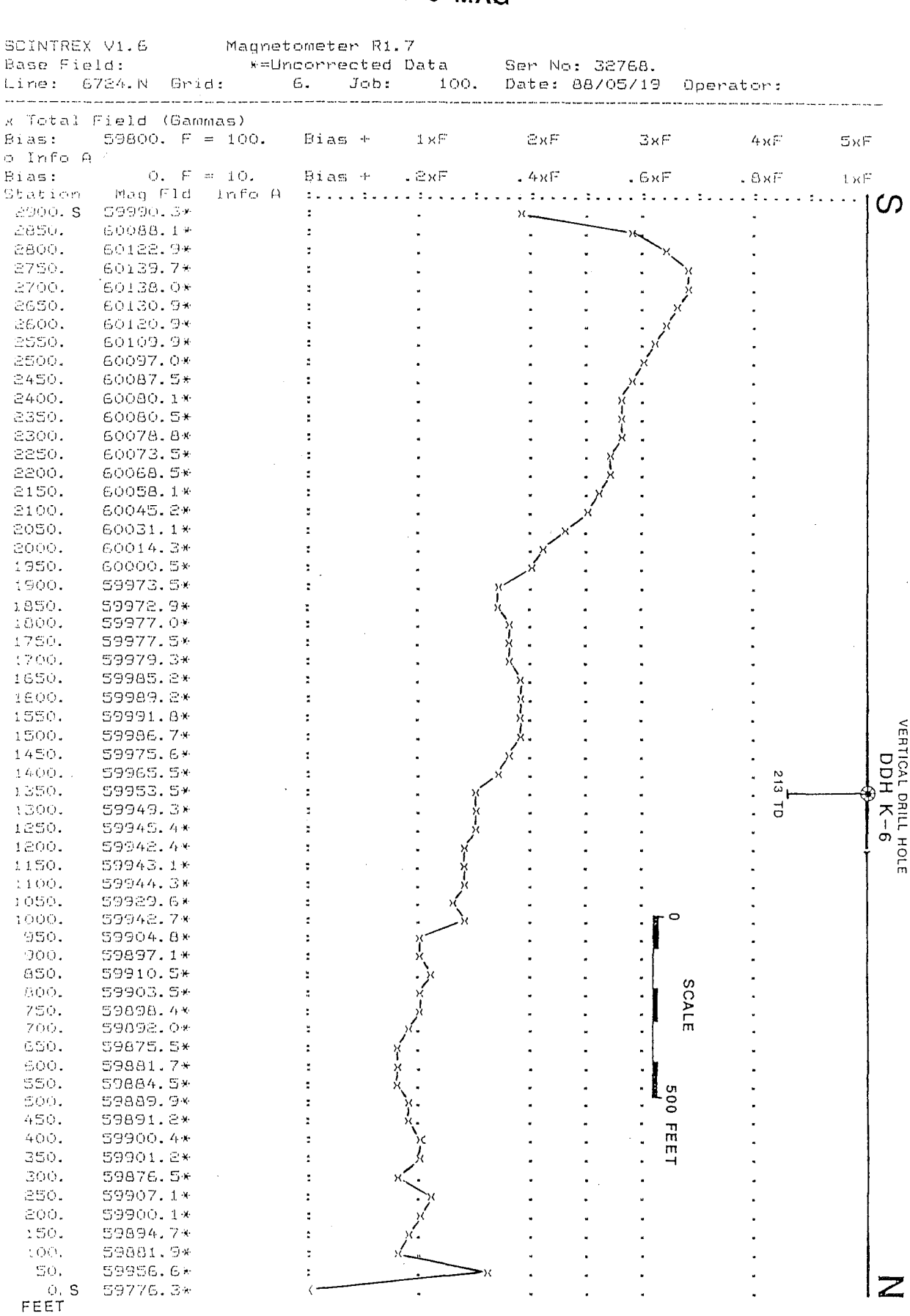
Acid Tests:

Depth Footage	Corrected Angle
120'	-89
213'	-89

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-16. Ground Magnetic Traverse with Drill Hole Location for DDH K-6.



LITHOLOGIC LOG FOR DDH K-6

0'- 129' OVERBURDEN.

Only a few metavolcanic pebbles, which are variably altered and weathered.

129'- 171.0' Variably BIOTITIC medium grained TONALITIC GNEISSIC PALEOSOME with local blebs and areas of pink coarse-grained to pegmatitic GRANITE NEOSOME and MIXED HYBRID rocks.

Core is locally broken with poor recovery, especially the more micaceous intervals between 129'-144', 154'-156' and 158'-160'.

There is some gradation between the rock types, however the least is with the pegmatoidal neosome which forms 25% of the recovered rock. The remainder is quartz diorite and hybrids.

The pegmatite mode (on one extreme) is:

60-80%	pink K feldspar (perthite).
20-40%	quartz
0-5%	albite
trace - several %	blue-green mica (chlorite or chloritized? biotite).

Quartz and K-feldspar are often graphically intergrown.

The other extreme is the tonalite with an approximate mode of:

40-70%	plagioclase
5-30%	quartz
5-30%	biotite

Most of the tonalite appears somewhat hybridized (and generally gneissic). Mica tends to be more chloritized within this and the more hybridized rock, especially in the upper part of the hole. Locally for short intervals within 134'- 144', the rock is a schist with 90% chloritized biotite.

The interval 161.6'- 171' is predominantly neosome, with the remaining part of the hole being paleosome and hybridized paleosome.

Besides the biotite altering to chlorite and clays, the plagioclase is also locally altered to sericite.

Granite neosome locally contains scattered thin calcite veins with pyrite and a trace of chalcopyrite(?).

171.0'- 213.0' Olive-black schistose to dark gray, fine to medium-grained BIOTITIC TONALITIC PALEOSOME; with medium-grained, yellowish-gray-white TONALITIC BLEBS and VEINS, more pinkish coarser grained GRANITIC VEINS and BLEBS (NEOSOME) and HYBRID VEINS and BLEBS.

Paleosome is locally altered (weathered? to clays).

Unit is 25% pink K-feldspar predominating neosome and hybrids and is found within 178.2'- 178.7', 183.2'- 183.5', 187.2'- 188.5', 196.5'- 206' (with scattered hybridization with plagioclase and xenoliths) 208.5'- 213' (with local plagioclase, some stringers and xenoliths of biotitic tonalite, locally medium-grained).

This material is largely intrusive, with thinner stringers within the micaceous paleosome often folded or boudinaged(?). Some may have been generated in place. Beside some hybridization, the material often has tonalitic xenoliths and stringers. The interval 196.5'- 206' contains biotite(?) that is altered (hydrothermally?) to chlorite and clays. The interval 200'- 202' has minor fracturing-brecciation with epidote fracture filling. The interval 201.2'- 201.3' is a hematitic clay gouge or fracture filling zone containing scattered quartz, K- feldspar, mica and epidote grains.

Unit contains light colored (relatively biotite free) tonalite and plagioclase predominating hybrid veins and blebs which occurs as veins and blebs (often irregular) within the more biotitic tonalite which is predominantly within 171.0'- 196' and 206'- 209.5'. Some material is intruded with some veins-layers ptygmatically folded; while in other places, it may be generated in place (biotite concentrated at margins). Several generations do appear to exist. This material appears to contain cordierite (to 20%) at least locally, as does the more biotitic tonalite paleosome.

The micaceous tonalitic paleosome found within 193.8'- 201' contains 90% or more mica with little quartz and feldspar. Mica is somewhat altered to clays, with 2 micas (biotite and phlogopite?) otherwise being present. This interval may represent very aluminous, clayey metasediments or hydrothermally altered intervals.

Unit contains a trace to 1/2%(?) pyrite blebs (with limonitic oxidation). This is typically found in the granitic neosome and locally in the light colored tonalite or hybrids. This may be associated with hairline veins (?) fractures.

Rock modes for the granitic and light colored tonalite (except for local cordierite here) are similar to the first unit. The mode of the more micaceous, finer grained paleosome of this unit is:

25-95%	biotite (and phlogopite, chlorite?)
4-65%	quartz
1-20%	plagioclase
0-10%?	cordierite

213' E.O.H.

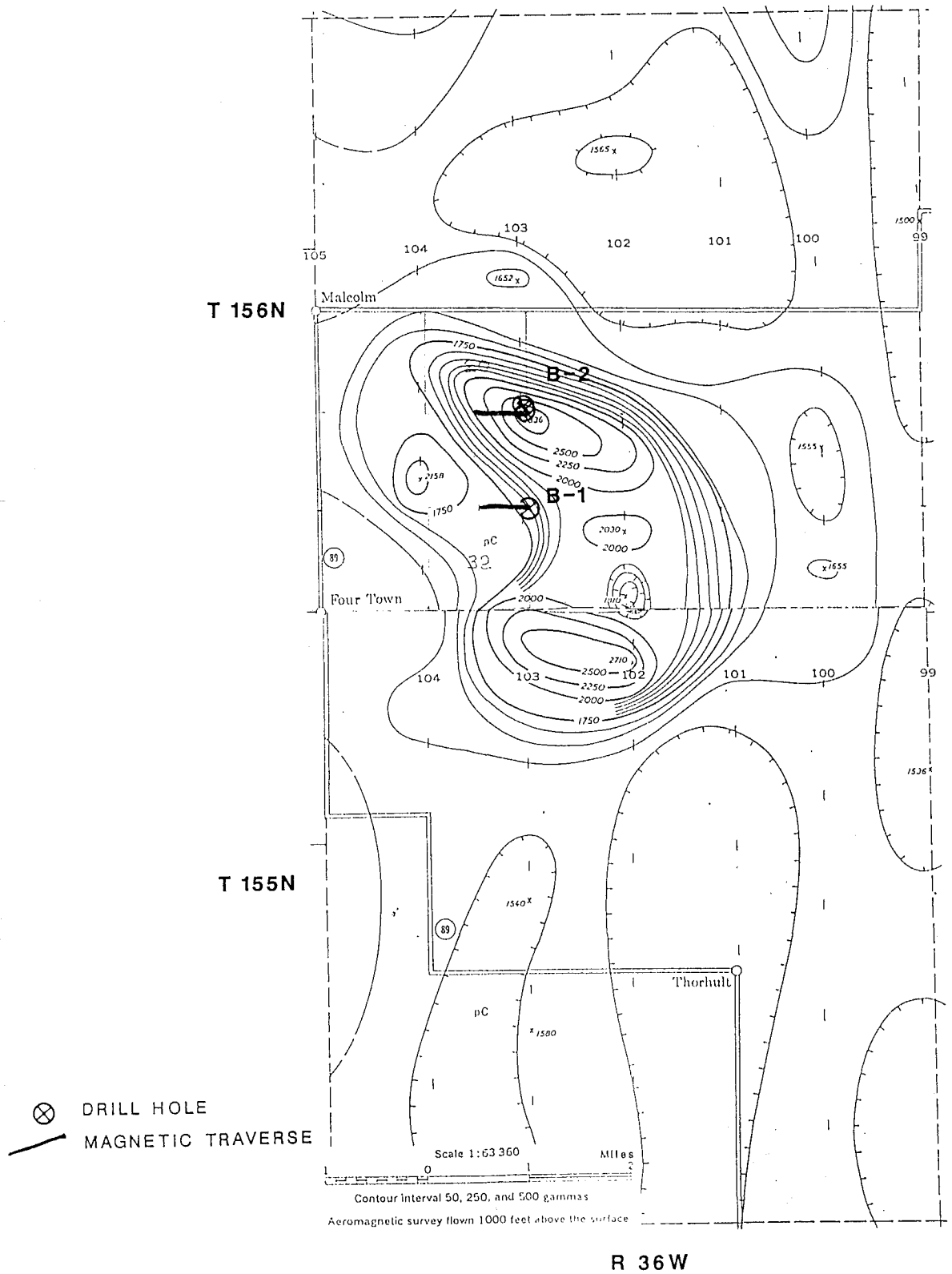
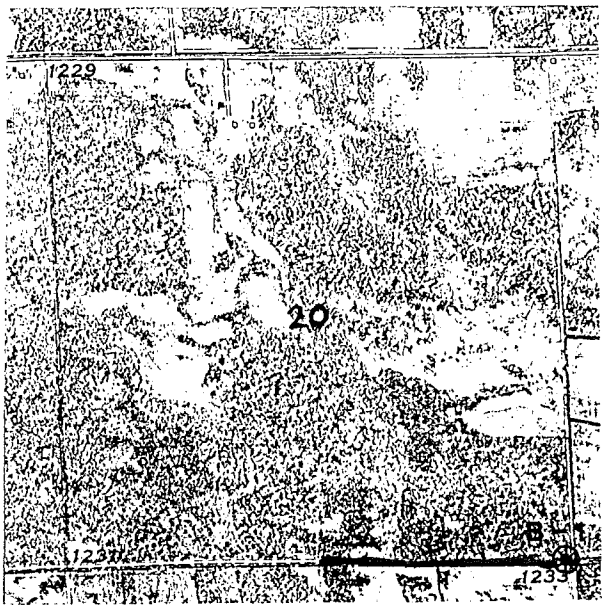


FIGURE 264-17. Aeromagnetic Map of a Portion of Beltrami County with Locations of DDH's B-1 and B-2, and Ground Magnetic Traverses (modified from Meuschke et al ,1957 and 1957a).

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

B-1



SCALE 1:24000
MAGNETIC TRAVERSE

LOCATION INFORMATION

County:
BELTRAMI

Legal Description T-R-S:
T.156N., R.36W., SEC. 20,
SE SE SE SE SE

Abbreviated T-R-S:
T.156N., R.36W., SEC. 20, DDDDD

7-1/2' U.S.G.S. Quadrangle:
FOURTOWN

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
282' - 415'

Surface Elevation:(from 7-1/2' U.S.G.S. Quad)
1233'

Depth to Precambrian Bedrock:
295'(?)

Total Depth:
415'

Elevation of Precambrian Bedrock:
938'(?)

Drill Hole Azimuth:
--

Drill Hole Inclination:
-90 degrees

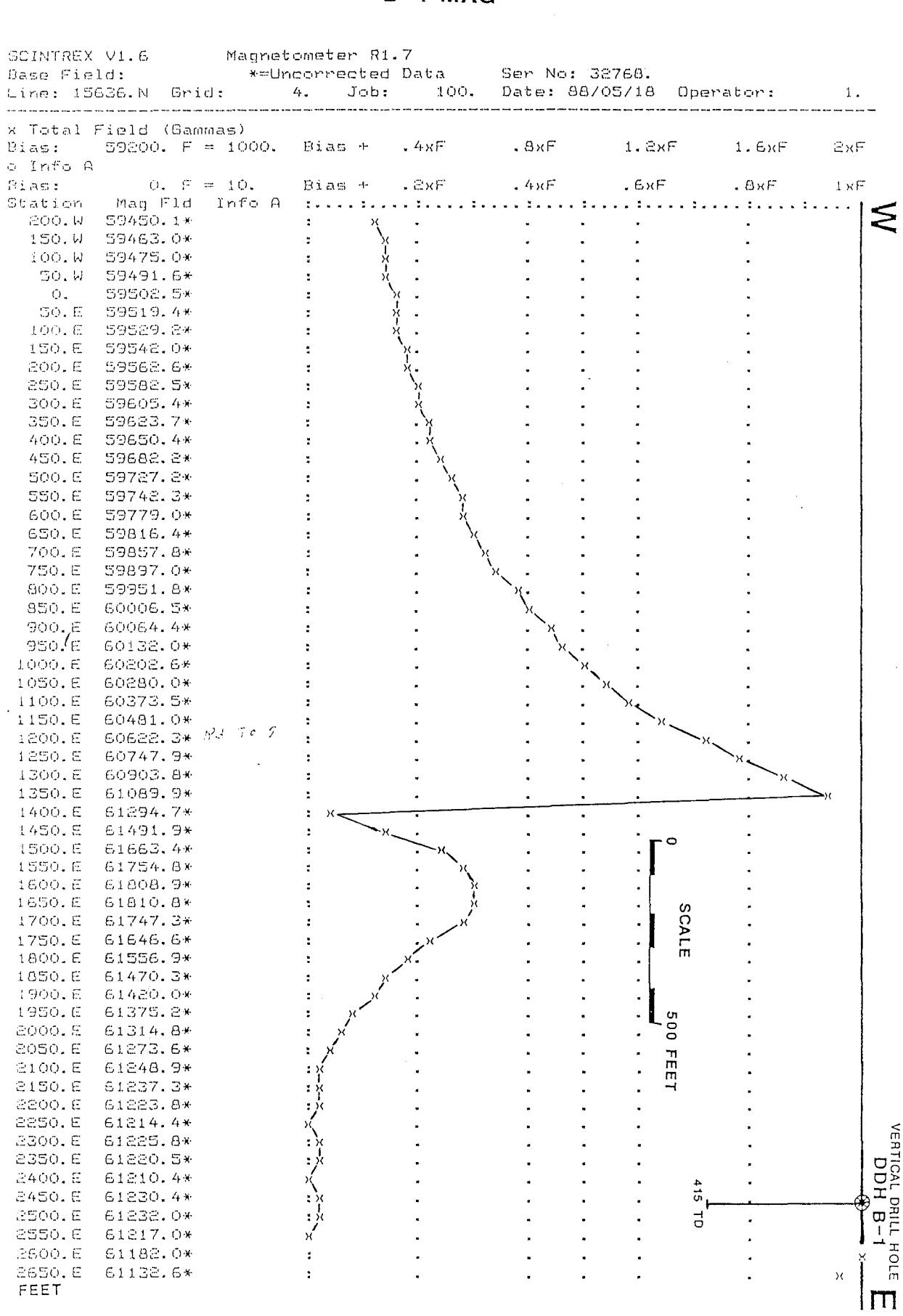
Acid Tests:

Depth Footage	Corrected Angle
282'	-89 degrees
415'	-86 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-18. Ground Magnetic Traverse with Drill Hole Location for DDH B-1.



LITHOLOGIC LOG FOR DDH B-1

0'- 282' OVERBURDEN.

No sample.

282'- 282.3' OVERBURDEN.

Cobbles are of garnet, biotite, quartz, plagioclase schist and gneiss. Both cobbles are relatively fresh with minor surficial weathering and are medium to coarse-grained. More schistose cobble is locally epidotitic and chloritic.

282.3'- 361.0' Variably weathered, broken, brecciated olive-gray to grayish-olive very fine-grained REGOLITHIC CLAYEY CHLORITIC, QUARTZ CARBONATE?? PHYLLITE with pyrite or limonite.

In general, unit is a claystone with unit becoming less clayey-altered with depth. Broken intervals are predominantly 282.3'- 295', 310'- 312', 324'- 325', 331'- 350', 354'- 355', 357'- 361'. Locally, these have angular fragments with interstitical clay such 345'- 347'. This may result from weathering, glacial brecciation and/or tectonic brecciation.
Foliation-bedding runs 0-20 degrees to core axis.

Pyrite and limonite (pyrite replacements?) occur as very fine disseminations (less than 1%) and along minor hairline fractures.
358'- 358.2' contains a 1 cm irregular vein with quartz, chlorite, pyrite and local yellow efflorescence.

Unit has poor recovery locally.

Upper part (13') of drill hole may be glacial overburden.

361.0'- 395.5' Light olive-gray to olive-gray to grayish-black SERICITE-CHLORITE-CARBONATE-SILICEOUS PHYLLITE with local pyrite and minor quartz calcite pyrite veins.

Unit gets darker toward the base, and is somewhat clayey toward the top. Fabric is relatively massive but rock maintains a phyllitic sheen, with a very fine corrugated appearance. Core surface is somewhat lighter colored than internal surfaces.

Core is locally broken at 371' and 371.7'- 372.3'.
Bedding and foliation run 0-18 degrees to the core axis.

Hairline quartz calcite pyrite veins are subparallel to the fabric and are especially common in the basal 20 feet. A few larger (quartz predominating) veins to 1.5 cm have this orientation and are attenuated-boudinaged. The largest ones are within 375'- 377' with some having melanterite efflorescence.

Later, local calcite-pyrite predominating veins occur at 369.3'- 369.5', 379.4', 371.2'- 371.6', 391.9'- 392.5'. At 367.7' is a 3 mm vein that has much black chlorite. These veins cut across the quartz veins and more across the rock fabric, and may or may not exhibit folding.

Rock becomes more calcareous with depth.

395.5'- 409.3' Olive-gray, locally broken, fine-grained TUFFACEOUS SILICEOUS SCHIST with lesser SERICITE-CHLORITE-CARBONATE(?) PHYLLITE.

This unit behaved in a more brittle manner when deformed and is extensively cut by hairline fractures and breaks with minor quartz, pyrite, and disseminated black oxide(?) and local calcite. The most broken interval is within 405'- 408.5'. Rock is somewhat calcareous in upper few feet.

Predominant fractures-bedding run 0-20 degrees to the core axis with a second set of fractures running from 55 to 90 degrees to the core axis.

Pyrite content is probably 1% or less. Local yellow efflorescence occurs near the base of the unit, especially on the second set of fractures.

409.3'- 415' Grayish-black and olive-black massive variably TUFFACEOUS and SILICEOUS SERICITIC-CHLORITIC(?) CALCAREOUS PHYLLITE.

Unit is cut by few hairline quartz-calcite pyrite veinlets, running 0-20 degrees to core axis.

Some fractures more perpendicular to core axis also have calcite and pyrite.

