COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

FAME PROGRAM REPORT

FAME GRANT #10963-M18

SULLIVAN PROJECT

1987 GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,732

PREPARED IN THREE PARTS

FILMED

PART 1: GEOLOGY

PART 2: DIAMOND DRILLING

PART 3: GEOPHYSICS

FEBRUARY, 1988

P.W. RANSOM

COMINCO LTD.

EXPLORATION WESTERN DISTRICT

NTS: 82F/9
82F/16
82G/12
82G/13

1987 FAME REPORT

SULLIVAN PROJECT

Fort Steele Mining Division

February, 1988 P.W. Ransom

INTRODUCTION

Specific Location

The work being reported on was done in the Mark and Matthew Creek areas west and northwest of Kimberley, B.C. Access to these areas is by logging and exploration roads.

Property Description

The property being investigated forms part of the Sullivan Mine claim group, owned by Cominco Ltd. Cominco has operated the mine for about 75 years. The Sullivan stratiform Ag-Pb-Zn-Fe sulphide deposit is one of the most important of its type worldwide and has contributed significantly to the mineral wealth generated in the province of British Columbia.

Geological Mapping and Diamond Drilling

Geological mapping was done in the headwaters of Mark Creek and in the vicinity of some of the holes drilled. Two holes were drilled on North Star Hill on geophysical anomalies near known sulphide mineralization; one hole tested a geophysical anomaly on the northeast fork of Matthew Creek; and one hole tested Sullivan Horizon on the west fork of Matthew creek. A 1.7 km long hole was drilled 4 km northwest of Sullivan to test for the faulted continuation of the Sullivan orebody north of the Kimberley Fault. EM surveying was conducted in the northeast fork of Matthew Creek.

Claims Explored

The north and west part of the Sullivan claim block (1685 claims) was partially explored by this work, an area about 10 X 15 km in size. Cominco's claim outline in this area is shown in Figure 3 and a summary of the Sullivan Mine Group of Mineral Claims is in Appendix K.

FAME PROGRAM REPORT

SULLIVAN PROJECT

PART 1

GEOLOGY

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PART 1

COMINCO LTD.

EXPLORATION WESTERN DISTRICT

NTS: 82F/9
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1987 FAME REPORT

SULLIVAN PROJECT

PART 1 - GEOLOGY

Fort Steele Mining Division

February, 1988

P.W. Ransom

GEOLOGICAL MAPPING

Introduction

Geological mapping was done in the upper tributaries of Mark Creek to expand on previous work done by Cominco in order to identify structures that might project into areas where deep drilling was being considered. A recent interpretation suggests that a west dipping normal fault is necessary to explain observed steep east dip of bedding in outcrop and apparent gentle east dip of the Upper Aldridge Formation and enclosing strata (Carter et al, 1987).

Extensive areas at lower elevations were traversed in 1987 to expand coverage beyond the more easily and previously mapped ridge tops. Mapping control was by pace, compass and altimeter used in conjunction with airphotos; the base map scale was 1:20,000.

Results

Several critical outcrops were located that placed constraints on the locations of the top and bottom contacts of the Upper Aldridge Formation. In addition, because of the contrast in lithologic character between this formation and adjacent formations, it was also possible to use rubble and float occurrences to refine limits of these important contacts.

Rocks mapped belong to three formations, Middle Aldridge, Upper Aldridge and Creston. The lowest strata observed are from the upper portion of the Middle Aldridge Formation, generally exposed at lower elevations along creeks. The dominant rock types are wacke and quartz wacke that are grey weathering; medium to light grey; medium to thick bedded; with sharp, flat bed contacts; graded, especially in the top 10% to 20% of the beds, through subwacke to argillite. Also present are significant thicknesses of wacke, subwacke and argillite that are rust to dark grey weathering; medium and dark grey; thin bedded to laminated; with sharp flat bed contacts and laminations; beds are either

graded or homogeneous; and typically contain 1% to 2% pyrrhotite. Exposures are poor and discontinuous, therefore only an impression of the relative distribution of these two lithotypes is possible. Thickness of either as much as 100 feet were observed, and either may have intercalations of the other in units from 1 to 20 feet thick.

The dominant rock types of the Upper Aldridge Formation are argillite and subwacke to wacke that is rust weathering; the argillite is medium grey, the subwacke-wacke is generally dark grey to black, rarely white; the argillite is uniform or massive, the subwacke-wacke is usually very finely internally laminated; the subwacke-wacke contains very fine silt grains in an argillaceous matrix; these lithotypes are laminated to very-thin bedded with respect to each other, bed contacts are sharp and flat; pyrrhotite and pyrite (about 1 or 2% of the rock in places) is restricted to the subwacke-wacke lithotypes.

The youngest strata mapped belong to the Lower Creston Formation. The dominant rock types are wacke, subwacke and argillite that are light green, brown and light rust weathering; grey to greenish grey; medium, thin bedded and laminated; bed contacts are generally distinct and wavy; beds are typically graded and laminated intervals are distinctly wavy, cross laminations are present; magnetite, although not abundant, is present in the wacke.

Within the lower 100 or 200 feet of the Lower Creston Formation there is one interval of distinct Upper Aldridge type strata about 20 feet thick. Exposures are not adequate to determine if this is a merely a local phenomenon or a feature of regional extent. It is important to be aware that Upper Aldridge contacts based on the presence of Upper Aldridge type rubble may be in error, although such errors are believed to be relatively minor.

The mapped distribution of the Upper Aldridge Formation (Fig. 1) defines three major westerly dipping normal faults not previously documented. The Cue and Cub faults both have a significant topographic expression on the ridge to the north, the Kent Fault appears to follow a lengthy airphoto linear. Offsets on the Cue, Cub and Kent faults are 800, 1000 and 1300 feet respectively, as determined from section 5514 000N, Fig. 2.

The Cue, Cub and Kent faults offset a large anticline on the northeast fork of Mark Creek and to the south they disappear beneath the overburden of Mark Creek valley. No major offsets of the Kimberley Fault can be ascribed to these faults. The dip of these faults changes from westerly to northwesterly as the Kimberley Fault is approached and there they become indistinguishable in the complex deformation associated with this major east-west structure.

Conclusions

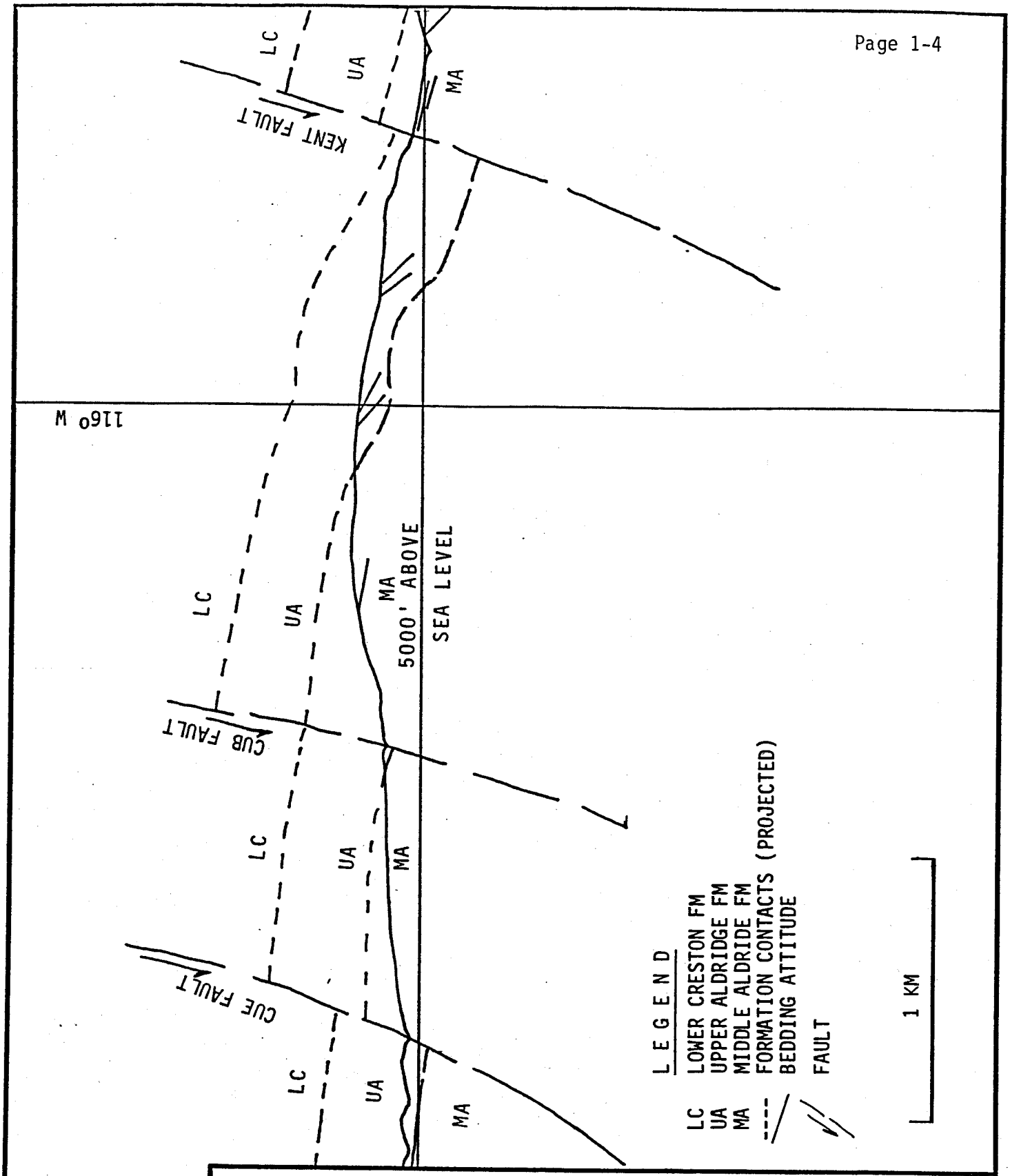
This mapping has defined three major west to northwest dipping normal faults. Because these faults curve into the Kimberley Fault, it can be reasonably assumed that they are listric. The Kimberley Fault developed as a lateral ramp and normal fault related to the major east verging Matthew Creek Thrust (Ransom, 1987), one of many east verging structures in the Purcell Mountains produced at the same time as the Rocky Mountain Fold and thrust belt. Because the Cue, Cub and Kent faults cut, and therefore postdate, folds developed during Cretaceous mountain-building, they most likely formed during the major regional scale Eocene extension faulting event documented in southeast B.C. (Price et al). It is inferred that the Kimberley Fault was reactivated at that time as an extensional decollement.

References

Carter, G. and Hoy, T., 1987, OPEN FILE MAP 1987-8, Geology of the Skookumchuck Map Area, B.C. Ministry of Energy, Mines and Petroleum Resources.

Ransom, P.W., 1987, 1986 FAME Report, Sullivan Mine Area, Kimberley, B.C. (FAME Grant Identification No. 10963M-5).