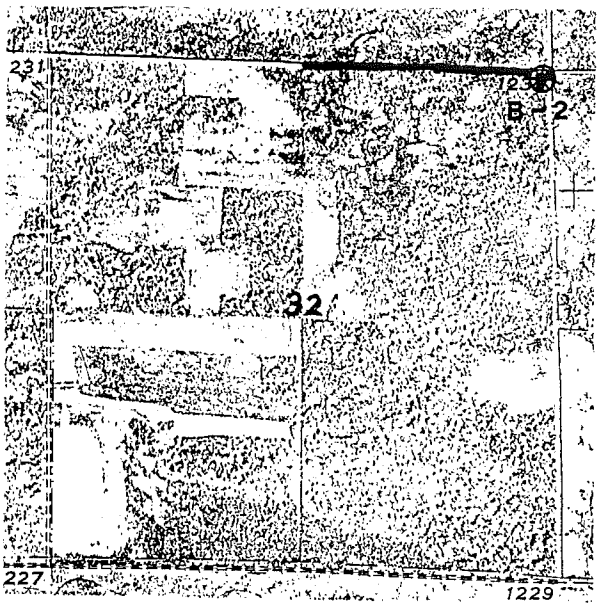
This unit is more like 361.0'- 395.5' than 395.5'- 409.3'.

415' E.O.H.

DDH LOCATION MAP FROM U.S.G.S. QUAD

DRILL HOLE #:

B-2



SCALE 1:24000
MAGNETIC TRAVERSE

LOCATION INFORMATION

County:
BELTRAMI

Legal Description T-R-S:
T.156N., R.36W., SEC. 32,
NE NE NE NE NE

Abbreviated T-R-S:
T.156N., R.36W., SEC. 32, AAAAA

7-1/2' U.S.G.S. Quadrangle:
FOURTOWN

DRILL HOLE PARAMETERS

Core Size:
NQ (1.875" diameter)

DNR Core Storage Interval:
253' - 430'

Surface Elevation:(from 7-1/2' U.S.G.S. Quad)
1230'

Depth to Precambrian Bedrock:
291'

Total Depth:
430'

Elevation of Precambrian Bedrock:
939'

Drill Hole Azimuth:
--

Drill Hole Inclination:
-90 degrees

Acid Tests:

Depth Footage	Corrected Angle
250'	-83 degrees
415'	-87 degrees

ADDITIONAL MATERIALS AVAILABLE FOR EXAMINATION

Drill core

FIGURE 264-19. Ground Magnetic Traverse with Drill Hole Location for DDH B-2.

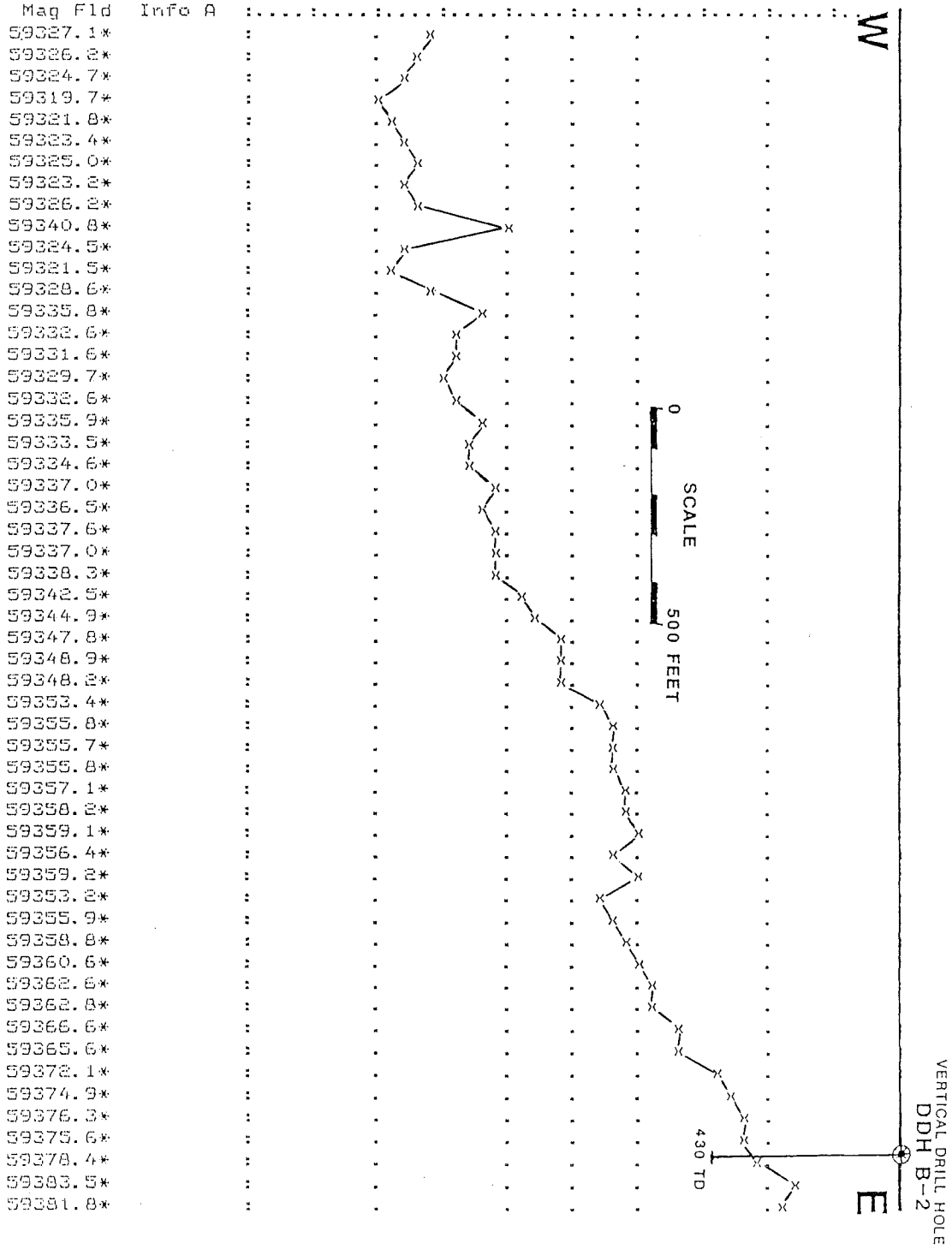
B-2 MAG

SCINTREX V1.6 Magnetometer R1.7
Base Field: *=Uncorrected Data Ser No: 32768.
Line: 15636.N Grid: 3. Job: 100. Date: 88/05/18 Operator: 1.

x Total Field (Gammas)
Bias: 59200. F = 100. Bias + .2xF .4xF .6xF .8xF 1xF
o Info A
Bias: 0. F = 10. Bias + .2xF .4xF .6xF .8xF 1xF

Station	Mag Fld	Info A
0.	59327.1*	
50.E	59326.2*	
100.E	59324.7*	
150.E	59319.7*	
200.E	59321.8*	
250.E	59323.4*	
300.E	59325.0*	
350.E	59323.2*	
400.E	59326.2*	
450.E	59340.8*	
500.E	59324.5*	
550.E	59321.5*	
600.E	59328.6*	
650.E	59335.8*	
700.E	59332.6*	
750.E	59331.6*	
800.E	59329.7*	
850.E	59332.6*	
900.E	59335.9*	
950.E	59333.5*	
1000.E	59334.6*	
1050.E	59337.0*	
1100.E	59336.5*	
1150.E	59337.6*	
1200.E	59337.0*	
1250.E	59338.3*	
1300.E	59342.5*	
1350.E	59344.9*	
1400.E	59347.8*	
1450.E	59348.9*	
1500.E	59348.2*	
1550.E	59353.4*	
1600.E	59355.8*	
1650.E	59355.7*	
1700.E	59355.8*	
1750.E	59357.1*	
1800.E	59358.2*	
1850.E	59359.1*	
1900.E	59356.4*	
1950.E	59359.2*	
2000.E	59353.2*	
2050.E	59355.9*	
2100.E	59358.8*	
2150.E	59360.6*	
2200.E	59362.6*	
2250.E	59362.8*	
2300.E	59366.6*	
2350.E	59365.6*	
2400.E	59372.1*	
2450.E	59374.9*	
2500.E	59376.3*	
2550.E	59375.6*	
2600.E	59378.4*	
2650.E	59383.5*	
2700.E	59381.8*	

FEET



LITHOLOGIC LOG FOR DDH B-2

0'- 253' OVERBURDEN.

No sample.

253'- 291' OVERBURDEN. GLACIAL TILL.

This moderately hard to hard glacial sediment is a light olive-gray to olive-gray calcareous, sandy, silty till; with boulders, cobbles, abundant pebbles and granules. Largest clasts and lithologies are:

253' - 253.2'	Medium grained, greenish-gray ALTERED GABBRO.
253.2'- 255'	Fine-medium grained, light olive-gray to dark gray, pyrite bearing, heterogeneous QUARTZ-AMPHIBOLITE SCHIST.
255.7'- 256.2'	Pink, medium-coarse grained, somewhat porphyritic, BIOTITIC QUARTZ MONZONITE.
258.7'- 258.9'	Dark green-gray, fine grained METABASALT-METADIABASE.
259.1'- 259.4'	Pale pink, fine-medium grained, BIOTITIC QUARTZ DIORITE.
259.5'- 259.8'	Medium grained, dark green AMPHIBOLITIC QUARTZ MONZONITE GNEISS.
260.9'- 261.0'	Fine-medium grained, dark gray-pinkish MIGMATITIC GNEISS.
261.0'- 261.1'	Chloritic, epidotitic grayish-green SHEARED METABASALT.
261.1'- 261.3'	Medium-coarse grained, pinkish BIOTITIC QUARTZ MONZONITE GNEISS.
264.1'- 264.3'	Pink, medium to coarse grained QUARTZ MONZONITE GNEISS(?).
271' - 271.2'	Medium grained, dark green spotted amphibolitic pink QUARTZ MONZONITE.
274.1'- 274.3'	Gray, fine-medium grained GNEISSIC BIOTITIC QUARTZ DIORITE with coarse K-feldspar porphyroclasts(?).
277' - 277.3'	Fine-medium grained, medium dark gray METADIABASE-METAGABBRO.
280.1'- 280.3'	Greenish-black deformed METABASALT with quartz veins.
280.7'- 282'	Grayish-red, medium grained, variably magnetic, OXIDE BEARING GRANITE.
282.1'- 282.2'	Medium light gray, medium grained DOLOMITIC QUARTZARENITE(?).
283.1'- 283.6'	Dusky yellow-brown, medium grained QUARTZ MONZONITE with hornblende.
284' - 285.1'	Greenish-black, medium grained, locally siliceous, altered METAGABBRO.

286.5'- 286.6'	Greenish-gray ANDESITIC PORPHYRY.
286.8'- 287.0'	Greenish-gray ANDESITIC PORPHYRY.
287.0'- 287.3'	Dark greenish-gray deformed DACITIC METATUFF.
288' - 288.3'	Spotted biotitic medium grained pinkish QUARTZ MONZONITE.

Other clast lithologies include black chert, carbonates (Paleozoic?), quartz, schists, gneisses-plutonic rocks, and phyllite.

Basal .5' contains numerous angular pebbles of bedrock with scattered surface limonite and clays.

Core recovery is locally poor.

291.0'- 358.3' Dark greenish-gray recrystallized interbedded ARGILLACEOUS-SERICITIC SILICEOUS DOLOMITIC(?) SILTSTONE with pyrite and fine-medium grained DACITIC(?) METATUFF-METAGRAYWACKE with pyrite.

Bedding is at a shallow angle to the core axis (0-20 degrees), so little stratigraphy is cut. Beds are locally graded. Unit is leached (of calcite?), with these affects decreasing downward.

Unit contains 1/2 to 5% pyrite-pyrrohotite(?). This occurs as fine disseminations, thin (less than 1mm) bedding parallel partings, and along thin (hairline to several mm) veins-shears. Sulfides along the latter veins are dark and appear to be more unstable. These veins-shears are sericitic, chloritic with leaching. Calcite remnants do occur in these veins, often with orange limonitic rims adjacent to the wall rock. Sulfide distribution may result from the veins, or the veins may simply have allowed for concentration of dissemmated pyrite. Thicker veins of this type are at 317.5'- 317.9' (1 cm, vuggy oriented at 17 degrees to core axis) and 321.5'- 321.9' (1 cm, vuggy, developed along bedding plane, oriented 17 degrees to core axis). Other veins-shears are predominantly granular chlorite, iron carbonate and quartz such as 318.0'- 318.2' (1 cm, oriented 38 degrees to core axis), 320.0' (2 mm, oriented 32 degrees to core axis) and 333.9' (5 mm, oriented 50 degrees to core axis). Some veins-shears have slickensides, especially some of those with chlorite. Thinner hairline veins have contributed to breakage in some intervals, namely 294'- 302', 305'- 310', 312'- 319', 342'- 343'. These features run 0-20 degrees to the core axis and are generally subparallel to bedding and may be an expression of a poorly developed schistosity.

Unit has tended to develop a yellow or white coating of sulphates (melanterite?) with the heaviest amounts within 295'- 302', 305'- 310', 315'- 317', 321'- 333', 336'- 343' and 348'- 358.3'.

Coarser sediment contains scattered quartz eyes, partially saussuritized plagioclase phenocrysts along with small rip up clasts and rock fragments. The finer grained matrix is chloritic and sericitic with minor carbonate.

358.3' - 430' Dark greenish-gray, recrystallized interbedded CALCAREOUS SERICITIC SILICEOUS SILTSTONE with pyrite; and fine-medium grained CALCAREOUS DACITIC(?) METATUFF-METAGRAYWACKE with pyrite.

Unit similar to previous unit, except that it is minimally leached, and it is fairly calcareous.

Bedding is still 0-20 degrees to core axis and is also locally graded.

Hairline veining tends to subparallel bedding, with chlorite, pyrite and calcite. Some have slickensides, although some that cut the core at higher angles (25-40 degrees to core axis) tend to be more irregular. These thin veins are locally plentiful enough to promote broken intervals in the core such as 367'- 372.5', 378'- 381.5', and 397'- 397.5'. These intervals also tend to have higher amounts of pyrite and efflorescence.

A few scattered veins are thicker and contain quartz, calcite, local minor Fe carbonate, local pyrite, and local minor chlorite. These are usually at a higher angle to the core axis, but do occur at all angles. Largest ones are at 386.5' (4 mm, oriented 50 degrees to core axis), 406.0' (1 cm, oriented 40 degrees to core axis) and at 429.8' (6 mm, oriented 40 degrees to core axis).

Pyrite amount varies from a trace to several percent, with the distribution primarily controlled by the hairline veining as noted earlier. Yellow (and orange) efflorescence is primarily in the upper part of the unit (363'- 382') but does occur throughout. Orange coating may be limonite on Fe carbonates, not sulfates on sulfides. Orange efflorescence is noticeable at 358.6' and 371'- 375'.

430' E.O.H.

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Project 264

Geodrilling Report

Appendices

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
HB-87-1	20765		670-680		Gabbro without shears and alteration.
			PARTIAL INTERVALS		
	20766		670-680		Gabbro with shears and alteration.
HB-87-4	20734		724.5-725.4		Syenite.
	20735		724-733		Syenite with veins.
			PARTIAL INTERVALS		
SL-2	22092		77.5-81.9		Hornfels.
	22093		82.7-83.7		Hornfels with pyrite-chlorite-serpentine along fracture.
	22094		100.0-101.4		Hornfels with quartz-carbonate-pyrite vein.
	22095		138.5-142.0		Hornfels with pyrite-chlorite-serpentine along fractures.
	22096		178.0-180.0		Hornfels with pyrite along fracture.
	22097		195.0-199.0		Hornfels.
	22113		203-205		Hornfels with pyrite-chlorite along fracture.
	22114		215-216.6		Vein, shear with quartz-carbonate-zeolites, amphiboles, oxides.
	22115		216.6-219.0		Hornfels with siderite, recrystallized margin to calcsilicate zone.
	22137		219.0-221.0		Hornfels, with local siderite and porphyroblastic biotite.
	22116		238.0-239.2		Hornfels with serpentine-chlorite along fracture.
	22117		250.7-252.2		Hornfels with talc-serpentine along fracture.
	22218		260.2-264.1		Hornfels with pyrite-marcasite along fractures.
	22119		280.3-283.3		Hornfels with small dike, fractures with pyrite.
	22120		283.3-285.2		Dike of gabbro (metasomatized?).

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
SL-2(cont.)	22143		285.2-287.2		Hornfels adjacent to dike.
	22169		314.0-317.9		Calcsilicate zone, hornfels, minor granophyre melt.
	22170		317.9-319.8		Hornfels, calcsilicates, minor massive sulfide.
	22173		345-352.2		Hornfels; with fractures with pyrite, serpentine? chlorite?, carbonate.
	22174		352.2-361.8		Hornfels; with fractures with chlorite-quartz-carbonate-pyrite-serpentine?
	22175		363.0-367.5		Hornfels; with fractures with chlorite-quartz-carbonate-pyrite.
	22176		367.5-370.0		Calcsilicate zone, hornfels (minor), granophyre, fractures with chlorite, pyrite.
	22177		381.0-391.0		Hornfels (siliceous); with fractures with quartz-carbonate-chlorite, 1-2 cm pyrite nodules.
	22178		391.0-401.0		Hornfels with fractures with pyrite-chlorite-carbonate.
	22179		408.1-411.0		Calcsilicate zone with fayalite, hornfels.
	22180		411.0-415.0		Hornfels with fractures with carbonate-pyrite-chlorite.
	22181		445.0-449.0		Hornfels with fractures with pyrite-chlorite-carbonate.
	22182		454.0-457.3		Hornfels; with fractures with pyrite-chlorite with 5 cm quartz-carbonate, vuggy, vein; pyrite.
	22219		476-479		Hornfels with 1 cm quartz-calcite-chlorite-pyrite vein.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
SL-2(cont.)	22220		481.5-482.9		Hornfels with 8 cm quartz?-calcite-wollastonite? vein with vugs, pyrite.
	22221		486.5-488.1		Calcsilicate zone.
	22222		504-507		Hornfels with chlorite-carbonate fractures.
	22223		510-513		Hornfels with chlorite, pyrite fractures and 1 cm pink quartz-carbonate-wollastonite? vein.
	22224		514.5-517.1		Hornfels with chlorite, pyrite fractures.
	22225		519.7-523		Hornfels with chlorite, pyrite fractures.
	22226		533-540		Hornfels with minor calcsilicates, chlorite, pyrite fractures.
	22227		540-541.5		Calcsilicate zone.
	22228		541.5-543.8		Hornfels with minor calcsilicates, quartz, chlorite veins.
	22229		576-578.6		Hornfels with chlorite, pyrite veins.
	22230		578.6-583.2		Hornfels.
	22231		583.2-583.9		Calcsilicate zone.
	22232		583.9-585		Hornfels with minor calcsilicates.
	22233		600.5-602.4		Hornfels.
	22234		602.4-603.2		Calcsilicate zone.
	22235		603.2-605.0		Hornfels.
	22236		642-646.9		Hornfels with 2 mm quartz-pyrite-chalcopyrite-calcite vein.
	22237		653.9-657.0		Hornfels, calcsilicates, leached carbonate zones.
	22238		661.2-662.9		Hornfels with muscovite-paragonite veins.
	22239		666.8-667.3		Hornfels; with carbonate leached interval, introduction of fine pyrite?.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
SL-2(cont.)	22240		678-679.1		Hornfels; with chlorite, pyrite veins and calcsilicates.
	22241		679.1-680.0		Calcsilicate zone.
	22242		705.0-706.8		Hornfels; with minor veins with calcite, muscovite, pyrite.
	22243		707.7-708.7		Hornfels with small calcsilicate zone.
	22244		748.0-751.0		Hornfels with .3' calcsilicate zone and 1-3 mm chlorite-quartz-pyrite vein.
	22245		757.6-762.0		Hornfels with 8 mm quartz-carbonate-pyrite vein and .7' quartz-muscovite calcsilicate zone.
	22246		768.7-769.9		Hornfels with partial leaching of carbonate; with minor calcsilicates, pyrite.
	22247		796.7-798.0		Hornfels; with .2' calcsilicate zone, and fractures with pyrite-chlorite-serpentine?.
	22248		825.0-827.0		Hornfels.
	22249		828.7-831.7		Hornfels with .5' of carbonate leached intervals.
	22250		854.7-855.7		Hornfels with .2' leached carbonate zone and .3' calcsilicate zone.
	22251		878.2-879.8		Hornfels; with hairline vein with chlorite, pyrite (marcasite?), carbonate?.
	22252		888.2-891.0		Hornfels; with calcsilicate zone, carbonate leached zone with pyrite, quartz and muscovite vein.
	22253		893.0-895.0		Hornfels.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-1	22254		280-290.3		Gray to gray red to green, broken, weathered phyllitic, tuffaceous dolomitic schist.
	22255		290.3-296.3		Gray, with minor gray red and gray green, phyllitic, tuffaceous dolomitic schist.
	22256		296.3-303		Broken, gray red, green gray and gray, phyllitic tuffaceous dolomitic schist.
	22257		303-312		Gray red, gray green and gray, phyllitic tuffaceous dolomitic schist.
	22258		312-319		Gray, broken, phyllitic tuffaceous dolomitic schist, with gouge zones.
	22259		319-325		Gray red, gray and gray green, phyllitic tuffaceous schist.
	22260		325-328.5		Gray, phyllitic tuffaceous dolomitic schist, with gouge zones.
	22261		328.5-343		
		22261-A		328.5-335.7	Gray, red gray, green gray, somewhat phyllitic, tuffaceous dolomitic schist .
		22261-B		335.7-343	Gray, red gray, green gray, tuffaceous dolomitic schist.
	22262		343-350		Gray red, gray green, and gray, tuffaceous dolomitic schist, with broken intervals, pits.
	22263		350-357		Gray, tuffaceous dolomitic schist, without pits and with minor veins.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-1(cont.)	22264		357-366.3		Gray, red gray, green gray, tuffaceous dolomitic schist, with pits.
	22265		366.3-381.3		Gray, tuffaceous dolomitic schist, without pits and with minor veins.
	22266		381.3-391.0		Gray, red green gray, tuffaceous dolomitic schist, with dolomitic gouge.
	22267		391.0-406.0		Green gray, tuffaceous dolomitic schist, with minor veins.
	22268		406.0-421.0		Green gray, tuffaceous dolomitic schist, with minor veins.
	22269		421.0-425.8		Argillaceous, tuffaceous dolomitic schist, with black argillite at contact.
	22270		425.8-431		Schistose dolosiltstone.
	22271		431-440		Schistose dolosiltstone, with minor veins.
	22272		440-445		Locally sericitic (argillitic), schistose dolosiltstone, with gouge.
	22273		445-454		Locally sericitic (argillitic), schistose dolosiltstone, with gouge.
	22274		454-461.9		Sericitic (argillitic) schistose dolosiltstone, with minor gouge.
	22275		461.9-468.9		Dark gray, dark green gray, sericitic, chloritic schist, with quartz eyes.
	22276		468.9-482		Gray, red gray, green gray, dolomitic, siliceous, crystal, tuffaceous schist.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-1(cont.)	22277		482-497		Gray, dolomitic, siliceous, crystal, tuffaceous schist, with gouge, breakage.
	22278		497-508		Gray, dolomitic, siliceous, crystal, tuffaceous schist, with quartz-muscovite veins.
	22279		508-518.9		Gray, red gray, green gray, dolomitic, sideritic, siliceous schist, with quartz, muscovite veins, breakage.
	22280		518.9-522		Broken, mylonitic, tuffaceous schist and mylonitic phyllite.
	22281		522-524		Chlorite, serpentine gouge, mylonite, with disrupted quartz masses.
	22282		524-526		Broken, altered gabbro (serpentine-chlorite), with hairline dolomite, muscovite veins.
	22283		526-532		Altered, metagabbro, with thin carbonate veins and thin ultramylonite.
	22284		532-540		Metagabbro; with hairline chlorite veins and local alteration.
	22285		540-550		Metagabbro; with hairline chlorite veins, local alteration, ultramylonite.
	22286		550-557		Metagabbro; with hairline chlorite veins, local, calcite vein, alteration, ultramylonite.
	22287		557-564		Metagabbro; with few hairline chlorite veins, some alteration.
K-3	22288		223-228		Grayish olive, slightly calcareous, sandy, clayey, silty till, with pebbles.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-3(cont.)	22289		228-239		Olive gray to pale brown, slightly calcareous, clayey, silty till, with saprolitic bedrock fragments, limonite.
	22740		239-242		Grayish olive to dark yellowish brown, sandy, silty, clayey till, with pebbles.
	22741		242-250		Dark yellowish brown, somewhat calcareous, saprolitic meta-basalt, with brecciation, much clay.
	22742		250-255		Dark yellowish brown to moderate brown, somewhat calcareous, saprolitic, metabasalt; with much brecciation, clay.
	22743		255-258		Moderate brown to dark yellowish brown, saprolitic, metabasalt, with much clay.
	22744		258-263		Dark yellowish brown, slightly calcareous, saprolitic metabasalt, with much clay.
	22745		263-269		Dark yellowish brown to moderate olive gray, slightly calcareous, saprolitic metabasalt, with much clay.
	22746		269-273		Grayish olive, fine medium grained, altered metagabbro; broken with fractures, clay.
	22747		273-279		Olive gray, broken, variably altered, fine-grained, meta-basalt-metagabbro.
	22748		279-284		Greenish black, locally pyritic, fine-grained, locally broken metabasalt.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-3(cont.)	22749		284-290		Dark gray, greenish black, pyritic, broken, medium grained, cataclasized metagabbro.
	22750		290-294.7		Dark greenish-gray, locally broken, fine-grained metabasalt.
	22751		294.7-302.1		Dark greenish gray, locally broken and altered, pyritic, medium grained metagabbro, with calcite veins.
	22752		302.1-304.3		Greenish and dark greenish gray, broken, fine-grained metabasalt.
	22753		304.3-312		Dark greenish gray, locally broken, pyritic, fine and medium-grained metagabbro-metabasalt.
	22754		312-320		Greenish black, medium-grained, broken, locally pyritic metagabbro, with local epidote.
	22755		320-325		Dark greenish yellow to olive gray, variably altered, sheared metagabbro.
	22756		325-332		Dark grayish green, locally fractured, medium-grained metagabbro.
	22757		332-340		Medium dark gray, locally fractured, medium-grained metagabbro, with quartz vein.
	22758		340-349		Locally sheared, veined, fractured, greenish black, medium-grained metagabbro-flow breccia?.
	22759		349-352		Olive black, fine medium-grained metagabbro, with pyrite.
	22760		352-357.3		Black, fine medium-grained metagabbro, with light olive gray silicification.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-3(cont.)	22761		357.3-361		Grayish black, fine medium-grained metagabbro, with minor quartz-chlorite veins.
	22762		361-365.5		Dark greenish gray, medium-grained metagabbro; with silicification and minor quartz-chlorite veins.
	22763		365.5-378.8		Grayish black to greenish black, fine medium-grained metagabbro; with quartz-calcite veins, silicification.
	22764		378.8-388		Greenish black, fine medium-grained metagabbro; with epidote, quartz, calcite veins.
	22765		388-399		Greenish black, fine medium-grained metagabbro; with epidote, pyrite, and veins, with quartz, calcite, chlorite.
	22766		409.0-419.1		
		22766-A		409.0-414.0	Green black to dark green gray, fine medium-grained metagabbro; with epidote, shears, quartz-calcite-chlorite veins.
		22766-B		414.0-419.1	Green black to dark green gray, fine medium-grained metagabbro; with epidote, shear, quartz-calcite-chlorite veins.
	22767		419.1-425		Dark gray and dark greenish gray, fine medium grained metagabbro; with pyrite, epidote, minor quartz-calcite veins.
	22768		425-435		Dark greenish gray, medium-grained metagabbro; with pyrite, epidote, minor veins.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-3(cont.)	22769		435-444		Dark greenish gray, fine medium-grained metagabbro; with shears, epidote, minor quartz-calcite veins.
	22770		445.8-451.9		Dark greenish gray, fine medium-grained metagabbro-metabasalt; with pyrite, some shearing.
	22771		451.9-456.2		Dark greenish gray, fine-grained, calcareous, amygdaloidal?, metabasalt and/or sheared metagabbro.
	22772		456.2-466		Dark greenish gray, fine medium-grained, locally calcareous, metagabbro; with pyrite, minor quartz-calcite veins, shears.
	22773		473-480		Dark greenish gray, mostly fine-grained metabasalt-metagabbro; with local shears, minor quartz-calcite veins.
	22774		485.5-491		Dark greenish gray, medium-grained metagabbro; with shears, chlorite-quartz-calcite-hematite vein.
	22775		491-497		Dark greenish gray, medium-grained metagabbro; with minor shears, quartz-calcite veins, pyrite.
	22776		500-510		Dark greenish gray, fine medium-grained metagabbro-metabasalt; with pyrite, quartz-calcite veins.
	22777		512-517		Dark greenish gray, fine medium-grained metagabbro; with quartz-calcite-chlorite veins and pyrite.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-3(cont.)	22778		517-523		Dark greenish gray, fine medium grained metagabbro; with quartz-calcite-chlorite veins, shears and pyrite.
	22779		523-531		Dark greenish gray, fine, minor medium-grained, calcareous metagabbro; with quartz-calcite veins & pyrite.
	22780		531-539		Dark greenish gray, fine medium-grained, calcareous metabasalt; with chlorite-calcite-quartz shears, veins, pyrite.
	22781		539-547.1		Dark greenish gray, fine medium-grained, calcareous metabasalt; with chlorite-calcite-quartz veins, pyrite.
	22782		547.1-556.5		Dark greenish-gray, fine-medium grained, calcareous metabasalt; with chlorite-calcite-quartz veins, shears, pyrite.
	22783		565-571		Dark greenish-gray, fine-grained, calcareous metabasalt; with chlorite-calcite-quartz veins.
OUTCROP	20729		OUTCROP		Quartz veins, with pyrite, chalco-pyrite in specimen #20732.
	20730		OUTCROP		Fine-grained quartz, biotite schist (siliceous tuff?).
	20731		OUTCROP		Veins & mylonite in #20730, with quartz-carbonate-limonite-pyrite-Mn oxides?.
	20732		OUTCROP		Siliceous metatuff (porphyroblastic).

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-4	22858		127.5-134.9		Biotitic tonalite gneiss and ademellite gneiss and biotitic schist-gneiss.
	22859		134.9-140.8		Biotitic tonalite gneiss and ademellite gneiss.
	22860		140.8-150.7		Fine-grained biotite-quartz gneiss-schist with minor sulfides (paleosome).
	22861		150.7-155.3		Medium-grained to pegmatitic ademellite gneiss.
	22862		155.3-164.0		Medium-grained to pegmatitic granite-ademellite.
	22863		164.0-175.0		Medium-grained to pegmatitic ademellite.
	22864		175.0-178.3		Fine-grained biotite-quartz gneiss-schist (paleosome).
	22865		178.3-184.0		Medium-grained to pegmatitic ademellite with minor sulfides and minor tonalite.
	22866		184.0-191.0		Fine to medium-grained, variably biotitic tonalite gneiss and minor ademellite.
	22867		191.0-194.5		Variably biotitic tonalite and medium-grained to pegmatitic ademellite.
	22868		194.5-197.5		Medium-grained to pegmatitic ademellite with minor sulfides.
	22869		197.5-204.0		Medium-grained to pegmatitic ademellite with minor sulfides.
K-5	22842		299.0-309.3		Chloritized, biotitic tonalite with tonalite and chloritic granitic pegmatite intrusives.
	22843		309.3-318.0		Medium-grained micaceous amphibolite with local granite and limonite.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-5(cont.)	22844		318.0-325.3		Medium-grained micaceous amphibolite with minor granite, pyrite.
	22845		325.3-329.5		Fine to medium-grained, gray red biotitic ademellite gneiss with minor granite veins.
	22846		329.5-332.8		Chloritic granite pegmatite.
	22847		332.8-335.3		Medium-grained biotitic ademellite-tonalite gneiss with minor pyrite.
	22848		335.3-340.3		Chloritic granite pegmatite.
	22849		340.3-347.0		Locally broken, chloritic granite pegmatite.
	22850		347.0-351.0		Chloritic granite pegmatite.
	22851		351.0-357.0		Chloritic granite pegmatite.
	22852		357.0-364.0		Chloritic granite-quartz monzonite pegmatite.
	22853		364.0-370.8		Chloritic granite-quartz monzonite pegmatite.
	22854		370.8-374.0		Chloritic granite pegmatite and medium-grained gray ademellite gneiss with pyrite.
	22855		374.0-382.0		Medium-grained, gray red ademellite gneiss with pyrite, chlorite fractures.
	22856		382.0-390.3		Medium-grained, gray red ademellite gneiss with minor granite, chlorite fractures.
	22857		390.3-394.0		Chloritic granite-monzonite pegmatite.
K-6	22828		134.0-144.0		Medium to coarse-grained quartz monzonite hybrid with minor chloritized biotite schist.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-6(cont.)	22829		144.0-148.0		Medium to coarse-grained quartz monzonite hybrid and tonalite (micaceous).
	22830		148.0-153.5		Medium to coarse-grained quartz monzonite hybrid and tonalite (micaceous).
	22831		153.5-161.5		Locally broken medium to coarse-grained micaceous quartz monzonite hybrid and tonalite.
	22832		161.5-171.0		Granite pegmatite; with minor calcite, pyrite veins, and quartz monzonite hybrid.
	22833		171.0-178.0		Fine-grained biotitic tonalite paleosome; with tonalite veins with minor hybridization.
	22834		178.0-180.0		Hybridized tonalite with local biotitic tonalite xenoliths.
	22835		180.0-187.0		Fine-grained biotitic tonalite paleosome; with tonalite veins with local hybridization.
	22836		187.0-193.0		Hybridized tonalite with local biotitic tonalite intervals.
	22837		193.0-194.8		Biotite-phlogopite schist; with minor tonalite and biotitic tonalite paleosome.
	22838		194.8-200.0		Hybridized tonalite and mica schist and granite neosome.
	22839		200.0-202.0		Granite neosome with minor mica schist and fracturing, brec-ciation with gouge, epidote.
	22840		202.0-206.4		Locally hybridized granite neosome with local mica schist and paleosome.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
K-6(cont.)	22841		206.4-213		Granite neosome with minor hybridization and paleosome.
B-1	22785		282.3-295		Olive gray, brecciated, broken, clayey regolith.
	22786		295-300		Olive gray, clayey regolith.
	22787		300-312		Locally broken, brecciated, clayey, olive gray regolith, with minor limonite.
	22788		312-325		Locally broken, brecciated, olive gray, clayey regolith, with minor pyrite.
	22789		325-332		Olive gray, clayey regolith, with minor pyrite.
	22790		332-345		Broken, brecciated, olive gray, clayey regolith.
	22791		345-350		Locally broken, brecciated, olive gray, clayey regolith, with minor pyrite.
	22792		350-355		Locally broken, brecciated, olive gray, clayey regolith, with minor pyrite.
	22793		355-358		Locally broken, brecciated, olive gray, clayey regolith, with minor pyrite, limonite.
	22794		358-361		Broken, brecciated, olive gray, clayey regolith, with quartz, pyrite, chlorite vein.
	22795		361-365		Olive gray, siliceous-carbonate-sericite-chlorite phyllite, with pyrite.
	22796		365-370.9		Olive gray, siliceous-carbonate-sericite-chlorite phyllite, with pyrite.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
B-1(cont.)	22797		370.9-375		Locally broken, olive gray, siliceous-carbonate-sericite-chlorite phyllite, with pyrite.
	22798		375-379		Olive gray, siliceous-carbonate-chlorite-sericite phyllite, with pyrite, veins.
	22799		379-385		Olive gray, siliceous-carbonate-chlorite-sericite phyllite; with pyrite, veins.
	22800		385-389		Olive gray, siliceous-carbonate-chlorite-sericite phyllite with pyrite, no veins.
	22801		389-395.5		Olive gray, siliceous-carbonate-chlorite-sericite phyllite; with veins, pyrite.
	22802		395.5-403		Olive gray, broken, tuffaceous, siliceous schist & phyllite.
	22803		403-406		Olive gray, broken, tuffaceous, siliceous schist & phyllite.
	22804		406-409.3		Olive gray, broken, tuffaceous, siliceous schist & phyllite.
	22805		409.3-415		Olive gray, siliceous, carbonate, chloritic, sericitic phyllite, with veins, pyrite.
B-2	22806		291.0-300.0		Dark green gray, locally broken, fine to medium-grained dacitic metatuff.
	22807		300.0-305.0		Dark green gray, fine to medium-grained dacitic metagraywacke and argillitic-sericitic siltstone.
	22808		305.0-311.0		Dark green gray, fine to medium-grained dacitic metagraywacke and sericitic siltstone with hairline pyrite veins.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
B-2(cont.)	22809		311.0-318.0		Dark green gray, fine to medium-grained dacitic metagraywacke and sericitic siltstone with chlorite-sericitic-calcite-pyrite veins.
	22810		318.0-321.1		Dark green gray, fine to medium-grained dacitic metagraywacke and sericitic siltstone with chlorite-iron carbonate veins.
	22811		321.1-331.1		Dark green-gray, fine to medium-grained dacitic metagraywacke and sericitic siltstone with hairline pyrite veins, efflorescence.
	22812		331.1-333.0		Dark green gray, fine to medium-grained dacitic metagraywacke with chlorite, iron carbonate veins.
	22813		333.0-337.0		Dark green gray, fine to medium-grained dacitic metagraywacke with few hairline pyrite veins.
	22814		337.0-341.0		Dark green gray, fine to medium-grained dacitic metagraywacke with efflorescence.
	22815		341.0-345.0		Dark green gray, locally broken, fine to medium-grained dacitic metagraywacke and siltstone with pyrite veins, efflorescence.
	22816		345.0-351.0		Dark green gray, fine to medium-grained dacitic metagraywacke with minor hairline pyrite veins, efflorescence.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
B-2(cont.)	22817		351.0-358.3		Dark green gray, fine to medium-grained dacitic metagraywacke with minor hairline pyrite veins, efflorescence.
	22818		358.3-365.0		Dark green gray, fine to medium-grained, calcareous, dacitic metagraywacke and sericitic siltstone, with minor pyrite veins.
	22819		365.0-371.0		Dark green gray, fine to medium-grained, calcareous, dacitic, metagraywacke; with minor leached pyrite, calcite veins.
	22820		371.0-381.1		Dark green gray, fine to medium-grained, calcareous, dacitic, metagraywacke and sericitic siltstone; with pyrite veins, minor breakage, efflorescence.
	22821		381.1-391.0		Dark green gray, fine to medium-grained, calcite, dacitic, metagraywacke and sericitic siltstone; with minor calcite, pyrite veins.
	22822		391.0-395.0		Dark green gray, fine to medium-grained, calcite, dacitic, metagraywacke and sericitic siltstone; with minor chlorite-calcite-pyrite veins.
	22823		395.0-405.0		Dark green gray, fine to medium-grained, calcite, dacitic, metagraywacke and sericitic siltstone; with minor chlorite-calcite-pyrite veins.

PROJECT 264
SAMPLE LIST

DDH	SAMPLE #	SUBSAMPLE #	OVERALL SAMPLE FOOTAGE	SUBSAMPLE FOOTAGE	LITHOLOGY
B-2(cont.)	22824		405.0-407.0		Dark green gray, fine to medium-grained, calcareous, dacitic, metagraywacke with quartz-calcite-chlorite vein.
	22825		407.0-415.0		Dark green gray, fine to medium-grained, calcareous, dacitic, metagraywacke and sericitic siltstone; with calcite, pyrite veins.
	22826		415.0-425.0		Dark green gray, fine to medium-grained, calcareous, dacitic, metagraywacke and sericitic siltstone; with minor quartz-calcite-pyrite veins.
	22827		425.0-430.0		Dark green gray, fine to medium-grained, calcareous, dacitic, metagraywacke; with minor quartz-calcite-pyrite veins.
OUTCROP	20849		OUTCROP		Oxide-silicate banded iron formation (Biwabik) with quartz carbonate vein.
	20850		OUTCROP		Oxide-silicate banded iron formation (Biwabik) with quartz carbonate vein.