Price, R.A., 1981, The Cordilleran foreland thrust and fold belt in the southern Canadian Rocky Mountains, in Thrust and Nappe Tectonics, McClay and N.J. Price (eds.), Geological Society of London Special Publication No. 9.



Iss'd To:	Date:

GEOLOGIC SECTION
5514 000N UTM GRID
32,000N SULLIVAN GRID

Drawn by: PWR	Scale: Shown	Date: Feb. 19/88	Plate: Fig. 2

FAME PROGRAM REPORT

SULLIVAN PROJECT

PART 2

DIAMOND DRILLING

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PART 2

COMINCO LTD.

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WESTERN DISTRICT

1987 FAME REPORT

SULLIVAN PROJECT

PART 2 - DIAMOND DRILLING
Fort Steele Mining Division

February, 1988

P.W. Ransom

DIAMOND DRILLING

Introduction

Five core holes were drilled during 1987 and January 1988, they are:

HOLE NO.	LENGTH FEET (METRES)
DDH 6460	547 (167)
DDH 6461	497 (152)
DDH 6462	315 (96)
DDH 6463	997 (304)
DDH 6464	5701 (1738)

Detailed lithologic descriptions, core size information, survey information and claim names drilling was done on are in the logs in appendices F to J and a cost summary on each hole is in appendices A to E. Hole locations are shown in Figure 3 (Part 1), the geologic map of the Kimberley area. Figures 4 through 7 are graphic logs showing a lithologic summary and some sedimentologic and structural details in core from holes 6460 through 6463, Figure 8 is the legend for these figures. Figure 9 shows interpretive sections through DDH 6464. A brief description of the results obtained in each hole follows.

Results and Interpretation

DDH 6460

DDH 6460 (Fig. 3, Part 1) was drilled to test the North Star Hill UTEM conductor "J", described in Part C of the 1986 FAME report on Sullivan (Lajoie). Drilling was entirely within the Lower Aldridge Formation; rock types cored include quartz arenite, quartz wacke, wacke, subwacke and argillite in thick, medium and thin beds and laminites; many beds contain minor, but variable, amounts of pyrrhotite (Fig. 4). Veinlets and thin bedding-parallel layers of pyrrhotite up to 3 millimeters thick are electrically

connected across as much as 10 centimeters of strata in the core at a few locations between 270 and 359 feet, the general target depth. These pyrrhotite seams and stringers are the cause of the geophysical anomaly. No economic concentrations of sulphides were cored.

DDH 6461

DDH 6461 was drilled on one of many UTEM and HLEM conductors previously documented on North Star Hill, just south of Mark Creek between the Sullivan and North Star orebodies (Fig. 3, Part 1). It is approximately on strike to the north of the Quantrell sulphide occurrence in which both bedded and vein sulphides (mainly pyrrhotite, some galena and sphalerite) were exposed by prospectors early this century.

DDH 6461 was drilled entirely within the Lower Aldridge Formation. Rock types cored include quartz arenite, quartz wacke, wacke subwacke and argillite in thick, medium and thin beds and laminites; most beds contain minor variable amounts of pyrrhotite (Fig. 5). Pyrrhotite is also present in bedding-parallel layers up to 3 centimeters thick, laminations, stringers and veins, especially between 20 and 459 feet. Minor galena and sphalerite accompany the pyrrhotite in a few places; no assaying was done. Although the strata cored appear less quartzose than that cored in DDH 6460, both holes cored approximately the same stratigraphic interval.

DDH 6462

DDH 6462 was drilled on the northeast fork of Matthew Creek (Fig.3, Part 1) to test a UTEM anomaly recognized in a survey conducted in 1986 and reported in part C of the 1986 FAME report on Sullivan.

DDH 6462 was drilled within a portion of the Middle Aldridge Formation, primarily through wacke, subwacke and argillite, and minor quartz wacke, in predominantly medium and thin beds, some laminites and a few thick beds (Fig. 6). Pyrrhotite, although not abundant, is widely disseminated. Up to 30% pyrrhotite in seams parallel to bedding up to five millimeters thick as well as in crosscutting veinlets, all between 157 and 277 feet (the approximate target depth) are the cause of the UTEM anomaly. Two thin gabbro sills, Moyie intrusions, were intersected. No economic sulphide mineralization was discovered.

DDH 6463

DDH 6463 was drilled south of the west fork of Matthew Creek (Fig.3, Part 1). The objective was to test for strataform lead, zinc, iron sulphides at Sullivan Horizon, the stratigraphic interval where the Sullivan orebody is found, near the top of the Lower Aldridge Formation.

Rocks cored by DDH 6463 include quartz arenite, quartz wacke, wacke, subwacke and argillite in thick, medium and thin beds and laminites of the Middle Aldridge and Lower Aldridge Formations (Figure 7). In the strata interpreted as Sullivan Horizon, no significant concentrations of lead, zinc, iron or other trace elements were found (Table 1). Two thin gabbro sills, Moyie intrusions, were intersected.

DDH 6464

DDH 6464 was drilled west of Mark Creek, about 4 kilometers northwest of the Sullivan orebody (Fig. 3, Part 1). This hole was designed to test for the faulted continuation of the Sullivan orebody north of the Kimberley Fault. Drilling was completed to a depth of 5701 feet. The cored interval was entirely within the the Middle Aldridge Formation and at 5701 feet the hole is substantially above the target horizon.

A simplified stratigraphic interpretation is shown in Figure 9. The Moyie intrusions are shown and assumed to to be sills, however it should be pointed out that although Moyie intrusions are generally sill like throughout much of the Aldridge, there are many localities where they cut through substantial amounts of strata. Details of lithology, sedimentology, and structure are contained within the log in appendix A. No significant sulphide mineralization was intersected to the 5701 foot depth. At 5701 feet the rock temperature is 118.5° F.

SULLIVAN EXPL. —WI

Job V 87-0296R
Report date 21 AUG 1987

SAMPLE INTERVAL From	To (Feet)	Au PPB	Wt Au GRAM	Ag PPM	Pb PPM	Zn PPM	Cu PPM	Fe %	Mn PPM	V PPM	Ce PPM	As PPM	Hg PPB
897.0	902.8	<10	5	.5	184	265	24	3.24	638	92	93	7	210
902.8	907.0	<10	5	.5	246	1140	33	4.46	688	109	72	7	10
907.0	912.0	<10	5	<.4	58	411	29	3.86	516	97	83	13	<10
912.0	917.0	<10	5	<.4	29	205	31	3.62	447	89	83	8	10
917.0	922.0	<10	5	.6	216	421	31	4.14	474	86	92	8	<10
922.0	927.0	<10	5	<.4	149	176	27	3.50	450	90	94	12	<10
927.0	930.6	<10	5	<.4	37	90	38	3.62	394	90	91	11	<10

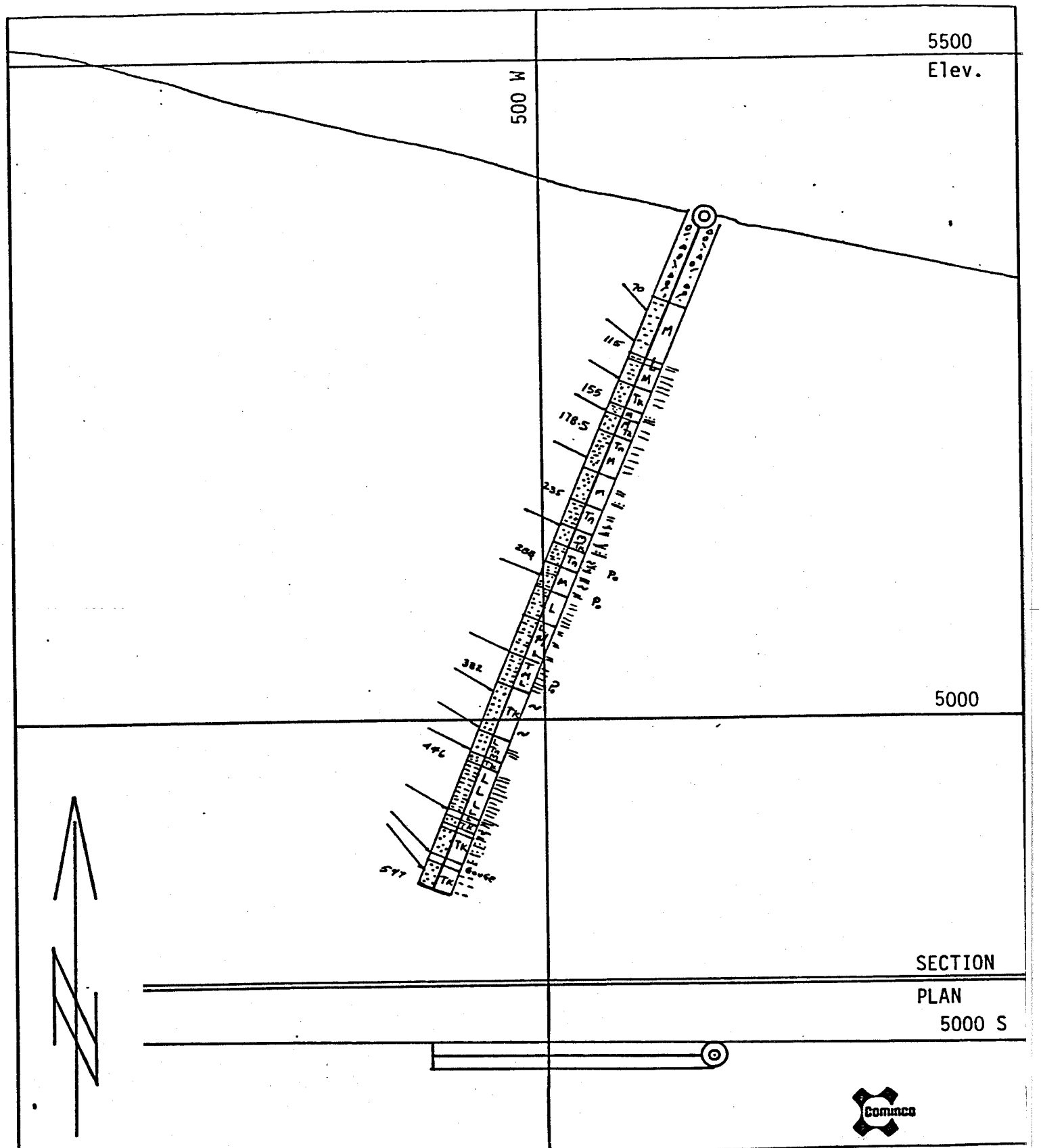
I=INSUFFICIENT SAMPLE X=SMALL SAMPLE E=EXCEEDS CALIBRATION C=BEING CHECKED R=REVISED
IF REQUESTED ANALYSES ARE NOT SHOWN RESULTS ARE TO FOLLOW