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Bi	As	Sb	B	Ba	Au	Pt	Pd	S	Se	Te	Ag	Cu	Mo	W	Sn	F	Ga	Sc	Y	La	Ce	Zr	Nb	Ta
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
20765	HB-87-1	<1	5	<0.2	<10	194	4	<10	<2	0.01	<5	<1	<0.5	126	<2	<30	<50	120	20	44	24	11	28	78	<100	<2
20766	HB-87-1	<1	3	<0.2	<10	106	2	<10	7	0.01	<5	<1	<0.5	191	<2	<30	<50	130	28	37	26	9	20	64	<100	<2
20734	HB-87-4	<1	4	<0.2	<10	398	<1	<10	<2	0.01	<5	<1	<0.5	72	<2	<30	<50	560	10	10	19	53	130	167	<100	<2
20735	HB-87-4	<1	5	<0.2	<10	349	4	<10	<2	0.06	<5	<1	<0.5	423	2	<30	<50	450	12	11	20	50	120	205	<100	<2
22092	SL-2	<1	12	0.4	10	647	<1	<10	<2	0.40	5	<1	<0.5	98	10	<30	<50	1050	24	21	28	38	79	144	<100	<2
22093	SL-2	<1	14	0.4	70	669	2	<10	5	0.19	<5	<1	<0.5	91	8	<30	<50	900	26	24	29	33	71	144	<100	<2
22094	SL-2	<1	7	0.2	<10	878	<1	<10	<2	0.45	<5	<1	<0.5	130	8	<30	<50	640	26	18	26	35	72	121	<100	<2
22095	SL-2	<1	9	0.4	<10	751	1	<10	<2	0.46	<5	<1	<0.5	137	14	<30	<50	1100	22	20	30	39	81	157	<100	<2
22096	SL-2	<1	17	0.2	<10	654	2	<10	<2	0.25	<5	<1	<0.5	108	10	<30	<50	840	22	22	27	37	79	150	<100	<2
22097	SL-2	<1	30	0.2	<10	624	2	<10	<2	0.24	<5	<1	<0.5	109	14	<30	<50	900	22	21	28	32	67	154	<100	<2
22113	SL-2	<1	10	0.4	<10	659	<1	<10	<2	0.30	<5	<1	<0.5	134	10	<30	<50	960	20	22	26	39	84	156	<100	<2
22114	SL-2	<1	8	<0.2	70	739	<1	<10	<2	0.49	<5	<1	<0.5	212	8	<30	<50	1400	26	23	27	34	74	161	<100	<2
22115	SL-2	<1	7	0.4	90	83	3	<10	<2	0.06	<5	<1	<0.5	<5	18	<30	<50	840	18	15	58	44	92	77	<100	<2
22137	SL-2	<1	22	<0.2	<10	760	5	<10	<2	0.17	<5	<1	<0.5	106	18	<30	<50	1050	28	22	32	39	82	161	<100	<2
22116	SL-2	<1	11	0.2	<10	637	1	<10	<2	0.30	<5	<1	<0.5	132	16	<30	<50	180	20	22	30	34	74	155	<100	<2
22117	SL-2	<1	16	<0.2	<10	667	3	<10	8	0.30	<5	<1	<0.5	98	10	<30	<50	760	26	22	32	38	77	162	<100	<2
22118	SL-2	<1	14	0.2	<10	673	3	<10	<2	0.34	<5	<1	<0.5	94	6	<30	<50	1200	24	24	29	41	84	147	<100	<2
22119	SL-2	<1	18	0.2	10	608	2	<10	<2	0.39	<5	<1	<0.5	136	10	<30	<50	820	24	21	38	47	94	149	<100	<2
22120	SL-2	<1	15	1.0	<10	14	3	<10	<2	0.03	<5	<1	<0.5	8	6	<30	<50	250	64	8	30	17	35	34	<100	<2
22143	SL-2	<1	25	0.4	40	716	4	<10	<2	0.22	<5	<1	<0.5	125	8	<30	<50	1050	30	21	32	40	84	161	<100	<2
22169	SL-2	<1	16	0.2	90	305	<1	<10	<2	0.20	<5	<1	<0.5	67	2	<30	<50	820	36	13	63	61	130	151	<100	<2
22170	SL-2	<1	29	<0.2	30	392	5	<10	<2	1.10	<5	<1	<0.5	425	4	<30	<50	1400	26	20	81	100	220	286	<100	<2
22173	SL-2	<1	4	<0.2	120	746	2	<10	<2	0.29	<5	<1	<0.5	120	10	<30	<50	1000	24	20	26	38	76	147	<100	<2
22174	SL-2	<1	7	<0.2	120	649	2	<10	<2	0.24	<5	<1	<0.5	104	12	<30	<50	800	26	20	25	35	74	147	<100	<2
22175	SL-2	<1	6	<0.2	80	960	1	<10	<2	0.23	5	<1	<0.5	125	10	<30	<50	1000	24	21	24	38	81	274	<100	<2
22176	SL-2	<1	18	<0.2	70	924	3	<10	<2	0.35	<5	<1	<0.5	115	10	<30	<50	720	24	22	50	36	84	196	<100	<2
22177	SL-2	<1	15	<0.2	<10	707	<1	<10	<2	0.89	<5	<1	<0.5	125	10	<30	<50	800	24	20	26	36	73	167	<100	<2
22178	SL-2	<1	10	<0.2	<10	695	<1	<10	<2	1.06	<5	<1	<0.5	176	10	<30	<50	900	26	22	28	36	83	172	<100	<2
22179	SL-2	<1	13	<0.2	<10	473	<1	<10	<2	0.69	<5	<1	<0.5	105	6	<30	<50	1800	26	14	32	27	54	101	<100	<2
22180	SL-2	<1	20	0.4	<10	1031	<1	<10	<2	0.37	<5	<1	<0.5	111	8	<30	<50	660	24	21	29	42	90	183	<100	<2
22181	SL-2	<1	7	<0.2	10	875	<1	<10	<2	0.48	5	<1	<0.5	110	8	<30	<50	960	28	23	27	33	68	198	<100	<2
22182	SL-2	<1	16	1.2	<10	753	<1	<10	<2	0.37	<5	<1	<0.5	99	8	<30	<50	860	28	20	23	36	73	138	<100	<2
22219	SL-2	<1	6	<0.2	10	863	<1	<10	<2	0.04	<5	<1	<0.5	91	4	<30	<50	920	32	22	25	36	78	131	<100	<2
22220	SL-2	<1	8	0.4	10	804	2	<10	6	0.04	<5	<1	<0.5	100	4	<30	<50	900	32	20	22	32	71	116	<100	<2
22221	SL-2	<1	9	<0.2	50	15	<1	<10	<2	0.07	<5	<1	<0.5	<5	2	<30	<50	900	26	10	67	47	93	57	<100	<2
22222	SL-2	<1	2	0.2	70	794	<1	<10	<2	0.38	<5	<1	<0.5	127	4	<30	<50	860	30	24	29	33	62	150	<100	<2
22223	SL-2	<1	4	<0.2	110	1697	<1	<10	<2	0.25	<5	<1	<0.5	103	4	<30	<50	520	30	24	25	28	61	130	<100	<2
22224	SL-2	<1	6	<0.2	70	845	<1	<10	<2	0.37	<5	<1	<0.5	95	4	<30	<50	760	32	24	26	33	68	144	<100	<2
22225	SL-2	<1	<1	<0.2	110	863	<1	<10	<2	0.23	<5	<1	<0.5	98	4	<30	<50	880	28	23	39	42	82	138	<100	<2
22226	SL-2	<1	7	<0.2	120	754	<1	<10	<2	0.44	<5	<1	<0.5	102	4	<30	<50	860	28	23	27	37	75	155	<100	<2

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

APPENDIX B-1

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Cd	Zn	Pb	Cu	Ni	Pt	Pd	Au	Cr	Co	V	TiO_2	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	P_2O_5	Li	Na_2O	K_2O	Rb	Sr	CaO	Be
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	%	%	%	%	%	%	%	ppm	%	%	ppm	ppm	%	ppm
20765	HB-87-1	<1	106	6	126	44	<10	<2	4	68	61	356	1.42	5.44	15.65	0.24	51.09	13.02	0.14	17	2.55	0.47	20	166	8.30	<1
20766	HB-87-1	<1	153	12	191	27	<10	7	2	71	70	299	1.14	6.30	16.45	0.18	51.86	11.74	0.12	30	2.98	0.45	15	141	5.43	<1
20734	HB-87-4	<1	79	6	72	17	<10	<2	<1	62	24	91	0.66	2.94	5.89	0.10	60.43	16.00	0.40	18	6.82	2.73	55	284	2.68	1
20735	HB-87-4	<1	81	8	423	18	<10	<2	4	45	22	104	0.71	3.24	5.94	0.12	59.47	15.80	0.50	19	6.80	2.53	54	264	3.33	2
22092	SL-2	<1	229	8	98	88	<10	<2	<1	249	29	181	0.83	3.13	6.91	0.04	60.79	17.05	0.20	96	2.26	3.55	150	160	0.67	1
22093	SL-2	<1	209	6	91	84	<10	5	2	228	25	181	0.86	3.31	6.80	0.04	61.52	17.63	0.19	160	1.92	4.21	170	148	0.59	1
22094	SL-2	<1	171	8	130	84	<10	<2	<1	192	25	146	0.68	3.27	7.00	0.06	62.52	14.76	0.16	120	1.00	5.85	230	93	0.44	1
22095	SL-2	<1	206	8	137	85	<10	<2	1	203	32	176	0.82	3.08	6.84	0.05	61.00	17.39	0.19	100	2.30	4.32	170	142	0.66	1
22096	SL-2	<1	174	4	108	91	<10	<2	2	225	31	199	0.84	3.05	6.43	0.04	62.57	16.90	0.20	110	1.94	4.05	150	133	0.56	1
22097	SL-2	<1	198	6	109	85	<10	<2	2	231	33	209	0.84	2.89	6.34	0.04	62.29	17.03	0.19	92	2.43	3.66	150	155	0.72	1
22113	SL-2	2	256	4	134	88	<10	<2	<1	211	31	192	0.82	3.20	6.78	0.04	62.10	17.68	0.19	93	2.10	3.96	150	127	0.54	1
22114	SL-2	<1	168	2	212	88	<10	<2	<1	210	32	174	0.87	3.32	6.73	0.07	58.22	17.77	0.20	47	3.17	3.12	150	282	3.30	<1
22115	SL-2	2	260	4	<5	46	<10	<2	3	135	19	117	0.59	3.56	9.87	0.52	45.69	10.20	0.12	21	0.16	0.44	20	173	23.89	<1
22137	SL-2	<1	150	14	106	103	<10	<2	5	203	28	212	0.90	3.51	6.12	0.10	54.88	18.03	0.18	48	2.44	3.88	150	274	5.34	1
22116	SL-2	1	213	12	132	104	<10	<2	1	240	36	198	0.81	3.03	6.99	0.05	61.46	16.89	0.31	95	2.10	3.63	160	157	1.17	1
22117	SL-2	<1	178	4	98	85	<10	8	3	205	28	172	0.84	2.80	6.95	0.04	61.54	17.09	0.20	170	2.00	4.32	180	144	0.81	1
22118	SL-2	<1	202	6	94	83	<10	<2	3	233	32	164	0.86	3.29	7.65	0.04	60.68	17.55	0.19	110	1.93	3.90	160	125	0.56	1
22119	SL-2	1	264	6	136	85	<10	<2	2	207	32	173	0.93	3.35	7.67	0.12	57.36	16.16	0.20	59	1.94	2.62	130	208	7.31	1
22120	SL-2	4	96	4	8	28	<10	<2	3	74	2	68	0.28	1.33	3.43	0.27	46.97	6.09	0.04	5	0.11	<0.10	5	101	38.84	<1
22143	SL-2	<1	189	10	125	107	<10	<2	4	192	23	172	0.89	3.39	6.38	0.12	50.89	17.52	0.23	40	1.73	2.89	120	357	10.97	1
22169	SL-2	<1	136	38	67	49	<10	<2	<1	93	5	61	0.48	2.94	4.65	0.33	38.60	13.47	0.09	42	1.08	1.15	52	301	24.36	1
22170	SL-2	<1	122	22	425	82	<10	<2	5	109	23	81	0.69	2.81	5.39	0.06	55.59	21.15	0.18	62	1.85	3.72	180	530	5.27	2
22173	SL-2	<1	166	6	120	101	<10	<2	2	192	27	164	0.80	3.39	6.97	0.06	60.92	16.77	0.18	130	1.38	5.19	160	125	0.74	1
22174	SL-2	<1	192	6	104	84	<10	<2	2	182	24	171	0.78	3.37	6.26	0.05	61.13	16.40	0.18	110	1.47	5.26	200	122	0.70	<1
22175	SL-2	<1	160	6	125	88	<10	<2	1	194	31	167	0.81	3.53	6.27	0.07	59.63	16.42	0.18	120	2.48	5.18	190	214	1.06	1
22176	SL-2	<1	112	6	115	99	<10	<2	3	203	28	180	0.83	4.90	6.28	0.19	50.78	18.04	0.19	73	1.54	2.58	93	548	10.54	2
22177	SL-2	<1	195	6	125	113	<10	<2	<1	220	35	178	0.83	3.14	7.49	0.05	60.15	16.27	0.19	140	1.81	4.52	170	151	0.74	1
22178	SL-2	<1	228	6	176	135	<10	<2	<1	214	34	193	0.81	3.15	7.22	0.05	60.51	16.75	0.21	140	2.05	4.33	170	151	0.76	1
22179	SL-2	2	211	4	105	58	<10	<2	<1	147	22	139	0.56	13.11	6.56	0.24	50.50	11.44	0.11	210	1.28	1.51	97	190	8.94	<1
22180	SL-2	<1	212	8	111	101	<10	<2	<1	206	32	173	0.81	3.34	6.47	0.05	59.72	18.05	0.18	100	2.82	4.52	180	208	1.04	1
22181	SL-2	<1	154	8	110	103	<10	<2	<1	213	31	185	0.81	3.55	7.21	0.07	59.33	16.92	0.19	150	1.57	5.69	220	139	0.56	1
22182	SL-2	<1	184	6	99	85	<10	<2	<1	208	34	158	0.76	3.45	7.29	0.06	60.41	16.71	0.18	130	1.93	4.82	180	127	0.62	1
22219	SL-2	<1	182	4	91	95	<10	<2	<1	199	32	151	0.77	3.79	8.40	0.08	58.72	17.41	0.17	240	1.40	5.46	250	112	0.49	1
22220	SL-2	<1	139	6	100	79	<10	6	2	202	25	135	0.69	3.83	7.85	0.09	60.52	15.55	0.16	150	1.43	4.99	210	103	0.60	<1
22221	SL-2	1	48	2	<5	35	<10	<2	<1	97	10	78	0.35	13.15	5.16	0.54	51.18	6.69	0.08	58	0.14	<0.10	6	40	15.04	<1
22222	SL-2	<1	154	4	127	136	<10	<2	<1	225	35	167	0.85	3.64	7.87	0.06	58.18	17.64	0.19	150	1.91	4.50	150	126	0.82	<1
22223	SL-2	<1	159	6	103	97	<10	<2	<1	208	34	180	0.84	3.95	8.37	0.07	57.31	18.24	0.18	110	1.54	5.26	130	112	0.43	<1
22224	SL-2	<1	166	2	95	525	<10	<2	<1	260	38	242	1.01	3.23	10.09	0.05	58.15	17.20	0.20	150	1.90	4.95	130	136	0.62	<1
22225	SL-2	<1	148	4	98	135	<10	<2	<1	207	34	175	0.88	3.57	7.90	0.06	58.82	17.22	0.18	70	1.76	6.44	96	122	0.79	<1
22226	SL-2	1	152	2	102	101	<10	<2	<1	214	34	159	0.86	3.43	7.62	0.05	60.81	17.71	0.20	100	2.25	4.23	64	151	0.65	1

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Bi	As	Sb	B	Ba	Au	Pt	Pd	S	Se	Te	Ag	Cu	Mo	W	Sn	F	Ga	Sc	Y	La	Ce	Zr	Nb	Ta
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
22227	SL-2	<1	12	0.4	110	185	<1	<10	<2	0.05	<5	<1	<0.5	64	<2	<30	<50	700	40	14	50	18	43	95	<100	<2
22228	SL-2	<1	10	0.2	80	694	<1	<10	<2	0.08	<5	<1	<0.5	27	2	<30	<50	560	26	20	35	45	83	195	<100	<2
22229	SL-2	<1	8	<0.2	30	706	2	<10	<2	0.37	<5	<1	<0.5	87	4	<30	<50	760	32	26	28	36	70	141	<100	<2
22230	SL-2	<1	5	<0.2	30	738	<1	<10	<2	0.38	<5	<1	<0.5	121	4	<30	<50	800	32	27	31	36	70	149	<100	<2
22231	SL-2	<1	6	<0.2	70	56	<1	<10	<2	0.11	<5	<1	<0.5	31	2	<30	<50	920	34	14	64	29	64	63	<100	<2
22232	SL-2	<1	6	0.2	30	740	<1	<10	<2	0.32	<5	<1	<0.5	105	4	<30	<50	900	36	26	29	36	76	147	<100	<2
22233	SL-2	<1	4	0.2	10	772	<1	<10	<2	0.27	<5	<1	<0.5	61	2	<30	<50	860	34	24	25	35	73	138	<100	<2
22234	SL-2	<1	7	<0.2	40	31	<1	<10	<2	0.03	<5	<1	<0.5	<5	2	<30	<50	460	34	10	49	25	51	41	<100	<2
22235	SL-2	<1	3	<0.2	130	719	<1	<10	<2	0.33	<5	<1	<0.5	68	2	<30	<50	760	34	26	40	39	73	152	<100	<2
22236	SL-2	<1	2	<0.2	80	537	<1	<10	<2	0.38	<5	<1	<0.5	77	4	<30	<50	960	32	22	31	34	73	154	<100	<2
22237	SL-2	<1	3	<0.2	130	849	<1	<10	<2	0.06	<5	<1	<0.5	26	2	<30	<50	760	30	23	35	38	74	141	<100	<2
22238	SL-2	<1	2	<0.2	80	678	<1	<10	<2	0.11	<5	<1	<0.5	984	2	<30	<50	660	28	20	30	38	73	133	<100	<2
22239	SL-2	<1	5	<0.2	70	277	<1	<10	<2	0.03	<5	<1	<0.5	59	2	<30	<50	370	28	15	50	40	84	147	<100	<2
22240	SL-2	<1	6	<0.2	110	788	<1	<10	<2	0.10	<5	<1	<0.5	109	4	<30	<50	860	36	25	25	41	80	149	<100	<2
22241	SL-2	<1	6	<0.2	70	91	<1	<10	<2	0.02	<5	<1	<0.5	<5	<2	<30	<50	700	28	14	46	24	48	86	<100	<2
22242	SL-2	<1	5	<0.2	90	677	<1	<10	<2	0.17	<5	<1	<0.5	73	2	<30	<50	900	34	25	28	43	87	136	<100	<2
22243	SL-2	<1	8	<0.2	50	722	<1	<10	<2	0.24	<5	<1	<0.5	104	2	<30	<50	1300	38	25	30	45	86	138	<100	<2
22244	SL-2	<1	9	<0.2	50	628	<1	<10	<2	0.13	<5	<1	<0.5	62	2	<30	<50	660	34	23	31	39	81	139	<100	<2
22245	SL-2	<1	11	<0.2	80	654	2	<10	<2	0.12	<5	<1	<0.5	61	2	<30	<50	520	32	22	28	36	72	138	<100	<2
22246	SL-2	<1	12	<0.2	90	537	2	<10	<2	0.07	<5	<1	<0.5	55	2	<30	<50	420	26	16	46	40	85	128	<100	<2
22247	SL-2	<1	2	<0.2	110	337	<1	<10	<2	0.14	<5	<1	<0.5	98	2	<30	<50	860	34	12	20	41	79	73	<100	<2
22248	SL-2	<1	6	<0.2	80	683	<1	<10	<2	0.24	<5	<1	<0.5	84	4	<30	<50	900	34	25	29	40	79	143	<100	<2
22249	SL-2	<1	5	<0.2	120	631	<1	<10	<2	0.21	<5	<1	<0.5	91	2	<30	<50	760	36	24	30	37	79	153	<100	2
22250	SL-2	<1	4	<0.2	50	323	<1	<10	<2	0.13	<5	<1	<0.5	38	<2	<30	<50	660	30	20	43	42	85	108	<100	<2
22251	SL-2	<1	6	<0.2	80	651	<1	<10	<2	0.21	<5	<1	<0.5	66	2	<30	<50	1200	34	24	33	40	83	164	<100	<2
22252	SL-2	<1	5	<0.2	90	640	<1	<10	4	0.14	<5	<1	<0.5	57	2	<30	<50	740	34	23	29	39	77	138	<100	<2
22253	SL-2	<1	4	<0.2	80	672	<1	<10	<2	0.16	<5	<1	<0.5	79	2	<30	<50	720	36	25	30	42	85	142	<100	<2
22254	K-1	<1	6	<0.2	70	714	<1	<10	<2	0.05	<5	<1	<0.5	139	2	<30	<50	430	20	17	15	31	62	101	<100	<2
22255	K-1	<1	7	<0.2	80	638	<1	<10	<2	0.17	<5	<1	<0.5	77	2	<30	<50	400	20	16	15	32	67	109	<100	<2
22256	K-1	<1	3	<0.2	90	647	<1	<10	<2	0.03	<5	<1	<0.5	162	<2	<30	<50	320	22	18	15	29	60	105	<100	<2
22257	K-1	<1	5	<0.2	90	684	<1	<10	<2	0.03	<5	<1	<0.5	61	<2	<30	<50	280	20	18	17	30	61	113	<100	<2
22258	K-1	<1	2	<0.2	110	625	<1	<10	<2	0.05	<5	<1	<0.5	49	<2	<30	<50	520	22	15	15	29	58	115	<100	<2
22259	K-1	<1	5	<0.2	110	696	<1	<10	<2	0.11	<5	<1	<0.5	37	2	<30	<50	360	20	16	14	29	56	104	<100	<2
22260	K-1	<1	6	<0.2	90	737	<1	<10	<2	0.23	<5	<1	<0.5	63	<2	<30	<50	340	20	16	14	32	59	97	<100	<2
22261	K-1	<1	12	<0.2	<10	554	<1	20	<2	0.27	<5	<1	<0.5	61	<2	<30	<50	450	16	13	17	29	58	121	<100	<2
22262	K-1	<1	10	<0.2	<10	565	<1	<10	<2	0.32	<5	<1	<0.5	69	<2	<30	<50	400	20	13	12	30	59	122	<100	<2
22263	K-1	<1	23	<0.2	<10	550	<1	<10	<2	0.14	<5	<1	<0.5	91	2	<30	<50	350	20	14	14	30	60	170	<100	<2
22264	K-1	<1	14	<0.2	<10	592	<1	<10	<2	0.16	<5	<1	<0.5	77	<2	<30	<50	420	18	13	12	29	59	132	<100	<2
22265	K-1	<1	25	<0.2	<10	536	<1	<10	<2	0.02	<5	<1	<0.5	68	2	<30	<50	360	18	13	15	29	59	135	<100	<2
22266	K-1	<1	7	<0.2	<10	556	<1	<10	4	0.21	<5	<1	<0.5	83	<2	<30	<50	340	18	14	16	28	52	119	<100	<2

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

APPENDIX B-3

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Cd	Zn	Pb	Cu	Ni	Pt	Pd	Au	Cr	Co	V	TiO_2	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	P_2O_5	Li	Na_2O	K_2O	Rb	Sr	CaO	Be
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	%	%	%	%	%	%	%	ppm	%	%	ppm	ppm	%	ppm
22227	SL-2	2	227	4	64	56	<10	<2	<1	133	13	95	0.55	7.17	4.63	0.35	40.37	10.21	0.15	110	0.45	0.60	18	112	21.25	<1
22228	SL-2	<1	108	2	27	88	<10	<2	<1	233	25	139	0.86	3.27	6.36	0.06	61.23	16.02	0.21	54	3.00	3.68	63	170	1.85	<1
22229	SL-2	<1	151	2	87	108	<10	<2	2	232	36	170	0.88	3.75	8.38	0.05	59.16	18.51	0.19	97	2.46	3.37	130	173	0.78	<1
22230	SL-2	<1	213	10	121	113	<10	<2	<1	242	37	172	0.89	3.75	8.36	0.05	59.58	18.31	0.21	79	2.30	3.84	140	148	0.62	<1
22231	SL-2	8	231	2	31	85	<10	<2	<1	129	28	102	0.43	9.09	5.24	0.22	53.48	8.58	0.19	110	0.25	0.13	4	127	13.48	<1
22232	SL-2	<1	135	4	105	101	<10	<2	<1	237	38	163	0.86	4.20	8.39	0.06	55.80	18.78	0.20	90	2.28	3.64	130	214	2.04	<1
22233	SL-2	<1	136	6	61	104	<10	<2	<1	236	35	153	0.86	3.87	7.99	0.06	58.35	18.28	0.21	100	2.23	4.00	160	149	1.15	<1
22234	SL-2	1	95	2	<5	27	<10	<2	<1	106	6	72	0.34	9.31	4.07	0.53	34.32	6.97	0.07	160	0.16	<0.10	8	221	28.15	<1
22235	SL-2	<1	145	2	68	100	<10	<2	<1	216	32	142	0.85	3.91	7.84	0.07	56.51	18.08	0.21	70	2.64	3.57	110	197	2.49	<1
22236	SL-2	<1	120	4	77	107	<10	<2	<1	240	32	160	0.85	3.54	7.65	0.06	59.24	17.11	0.20	67	3.68	2.71	120	234	1.57	<1
22237	SL-2	<1	109	4	26	105	<10	<2	<1	211	32	188	0.86	3.59	7.53	0.16	53.40	16.95	0.18	41	2.97	2.62	62	279	7.91	<1
22238	SL-2	<1	120	4	984	101	<10	<2	<1	227	31	176	0.80	3.39	7.47	0.06	61.55	16.19	0.29	68	3.02	2.81	100	197	1.73	<1
22239	SL-2	<1	129	6	59	80	<10	<2	<1	221	23	92	0.69	3.19	6.25	0.20	59.32	13.06	0.18	22	1.64	1.01	34	239	11.07	<1
22240	SL-2	<1	131	4	109	104	<10	<2	<1	230	33	176	0.90	4.18	7.97	0.06	56.53	18.22	0.21	120	2.52	4.26	150	172	1.39	<1
22241	SL-2	<1	96	6	<5	50	<10	<2	<1	152	11	99	0.50	8.22	4.45	0.48	40.36	10.52	0.12	180	0.19	<0.10	11	175	25.08	<1
22242	SL-2	<1	168	8	73	112	<10	<2	<1	227	32	171	0.87	3.85	8.02	0.06	60.67	18.30	0.19	77	2.12	3.58	89	120	0.76	<1
22243	SL-2	<1	144	10	104	109	<10	<2	<1	217	33	166	0.89	4.20	8.39	0.09	55.86	19.03	0.17	69	3.11	2.98	110	326	3.16	<1
22244	SL-2	<1	140	10	62	110	<10	<2	<1	214	29	157	0.88	3.85	7.65	0.12	56.72	17.13	0.20	53	2.25	3.07	130	186	5.13	<1
22245	SL-2	<1	120	8	61	89	<10	<2	2	218	27	148	0.82	3.54	7.53	0.08	61.23	16.74	0.19	74	2.41	3.06	100	151	2.58	<1
22246	SL-2	<1	100	10	55	88	<10	<2	2	215	20	108	0.72	2.79	6.43	0.14	61.19	13.32	0.18	22	1.42	1.25	52	305	9.99	<1
22247	SL-2	<1	98	8	98	52	<10	<2	<1	192	13	85	0.73	4.66	7.17	0.10	55.62	16.02	0.10	76	2.62	2.50	91	122	5.21	<1
22248	SL-2	<1	162	10	84	121	<10	<2	<1	214	34	195	0.85	3.80	8.08	0.05	58.56	18.32	0.19	80	2.38	3.49	120	134	0.54	<1
22249	SL-2	<1	132	10	91	108	<10	<2	<1	229	35	156	0.88	3.73	7.71	0.08	60.55	17.76	0.20	63	2.61	3.12	110	183	2.40	<1
22250	SL-2	<1	125	10	38	84	<10	<2	<1	164	23	127	0.72	3.00	7.30	0.34	47.13	14.12	0.17	36	2.33	1.49	39	325	18.58	<1
22251	SL-2	<1	178	8	66	132	<10	<2	<1	233	35	165	0.87	3.70	8.03	0.06	62.06	17.62	0.20	80	2.54	3.05	100	167	0.74	<1
22252	SL-2	<1	133	12	57	116	<10	4	<1	215	35	157	0.87	3.71	8.07	0.10	59.09	16.73	0.18	52	2.61	2.95	110	213	3.02	<1
22253	SL-2	<1	153	8	79	109	<10	<2	<1	236	36	185	0.89	4.04	8.77	0.06	59.50	18.72	0.20	51	2.16	3.63	41	130	0.46	<1
22254	K-1	<1	108	8	139	91	<10	<2	<1	198	29	150	0.65	2.37	7.23	0.01	63.48	16.59	0.23	28	1.38	3.05	64	113	0.47	<1
22255	K-1	<1	98	8	77	116	<10	<2	<1	232	26	149	0.65	2.46	6.86	0.01	65.09	16.23	0.20	26	2.30	2.37	48	133	0.45	<1
22256	K-1	<1	114	6	162	124	<10	<2	<1	197	33	166	0.69	2.94	8.27	0.01	61.00	16.97	0.22	38	2.08	2.46	73	120	0.49	<1
22257	K-1	<1	112	10	61	119	<10	<2	<1	194	32	158	0.66	2.86	7.40	0.01	63.37	17.19	0.22	24	2.53	2.33	43	134	0.45	<1
22258	K-1	<1	97	8	49	121	<10	<2	<1	208	28	121	0.61	2.35	7.10	0.01	64.25	16.29	0.21	28	2.73	2.19	42	156	0.41	<1
22259	K-1	<1	97	8	37	93	<10	<2	<1	204	25	117	0.64	2.61	6.52	0.01	65.21	16.97	0.21	23	3.00	1.99	35	158	0.47	<1
22260	K-1	<1	97	8	63	119	<10	<2	<1	222	28	173	0.62	2.48	6.43	0.01	64.14	16.17	0.21	27	2.73	2.22	46	153	0.44	<1
22261	K-1	<1	87	8	61	98	20	<2	<1	255	28	96	0.56	2.09	5.98	0.15	67.25	14.52	0.28	21	3.46	1.65	28	159	0.68	1
22262	K-1	<1	96	8	69	99	<10	<2	<1	263	26	102	0.61	2.35	6.73	0.01	65.81	15.18	0.20	26	3.38	1.70	38	154	0.45	1
22263	K-1	<1	138	12	91	116	<10	<2	<1	291	48	155	0.61	2.34	9.02	0.46	62.38	14.37	0.27	28	3.42	1.39	36	136	0.45	<1
22264	K-1	<1	116	8	77	121	<10	<2	<1	239	26	87	0.58	2.22	5.79	0.02	67.07	15.16	0.21	27	3.40	1.71	39	139	0.48	1
22265	K-1	<1	114	8	68	120	<10	<2	<1	250	39	96	0.58	2.12	6.81	0.34	65.25	14.56	0.20	23	3.59	1.49	24	146	0.41	1
22266	K-1	<1	113	8	83	112	<10	4	<1	262	20	119	0.61	2.21	6.94	0.02	66.28	15.09	0.19	24	3.12	1.63	36	159	0.44	1

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

APPENDIX B-4

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Bi	As	Sb	B	Ba	Au	Pt	Pd	S	Se	Te	Ag	Cu	Mo	W	Sn	F	Ga	Sc	Y	La	Ce	Zr	Nb	Ta
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
22267	K-1	<1	42	<0.2	<10	552	<1	<10	16	0.29	<5	<1	<0.5	68	<2	<30	<50	290	14	14	13	29	59	131	<100	<2
22268	K-1	<1	35	<0.2	<10	504	<1	<10	<2	0.22	<5	<1	<0.5	67	<2	<30	<50	280	16	14	16	28	57	111	<100	<2
22269	K-1	<1	31	<0.2	<10	599	<1	<10	<2	0.13	<5	<1	<0.5	82	2	<30	<50	260	14	13	13	29	58	101	<100	<2
22270	K-1	<1	26	<0.2	<10	589	<1	<10	<2	0.19	<5	<1	<0.5	83	<2	<30	<50	310	18	13	14	27	48	104	<100	<2
22271	K-1	<1	36	0.4	<10	586	<1	<10	<2	0.21	<5	<1	<0.5	64	2	<30	<50	330	18	13	15	28	53	118	<100	<2
22272	K-1	<1	29	<0.2	<10	775	<1	20	<2	0.26	<5	<1	<0.5	77	<2	<30	<50	320	16	13	17	29	58	118	<100	<2
22273	K-1	<1	36	<0.2	20	720	2	<10	<2	0.21	<5	<1	<0.5	89	<2	<30	<50	450	18	14	15	31	64	107	<100	<2
22274	K-1	<1	32	<0.2	<10	718	<1	<10	<2	0.20	<5	<1	<0.5	71	2	<30	<50	430	18	15	15	30	59	110	<100	<2
22275	K-1	<1	82	<0.2	30	939	5	<10	<2	0.11	<5	<1	<0.5	107	<2	<30	<50	360	12	19	16	34	68	107	<100	<2
22276	K-1	<1	35	<0.2	<10	560	3	<10	<2	0.02	<5	<1	<0.5	60	<2	<30	<50	220	12	14	14	29	55	107	<100	<2
22277	K-1	<1	32	<0.2	<10	582	3	<10	<2	0.05	<5	<1	<0.5	96	<2	<30	<50	200	14	14	15	32	57	295	<100	<2
22278	K-1	<1	28	<0.2	20	537	4	<10	<2	0.07	<5	<1	<0.5	68	2	<30	<50	280	12	14	19	28	52	117	<100	<2
22279	K-1	<1	32	<0.2	<10	601	3	<10	<2	0.09	<5	<1	<0.5	79	<2	<30	<50	410	16	14	20	33	60	124	<100	<2
22280	K-1	<1	18	<0.2	20	548	6	<10	<2	0.11	<5	<1	<0.5	88	<2	<30	<50	460	14	14	50	28	56	101	<100	<2
22281	K-1	<1	9	<0.2	<10	63	6	<10	4	0.04	<5	<1	<0.5	54	<2	<30	<50	270	22	22	73	10	21	32	<100	<2
22282	K-1	<1	16	<0.2	<10	114	4	<10	8	0.10	<5	<1	<0.5	72	<2	<30	<50	800	36	38	58	7	15	36	<100	<2
22283	K-1	<1	8	0.4	30	993	2	20	10	0.08	<5	<1	<0.5	133	<2	<30	<50	410	28	41	19	3	8	24	<100	<2
22284	K-1	<1	5	<0.2	40	519	2	<10	6	0.11	<5	<1	<0.5	172	<2	<30	<50	110	20	41	14	2	6	20	<100	<2
22285	K-1	<1	6	<0.2	20	490	2	20	9	0.11	<5	<1	<0.5	131	<2	<30	<50	90	20	39	14	3	9	15	<100	<2
22286	K-1	<1	6	<0.2	40	507	2	<10	9	0.14	<5	<1	<0.5	130	<2	<30	<50	78	20	39	15	2	9	18	<100	<2
22287	K-1	<1	7	<0.2	30	458	<1	<10	9	0.12	<5	<1	<0.5	130	<2	<30	<50	110	20	38	15	3	7	23	<100	<2
22288	K-3	<1	9	<0.2	20	53	<1	<10	<2	0.10	<5	<1	<0.5	88	<2	<30	<50	140	34	39	31	6	18	66	<100	<2
22289	K-3	<1	7	<0.2	<10	47	4	<10	<2	0.01	<5	<1	<0.5	61	<2	<30	<50	210	36	36	58	11	28	82	<100	<2
22740	K-3	<1	8	<0.2	<10	99	<2	<10	<2	0.06	<5	<1	<0.5	87	<2	<30	<50	170	34	37	38	8	23	90	<100	<2
22741	K-3	<1	6	<0.2	<10	58	<1	<10	<2	0.02	5	<1	<0.5	67	<2	<30	<50	120	32	41	20	5	16	73	<100	<2
22742	K-3	<1	8	<0.2	<10	38	<1	<10	<2	0.01	<5	<1	<0.5	49	<2	<30	<50	260	32	41	35	9	25	113	<100	<2
22743	K-3	<1	9	<0.2	<10	43	<1	<10	<2	0.06	5	<1	<0.5	46	<2	<30	<50	170	34	42	51	13	20	79	<100	<2
22744	K-3	<1	10	<0.2	20	43	<1	<10	<2	0.01	<5	<1	<0.5	35	<2	<30	<50	120	32	34	57	12	38	175	<100	<2
22745	K-3	<1	7	<0.2	<10	44	9	<10	<2	0.02	<5	<1	<0.5	26	<2	<30	<50	80	30	39	73	9	30	121	<100	<2
22746	K-3	<1	10	<0.2	<10	30	6	<10	<2	0.38	<5	<1	<0.5	92	<2	<30	<50	120	36	49	39	10	23	110	<100	<2
22747	K-3	<1	8	<0.2	20	177	4	<10	<2	0.24	<5	<1	<0.5	70	<2	<30	<50	170	38	43	34	7	21	93	<100	<2
22748	K-3	<1	10	<0.2	20	117	<1	<10	<2	0.31	<5	<1	<0.5	64	<2	<30	<50	160	38	40	33	8	21	81	<100	<2
22749	K-3	<1	11	<0.2	50	117	<1	<10	<2	0.30	<5	<1	<0.5	60	<2	<30	<50	190	36	41	42	15	41	90	<100	<2
22750	K-3	<1	8	<0.2	<10	29	<1	<10	<2	0.03	<5	<1	<0.5	108	<2	<30	<50	440	34	27	27	38	96	78	<100	<2
22751	K-3	<1	9	<0.2	<10	116	<1	<10	<2	0.52	<5	<1	<0.5	155	<2	<30	<50	210	28	35	48	19	46	115	<100	<2
22752	K-3	<1	6	<0.2	<10	28	<1	<10	<2	0.03	<5	<1	<0.5	83	<2	<30	<50	440	30	31	28	28	69	100	<100	<2
22753	K-3	<1	9	<0.2	<10	131	<1	<10	<2	0.30	<5	<1	<0.5	50	<2	<30	<50	270	30	41	44	8	27	126	<100	<2
22754	K-3	<1	5	<0.2	<10	148	<1	<10	<2	0.16	<5	<1	<0.5	26	<2	<30	<50	320	28	39	45	8	23	130	<100	<2
22755	K-3	<1	7	<0.2	<10	24	<1	<10	<2	0.09	<5	<1	<0.5	61	<2	<30	<50	135	28	35	51	15	45	164	<100	<2
22756	K-3	<1	6	<0.2	<10	193	<1	<10	<2	0.13	<5	<1	<0.5	27	<2	<30	<50	210	18	26	73	15	42	218	<100	<2

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Cd	Zn	Pb	Cu	Ni	Pt	Pd	Au	Cr	Co	V	TiO_2	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	P_2O_5	Li	Na_2O	K_2O	Rb	Sr	CaO	Be
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	%	%	%	%	%	%	%	ppm	%	%	ppm	ppm	%	ppm
22267	K-1	<1	126	6	68	92	<10	16	<1	222	25	80	0.56	1.89	4.52	0.01	69.10	15.43	0.18	15	3.85	1.53	24	146	0.27	1
22268	K-1	<1	123	8	67	91	<10	<2	<1	237	29	76	0.56	1.85	6.43	0.17	66.92	14.68	0.18	20	3.48	1.55	25	148	0.30	<1
22269	K-1	<1	147	8	82	103	<10	<2	<1	205	25	87	0.57	1.82	4.51	0.01	68.29	16.17	0.09	19	3.07	2.06	30	141	0.16	1
22270	K-1	<1	189	14	83	89	<10	<2	<1	200	32	73	0.57	2.19	9.89	0.47	60.61	15.04	0.20	14	3.18	1.85	23	132	0.32	<1
22271	K-1	<1	194	10	64	123	<10	<2	<1	214	43	74	0.54	2.23	10.11	0.49	61.20	14.53	0.19	16	3.17	1.94	28	127	0.36	1
22272	K-1	<1	141	10	77	97	20	<2	<1	207	31	88	0.59	2.18	6.27	0.13	65.71	16.21	0.09	12	3.15	2.41	29	124	0.18	1
22273	K-1	<1	137	8	89	104	<10	<2	2	219	35	99	0.65	2.62	6.37	0.02	65.06	16.74	0.18	17	2.08	2.93	29	116	0.27	1
22274	K-1	<1	134	8	71	126	<10	<2	<1	219	36	102	0.65	2.65	6.38	0.02	64.88	16.73	0.19	19	2.07	2.90	30	116	0.31	1
22275	K-1	<1	90	8	107	138	<10	<2	5	215	44	121	0.69	1.84	5.79	0.01	63.69	17.41	0.07	17	1.13	3.98	52	100	0.25	1
22276	K-1	<1	97	10	60	100	<10	<2	3	230	37	108	0.56	1.64	4.95	0.01	67.54	15.41	0.06	20	2.95	2.27	45	142	0.20	1
22277	K-1	<1	106	8	96	84	<10	<2	3	257	38	104	0.61	1.85	4.27	0.01	66.66	15.88	0.08	18	2.93	1.95	35	124	0.15	1
22278	K-1	<1	132	4	68	90	<10	<2	4	230	33	79	0.57	1.85	4.64	0.01	67.67	15.77	0.15	20	3.84	1.77	47	171	0.28	1
22279	K-1	<1	139	6	79	126	<10	<2	3	228	39	92	0.59	2.32	6.47	0.13	62.34	16.33	0.24	18	3.78	2.20	43	187	0.68	1
22280	K-1	<1	82	6	88	61	<10	<2	6	204	27	103	0.57	1.44	6.76	0.05	64.05	14.98	0.45	8	3.90	2.08	37	135	0.82	1
22281	K-1	<1	153	16	54	91	<10	4	6	241	26	86	0.49	1.86	17.27	0.03	61.86	9.93	0.06	6	2.68	0.15	12	104	0.49	<1
22282	K-1	<1	463	18	72	176	<10	8	4	332	62	177	0.73	6.97	13.50	0.07	54.13	13.72	0.44	37	3.01	<0.10	9	157	1.00	<1
22283	K-1	<1	143	14	133	118	20	10	2	415	54	206	0.73	7.79	12.28	0.18	48.92	15.13	0.44	19	2.04	1.98	38	337	5.87	<1
22284	K-1	<1	94	6	172	103	<10	6	2	448	51	196	0.68	7.97	11.18	0.19	49.07	14.19	0.09	15	1.54	1.69	35	246	9.96	<1
22285	K-1	<1	91	6	131	100	20	9	2	454	51	195	0.66	7.71	11.41	0.19	48.58	14.07	0.09	17	1.57	1.61	29	246	9.47	<1
22286	K-1	<1	110	8	130	110	<10	9	2	439	51	235	0.68	7.96	10.87	0.18	48.06	14.50	0.08	19	1.84	1.74	36	251	9.47	<1
22287	K-1	<1	100	8	130	88	<10	9	<1	333	53	205	0.72	7.43	11.39	0.19	48.38	14.23	0.09	17	1.85	1.88	41	221	9.91	<1
22288	K-3	<1	126	12	88	47	<10	<2	<1	39	65	381	2.30	3.52	20.89	0.16	49.37	12.37	0.21	14	0.30	1.46	32	63	1.73	<1
22289	K-3	<1	101	10	61	82	<10	<2	4	25	81	389	2.09	3.82	20.96	0.14	49.91	12.29	0.26	17	0.13	1.53	30	62	1.54	<1
22740	K-3	<1	95	10	87	81	<10	<2	<2	73	72	371	2.08	3.68	20.22	0.15	48.26	12.89	0.22	15	0.29	1.01	28	102	3.64	<1
22741	K-3	<1	136	10	67	71	<10	<2	<1	22	64	417	2.44	3.09	21.83	0.17	48.40	12.94	0.25	15	0.30	1.72	35	61	1.33	<1
22742	K-3	<1	119	10	49	34	<10	<2	<1	34	67	341	2.42	2.85	22.82	0.18	47.46	13.17	0.30	17	0.06	1.63	47	50	1.03	<1
22743	K-3	<1	124	12	46	10	<10	<2	<1	<5	72	382	2.64	3.09	23.96	0.28	45.85	12.77	0.23	11	0.16	1.59	36	67	1.40	<1
22744	K-3	<1	96	10	35	12	<10	<2	<1	19	54	225	2.02	1.99	21.67	0.17	48.59	12.94	0.48	12	0.10	1.07	27	71	2.80	<1
22745	K-3	<1	112	10	26	<10	<10	<2	9	18	69	344	2.38	2.50	22.14	0.13	47.69	12.37	0.33	13	0.96	1.26	34	78	1.96	<1
22746	K-3	<1	95	8	92	27	<10	<2	6	7	86	645	3.15	4.09	16.14	0.14	48.75	15.25	0.26	11	3.15	<0.10	10	56	3.43	<1
22747	K-3	<1	111	10	70	34	<10	<2	4	6	84	548	2.74	4.80	19.48	0.26	47.69	13.25	0.22	9	2.74	0.28	7	44	2.99	<1
22748	K-3	<1	97	10	64	<10	<10	<2	<1	5	78	504	2.64	5.05	19.78	0.23	48.00	12.89	0.22	9	2.67	0.23	8	46	2.86	<1
22749	K-3	<1	95	8	60	<10	<10	<2	<1	7	80	440	2.60	5.01	19.63	0.21	48.37	12.69	0.27	10	3.75	0.25	9	47	1.97	<1
22750	K-3	<1	97	8	108	192	<10	<2	<1	388	52	182	0.80	12.76	11.74	0.14	49.48	12.91	0.31	19	3.50	<0.10	7	80	3.89	1
22751	K-3	<1	96	12	155	21	<10	<2	<1	25	85	493	2.29	4.75	18.59	0.33	48.05	11.96	0.28	8	4.39	0.44	13	106	3.96	1
22752	K-3	<1	92	8	83	208	<10	<2	<1	383	75	309	1.06	13.11	13.41	0.18	48.16	12.34	0.34	35	2.39	<0.10	7	66	3.67	1
22753	K-3	<1	109	8	50	<10	<10	<2	<1	24	87	279	2.75	5.10	19.80	0.27	50.38	11.50	0.23	10	2.94	0.45	13	64	2.98	<1
22754	K-3	<1	92	8	26	19	<10	<2	<1	16	77	240	3.13	4.16	19.31	0.29	50.44	11.96	0.23	8	2.85	0.47	15	57	3.53	<1
22755	K-3	<1	80	8	61	149	<10	<2	<1	137	55	119	2.28	1.85	22.50	0.08	47.70	14.00	0.27	11	1.79	0.19	12	44	0.99	1
22756	K-3	<1	115	6	27	27	<10	<2	<1	24	56	82	2.12	1.99	17.30	0.25	54.79	12.27	0.37	4	3.42	0.59	13	102	4.78	<1