ANALYTICAL METHODS

- Au Aqua regia decomposition / solvent extraction / AAS
- Wt Au The weight of sample taken to analyse for gold (geochem)
- Ag Aqua regia decomposition / AAS
- Pb Aqua regia decomposition / AAS
- Zn Aqua regia decomposition / AAS
- Cu Aqua regia decomposition / AAS
- Fe Aqua regia decomposition / AAS
- Mn Aqua regia decomposition / AAS
- V X-Ray fluorescence / pressed pellet
- Ce X-Ray fluorescence / pressed pellet
- As Pyrosulphate fusion / colorimetric
- Hg Flameless AAS

TABLE 1

DDH6463 TRACE ELEMENT GEOCHEMISTRY



Drawn by: PWR		Traced by:	
Revised by	Date	Revised by	Date

DDH 6460 GRAPHIC LOG

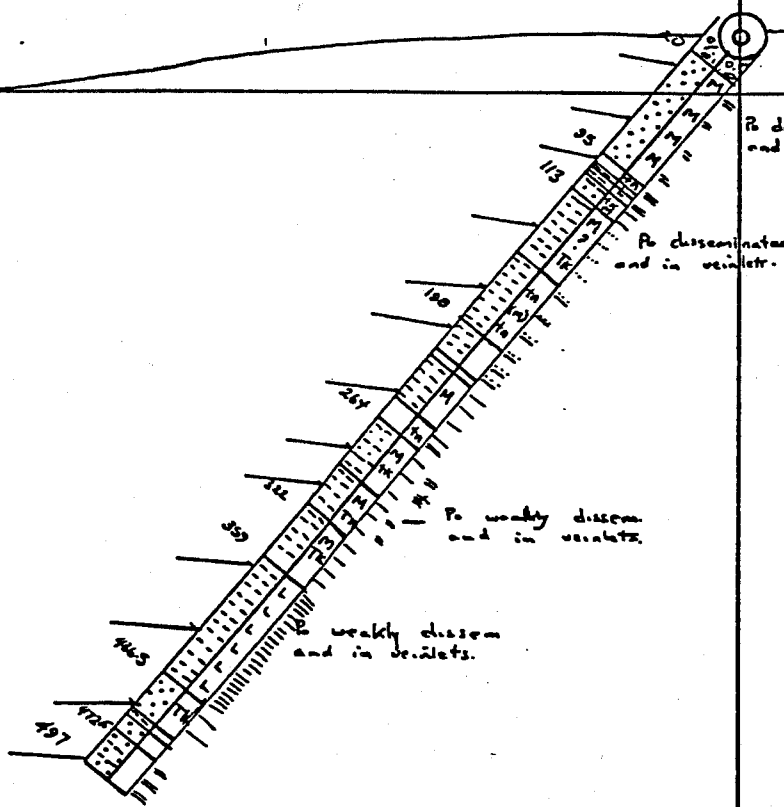
Scale: 100'

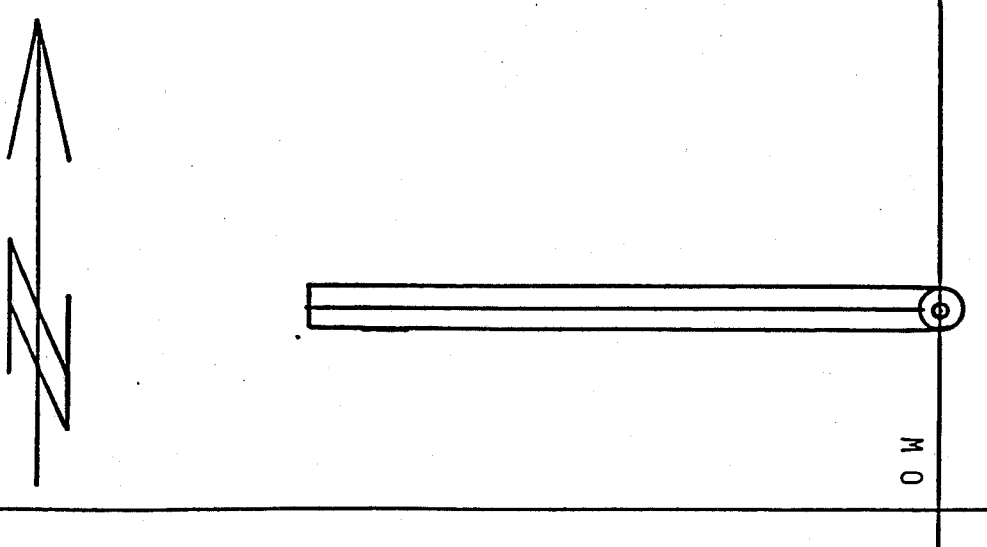
Date: February, 1988

Plate: Fig. 4

210-0611

BCIL-2187-C





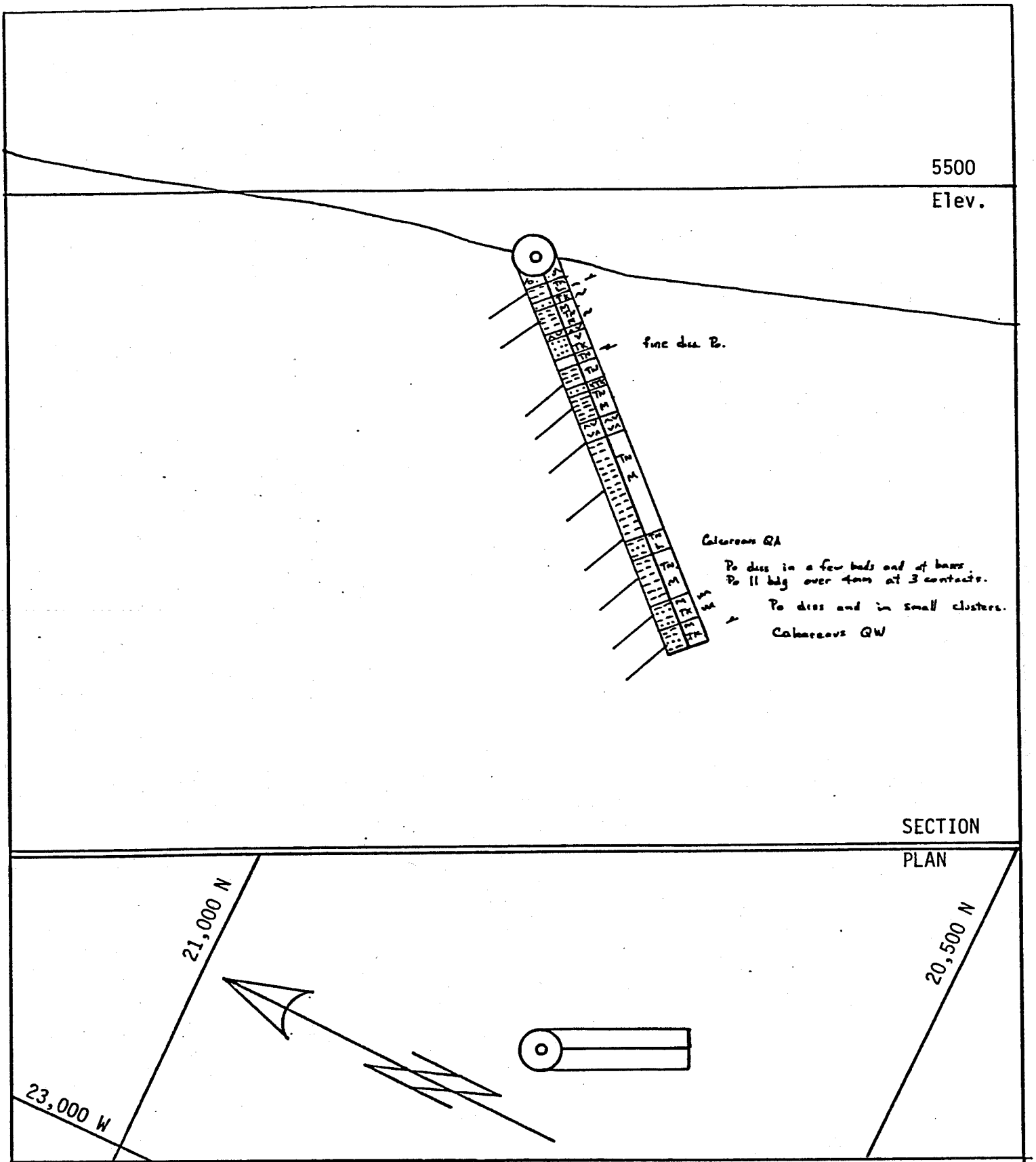
Drawn by: PWR		Traced by:	
Revised by	Date	Revised by	Date

DDH 6461 GRAPHIC LOG

Scale: 100'

Date: February, 1988

Plate: Fig. 5



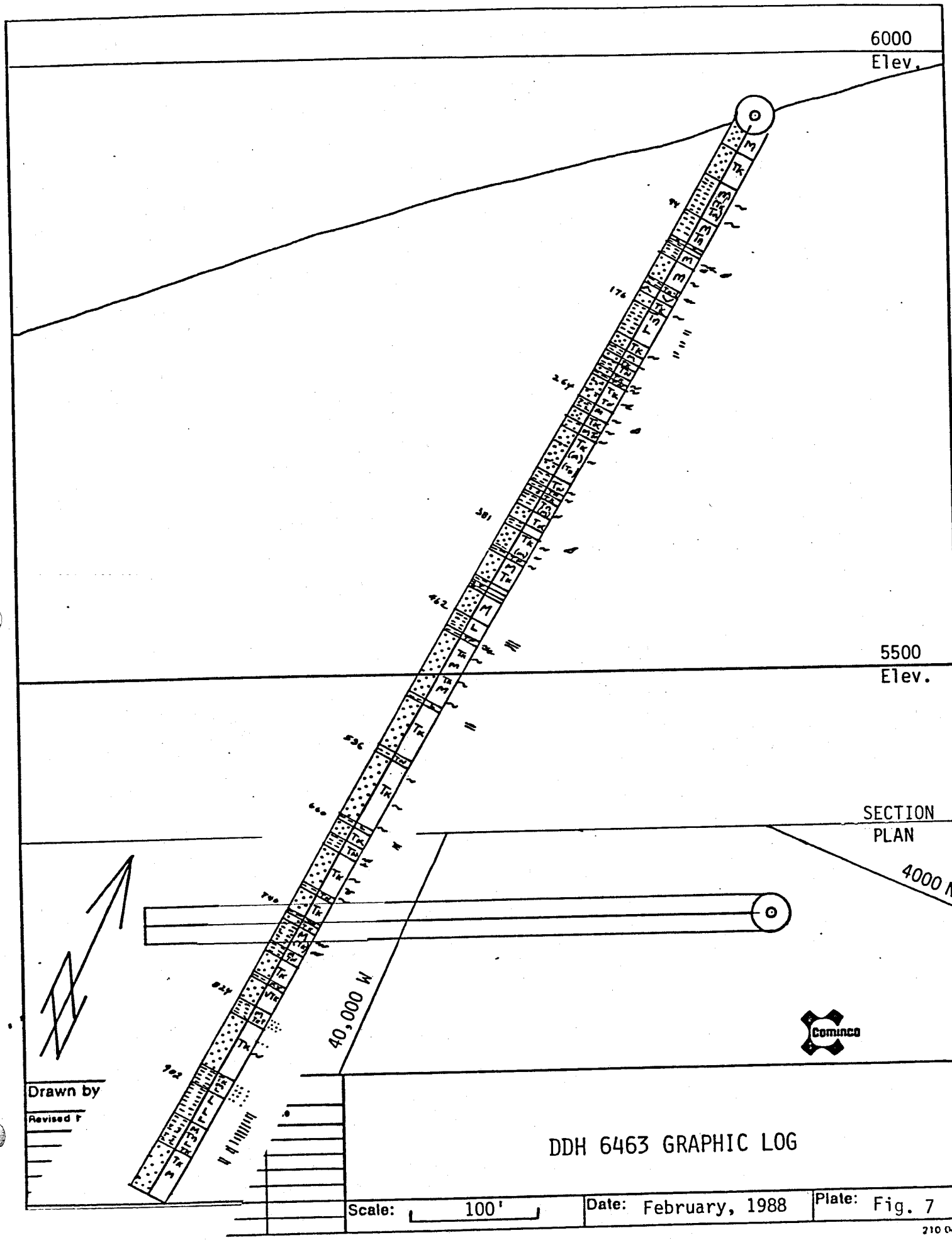
Drawn by: PWR		Traced by:	
Revised by	Date	Revised by	Date

DDH 6462 GRAPHIC LOG

Scale: 100'

Date: February, 1988

Plate: Fig. 8


6000
Elev.
5500
Elev.
SECTION
PLAN
4000 N
40,000 W
Cominco
Drawn by
Revised
DDH 6463 GRAPHIC LOG
Scale: 100'
Date: February, 1988
Plate: Fig. 7
210 0610

LEGEND

Drill Hole Collar

Quartz Wacke or * Quartz Arenite Dominated

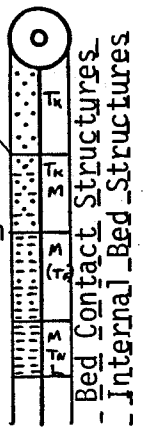
Above with as much as 40% Wacke

n

Wacke with as much as 40% Quartz Arenite or Quartz Wacke

Wacke dominated with Subwacke & Argillite

Subwacke & Argillite



In general all beds have tops graded to subwacke or argillite.

Bed Thicknesses

L	Laminated (<1 cm)
Tn	Thin bedded 1-10 cm
M	Medium bedded 10-30 cm
Tk	Thick bedded 30-100 cm
VTK	>100 cm

Bed Contact Structures

Most bed contacts are sharp or distinct and flat, and this is implied throughout.

Symbols for other contacts are:

... vague
wavy
irregular
flame
shredded

Internal Bed Structures

Grading is implied throughout.

ABCD refer to Bouma subdivisions (not always used).

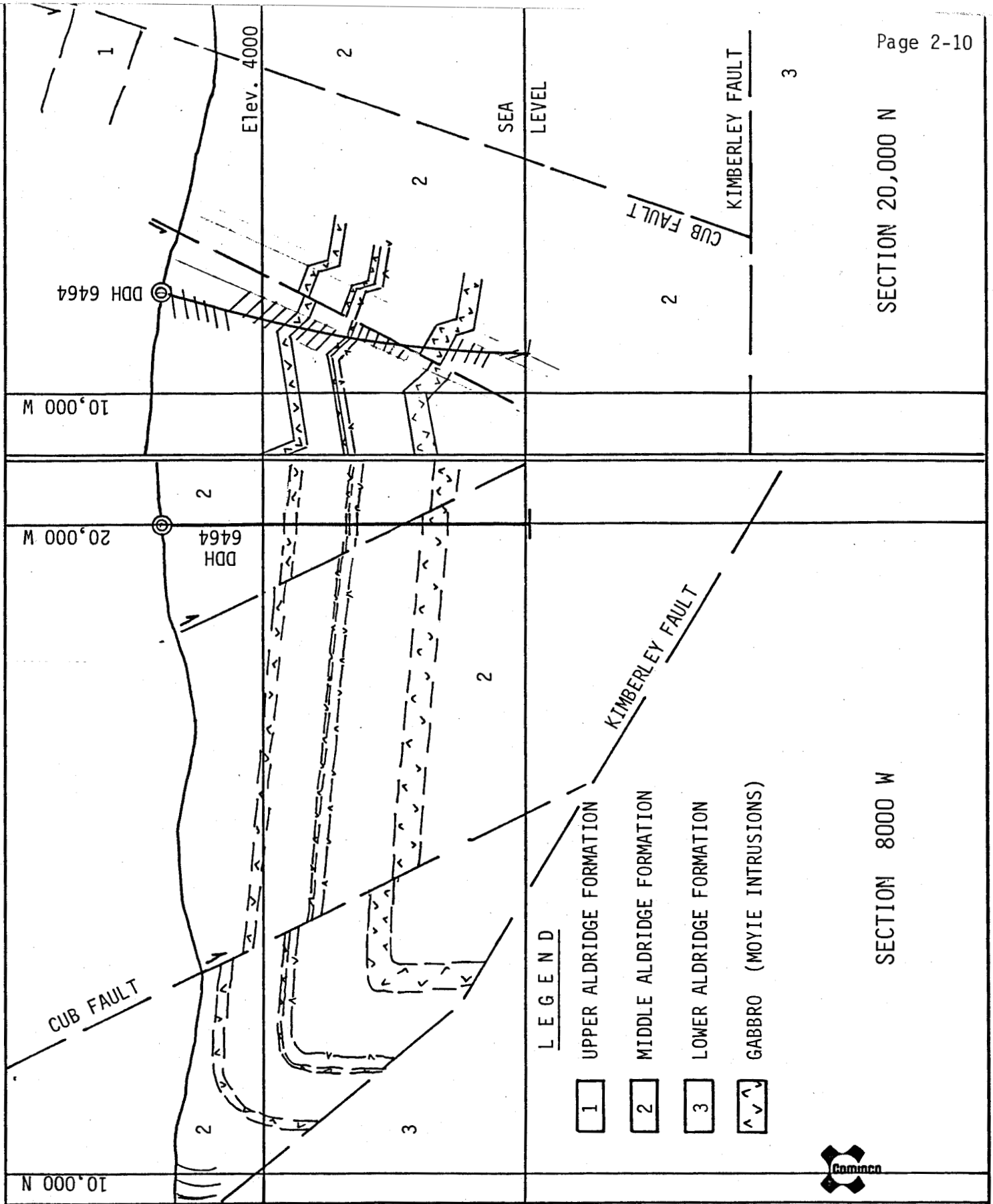
Cross beds or laminations
Clasts
Flat, even parallel laminations

* Bedding to core angle

n depth in feet

LEGEND FOR FIGURES 4 TO 7

FIGURE 8



Drawn by: PWR	Traced by:			
Revised by	Date	Revised by	Date	

VERTICAL SECTIONS SHOWING
GEOLOGICAL INTERPRETATION OF DDH6464

Scale: 2000'

Date: February 1988

Plate: Fig. 9

Parts 1 and 2 of this report by: P.W. Ransom

P.W. RANSOM
Project Geologist
Cominco Ltd.

Approved for release by: "J.M. HAMILTON"

J.M. HAMILTON
Manager, Exploration
Western Canada
Cominco Ltd.

Distribution: Ministry of Energy, Mines and
Petroleum Resources (2 copies)
Sullivan Mine
Kootenay Exploration
Western District

STATEMENT OF EXPENDITURES

DDH 6460

DIRECT COSTS

Contractor: Tonto Drilling (B.C.) Ltd.
#200 - 3920 Norland Ave.
Burnaby, B.C. V5G 4K7

Item		Amount
Mobilization/Demobilization		$ 500.00
Drilling	0-547	11,831.00
Moving		2,782.00
Surveys		75.00
Other		338.00
Materials		1,539.45
	Direct Costs =	$17,065.45

INDIRECT COSTS

Salaries
P.W. Ransom - Geologist - supervision, core logging, report writing 10 days @ $250/day $ 2,500.00

Other Contractors:
W. Barker Contracting Ltd., Kimberley, B.C. - Site access/Preparation - 0.1 km of road plus site

D-7 buldozer	12.5 hours @ $85/hour	1,062.50
plus cat hauling		130.00
Water hauling	6.5 hours @ $45/hour	292.50

Henderson Heavy Hauling (1973) Ltd., Cranbrook, B.C.
Equipment hauling (Cat) 639.00

Transportation:
one 4X4 truck - 10 days @ $40/day 400.00

Supplies:		
Mud	- Gel	152.00
	- Polymer (incl. transport)	1,017.42
Core boxes (incl. transport)		180.00
Cap		34.92
	Indirect costs =	6,408.34
	Total Direct + Indirect costs =	$23,473.79

Signed: P.W. Ransom
P.W. RANSOM
Project Geologist

STATEMENT OF EXPENDITURES

DDH 6461

DIRECT COSTS

Contractor: Tonto Drilling (B.C.) Ltd.
#200 - 3920 Norland Ave.
Burnaby, B.C. V5G 4K7

Item		Amount
Mobilization/Demobilization		$ 500.00
Drilling	O-497	10,685.50
Moving		650.00
Surveys		37.50
Other		78.00
Materials		631.45
	Direct Costs =	$12,582.45

INDIRECT COSTS

Salaries

P.W. Ransom - Geologist - supervision, core logging, report writing 10 days @ $250/day $ 2,500.00

Other Contractors:

W. Barker Contracting Ltd., Kimberley, B.C.

Site access/Preparation - D-7 buldozer	15.5 hours @ $85/hour	1,317.50
Site clean-up	Grader 6 hrs. @ $70/hr.	420.00
Water hauling	47 hrs. @ $40/hr.	1,880.00

Crossfield Excavating, Kimberley, B.C.