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Bi	As	Sb	B	Ba	Au	Pt	Pd	S	Se	Te	Ag	Cu	Mo	W	Sn	F	Ga	Sc	Y	La	Ce	Zr	Nb	Ta
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
22757	K-3	<1	5	<0.2	<10	164	<1	<10	<2	0.12	<5	<1	<0.5	23	<2	<30	<50	130	22	26	76	15	45	224	<100	<2
22758	K-3	<1	6	<0.2	<10	159	<1	<10	<2	0.03	<5	<1	<0.5	13	<2	<30	<50	260	18	22	83	13	42	249	<100	<2
22759	K-3	<1	6	<0.2	<10	171	<1	<10	<2	0.05	<5	<1	<0.5	14	<2	<30	<50	145	18	23	80	17	47	251	<100	<2
22760	K-3	<1	7	0.2	<10	145	<1	<10	<2	0.09	<5	<1	<0.5	5	<2	<30	<50	210	16	22	82	15	48	258	<100	<2
22761	K-3	<1	5	<0.2	30	159	<1	<10	<2	0.05	<5	<1	<0.5	15	<2	<30	<50	180	20	21	85	18	53	261	<100	<2
22762	K-3	<1	7	<0.2	<10	134	<1	<10	<2	0.03	<5	<1	<0.5	28	<2	<30	<50	210	20	22	88	13	44	255	<100	<2
22763	K-3	<1	5	<0.2	20	130	<1	<10	<2	0.05	<5	<1	<0.5	40	<2	<30	<50	220	20	22	90	17	48	249	<100	<2
22764	K-3	<1	6	<0.2	<10	46	<1	<10	<2	0.06	<5	<1	<0.5	25	<2	<30	<50	260	26	20	85	16	43	268	<100	<2
22765	K-3	<1	6	<0.2	<10	47	<1	<10	<2	0.09	<5	<1	<0.5	83	<2	<30	<50	210	24	26	62	15	39	192	<100	<2
22766	K-3	<1	4	<0.2	20	57	<1	<10	<2	0.04	<5	<1	<0.5	47	<2	<30	<50	130	26	29	52	11	30	158	<100	<2
22767	K-3	<1	6	0.2	<10	70	<1	20	<2	0.06	<5	<1	<0.5	41	<2	<30	<50	135	26	29	67	13	41	199	<100	<2
22768	K-3	<1	5	<0.2	<10	96	8	<10	<2	0.07	<5	<1	<0.5	84	<2	<30	<50	130	24	28	54	10	31	179	<100	<2
22769	K-3	<1	6	<0.2	<10	85	<1	<10	<2	0.07	<5	<1	<0.5	46	<2	<30	<50	145	22	32	49	8	23	152	<100	<2
22770	K-3	<1	6	<0.2	<10	72	8	<10	<2	0.19	<5	<1	<0.5	155	<2	<30	<50	84	28	32	46	11	31	144	<100	<2
22771	K-3	<1	8	<0.2	<10	40	10	<10	<2	0.02	<5	<1	N/S	40	<2	<30	<50	170	36	24	35	24	60	98	<100	<2
22772	K-3	<1	5	0.2	<10	90	10	<10	<2	0.07	<5	<1	<0.5	95	<2	<30	<50	145	34	33	48	7	21	128	<100	<2
22773	K-3	<1	4	0.2	<10	47	12	<10	<2	0.04	<5	<1	<0.5	67	<2	<30	<50	100	28	30	43	7	22	131	<100	<2
22774	K-3	<1	3	0.2	<10	25	4	<10	<2	0.02	<5	<1	<0.5	31	<2	<30	<50	150	34	25	37	6	20	122	<100	<2
22775	K-3	<1	6	<0.2	<10	27	6	<10	<2	0.05	<5	<1	<0.5	31	<2	<30	<50	110	26	29	43	8	23	139	<100	<2
22776	K-3	<1	5	<0.2	<10	33	7	<10	<2	0.15	<5	<1	<0.5	99	<2	<30	<50	120	32	30	43	9	26	130	<100	<2
22777	K-3	<1	3	<0.2	<10	30	10	<10	<2	0.12	<5	<1	<0.5	74	<2	<30	<50	105	28	31	44	8	27	138	<100	<2
22778	K-3	<1	4	<0.2	<10	21	5	<10	<2	0.03	<5	<1	<0.5	81	<2	<30	<50	130	30	32	46	8	27	139	<100	<2
22779	K-3	<1	<1	<0.2	<10	26	6	<10	<2	0.10	<5	<1	<0.5	59	<2	<30	<50	145	28	29	43	8	22	134	<100	<2
22780	K-3	<1	5	<0.2	<10	31	14	<10	<2	0.07	<5	<1	<0.5	101	2	<30	<50	86	38	28	41	9	25	136	<100	<2
22781	K-3	<1	4	<0.2	<10	39	8	<10	<2	0.09	<5	<1	<0.5	108	<2	<30	<50	200	38	28	38	9	29	131	<100	<2
22782	K-3	<1	4	<0.2	<10	38	8	<10	<2	0.05	5	<1	<0.5	31	<2	<30	<50	165	40	28	39	8	23	139	<100	<2
22783	K-3	<1	5	0.2	<10	33	13	<10	<2	0.16	<5	<1	<0.5	83	<2	<30	<50	175	42	27	40	9	23	132	<100	<2
20729	OUTCROP	<1	4	<0.2	70	472	1	<10	8	0.12	<5	<1	<0.5	65	12	<30	<50	210	22	12	17	17	39	75	<100	<2
20730	OUTCROP	<1	4	<0.2	<10	663	1	<10	4	0.02	<5	<1	<0.5	66	8	<30	<50	300	24	25	15	35	75	168	<100	<2
20731	OUTCROP	<1	4	<0.2	120	336	2	<10	<2	0.03	<5	<1	<0.5	35	6	<30	<50	110	12	11	8	16	45	67	<100	<2
20732	OUTCROP	<1	6	<0.2	<10	693	<1	<10	<2	0.23	<5	<1	<0.5	85	2	<30	<50	270	24	21	16	31	67	129	<100	<2
22858	K-4	<1	7	<0.2	<10	2701	<1	<10	<2	0.04	<5	1	<0.5	<5	<2	<30	<50	205	4	2	6	110	200	71	<100	<2
22859	K-4	<1	9	0.2	<10	496	1	<10	<2	0.04	<5	2	<0.5	<5	<2	<30	<50	150	4	2	4	27	54	86	<100	<2
22860	K-4	<1	6	<0.2	<10	685	<1	<10	<2	0.17	<5	<1	<0.5	80	<2	<30	<50	550	24	13	13	32	72	117	<100	<2
22861	K-4	<1	10	<0.2	<10	4242	<1	<10	<2	0.30	<5	1	<0.5	<5	<2	<30	<50	250	6	2	6	85	160	35	<100	<2
22862	K-4	<1	9	0.2	<10	4078	<1	<10	<2	0.04	<5	2	<0.5	<5	<2	<30	<50	200	6	2	6	130	250	124	<100	<2
22863	K-4	<1	8	0.6	<10	3842	<1	<10	<2	0.04	<5	1	<0.5	<5	<2	<30	<50	135	4	2	13	330	620	522	<100	<2
22864	K-4	<1	7	0.4	<10	844	<1	<10	6	0.25	<5	<1	<0.5	178	<2	<30	<50	400	24	13	13	39	78	132	<100	<2
22865	K-4	<1	7	0.2	<10	3438	<1	<10	<2	0.07	<5	1	<0.5	62	<2	<30	<50	340	4	3	8	210	370	93	<100	<2
22866	K-4	<1	8	0.6	<10	1473	<1	<10	<2	0.05	<5	1	<0.5	45	<2	<30	<50	260	12	4	5	35	68	100	<100	<2

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Cd	Zn	Pb	Cu	Ni	Pt	Pd	Au	Cr	Co	V	TiO_2	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	P_2O_5	Li	Na_2O	K_2O	Rb	Sr	CaO	Be
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	%	%	%	%	%	%	%	ppm	%	%	ppm	ppm	%	ppm
22757	K-3	<1	88	6	23	33	<10	<2	<1	29	55	56	2.13	2.05	17.34	0.24	54.28	12.46	0.38	6	3.14	0.53	13	88	5.14	<1
22758	K-3	<1	99	4	13	<10	<10	<2	<1	31	43	36	1.62	1.56	16.33	0.23	56.62	12.04	0.41	3	3.00	0.47	13	85	5.89	<1
22759	K-3	<1	106	4	14	21	<10	<2	<1	25	46	35	1.84	1.69	16.68	0.25	56.01	12.05	0.36	2	3.15	0.41	13	101	5.75	<1
22760	K-3	<1	85	4	5	18	<10	<2	<1	36	41	40	1.67	1.48	14.62	0.22	57.28	12.04	0.41	3	2.99	0.38	12	102	6.62	<1
22761	K-3	<1	103	8	15	29	<10	<2	<1	28	47	33	1.58	1.69	16.72	0.23	56.14	12.09	0.41	4	3.45	0.50	15	89	4.81	<1
22762	K-3	<1	84	6	28	35	<10	<2	<1	35	46	44	1.64	1.68	15.68	0.22	56.91	12.58	0.43	5	3.55	0.41	12	73	5.32	<1
22763	K-3	<1	91	6	40	13	<10	<2	<1	33	48	32	1.60	1.62	15.93	0.23	55.65	11.96	0.43	5	3.23	0.43	15	79	6.48	<1
22764	K-3	<1	77	6	25	35	<10	<2	<1	40	44	46	1.37	1.56	14.58	0.19	54.96	11.68	0.40	6	3.73	0.42	13	58	5.52	<1
22765	K-3	<1	95	6	83	32	<10	<2	<1	34	64	254	1.92	3.06	17.02	0.22	52.01	11.75	0.29	8	2.37	0.47	14	94	6.93	<1
22766	K-3	<1	105	6	47	48	<10	<2	<1	28	70	346	1.95	4.16	16.82	0.24	48.65	11.65	0.25	10	2.40	0.36	13	97	7.60	<1
22767	K-3	<1	87	6	41	36	20	<2	<1	36	66	246	1.90	3.45	16.08	0.21	53.43	12.03	0.30	7	2.22	0.43	13	116	7.02	<1
22768	K-3	<1	97	6	84	55	<10	<2	8	29	71	313	1.84	4.01	16.68	0.23	51.09	12.01	0.26	8	2.70	0.53	14	116	7.69	<1
22769	K-3	<1	94	8	46	55	<10	<2	<1	28	72	367	1.83	4.53	16.49	0.26	50.35	12.13	0.23	7	2.99	0.50	13	103	7.86	<1
22770	K-3	<1	93	6	155	49	<10	<2	8	27	72	359	1.94	4.68	16.00	0.23	47.67	12.07	0.24	9	3.43	0.44	12	92	7.17	<1
22771	K-3	<1	89	8	40	150	<10	<2	10	254	61	258	0.94	7.91	11.60	0.26	41.43	10.75	0.22	**	3.01	0.27	**	127	12.45	1
22772	K-3	<1	88	8	95	46	<10	<2	10	26	70	353	1.83	4.57	15.78	0.24	48.41	11.96	0.22	11	3.18	0.46	12	57	7.12	<1
22773	K-3	<1	96	6	67	43	<10	<2	12	28	69	350	1.81	4.82	15.95	0.23	48.52	11.95	0.21	5	2.66	0.35	8	78	7.73	<1
22774	K-3	<1	97	8	31	39	<10	<2	4	36	65	309	1.53	5.03	15.03	0.22	46.69	11.02	0.19	15	2.58	0.26	10	61	9.99	<1
22775	K-3	<1	93	6	31	55	<10	<2	6	33	77	357	1.81	4.94	15.99	0.23	49.96	12.35	0.22	7	2.69	0.34	10	68	7.68	<1
22776	K-3	<1	95	6	99	62	<10	<2	7	27	68	357	1.75	4.71	16.25	0.25	49.00	11.99	0.21	11	2.65	0.30	12	72	7.70	<1
22777	K-3	<1	101	6	74	47	<10	<2	10	28	70	362	1.79	5.25	16.48	0.24	48.72	12.33	0.22	13	2.46	0.29	12	100	7.63	<1
22778	K-3	<1	109	6	81	44	<10	<2	5	35	75	372	1.86	5.95	17.33	0.23	46.53	12.60	0.23	13	2.26	0.24	10	62	7.16	<1
22779	K-3	<1	89	8	59	51	<10	<2	6	43	67	346	1.75	5.03	15.24	0.21	47.09	11.77	0.21	12	2.41	0.17	9	59	7.83	<1
22780	K-3	<1	91	8	101	56	<10	<2	14	27	68	332	1.68	4.67	15.41	0.21	47.21	11.52	0.21	9	2.68	0.31	5	45	7.84	<1
22781	K-3	<1	94	8	108	95	<10	<2	8	67	73	356	1.69	4.38	15.59	0.21	46.41	11.38	0.21	13	2.70	0.44	9	50	7.47	<1
22782	K-3	<1	85	8	31	56	<10	<2	8	38	69	341	1.67	4.45	14.97	0.21	46.67	11.31	0.21	11	3.02	0.60	10	49	8.03	<1
22783	K-3	<1	115	8	83	74	<10	<2	13	40	72	342	1.66	4.44	14.96	0.22	46.01	11.43	0.21	10	2.78	0.43	11	60	8.29	<1
20729	OUTCROP	1	390	54	65	53	<10	8	1	203	26	113	0.47	2.74	5.04	0.07	70.06	11.29	0.14	37	2.29	1.60	44	214	3.93	<1
20730	OUTCROP	<1	106	10	66	108	<10	4	1	230	43	199	1.02	3.57	8.29	0.12	50.19	23.39	0.24	45	3.61	3.54	63	388	2.15	<1
20731	OUTCROP	<1	53	8	35	61	<10	<2	2	266	21	90	0.38	1.51	3.62	0.06	77.00	10.76	0.14	23	1.97	1.68	47	200	1.09	<1
20732	OUTCROP	<1	70	6	85	90	<10	<2	<1	195	35	154	0.82	3.40	6.87	0.08	61.79	15.77	0.22	64	4.27	2.04	49	301	1.62	<1
22858	K-4	<1	35	14	<5	18	<10	<2	<1	142	11	30	0.13	0.43	1.28	0.02	73.33	13.48	0.04	13	3.45	3.75	77	414	1.68	<1
22859	K-4	<1	37	10	<5	35	<10	<2	1	91	10	22	0.21	0.51	1.26	0.02	72.33	15.23	0.04	14	5.54	1.45	31	520	2.10	<1
22860	K-4	<1	85	10	80	76	<10	<2	<1	212	31	130	0.55	2.84	6.16	0.09	63.14	15.94	0.12	38	4.15	2.31	100	382	2.96	2
22861	K-4	<1	40	14	<5	<10	<10	<2	<1	98	11	21	0.17	0.44	1.73	0.02	70.81	13.94	0.02	15	2.92	5.65	115	335	1.17	<1
22862	K-4	<1	40	18	<5	56	<10	<2	<1	129	10	24	0.15	0.37	1.61	0.02	71.52	13.66	0.03	14	2.86	5.48	51	322	1.18	<1
22863	K-4	<1	29	18	<5	21	<10	<2	<1	91	9	20	0.10	0.24	1.13	0.02	72.91	14.28	0.08	12	3.21	5.23	78	348	1.47	<1
22864	K-4	<1	96	12	178	99	<10	6	<1	215	31	133	0.56	2.74	6.51	0.09	63.05	15.78	0.12	38	3.90	2.48	120	348	2.95	2
22865	K-4	<1	40	20	62	26	<10	<2	<1	132	12	17	0.13	0.34	1.54	0.02	71.77	14.49	0.04	13	3.41	4.85	75	336	1.51	<1
22866	K-4	<1	64	16	45	59	<10	<2	<1	109	15	55	0.34	1.17	3.24	0.04	67.07	16.56	0.06	30	4.70	2.50	96	448	2.76	1