Site clean-up	Backhoe 3 hrs. @ $50/hr.	150.00

Transportation:

one 4X4 truck - 10 days @ $40/day 400.00

Supplies:	Mud - Gel	152.00
	- Polymer (incl. transport)	924.42
	Core boxes (incl. transport)	195.00
	Cap	34.92
	Indirect costs =	7,973.84
	Total Direct + Indirect costs =	$20,556.29

Signed: P.W. Ransom

P.W. RANSOM
Project Geologist

STATEMENT OF EXPENDITURES

DDH 6462

DIRECT COSTS

Contractor: Tonto Drilling (B.C.) Ltd.
#200 - 3920 Norland Ave.
Burnaby, B.C. V5G 4K7

Item		Amount
Mobilization/Demobilization		$ 500.00
Drilling 0-315		6,772.50
Moving		845.00
Field Cost Charges		37.50
Surveys		208.00
Materials		631.45
	Direct Costs =	$ 8,994.45

INDIRECT COSTS

Salaries

P.W. Ransom - Geologist - supervision, core logging, report writing 8 days @ $250/day $ 2,000.00

Other Contractors:

W. Barker Contracting Ltd., Kimberley, B.C. - Site access/Preparation - 1 km or road plus site
D-7 buldozer 17 hours @ $85/hour 1,445.00
plus cat hauling 617.50

Henderson Heavy Hauling (1973) Ltd., Cranbrook, B.C.
Equipment hauling (Cat/Drill) 366.00

Wright Contracting, Cranbrook, B.C. - Site clean-up 626.50

Transportation:

one 4X4 truck - 8 days @ $40/day 320.00

Supplies:		
Mud	- Gel	167.00
	- Polymer (incl. transport)	585.90
Core boxes (incl. transport)		127.50
Cap		34.92
	Indirect costs =	6,290.32
	Total Direct + Indirect costs =	$15,284.77

Signed: P.W. Ransom

P.W. RANSOM
Project Geologist

STATEMENT OF EXPENDITURES

DDH 6463

DIRECT COSTS

Contractor: Tonto Drilling (B.C.) Ltd.
#200 - 3920 Norland Ave.
Burnaby, B.C. V5G 4K7

Item	Amount
Mobilization/Demobilization	$ 500.00
Drilling 0-997	22,181.00
Moving	1,300.00
Field Cost Charges	225.00
Surveys	37.50
Other	910.00
Materials	449.79
Direct Costs =	$25,603.29

INDIRECT COSTS

Salaries:
P.W. Ransom - Geologist - supervision, core logging, report writing 24 days @ $250/day $ 6,000.00

Other Contractors:
Wright Contracting, Cranbrook, B.C.
Site Access/Preparation - 2 km of road plus site
D-6 bulldozer 117 hrs. @ $86.35/hr 10,103.63

Henderson Heavy Hauling (1973) Ltd., Cranbrook, B.C.
Equipment hauling - Drill 355.00
Equipment hauling - Cat 427.00

Transportation:
one 4X4 truck - 24 days @ $40/day 960.00

Supplies:		
Mud	- Gel	152.00
	- Polymer (incl. transport)	1,854.42
	- Polymer through Tonto	1,285.68
Core boxes (incl. transport)		397.50
Cap		34.92
Freight waterline		187.84
	Indirect costs =	21,757.99
	Total Direct + Indirect costs =	$47,361.28

Signed: P.W. Ransom
P.W. RANSOM
Project Geologist

STATEMENT OF EXPENDITURES

DDH 6464

DIRECT COSTS

Contractor: Connors Drilling Ltd.
2007 West Trans Canada Highway
Kamloops, B.C. V1S 1A7

Drilling 0' - 5701', all invoices	$258,413.28
Direct costs =	$258,413.28

INDIRECT COSTS

Salaries:		
P.W. Ransom -	Geologist - supervision, core logging, report writing 88 days @ $250/day	$ 22,000.00
Supplies:	Mud - gel	6,477.00
	- polymers etc.	43,795.94
	Core boxes	2,734.71
Transportation:		
	Geologist 4X4 truck - 88 days @ $40/day	3,250.00
	Transportation of mud etc.	1,929.48
Cominco Charges:		
	Road and site construction	7,625.00
	Snow clearing	2,460.00
	Inter-office freight charges re supplies	492.48
	Core racks - Labour	2,185.70
	- Materials (est.) + installation	2,000.00
	Install radios at drill	360.00
	Carpentry work	620.00
	Federal and Provincial sales taxes re Cominco work	501.74
Other Contractors:		
	Crestbrook Forest Industries, Cranbrook, B.C. - bridge and culvert installation	4,374.22
	Indirect costs =	$100,806.27
	Total Direct + Indirect costs =	$359,219.55

Signed: P.W. Ransom

P.W. RANSOM
Project Geologist

Diamond Drill Geological Log For D.D.H. 6460

LAT. 5010 S DEP. 0380 W ELEV. 5380'
DIP: 70° AZIM.: 270° LENGTH: 547'
HORIZ. COMP. 187' VERT. COMP. 514'
DATE COLLARED: June 22, 1987 DATE COMPLETED: June 23, 1987
CORE STORAGE: Open Pit Storage Area
DRILLED ON CLAIM(S): Rowan Crown Grant
OBJECTIVE: To test electromagnetic anomaly.

PLANNED LENGTH: 500 feet
TERMINATION COMMENTS: No significant sulphide mineralization was intersected.

DRILLED BY: Tonto Drilling (B.C.) Ltd.
TYPE DRILL: Longyear 38
CORE SIZE: NQ
PERFORMANCE COMMENTS: Good productivity; used only WDS-120 Polymer and did not recirculate. Creek supply to shotcrete pool was insufficient and was necessary to haul water (Barker Contr.)

CASING REMAINING IN HOLE (LENGTH & SIZE): 70' HWL + Shoe

TYPE CAP & SEALING METHOD: 6" casing cap

OTHER MATERIAL REMAINING IN HOLE: None

SURVEY INSTRUMENT USED: Sperry Sun Single Shot

ADDITIONAL DOWN HOLE TESTS:

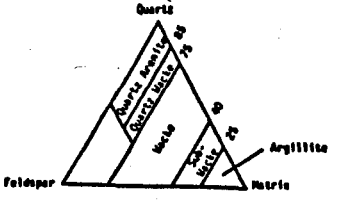
GENERAL COMMENTS: Sperry Sun Readings

Depth	Azimuth (Cor.)	Dip
300	N87W	-67.9
547	N85W	-67.75

LOG LEGEND

BED THICKNESS CLASSIFICATION

BEDS	Very Thick Bedded	100 cm
	Thick Bedded	30 cm
	Medium Bedded	10 cm
	Thin Bedded	3 cm
	Very Thin Bedded	1 cm
LAMINAE	Laminated	0.3 cm
	Thinly Laminated	



LITHOLOGIC CLASSIFICATION

D.D.H. 6460

APPENDIX F

Drill Hole Record

Cominco

Property	District Western/Ft. Steele M.D.	Hole No. DDH6460	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
0.0	70.0	Overburden
70.0	115.0	Heavily weathered sediments, 50% recovery. Wacke, some fresh is medium grey, medium bedded with scattered dendritic staining; some partially weathered is bleached (very top 3 feet only) and pitted (pyrrhotite dissolution); remainder is brown mud and rock fragments. Bedding to core 62° @ 80' and 72° @ 105'.
115.0	117.5	Wacke, thin medium and dark grey, flat parallel laminations throughout. Faint dendritic staining throughout; brown weathered zones 117.0 - 117.5. Bedding to core 76°.
117.5	137.0	Wacke, medium grey, medium bedded with a few thick and a few thin beds, most contacts are sharp to distinct and flat. Most beds have argillite and or subwacke tops one to two cm thick. Faint internal lamination noted in some beds. Pyrrhotite present disseminated in parts of most beds; some dissolution and decomposition of pyrrhotite; some fine dendritic staining. Sericite alteration; flecks of sericite up to about 1 mm across throughout. Bedding to core 74° @ 126', 79° 137'.
137.0	155.0	Quartz wacke, lesser wacke, thick bedded with a few medium beds, medium to light grey, contacts generally distinct and flat (some vague), one bad noted with fine quartz grains. Argillite or subwacke tops 1-10 cm thick. Pyrrhotite present, not abundant. Minor dendritic staining. Bedding to core 75° @ 151'.
155.0	164.0	Wacke and quartz wacke, medium grey, medium to thin bedded, beds graded with 1-3 cm argillite or subwacke tops. Many beds are composite with massive central part and faintly laminated base (latter in some cases is interturbidite sediment), contacts sharp and flat. Pyrrhotite comonly present at the base of many of the beds. Bedding to core 80° @ 162'.
164.0	178.5	Quartz wacke with 20% wacke; medium grey; medium and thick bedded (with a few thin beds); bed contacts sharp to distinct and flat; tops of argillite or subwacke

Drill Hole Record

Cominco

Property	District	Hole No. DDH6460	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
164.0	178.5 Cont'd	generally 1-2 cm thick. Pyrrhotite at base of some beds and disseminated throughout Bedding to core 82° @ 170'.
178.5	208.5	Wacke, subwacke, argillite 70%, medium to light grey, very distinctly thin bedded with sharp and flat bed contacts, most beds are composite with 1-3 cm light grey argillite tops and very faintly and thinly laminated dark wacke bases 1-5 cm thick. Quartz wacke 30% as thick or medium beds throughout the interval. Pyrrhotite is weakly to moderately disseminated in some of both types of beds. Bedding to core 78° @ 180' and 85° @ 200'.
208.5	235.0	Quartz wacke, medium grey, medium bedded with a few thick and a few thin beds, bed contacts sharp, most flat, at least one is wavy. Grading is common in some beds, internal parallel laminations noted in some beds, one narrow zone possibly cross-laminated. Pyrrhotite present near the bases of most beds; weakly disseminated in some. Bedding to core 84° @ 215', 86° @ 235'.
235.0	255.0	Wacke, subwacke, argillite 70%, medium to light grey, very distinctly thin bedded with sharp and flat bed contacts; most beds are composite with light grey argillite tops and dark grey interturbidite laminates some of which have disseminated pyrrhotite; some beds are graded wacke with disseminated pyrrhotite (a few are cross-laminated in the middle). Quartz wacke 30%, medium grey, medium to thick bedded, variably graded; faint laminations or cross-laminations noted; pyrrhotite scattered near the bases. 1-2 mm wide pyrrhotite lasins at 241'. Bedding to core 87° @ 255'.
255.0	270.0	Quartz wacke, medium to light grey; medium and thick bedded with few thin beds; bed contacts sharp to distinct and flat; vague Bouma subdivisions in some beds (cross-laminations and parallel high flow regime lass); pyrrhotite scattered lightly through some beds, often concentrated near bases of beds. Bedding to core 84° @ 265'.
270.0	285.0	Quartz wacke 60%, wacke, subwacke, argillite 40%, medium grey, thin bedded with a few medium beds; bed contacts generally sharp to distinct, most are flat but some are wavy; cross-laminations noted in several beds. Pyrrhotite is disseminated

Drill Hole Record

Cominco

Property	District	Hole No. DDH6460	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
270.0	285.0 Cont'd.	in most thin quartz wacke beds and weakly disseminated in the thicker quartz wacke beds; some is electrically conductive 1-2 cm parallel to bedding. Several types of fine parallel, flat laminations occur over a few mm up to 10 cm. Bedding to core 88° @ 282'.
285.0	305.5	Quartz wacke 70%, wacke with minor subwacke and argillite 30%; medium grey; medium bedded with a few thick and a few thin beds; about 25% interval (mostly quartz wacke) has very fine and faint parallel flat lamellae (one set at 288.3' have an angular discordance that does not appear to be a synsedimentary fault but, possibly, cross-laminations that are not tangential at the base); bed contacts sharp to distinct and flat to slightly wavy; pyrrhotite is weakly to moderately disseminated in most beds (especially 10 cm at 303° and in a minor slump at 296'); pyrrhotite is electrically connected across diameter of core in a few places. Bedding to core 89° @ 296'.
305.5	327.5	Quartzwacke and wacke, medium grey; difficult to describe bedding - 75% of interval is laminite generally in medium to thick packages with occasional thin argillite or siltstone parting 0.3 to 4 cm. Pyrrhotite is typically weakly disseminated with a few thin but continuous seams and one 10 cm calcite-pyrrhotite zone at 320.0; the seams are electrically continuous. Bedding to core 85° @ 307' and 85° @ 322'.
327.5	359.0	Quartzwacke and wacke alternating over 0.5 - 3.0 foot intervals, medium grey, medium bedded with some thin beds, about 50% of interval is laminite; bedding contacts distinct to vague and definition if individual beds is often difficult to determine; pyrrhotite is weakly disseminated in some beds, coarsely disseminated at the bases of several beds, forms numerous continuous (physically and electrically) lamellae 0.5 to 3 mm wide and one concretion-like structure 10 cm in diameter (331.5'). Bedding to core @ 330' and 86° @ 356'.
359.0	382.0	Quartzwacke and wacke, medium grey, thin and medium bedded, bed contacts from sharp to vague and flat; about 70% of interval is laminite in which about 5% is

211-0437

Drill Hole Record

Cominco

Property	District	Hole No. DDH6460	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
359.0	382.0 Cont'd.	argillite as bands 1 to 10 mm thick and having sharp flat top and bottom contacts; pyrrhotite is weakly to moderately disseminated in most beds, some coarser pyrrhotite blebs (to 2X5 mm) concentrated near bases of several beds, and some pyrrhotite lamellae 0.5 to 3 mm wide. Bedding to core 86° @ 370'.
382.0	421.5	Quartz arenite, very light grey, thick bedded with a few medium beds. Bed contacts are sharp, generally wavy, several beds have soft spots indicating probable amalgamation of beds; grains in most beds are medium and fine sand size; about 15% of interval is argillaceous tops and thin beds of quartz arenite, quartzwacke to wacke, subwacke, argillite; pyrrhotite present as faint disseminations both in beds and in steep cross-cutting zones and narrow quartz veins. Bedding to core 81° @ 387', 80° @418'. Entrained clast 10 cm across in 30 cm bed @ 375'.
421.5	440.0	Quartzwacke, possible some quartz arenite, with subwacke/argillite tops about 0.5 - 1 cm thick and predominantly subwacke/argillite intervals up to 20 cm thick, medium grey, 30% laminite, medium and thin bedded, bed contacts are sharp and generally flat (large flame at base of 30 cm bed at 436', dark argillite clast in 20 cm bed at 432'), dendritic mottling in some beds. Pyrrhotite is present in about half of the non-laminite beds, often near bed bases, and is parallel to bedding in some laminated subwacke/argillite. Bedding to core 85° @ 437'.
440.0	446.5	Quartzwacke, two thick (46 cm & 63 cm) beds, separated by 80 cm of wacke and quartzwacke, thin beds and laminite, medium grey, bed contacts sharp and flat. Scattered pyrrhotite in the non-laminite beds; coarse blebs near tops of thick beds.
446.5	486.0	Wacke, minor subwacke, argillite and quartzwacke, medium to dark grey, predominantly laminite with subwacke/argillite beds spaced generally at 1 to 30 cm intervals, probable silicification makes most of this interval appear much harder than wacke, from 462' sericite flakes with minor calcite are common form of alteration. Fine scattered pyrrhotite noted in much of the laminite 1 to 3 mm long grains sometimes forming continuous layers are in the subwacke/argillite beds. Bedding to core 82° @ 450', 81° @ 484'.

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Drill Hole Record

Cominco

Property	District	Hole No. DDH6460	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
486.0	490.4	Argillite, minor subwacke, light grey, characterized by biotitic laminae at 0.5 to 2 cm intervals. Pyrrhotite is dispersed in the subwacke beds, generally aligned parallel to cleavage. Top 20 cm brecciated, some calcite veining.
490.4	498.3	Quartz arenite, medium grey, fine grained, thick bedded, contacts distinct and irregular (loading/flames etc.), wacke, subwacke/ argillite tops to 30 cm. Quartz veinlets 5° and 15° to core. Alteration patches 2-3 cm across with garnet, biotite and calcite.
498.3	500.0	Argillite, (subwacke), light grey, upper portion laminated, lower portion is wispy laminated, few faint pyrrhotite laminae and wisps (lower portion is probably the top of a quartz arenite bed). Bedding to core 81°.
500.0	522.0	Quartz arenite, minor wacke/subwacke/argillite graded tops and interbeds to 20 cm, light grey, medium grained, thick and very thick bedded. The thickest bed is 1.75 meters and contains a 15 cm section with disseminated pyrrhotie. From 517 - 522' is minor weathering and oxidation along fractures. Bedding to core 65° @ 518'.
522.0	526.5	0.5 feet of core, only gouge, recovered. Parting (fault) is 50°.
526.5	547.0	Quartz arenite, minor wacke, medium grey, weathering oxidation on fractures throughout, core broken, medium and fine grained, thick bedded, bed contacts vague (few distinct, broken core makes recognition of some difficult). At 535' a strange bedding contact may be indicative of movement of unconsolidated sediments. Bedding to core 60° @ 532'.

***** END OF HOLE *****

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Drill Hole Record

Cominco

Property	District	Hole No. DDH6460	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From To | Description

RUNS	SHORTS	RUNS	SHORTS	RUNS	SHORTS
70-77	1.5	257-267	0.0	467-477	0.0
-85	3.0	-277	0.5	-487	0.0
-91	5.0	-287	0.0	-497	0.0
-97	1.5	-297	0.0	-507	0.0
-107	6.0	-307	0.2	-517	0.0
-115	6.0	-317	0.0	-527	4.0
-125	0.5	-327	0.0	-530	0.0
-127	0.3	-337	0.0	-537	0.0
-137	0.2	-347	0.0	-547	5.0
-147	0.0	-357	0.0		
-157	0.0	-367	0.0		
-167	0.0	-377	0.0		
-177	0.0	-387	0.0		
-187	0.0	-397	0.0		
-197	0.0	-407	0.0		
-207	0.0	-417	0.0		
-217	0.0	-427	0.0		
-227	0.0	-437	0.0		
-237	0.0	-447	0.0		
-247	0.0	-457	0.0		
-257	0.0	-467	0.0		

211-0437

Diamond Drill Geological Log For D.D.H. 6461

LAT. 1320 N DEP. 0000 ELEV. 4530
DIP: -50° AZIM.: 270° LENGTH: 497'
HORIZ. COMP. 319' VERT. COMP. 381'
DATE COLLARED: June 24, 1987 DATE COMPLETED: June 26, 1987
CORE STORAGE: Sullivan Open Pit Core Storage Area
DRILLED ON CLAIM(S): Eureka Crown Grant
OBJECTIVE: To test electromagnetic anomaly

PLANNED LENGTH: 500'
TERMINATION COMMENTS: Numerous veinlets, few veins, disseminations almost all exclusively pyrrhotite; are probable cause of anomaly.

DRILLED BY: Tonto Drilling (B.C.) Ltd.
TYPE DRILL: Longyear 38
CORE SIZE: NQ
PERFORMANCE COMMENTS: Good productivity. Did not recirculate and had to haul water from ski lodge steadily (Barker). Used WOS-120 Polymer, no gel.

CASING REMAINING IN HOLE (LENGTH & SIZE): 20' HWL + Shoe

TYPE CAP & SEALING METHOD: 6" cap

OTHER MATERIAL REMAINING IN HOLE: none

SURVEY INSTRUMENT USED: Sperry Sun Single Shot

ADDITIONAL DOWN HOLE TESTS: none

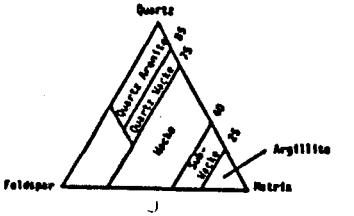
GENERAL COMMENTS: Sperry Sun Survey

Depth	Azimuth	Dip
497'	S84W	-48½°

LOG LEGEND

BED THICKNESS CLASSIFICATION

BEDS	Very Thick Bedded	
	100 cm	
	Thick Bedded	
	30 cm	
	Medium Bedded	
	10 cm	
	Thin Bedded	
	3 cm	
	Very Thin Bedded	
	1 cm	
LAMINAE	Laminated	
	0.3 cm	
	Thinly Laminated	



LITHOLOGIC CLASSIFICATION

D.D.H. 6461

APPENDIX G

Drill Hole Record

Cominco Page 2

Property	Sullivan	District		Hole No.	DDH 6461
Commenced	June 24, 1987	Location		Tests at	Hor. Comp.
Completed	June 26, 1987	Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Analysis

Footage From	To	Description
0.0	20.0	Overburden
20.0	90.0	Quartz wacke, some quartz arenite and wacke, most beds graded to subwacke or argillite, pyrrhotiferous; medium grey; medium bedded with 10% thick bedded and about 20% thin bedded; bed contacts are commonly sharp and flat, but some are irregular (disrupted); faint internal lamination is common in the wacke beds and is usually highlighted by disseminated pyrrhotite; most of the quartz wacke and quartz arenite beds have pyrrhotite disseminated most heavily toward the bases; grain size is generally fine or very fine, rarely medium; sulphides are also found in fine fractures and small veins generally crossing strata; small bedding parallel veins that contain wall rock fragments are up to 2 cm wide, the largest continuous vein (contains 30% wall rock) is 15 cm at 67', concentration of sulphides diminishes abruptly with increasing distance from some veins; sulphides are predominantly pyrrhotite with only minor sphalerite noted. Chlorite veinlet at 77'. Bedding to core 60° at 32', 60° at 50', 60° at 70' and 57° at 88'.
90.0	95.0	Subwacke, argillite and wacke, pyrrhotiferous; light to medium grey; thin bedded to laminated; contacts are sharp, flat to wavy; internal laminations with disseminated pyrrhotite; bedding to core 62° at 95'.
95.0	98.5	Wacke; dark grey; medium bedded; bed contacts sharp to vague, flat to irregular, deformed; about 30% has weak internal lamination with weak disseminated pyrrhotite; pyrrhotite also in irregular veinlets.
98.5	102.0	Wacke; dark grey; laminated (EPL) throughout, laminations are biotitic with irregular pyrrhotite disseminations and rare blebs; bedding to core 62°.
102.0	113.0	Wacke and quartz wacke with bed tops to subwacke and, possibly, argillite, pyrrhotiferous; dark grey; thick and medium bedded, not all distinct beds; bed contacts sharp to vague flat where recognized except very base, that is probably a fault contact (now occupied by pyrrhotite over 5 mm parallel to laminations in bed below and oblique to laminations in medium grained quartz wacke above). Pyrrhotite present