** = NON-SUFFICIENT SAMPLE

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Bi	As	Sb	B	Ba	Au	Pt	Pd	S	Se	Te	Ag	Cu	Mo	W	Sn	F	Ga	Sc	Y	La	Ce	Zr	Nb	Ta
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
22867	K-4	<1	6	<0.2	<10	2515	<1	<10	<2	0.05	<5	2	<0.5	39	<2	<30	<50	120	4	2	5	130	240	294	<100	<2
22868	K-4	<1	10	0.2	<10	3040	<1	<10	<2	0.06	<5	1	<0.5	29	<2	<30	<50	102	2	1	3	10	19	67	<100	<2
22869	K-4	<1	6	<0.2	<10	2575	<1	<10	<2	0.04	<5	1	<0.5	15	<2	<30	<50	210	6	2	13	37	71	115	<100	<2
22842	K-5	<1	11	0.2	20	820	<1	<10	<2	0.03	<5	<1	<0.5	41	<2	<30	<50	550	10	4	11	13	30	104	<100	<2
22843	K-5	<1	7	0.4	<10	233	<1	<10	<2	0.04	<5	<1	<0.5	41	<2	<30	<50	900	38	28	25	37	81	123	<100	<2
22844	K-5	<1	12	0.2	20	102	<1	<10	<2	0.16	<5	<1	<0.5	30	<2	<30	<50	1000	42	29	23	24	55	109	<100	<2
22845	K-5	<1	12	0.4	20	168	<1	<10	<2	0.04	<5	<1	<0.5	14	<2	<30	<50	340	20	8	17	18	42	189	<100	<2
22846	K-5	<1	10	0.4	<10	804	<1	<10	5	0.03	<5	<1	<0.5	<5	<2	<30	<50	180	8	1	5	8	16	41	<100	<2
22847	K-5	<1	11	0.4	<10	451	<1	<10	<2	0.03	<5	<1	<0.5	<5	<2	<30	<50	400	14	2	10	12	26	179	<100	<2
22848	K-5	<1	2	0.6	<10	3071	<1	<10	<2	0.03	<5	<1	<0.5	27	<2	<30	<50	92	4	<1	4	9	13	10	<100	<2
22849	K-5	<1	1	0.4	<10	2898	<1	<10	<2	0.03	<5	<1	<0.5	5	<2	<30	<50	105	10	2	4	13	24	17	<100	<2
22850	K-5	<1	9	0.6	<10	2902	<1	<10	<2	0.03	<5	<1	<0.5	26	<2	<30	<50	102	10	1	4	8	15	39	<100	<2
22851	K-5	<1	8	0.4	<10	3088	<1	<10	<2	0.03	<5	<1	<0.5	26	<2	<30	<50	140	10	2	9	13	27	54	<100	<2
22852	K-5	<1	11	0.6	<10	2359	<1	<10	<2	0.03	<5	1	<0.5	<5	<2	<30	<50	400	4	2	12	52	110	88	<100	<2
22853	K-5	<1	10	0.4	<10	2453	<1	<10	<2	0.04	<5	2	<0.5	7	<2	<30	<50	105	6	2	7	9	17	10	<100	<2
22854	K-5	<1	9	0.4	20	378	<1	<10	<2	0.05	<5	<1	<0.5	<5	<2	<30	<50	375	16	8	24	21	49	189	<100	<2
22855	K-5	<1	8	0.2	<10	216	<1	<10	<2	0.04	<5	<1	<0.5	<5	<2	<30	<50	420	18	8	22	23	49	196	<100	<2
22856	K-5	<1	9	0.2	20	198	<1	<10	<2	0.05	<5	<1	<0.5	<5	<2	<30	<50	500	18	7	21	23	53	209	<100	<2
22857	K-5	<1	10	0.4	<10	2591	<1	<10	<2	0.05	<5	1	<0.5	9	<2	<30	<50	250	4	2	9	23	46	29	<100	<2
22828	K-6	<1	2	<0.2	<10	1209	2	<10	<2	0.04	<5	<1	<0.5	19	<2	<30	<50	250	12	5	9	22	40	100	<100	<2
22829	K-6	<1	3	<0.2	<10	1461	6	<10	<2	0.01	<5	<1	<0.5	25	<2	<30	<50	80	8	2	4	7	17	56	<100	<2
22830	K-6	<1	3	<0.2	20	1079	6	<10	<2	0.01	<5	<1	<0.5	11	<2	<30	<50	35	8	1	6	8	17	78	<100	<2
22831	K-6	1	4	<0.2	30	451	4	<10	<2	0.01	<5	<1	<0.5	11	<2	<30	<50	120	12	2	6	9	19	96	<100	<2
22832	K-6	<1	1	0.8	<10	1713	<1	<10	<2	0.04	<5	<1	<0.5	<5	<2	<30	<50	90	8	1	14	5	12	48	<100	<2
22833	K-6	<1	8	0.6	<10	680	<1	<10	<2	0.03	<5	<1	<0.5	44	<2	<30	<50	375	24	10	14	22	47	107	<100	<2
22834	K-6	<1	10	0.8	<10	516	<1	<10	<2	0.04	<5	<1	<0.5	13	<2	<30	<50	500	12	3	10	11	25	64	<100	<2
22835	K-6	<1	7	0.4	<10	658	<1	<10	6	0.13	<5	<1	<0.5	87	<2	<30	<50	320	24	12	13	26	56	116	<100	<2
22836	K-6	<1	6	0.6	<10	1248	<1	<10	<2	0.04	<5	<1	<0.5	16	<2	<30	<50	400	12	4	10	34	75	99	<100	<2
22837	K-6	<1	5	0.4	<10	614	1	<10	7	0.03	<5	<1	<0.5	36	<2	<30	<50	1030	22	19	19	40	100	123	<100	<2
22838	K-6	<1	8	0.6	20	785	<1	<10	<2	0.03	<5	<1	<0.5	19	<2	<30	<50	720	20	10	13	21	46	80	<100	<2
22839	K-6	<1	10	0.4	20	730	<1	<10	<2	0.03	<5	<1	<0.5	31	<2	<30	<50	110	10	4	12	23	55	75	<100	<2
22840	K-6	<1	8	0.6	20	924	<1	<10	<2	0.05	<5	<1	<0.5	39	<2	<30	<50	280	12	5	7	22	48	73	<100	<2
22841	K-6	<1	7	0.4	20	1008	<1	<10	<2	0.05	<5	<1	<0.5	49	<2	<30	<50	500	16	7	9	23	49	93	<100	<2
22785	B-1	<1	5	<0.2	40	1172	18	<10	<2	0.02	<5	<1	<0.5	34	<2	<30	<50	500	8	16	20	47	75	181	<100	<2
22786	B-1	<1	9	<0.2	50	1165	21	10	6	0.01	<5	<1	<0.5	30	<2	<30	<50	580	8	17	21	49	69	193	<100	<2
22787	B-1	<1	8	<0.2	50	1151	5	<10	<2	0.02	<5	<1	<0.5	59	<2	<30	<50	430	10	15	18	45	110	197	<100	<2
22788	B-1	<1	11	<0.2	40	1192	8	<10	<2	0.01	<5	<1	<0.5	50	<2	<30	<50	350	6	14	16	39	90	187	<100	<2
22789	B-1	<1	5	<0.2	40	1061	10	<10	<2	0.04	<5	<1	<0.5	43	<2	<30	<50	390	10	14	17	40	72	178	<100	<2
22790	B-1	<1	5	0.2	50	1087	10	10	<2	0.26	<5	<1	<0.5	58	<2	<30	<50	450	10	13	18	43	82	174	<100	<2
22791	B-1	<1	5	<0.2	40	1201	12	<10	4	0.07	<5	<1	<0.5	92	<2	<30	<50	660	10	11	23	46	92	182	<100	<2

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

APPENDIX B-9

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Cd	Zn	Pb	Cu	Ni	Pt	Pd	Au	Cr	Co	V	TiO_2	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	P_2O_5	Li	Na_2O	K_2O	Rb	Sr	CaO	Be
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	%	%	%	%	%	%	%	ppm	%	%	ppm	ppm	%	ppm
22867	K-4	<1	34	20	39	17	<10	<2	<1	89	11	28	0.15	0.45	1.53	0.02	67.19	16.85	0.06	13	4.25	4.27	29	368	2.57	1
22868	K-4	<1	24	18	29	<10	<10	<2	<1	82	8	11	0.04	0.13	0.51	0.01	72.19	14.81	0.06	8	3.06	6.89	150	342	1.25	<1
22869	K-4	<1	49	20	15	<10	<10	<2	<1	105	10	25	0.24	0.46	1.86	0.02	69.80	14.05	0.20	22	2.43	7.17	180	285	1.03	<1
22842	K-5	<1	73	10	41	65	<10	<2	<1	200	9	23	0.22	0.45	2.38	0.03	70.49	14.71	0.02	7	3.77	3.85	78	190	0.97	1
22843	K-5	<1	143	8	41	19	<10	<2	<1	97	46	323	1.51	7.08	11.95	0.08	54.77	14.57	0.17	59	2.78	0.93	25	179	0.98	5
22844	K-5	<1	141	8	30	12	<10	<2	<1	84	47	339	1.64	7.61	12.57	0.10	54.61	14.22	0.23	63	3.08	0.66	11	109	0.53	5
22845	K-5	<1	86	8	14	<10	<10	<2	<1	75	16	54	0.53	2.70	4.91	0.05	66.89	14.96	0.10	23	4.33	1.29	30	186	1.39	<1
22846	K-5	<1	56	10	<5	28	<10	5	<1	134	2	18	0.11	0.62	1.23	0.02	74.57	13.89	<0.02	6	3.91	3.85	52	159	0.58	<1
22847	K-5	<1	72	10	<5	39	<10	<2	<1	98	6	37	0.27	1.54	2.46	0.02	71.31	14.36	0.04	15	4.56	1.28	27	197	1.21	1
22848	K-5	<1	52	14	27	<10	<10	<2	<1	133	3	11	0.07	0.29	0.58	0.01	71.22	14.57	<0.02	4	2.88	7.26	100	249	0.16	<1
22849	K-5	<1	73	12	5	17	<10	<2	<1	129	7	27	0.24	0.96	1.85	0.03	70.36	14.27	<0.02	10	2.67	6.89	145	235	0.11	<1
22850	K-5	<1	67	12	26	<10	<10	<2	<1	81	4	17	0.18	0.81	1.66	0.02	70.62	14.74	<0.02	7	3.06	6.54	93	246	0.16	<1
22851	K-5	<1	72	14	26	<10	<10	<2	<1	74	6	20	0.21	0.88	1.87	0.02	69.29	15.03	0.05	6	3.10	6.65	46	262	0.28	<1
22852	K-5	<1	39	14	<5	26	<10	<2	<1	82	10	23	0.15	0.72	1.48	0.02	69.07	15.07	<0.02	7	3.50	6.45	150	228	0.30	<1
22853	K-5	<1	36	10	7	20	<10	<2	<1	72	11	26	0.18	0.89	1.60	0.02	69.04	15.49	0.03	9	4.05	5.57	120	270	0.24	<1
22854	K-5	<1	81	6	<5	10	<10	<2	<1	100	20	69	0.51	2.69	4.48	0.06	67.77	14.53	0.14	30	4.22	1.47	40	214	1.05	2
22855	K-5	<1	74	6	<5	<10	<10	<2	<1	67	22	74	0.53	3.41	5.05	0.07	66.05	15.52	0.11	39	4.62	1.27	25	254	0.75	2
22856	K-5	<1	75	8	<5	22	<10	<2	<1	103	21	68	0.49	3.21	4.80	0.07	66.91	15.49	0.10	16	4.90	1.28	12	209	0.65	2
22857	K-5	<1	38	12	9	19	<10	<2	<1	114	10	31	0.17	0.77	1.68	0.02	72.92	14.36	<0.02	9	3.22	6.11	115	232	0.24	<1
22828	K-6	<1	85	10	19	107	<10	<2	2	234	40	61	0.20	1.12	2.64	0.03	68.99	14.46	0.14	18	3.41	4.29	155	625	2.05	2
22829	K-6	<1	47	8	25	75	<10	<2	6	132	32	49	0.14	0.47	1.55	0.05	67.84	15.23	0.08	12	3.75	5.16	116	900	2.16	2
22830	K-6	<1	42	6	11	61	<10	<2	6	176	33	50	0.11	0.35	1.25	0.08	68.99	15.17	0.07	10	3.89	4.33	106	693	2.60	3
22831	K-6	<1	57	6	11	76	<10	<2	4	145	32	54	0.17	0.63	1.80	0.04	65.98	15.51	0.11	16	4.64	2.46	67	546	4.32	3
22832	K-6	<1	57	20	<5	10	<10	<2	<1	142	9	22	0.05	0.17	0.64	0.03	71.32	14.40	0.04	3	2.74	7.41	115	468	1.91	1
22833	K-6	<1	109	14	44	65	<10	<2	<1	259	23	86	0.45	2.22	4.77	0.06	65.15	15.81	0.14	23	4.15	1.76	32	577	3.08	3
22834	K-6	<1	70	14	13	49	<10	<2	<1	177	10	69	0.18	0.78	2.18	0.04	69.72	15.30	0.03	12	4.68	1.50	43	531	3.85	2
22835	K-6	<1	124	12	87	68	<10	6	<1	278	33	124	0.56	3.00	5.84	0.09	64.07	15.54	0.15	33	4.03	2.11	105	495	3.18	3
22836	K-6	<1	74	14	16	48	<10	<2	<1	173	14	45	0.24	1.02	2.61	0.06	68.19	15.53	0.07	12	4.42	2.47	52	674	3.28	2
22837	K-6	<1	158	10	36	262	<10	7	1	825	60	181	0.65	8.67	8.73	0.17	54.76	13.22	0.30	30	2.89	1.97	88	496	6.73	3
22838	K-6	<1	101	10	19	112	<10	<2	<1	462	29	62	0.34	3.20	4.36	0.08	65.12	14.10	0.08	22	3.83	1.98	72	603	3.70	3
22839	K-6	<1	64	10	31	35	<10	<2	<1	167	9	58	0.22	0.63	2.26	0.07	69.09	15.21	0.07	6	4.80	3.08	62	646	1.82	1
22840	K-6	<1	73	12	39	32	<10	<2	<1	183	13	49	0.24	1.10	2.60	0.04	69.54	15.25	0.03	16	4.62	2.57	72	679	2.34	1
22841	K-6	<1	96	14	49	47	<10	<2	<1	183	18	67	0.35	1.90	3.77	0.06	66.74	15.84	0.08	30	4.55	2.75	92	779	2.35	2
22785	B-1	<1	99	16	34	131	<10	<2	18	209	54	200	0.84	1.52	7.12	0.07	56.99	20.34	0.14	63	0.23	6.09	20	46	0.83	3
22786	B-1	<1	133	12	30	145	10	6	21	220	55	194	0.89	1.31	7.16	0.03	54.25	22.14	0.11	69	0.15	5.56	21	60	0.51	3
22787	B-1	<1	126	10	59	136	<10	<2	5	200	50	195	0.86	1.27	7.37	0.05	56.77	21.62	0.09	53	0.11	5.61	22	62	0.33	2
22788	B-1	<1	122	4	50	153	<10	<2	8	169	55	176	0.71	1.42	5.73	0.03	60.86	20.39	0.07	51	0.12	6.73	32	70	0.20	2
22789	B-1	<1	152	8	43	183	<10	<2	10	175	65	180	0.74	1.59	6.00	0.04	58.23	19.96	0.08	52	0.11	6.75	35	65	0.31	2
22790	B-1	<1	172	10	58	191	10	<2	10	173	55	161	0.74	1.59	6.30	0.07	59.99	19.22	0.10	56	0.14	6.03	37	73	0.41	2
22791	B-1	<1	168	12	92	255	<10	4	12	193	48	176	0.69	1.95	5.85	0.05	59.32	20.26	0.27	46	0.50	6.89	31	108	0.87	3

ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Bi	As	Sb	B	Ba	Au	Pt	Pd	S	Se	Te	Ag	Cu	Mo	W	Sn	F	Ga	Sc	Y	La	Ce	Zr	Nb	Ta
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
22792	B-1	<1	2	0.4	20	1096	3	<10	<2	0.05	<5	<1	<0.5	43	<2	<30	<50	640	12	11	20	42	84	187	<100	<2
22793	B-1	<1	3	<0.2	30	1272	2	<10	<2	0.04	<5	<1	<0.5	62	<2	<30	<50	700	12	12	17	37	79	180	<100	<2
22794	B-1	<1	6	<0.2	<10	735	2	<10	<2	0.12	<5	<1	<0.5	67	<2	<30	<50	760	22	11	18	36	80	158	<100	<2
22795	B-1	<1	8	<0.2	20	1036	2	<10	<2	0.34	<5	<1	<0.5	85	<2	<30	<50	560	18	12	17	35	77	167	<100	<2
22796	B-1	<1	5	<0.2	20	841	<1	<10	<2	0.54	<5	<1	<0.5	81	2	<30	<50	580	18	12	14	35	77	170	<100	<2
22797	B-1	<1	10	0.2	20	949	3	<10	<2	0.70	<5	<1	<0.5	96	2	<30	<50	580	18	12	16	35	71	171	<100	<2
22798	B-1	<1	8	<0.2	40	936	2	<10	<2	0.63	<5	<1	<0.5	90	2	<30	<50	500	18	11	14	35	76	164	<100	<2
22799	B-1	<1	11	<0.2	40	921	2	<10	<2	0.30	<5	<1	<0.5	72	4	<30	<50	500	18	12	15	38	83	172	<100	<2
22800	B-1	<1	9	0.2	30	908	3	<10	<2	0.17	<5	<1	<0.5	73	4	<30	<50	460	18	12	17	36	78	165	<100	<2
22801	B-1	<1	8	0.2	30	878	3	<10	<2	0.17	<5	<1	<0.5	88	6	<30	<50	440	20	11	11	32	63	160	<100	<2
22802	B-1	<1	6	<0.2	30	907	3	<10	<2	0.19	<5	<1	<0.5	69	6	<30	<50	440	12	10	12	37	78	172	<100	<2
22803	B-1	<1	13	<0.2	30	951	6	<10	<2	0.12	<5	<1	<0.5	66	4	<30	<50	480	14	11	15	39	82	168	<100	<2
22804	B-1	<1	10	<0.2	50	999	2	<10	<2	0.10	<5	<1	<0.5	71	4	<30	<50	470	12	12	14	37	77	178	<100	<2
22805	B-1	<1	14	<0.2	30	981	<1	<10	<2	0.18	<5	<1	<0.5	134	4	<30	<50	560	16	11	11	36	74	161	<100	<2
22806	B-2	<1	3	<0.2	20	439	2	<10	<2	0.02	<5	<1	<0.5	33	<2	<30	<50	270	16	10	20	21	45	137	<100	<2
22807	B-2	<1	11	<0.2	<10	497	<1	<10	4	0.13	<5	<1	<0.5	92	<2	<30	<50	360	22	16	23	25	56	164	<100	<2
22808	B-2	<1	8	<0.2	<10	504	<1	<10	<2	0.22	<5	<1	<0.5	47	<2	<30	<50	310	20	12	18	25	55	152	<100	<2
22809	B-2	<1	7	<0.2	30	563	2	<10	<2	0.09	<5	<1	<0.5	65	<2	<30	<50	430	22	15	19	62	120	151	<100	4
22810	B-2	<1	4	<0.2	<10	320	<1	<10	<2	0.05	<5	<1	<0.5	52	<2	<30	<50	400	26	16	20	60	120	152	<100	<2
22811	B-2	<1	10	<0.2	<10	472	<1	<10	<2	0.21	<5	<1	<0.5	65	<2	<30	<50	370	20	13	18	26	57	155	<100	<2
22812	B-2	<1	8	<0.2	<10	304	3	<10	<2	0.10	<5	<1	<0.5	62	<2	<30	<50	210	20	10	20	26	54	143	<100	<2
22813	B-2	<1	6	<0.2	<10	394	3	<10	<2	0.15	<5	<1	<0.5	60	<2	<30	<50	150	18	10	18	23	50	142	<100	<2
22814	B-2	<1	9	<0.2	<10	425	<1	<10	<2	0.32	<5	<1	<0.5	74	<2	<30	<50	260	22	12	16	27	60	151	<100	<2
22815	B-2	1	14	<0.2	<10	428	5	<10	<2	0.25	<5	<1	<0.5	66	<2	<30	<50	380	20	10	16	25	50	132	<100	<2
22816	B-2	<1	5	<0.2	<10	438	4	<10	<2	0.18	<5	<1	<0.5	62	<2	<30	<50	190	18	10	16	26	54	124	<100	<2
22817	B-2	<1	7	<0.2	<10	370	3	<10	<2	0.24	<5	<1	<0.5	37	<2	<30	<50	180	16	11	15	27	54	130	<100	<2
22818	B-2	<1	9	<0.2	<10	487	3	<10	<2	0.13	<5	<1	<0.5	59	<2	<30	<50	270	20	10	16	25	49	121	<100	<2
22819	B-2	1	14	<0.2	<10	389	6	<10	<2	0.17	<5	<1	<0.5	42	<2	<30	<50	350	24	12	17	27	60	143	<100	<2
22820	B-2	<1	7	<0.2	<10	470	7	<10	<2	0.29	<5	<1	<0.5	66	<2	<30	<50	280	22	14	18	25	58	141	<100	<2
22821	B-2	1	9	<0.2	<10	406	6	<10	4	0.16	<5	<1	<0.5	49	<2	<30	<50	130	22	10	17	23	50	148	<100	<2
22822	B-2	<1	9	<0.2	<10	439	5	<10	<2	0.35	<5	<1	<0.5	102	<2	<30	<50	330	28	17	28	30	65	173	<100	<2
22823	B-2	1	7	<0.2	<10	375	30	<10	<2	0.15	<5	<1	<0.5	52	<2	<30	<50	230	26	13	17	24	53	139	<100	<2
22824	B-2	<1	7	<0.2	<10	253	8	<10	<2	0.16	<5	<1	<0.5	70	<2	<30	<50	350	24	10	20	30	69	162	<100	<2
22825	B-2	1	9	<0.2	<10	471	6	<10	<2	0.14	<5	<1	<0.5	52	<2	<30	<50	200	24	13	21	26	55	156	<100	<2
22826	B-2	1	7	<0.2	30	496	3	<10	<2	0.23	<5	<1	<0.5	65	<2	<30	<50	140	24	13	18	25	52	147	<100	<2
22827	B-2	1	9	<0.2	20	410	4	<10	<2	0.16	<5	<1	<0.5	46	<2	<30	<50	300	22	10	16	25	52	134	<100	<2
20849	OUTCROP	<1	10	<0.2	<10	194	2	<10	<2	0.17	<5	<1	<0.5	22	<2	<30	<50	110	30	4	7	4	8	<10	<100	<2
20850	OUTCROP	<1	7	<0.2	30	15	4	<10	<2	0.02	<5	<1	<0.5	10	<2	<30	<50	58	22	<1	3	2	<5	<10	<100	<2

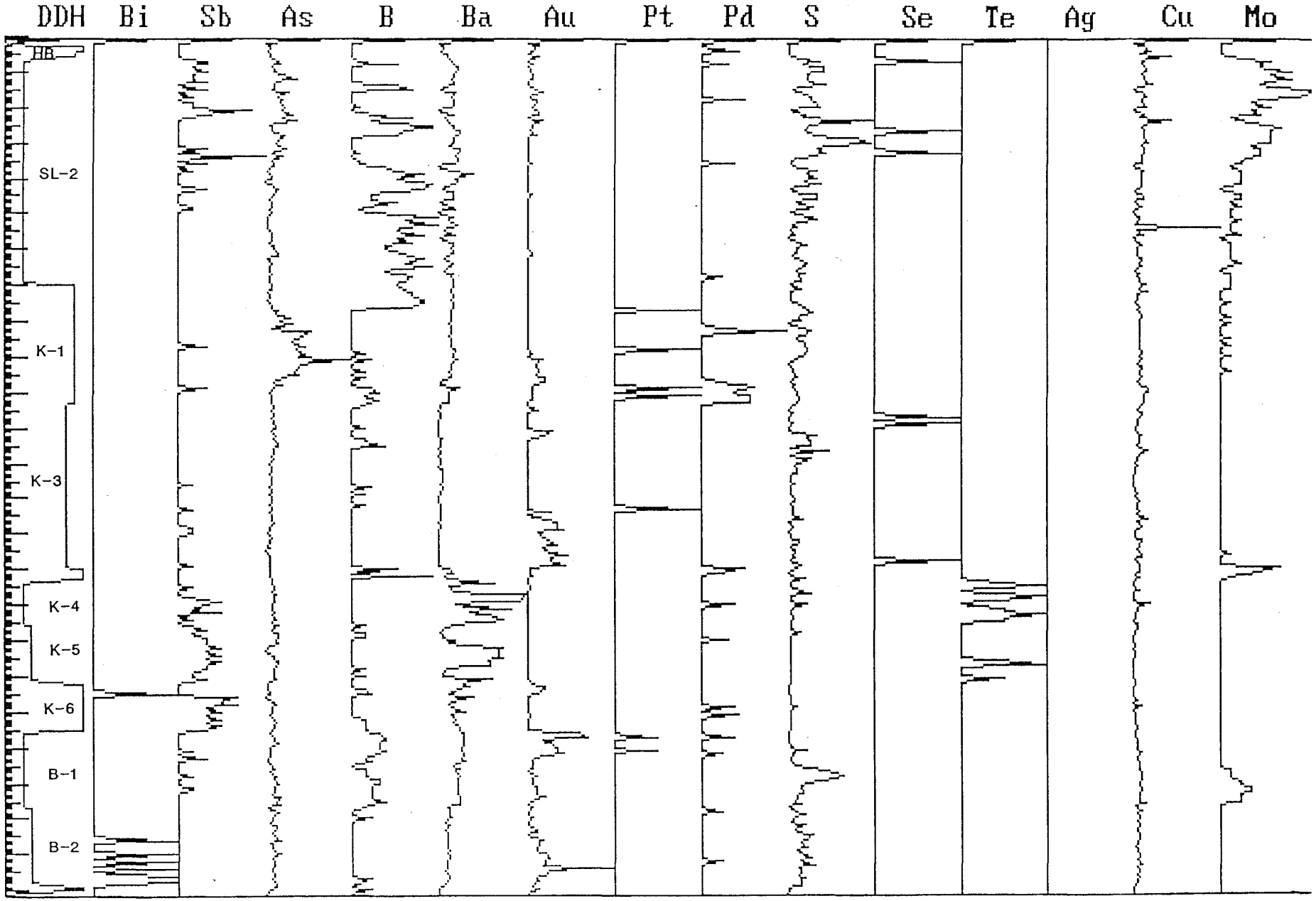
ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT

APPENDIX B-11

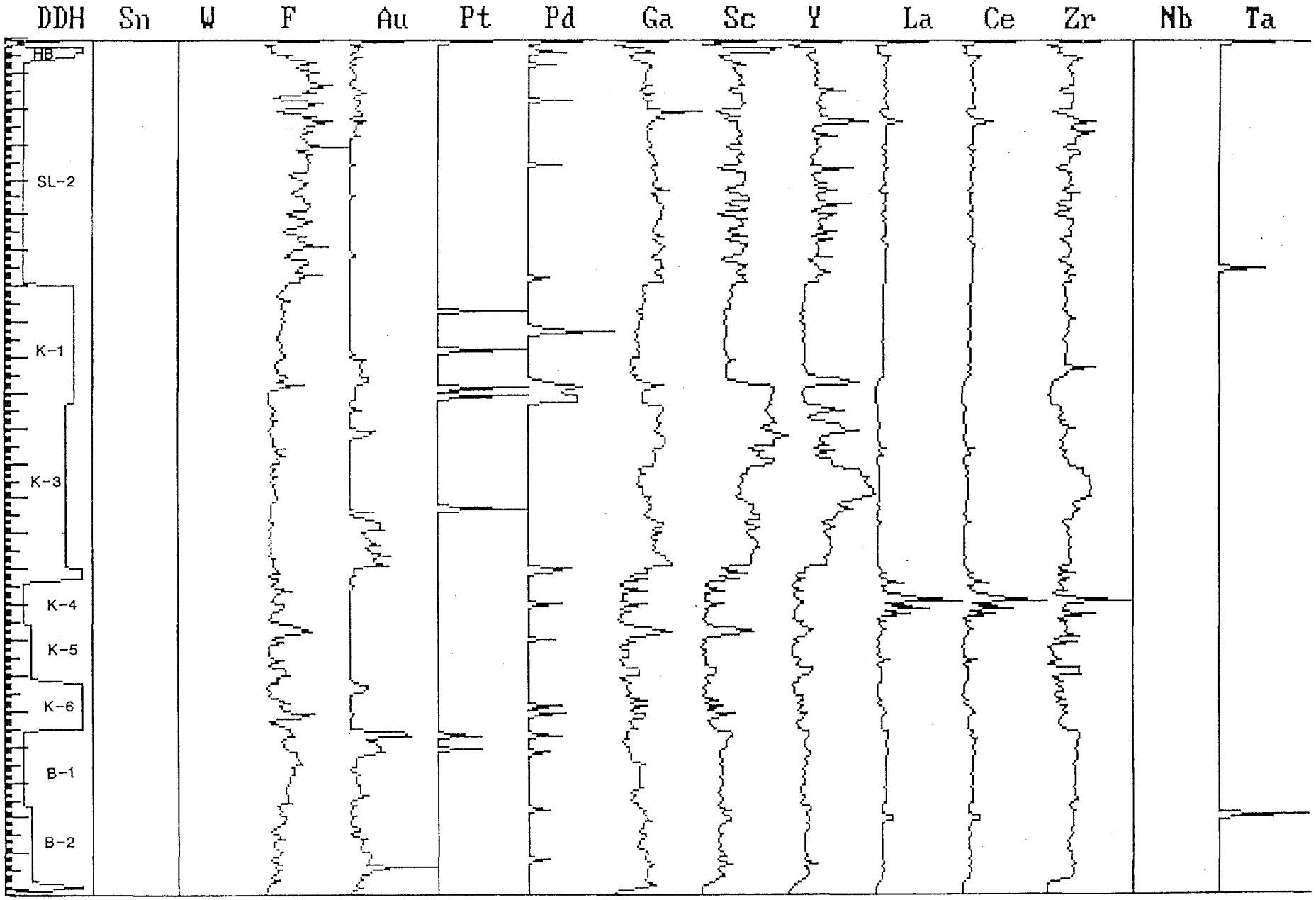
PROJECT 264
ANALYTICAL RESULTS

SAMPLE NUMBER	DRILL HOLE	Cd	Zn	Pb	Cu	Ni	Pt	Pd	Au	Cr	Co	V	TiO_2	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	P_2O_5	Li	Na_2O	K_2O	Rb	Sr	CaO	Be
		ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppm	ppm	ppm	%	%	%	%	%	%	%	ppm	%	%	ppm	ppm	%	ppm
22792	B-1	<1	123	8	43	179	<10	<2	3	187	49	159	0.68	1.69	5.12	0.10	59.76	19.90	0.27	31	2.03	5.92	46	159	0.77	2
22793	B-1	<1	113	14	62	197	<10	<2	2	200	56	161	0.68	1.57	5.27	0.06	60.33	19.07	0.26	47	1.76	6.21	46	165	0.65	3
22794	B-1	<1	140	6	67	227	<10	<2	2	178	53	156	0.67	2.23	7.51	0.04	60.34	17.30	0.27	49	3.33	4.47	160	230	0.71	1
22795	B-1	<1	107	14	85	181	<10	<2	2	171	63	159	0.65	2.14	7.11	0.07	61.14	17.15	0.32	30	1.80	5.24	35	154	0.81	2
22796	B-1	<1	98	12	81	134	<10	<2	<1	181	59	158	0.65	2.03	6.93	0.06	60.14	17.02	0.25	25	2.54	4.79	26	182	1.00	2
22797	B-1	<1	98	10	96	137	<10	<2	3	163	57	156	0.67	2.01	7.39	0.04	61.46	16.68	0.27	38	1.29	5.53	39	126	0.51	2
22798	B-1	<1	105	10	90	151	<10	<2	2	166	57	152	0.64	2.02	6.68	0.06	60.26	16.76	0.23	29	1.75	5.57	28	141	1.30	1
22799	B-1	<1	90	10	72	130	<10	<2	2	165	55	161	0.68	2.01	6.78	0.09	58.37	16.63	0.27	39	1.95	5.04	28	171	2.39	1
22800	B-1	<1	85	10	73	118	<10	<2	3	148	51	145	0.65	1.94	5.86	0.08	58.34	16.34	0.21	35	2.15	4.71	26	335	3.62	1
22801	B-1	<1	88	10	88	130	<10	<2	3	153	51	143	0.63	1.96	6.08	0.07	59.90	16.09	0.21	47	2.23	4.49	39	300	3.05	1
22802	B-1	<1	90	6	69	123	<10	<2	3	176	51	148	0.63	1.71	5.19	0.05	61.44	18.26	0.24	31	3.32	4.84	42	230	0.74	2
22803	B-1	<1	80	8	66	131	<10	<2	6	188	53	150	0.63	1.53	5.61	0.15	62.06	17.87	0.27	31	3.00	4.85	49	214	0.64	2
22804	B-1	<1	77	6	71	130	<10	<2	2	201	52	158	0.67	1.55	4.78	0.06	63.50	17.96	0.25	21	2.78	5.04	38	196	0.49	2
22805	B-1	<1	91	6	134	139	<10	<2	<1	175	51	146	0.64	1.56	5.07	0.06	61.31	17.50	0.22	31	2.63	4.81	35	289	2.05	1
22806	B-2	<1	81	6	33	98	<10	<2	2	186	44	117	0.55	2.24	5.79	0.03	68.66	13.69	0.13	18	3.01	2.17	22	214	0.42	1
22807	B-2	<1	108	16	92	115	<10	4	<1	191	70	201	0.83	3.24	7.15	0.05	61.06	16.62	0.18	40	3.61	2.67	61	220	0.48	1
22808	B-2	<1	102	10	47	114	<10	<2	<1	219	60	152	0.66	2.86	6.53	0.04	64.94	15.20	0.15	31	2.98	2.81	27	198	0.35	1
22809	B-2	<1	110	10	65	125	<10	<2	2	238	56	179	0.76	3.29	7.40	0.08	62.45	16.33	0.19	43	3.16	2.71	73	217	0.63	1
22810	B-2	<1	125	12	52	133	<10	<2	<1	238	57	188	0.80	3.24	8.00	0.09	60.81	16.41	0.19	27	4.79	1.65	23	290	0.49	1
22811	B-2	<1	114	18	65	123	<10	<2	<1	213	57	166	0.72	2.83	7.30	0.08	62.82	15.08	0.16	11	3.35	2.53	17	214	0.38	1
22812	B-2	<1	115	12	62	133	<10	<2	3	191	55	143	0.58	2.67	6.08	0.06	65.58	14.92	0.15	13	4.38	1.99	15	271	0.49	2
22813	B-2	<1	99	8	60	127	<10	<2	3	168	53	142	0.60	2.65	5.74	0.04	65.56	15.01	0.14	10	3.73	2.41	16	238	0.35	1
22814	B-2	<1	111	10	74	124	<10	<2	<1	242	55	154	0.66	2.89	6.52	0.05	63.73	14.73	0.16	9	3.06	2.60	15	208	0.47	1
22815	B-2	<1	101	12	66	131	<10	<2	5	237	51	143	0.61	2.65	5.98	0.07	62.92	14.39	0.14	24	3.14	2.52	15	275	1.87	1
22816	B-2	<1	102	10	62	134	<10	<2	4	237	50	135	0.57	2.49	5.72	0.07	65.40	14.09	0.14	22	2.99	2.53	21	286	2.11	1
22817	B-2	<1	96	10	37	127	<10	<2	3	243	51	137	0.58	2.48	6.04	0.05	67.41	14.58	0.16	24	3.86	2.22	34	257	0.60	1
22818	B-2	<1	90	10	59	122	<10	<2	3	218	47	143	0.56	2.34	5.26	0.08	63.90	14.06	0.14	8	3.00	2.66	18	294	2.35	1
22819	B-2	<1	112	12	42	132	<10	<2	6	213	52	161	0.65	3.16	7.23	0.09	61.74	15.71	0.16	11	4.13	2.16	14	244	0.61	1
22820	B-2	<1	113	12	66	134	<10	<2	7	233	57	159	0.69	3.07	7.06	0.08	61.29	15.28	0.16	8	3.59	2.46	15	231	1.39	1
22821	B-2	<1	100	14	49	130	<10	4	6	218	53	143	0.58	2.62	5.93	0.09	60.86	14.67	0.15	16	4.19	2.27	14	390	3.52	2
22822	B-2	<1	131	16	102	159	<10	<2	5	204	70	184	0.82	3.51	8.73	0.08	55.08	17.33	0.20	45	4.33	2.41	64	297	1.92	2
22823	B-2	<1	104	12	52	134	<10	<2	30	201	59	167	0.66	2.92	6.96	0.08	59.08	15.04	0.16	25	4.34	2.12	26	365	2.72	2
22824	B-2	<1	134	26	70	126	<10	<2	8	208	54	148	0.58	2.54	5.82	0.09	61.02	13.78	0.22	25	4.54	1.64	8	342	3.73	2
22825	B-2	<1	118	12	52	132	<10	<2	6	225	61	183	0.72	3.00	7.32	0.08	60.46	15.38	0.16	35	3.26	2.91	34	314	2.29	2
22826	B-2	<1	112	18	65	147	<10	<2	3	218	62	172	0.71	3.17	7.24	0.08	58.87	16.05	0.16	45	3.26	3.04	61	289	2.29	2
22827	B-2	<1	93	12	46	126	<10	<2	4	202	52	128	0.55	2.44	5.50	0.09	61.47	14.37	0.15	31	3.49	2.46	37	377	4.17	1
20849	OUTCROP	<1	<5	8	22	<10	<10	<2	2	188	8	82	0.13	4.46	14.80	0.39	52.69	1.18	0.04	6	0.20	<0.10	13	95	9.53	<1
20850	OUTCROP	<1	<5	6	10	<10	<10	<2	4	127	7	18	0.04	3.15	20.41	0.30	59.35	0.47	<0.02	5	0.12	<0.10	6	434	5.83	<1

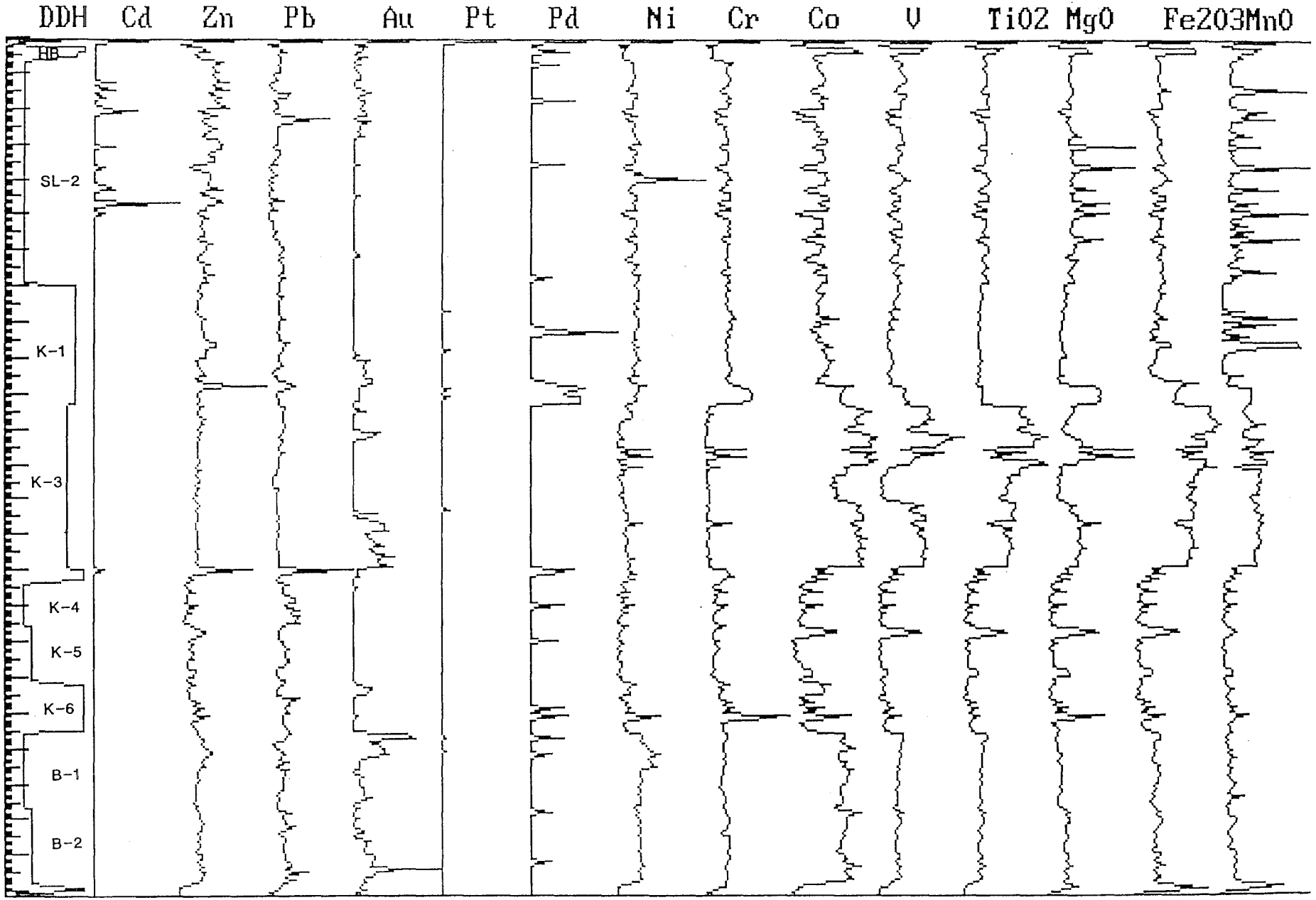
ppm = PARTS PER MILLION ppb = PARTS PER BILLION % = PERCENT



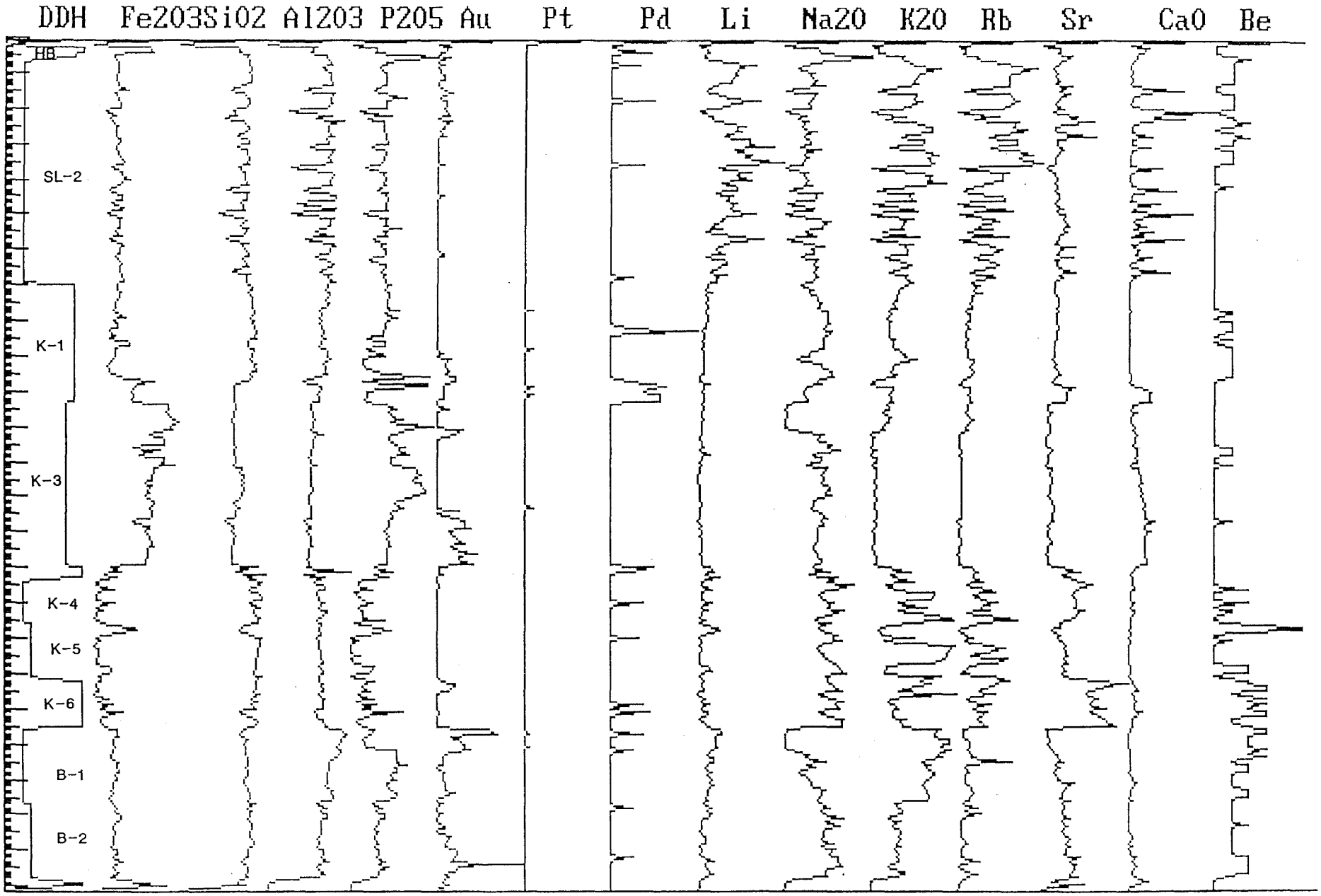
APPENDIX C-1. Sample Value vs. Sample # Plot for Bi,Sb,As,B, Ba,Au,Pt,Pd,S,Se,Te,Ag,Cu, and Mo.



APPENDIX C-2. Sample Value vs. Sample # Plot for Sn,W,F,Au,Pt, Pd,Ga,Sc,Y,La,Ce,Zr,Nb and Ta.



APPENDIX C-3. Sample Value vs. Sample # Plot for CD,Zn,Pb,Au, Pt,Pd,Ni,Cr,Co,V,Tio2,Mgo,Fe2O3 and MnO.



APPENDIX C-4. Sample Value vs. Sample # Plot for Fe2O3,SiO2,Al2O3, P2O5,Au,Pt,Pd,Li,Na2O,K2O,Rb,Sr,CaO and Be.