211-843

Drill Hole Record

Cominco Page 3

Property	Sullivan	District		Hole No.	DDH 6461
Commenced	June 24, 1987	Location		Tests at	Hor. Comp.
Completed	June 26, 1987	Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Analysis

Footage From	To	Description
102.0 (Cont'd.)	113.0	as disseminations, veinlets and scattered about in irregular patches and in small lenses. Galena, chlorite and garnet noted.
113.0	155.5	Wacke; medium grey; interval is mostly massive although short laminated intervals are present as well as single laminations that may in some cases be bedding planes; from 137 to 155.5 appears to be medium and thick bedded; most bedding contacts are distinct and flat however there are no significant differences in lithotype. Pyrrhotite is present throughout as disseminations, planar and irregular veinlets, veins to 3 cm wide some of which appear to parallel bedding and others that cut bedding, as elliptical concentrations to 1 cm long as well as irregular patches with up to 75% pyrrhotite to 4 cm long. Bedding to core 59° at 140'.
155.5	198.0	Wacke, often with subwacke and argillite tops, 20% of beds have a quartz wacke basal portion, numerous (thin) beds of subwacke and argillite; medium grey; medium bedded with about 20% thick (quartz wacke) beds and 5% thin beds (in clusters less than 2' long); bed contacts are generally sharp and flat but some appear to have been deformed by synsedimentary movement. Pyrrhotite is present as weak disseminations usually near base of beds and as isolated laminations near bed contacts; two veins about 1 cm wide also have sphalerite. Bedding to core 57° at 135', 54° at 180'.
198.0	219.0	Wacke, subwacke and argillite (thin beds) with about 25% of interval quartz wacke and wacke in medium and thick beds; medium grey; bed contacts sharp and flat. Pyrrhotite disseminated throughout many beds, in laminations especially at bed contacts, few veins and irregular patches. Galena noted in ankerite mass at 199'. Bedding to core 60° at 207'.
219.0	222.5	Subwacke argillite and wacke cut by a swarm of bifurcating ankerite veins. Minor pyrrhotite is present only in sediments.
222.5	251.0	Wacke, minor quartz wacke, commonly grading to subwacke and argillite; medium to light grey; medium bedded with rare thick beds and several thin beds; bed contacts

211-6

Drill Hole Record

Cominco Page 4

Property	Sullivan	District	Hole No. DDH 6461	
Commenced	June 24, 1987	Location	Tests at	Hor. Comp.
Completed	June 26, 1987	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates			True Brg.	Logged by
Objective			% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Footage From	To	Description	Analysis
222.5	251.0 (Cont'd)	generally sharp or distinct and flat, fault offset noted on one and possible flame or fold on another; about 50% of beds are internally laminated (flat parallel). Pyrrhotite is present as weak disseminations, rare veinlets, and is moderately concentrated at the bases of some beds. Bedding to core 60° at 227', 57° at 250'.	
251.0	264.0	Subwacke and argillite, light to medium grey; thin bedded; bed contacts sharp and flat; most beds are two or three distinct lithotypes with sharp flat contacts, particularly homogeneous argillite, subwacke often with disseminated pyrrhotite and generally having a fine granular appearance, and darker wacke or subwacke, laminite usually with fine disseminated pyrrhotite. Microfaulting is apparent along some veins. Pyrrhotite is present in irregular cross cuttting veins usually less than 1 cm wide and with less than 30% wall rock fragments; and as tow bedded veins 1 and 4 cm thick.	
264.0	298.0	Wacke, some of which is approaching quartz wacke, plus a few beds of quartz wacke, several beds as well as the tops of most are subwacke and argillite; medium to light grey; medium and thick bedded with a few sets of thin beds; most bed contacts are sharp to distinct and flat; commonly beds are internally laminted, some rarely have cross laminae. Pyrrhotite is present weakly disseminated, often accentuating the bedding; there are a few veinlets and irregular masses as well. Bedding to core 57° at 287'.	
298.0	322.0	Wacke, subwacke and argillite, two beds with quartz wacke portions; medium to light grey; medium and thin bedded; bed contacts sharp to distinct and generally flat, some slightly undulating and a few are offset by micro-faults; internal lamination (often quite faint) is present in most beds. Pyrrhotite is present in a few veinlets and is weakly disseminated in some beds. Bedding to core 56° at 312'.	
322.0	359.0	Wacke with attendant subwacke and lesser argillite in upper portions of beds, minor quartz wacke in about 10% of the beds; grey; medium and thick bedded, less than 10% of interval is thin bedded; bed contacts are sharp to distinct and flat;	

Drill Hole Record

Cominco Page 5

Property	Sullivan	District	Hole No. DDH 6461	
Commenced	June 24, 1987	Location	Tests at	Hor. Comp.
Completed	June 26, 1987	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates			True Brg.	Logged by
Objective			% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Footage From	To	Description	Analysis
322.0	359.0 (Cont'd)	internal laminations present over about 20% of interval; pyrrhotite is present as weak disseminations and in veinlets.	
359.0	436.5	Wacke with minor subwacke or argillite only as very thin interbeds spaced a few tens of centimeters in upper part of interval and one to 10 cm in the lower part; medium to dark grey. inter-bed contacts are sharp and flat; entire interval is thinly laminated (appears that biotite is the main mineral defining laminae) and laminations are planar and flat. Pyrrhotite is commonly weakly disseminated throughout; there are a few pyrrhotite veinlets, one with sphalerite at 418. Core is broken from 412-417', several fragments have slickensides - suspect only small fault is present. Bedding to core 57° at 365', 56° 385', 55° at 407', 55° at 427'.	
436.5	459.0	Quartz wacke with some quartz arenite, minor subwacke and argillite; medium to light grey; thick to very thick bedded; bed contacts are distinct and generally flat, some are irregular; most subwacke/argillite in 25 cm interval at 446'; pyrrhotite is present in rare veinlets and in widespread disseminations in portions of some beds; galena and sphalerite (rare) noted near and within quartz vein from 451' to 452.5'. Bedding to core 50° at 456'.	
459.0	463.5	Wacke, argillite, subwacke; thin and very thin bedded; with one medium quartz wacke bed; medium grey; bed contacts sharp and flat, rarely wavy; a 30 cm interval contains very thin beds that have cross laminated subwacke bases. Bedding to core 54° at 460'.	
463.5	472.5	Quartz wacke, some quartz arenite, minor subwacke and argillite in interbeds; medium grey; thick then medium bedded; bed contacts distinct to vague, flat, wavy and cuspate; pyrrhotite noted weakly and finely disseminated in some beds, in some irregular patches and a 3 cm vein (466') containing 30% wall rock fragments.	
472.5	497.0	Quartz wacke, wacke, subwacke and argillite; light, medium and dark grey; 60% of interval is wacke, subwacke and argillite, primarily found as thin beds about	

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 6

Property	Sullivan	District		Hole No.	DDH6461
Commenced	June 24, 1987	Location		Tests at	Hor. Comp.
Completed	June 26, 1987	Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	To	Description
472.5 - 497.0 (Cont'd)		half of which are laminites and that have sharp flat contacts (except from 372.5 - 375.5 where bedding parallel movement has disaggregated some contacts); 40% of interval is quartz wacke and wacke in medium and thick beds, commonly with wavy to cuspate contacts; some of the quartz wacke and wacke beds contain pyrrhotite disseminated and in irregular blebs defining a faint bedding parallel distribution. Pyrrhotite is also present in cross-cutting and bedding parallel veins. Rip up clasts of argillite noted in one quartz wacke bed. Bedding to core 57° at 477', 54° at 497'.
		*** END OF HOLE AT 497' ***

211-0

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 7

Property	Sullivan	District		Hole No.	DDH 6461
Commenced	June 24, 1987	Location		Tests at	Hor. Comp.
Completed	June 26, 1987	Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From To | Description

RUNS	SHORTS	RUNS	SHORTS	RUNS	SHORTS
20	Start	197	0.0	397	0.0
25	4.5	207	0.0	407	0.0
27	0.5	217	0.0	417	2.0
31	1.0	227	0.5	427	0.0
37	0.0	237	0.0	433	0.0
43	0.0	247	0.0	437	0.0
47	1.0	257	0.0	446	1.0
57	0.0	267	0.0	456	0.0
67	0.0	277	0.0	459	0.0
77	0.0	287	0.0	463	0.0
87	0.0	297	0.0	467	0.0
97	0.0	307	0.0	477	0.0
107	0.0	317	0.0	484	1.0
117	0.0	327	0.0	494	0.5
127	0.0	337	0.0	497	0.0
137	0.0	347	0.0		
147	0.0	352	1.0		
157	0.5	357	0.0		
167	3.0	367	0.0		
177	0.0	377	0.0		
187	0.5	387	0.0		

211-0

Diamond Drill Geological Log For D.D.H. 6462

APPENDIX H

LAT. 20,750 N	DEP. 22,800 W	ELEV. 5450'	
DIP: -70°	AZIM.: 245°	LENGTH: 315'	
HORIZ. COMP. 108	VERT. COMP. 296		
DATE COLLARED: June 27, 1987	DATE COMPLETED: June 28, 1987		

CORE STORAGE: Sullivan Mine

DRILLED ON CLAIM(S): Mat 71

OBJECTIVE: To test an EM geophysical anomaly.

PLANNED LENGTH: 320'

TERMINATION COMMENTS: Scattered fine pyrrhotite veinlets intersected explain the anomaly.

DRILLED BY: Tonto Drilling (B.C.) Ltd.

TYPE DRILL: Longyear 38

CORE SIZE: NQ

PERFORMANCE COMMENTS: Good

CASING REMAINING IN HOLE (LENGTH & SIZE): 20' HWL + Shoe

TYPE CAP & SEALING METHOD: 6" welded cap

OTHER MATERIAL REMAINING IN HOLE: none

SURVEY INSTRUMENT USED: Sperry Sun

ADDITIONAL DOWN HOLE TESTS: none

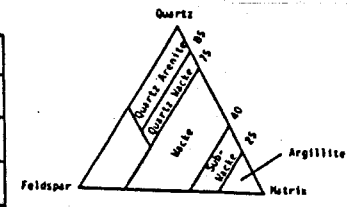
GENERAL COMMENTS: Sperry Sun Survey

Depth	Azimuth	Dip
315'	154°	-69°

LOG LEGEND

BED THICKNESS CLASSIFICATION

BEDS	Very Thick Bedded	100 cm
	Thick Bedded	30 cm
	Medium Bedded	10 cm
	Thin Bedded	3 cm
	Very Thin Bedded	1 cm
LAMINAE	Laminated	0.3 cm
	Thinly Laminated	



LITHOLOGIC CLASSIFICATION

D.D.H. 6462

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western/Ft. Steele M.D.	Hole No. DDH6462	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
0.0	20.0	Overburden
20.0	32.0	Wacke, medium to dark grey, thin bedded to laminated; one quartz wacke bed is thick, several light grey calcareous intervals with fine dark laminae may be Bouma B, some with Bouma C and starved ripples. The laminae and many bed contacts are sharp and flat, noted one sharp wavy contact. Bedding to core 76° @ 21' and 74° at 31'.
32.0	38.5	Quartz arenite (quartz wacke?), medium grey, thick bedded, contacts distinct to vague, flat to wavy.
38.5	58.3	Wacke 60%, quartz wacke 40%, medium grey, wacke is medium and thin bedded, quartz wacke is medium bedded, bed contacts generally sharp or distinct (rare vague) and flat to, for a few, wavy. Disaggregated argillite/subwacke/wacke over 15 cm at 39.5'. Calcareous laminae over 3 or 4 cm at 55'. Increase from background type of alteration to contact type seems to be at 50'. Bedding to core 75° at 46'.
58.3	62.6	Gabbro sill, medium grained and green at start changes to brown (biotite) and green at 60' and totally brown at 61 to 62.6'.
62.6	78.0	Quartz arenite, light grey, very thick bedded (single bed 62.6' to 73.0'), medium grained.
78.0	85.5	Argillite, subwacke, (wacke), medium grey, thin and ? bedded, many bed contacts shredded, indicative of soft sedimentary disturbance. Wispy patches contain finely disseminated pyrrhotite.
85.5	102.0	Wacke, subwacke/argillite with rare quartz wacke/quartz arenite, medium grey, thin (rare medium) beds, calcareous laminations 96.5 - 97.5, bed contacts generally sharp and flat. Pyrrhotite is rare but present as flecks, fine laminations and irregular (small) patches. Chlorite flecks to 2 mm and biotite to 0.5 mm noted in argillite. Bedding to core 69° at 98'.

111-041

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH6462	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	Footage To	Description
102.0	108.5	Quartz arenite (quartz wacke), light to medium grey, very thick beds, contacts vague.
108.5	129.0	Wacke, subwacke/argillite, (quartz wacke), medium to dark grey, alteration increases after 117' (mainly silicification), thin to medium bedded, contacts sharp and flat, many beds have light grey, calcareous, flat parallel laminated intervals, cross laminae noted but rare. Pyrrhotite as thin laminae and fractures and lenses up to 4 mm thick occure over interval 108.5 to 110.0'. Also there is a 7 mm wide bedding parallel calcite fracture with 30% pyrrhotite. Cross strata conductivity noted over several cm. Bedding to core 69° at 119'.
129.0	145.5	Gabbro, probably a sill, chilled upper contact, fine grained dark green, central portion medium grained, basal contact conformable. Approaching base grain size decreases and colour becomes a denser green - chill zone; then 8 cm of medium grained gabbro in selvage at contact.
145.5	225.0	Wacke, subwacke/argillite, medium grey some dark and light, thin and medium bedded, contacts sharp and flat. Multiple composition beds throughout that may comprise one or all of: argillite top, slightly graded wacke/subwacke that is not laminated, faintly to well laminated wacke (spaced up to several mm) and in some cases calcareous, and dark grey extremely finely laminated (flat parallel) wacke. The latter lithotype is probably a hemipelagic interturbidite accumulation. Pyrrhotite, usually coarse grains up to 2mm in size, is typically disseminated in the graded beds and is particularly concentrated near the bases. Very fine pyrrhotite is found in some of the hemipelagic type laminates. A 5 mm thick pyrrhotite layer contains about 10% calcite at 157'. Bedding to core 70° at 146', 68° at 166', 70° at 185', 71° at 211', 70° at 224'.
225.0	241.0	Wacke, subwacke/argillite with calcareous quartz arenite; wacke/subwacke/argillite is medium grey, thin bedded to laminated, contacts sharp and flat; quartz arenite is light grey generally featureless, very calcareous (strong effervescence with 10% HCl), from 231 - 232' is intercalated with thin beds argillite/subwacke and

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 4

Property Sullivan	District	Hole No. DDH6462	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Analysis

Footage From	To	Description
225.0	241.0	is disaggregated (cleavage present so probably tectonic). Bedding to core 71° at 235'.
241.0	277.0	Wacke, subwacke/argillite possibly some (dark) quartz wacke, medium to dark grey, medium and thin bedded, 50% of beds internally finely laminated, contacts and laminations are sharp and flat. Pyrrhotite disseminated in a few very thin beds or near basal contacts of some beds; two or three bed contacts might have up to 30% pyrrhotite over 4 to 5 millimeters. Bedding to core 71° at 245', 70° at 255', 74° at 265', 71° at 274'.
277.0	296.0	Wacke and quartz wacke, minor subwacke/argillite, medium and thick beds; the wacke beds commonly contain subwacke/argillite as disrupted to disaggregated tops and clasts. Contacts irregular except few thin beds. Pyrrhotite irregularly disseminated and in small clusters to 5 mm throughout. Bedding to core 70° at 286'.
296.0	315.0	Wacke, subwacke/argillite with minor quartz wacke; wacke/subwacke/argillite is medium grey, medium and thin bedded, has sharp flat bed contacts; quartz wacke is very calcareous, medium to light grey, medium and thick bedded with parallel and ripple laminations in upper portions of beds. Cleavage (?) chlorites noted in thin argillaceous tops. Weak pyrrhotite occurrences below 307', one 3 mm thick seam at 310'. Bedding to core 75° at 299', 75° at 310'.
		***** END OF HOLE AT 315.0 FEET *****

311-0

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 5

Property Sullivan	District	Hole No. DDH6462	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Analysis

Footage From To | Description

Runs	Shorts	Runs	Shorts
20	0.8	182	0.0
25	0.5	185	0.0
33	0.5	191	0.0
37	0.0	197	0.0
47	0.5	203	1.0
57	0.5	212	1.0
67	0.0	215	0.5
77	0.0	220	0.0
87	0.0	225	0.0
92	0.5	230	0.5
97	0.0	233	0.0
107	0.0	237	0.5
117	0.0	247	0.0
127	0.0	257	0.0
137	0.0	267	0.0
147	0.0	272	0.0
155	1.0	277	0.0
157	1.0	285	0.5
165	0.0	290	0.5
167	0.5	298	0.0
177	0.0	307	1.5
		315	0.5

Diamond Drill Geological Log For D.D.H. 6463

LAT. 3,936 N	DEP. 37,740 W	ELEV. 5950	
DIP: -60°	AZIM.: 245°	LENGTH: 997'	
HORIZ. COMP. 499'	VERT. COMP. 863'		
DATE COLLARED: June 29, 1987	DATE COMPLETED: July 7, 1987		

CORE STORAGE: Sullivan Mine

DRILLED ON CLAIM(S): Mat 265

OBJECTIVE: To test Aldridge strata for lead and Zinc sulphide mineralization.

PLANNED LENGTH: 1,000'

TERMINATION COMMENTS: No significant sulphides were recovered.

DRILLED BY: Tonto Drilling (B.C.) Ltd.

TYPE DRILL: Longyear 38

CORE SIZE: NQ

PERFORMANCE COMMENTS: Adequate, ground more broken than normal.

CASING REMAINING IN HOLE (LENGTH & SIZE): 10' HWL Rod + Shoe

TYPE CAP & SEALING METHOD: 6" welded cap

OTHER MATERIAL REMAINING IN HOLE: none

SURVEY INSTRUMENT USED: Sperry Sun

ADDITIONAL DOWN HOLE TESTS: none

GENERAL COMMENTS: Sperry Sun Survey

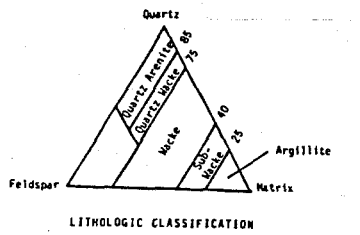
Depth	Azimuth	Dip
797'	245°	-60°

APPENDIX I

LOG LEGEND

BED THICKNESS CLASSIFICATION

BEDS	Very Thick Bedded	
	100 cm	
	Thick Bedded	
	30 cm	
	Medium Bedded	
	10 cm	
	Thin Bedded	
	3 cm	
	Very Thin Bedded	
	1 cm	
LAMINAE	Laminated	
	0.3 cm	
	Thinly Laminated	



LITHOLOGIC CLASSIFICATION

D.D.H. 6463

Drill Hole Record

Cominco Page 2

Property Sullivan | District Western/ Ft. Steele M.D. | Hole No. DDH 6463

Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
0.0	10.0	Overburden
10.0	34.0	50% recovery, core broken on fractures and bedding. Quartz wacke, wacke, subwacke/argillite, medium grey, medium bedded, bed contacts distinct to vague and flat, minor weathering. Slickensides on several bedding contacts and at low angle to bedding. Bedding to core 84° @ 12', 72° @ 32'.
34.0	62.0	65% recovery, several crumbly sections in thick beds. Quartzwacke, lowest bed is quartz arenite, bed tops graded to argillaceous, light grey, thick to very thick bedded (probably some bed contacts lost in drilling). Most beds are fine sand grain size, lowest is medium. Bed contacts not usually seen, some thin beds have bedding-parallel slip, and a 2 cm gouge zone at base of thick bed at 62'.
62.0	94.0	65% recovery. Wacke with subwacke/argillite tops and 15% quartzwacke, medium to light grey, some quartzwacke medium and fine grained, medium bedded with few thin beds, quartzwacke is thick bedded, bed contacts sharp to vague, flat, some wavy, many have slickensided surfaces and thin gouge zones. Bedding to core 81° @ 77'.
94.0	115.0	55% recovery. Wacke, medium grey, medium bedded, one thick and several thin beds, bed contacts from distinct to vague and generally flat, slickensides and small gouge zones parallel or at low angle to bedding. Bedding to core 82° @ 100'.
115.0	116.0	Gabbro dike, alterted, with quartz.
116.0	117.0	Wacke, altered, broken.
117.0	118.0	Broken, includes gouge and coarse micaceous igneous(?) material.
118.0	121.0	No core (i.e. intervals above may be thicker).

Drill Hole Record

Cominco Page 3

Property Sullivan | District | Hole No. DDH 6463

Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
121.0	133.0	Wacke generally with subwacke/argillite tops, a few quartzwacke beds are present, medium to thin bedded, bed contacts generally sharp and flat (some flames and rip-ups), slickensides and small gouge zones parallel or at small angle to bedding. Bedding to core 85° @ 130'.
133.0	154.0	Quartz arenite, quartzwacke and wacke in first 15', medium to light grey, fine and very fine grained, medium (few thick and thin) bedded, bed contacts sharp to distinct, flat (few wavy), slickensides noted on two bedding surfaces and a 3mm wide gouge zone on one. Bedding to core 79° @ 149'.
154.0	162.0	Wacke, subwacke/argillite with two quartz arenite beds at bottom, thin to very thin bedded with one interval laminated and two medium beds and two thick beds at bottom, bed contacts sharp to vague and flat to irregular, slickensides parallel to bedding on at least 5 beds. Bedding to core 75° @ 160'.
162.0	167.5	Gabbro, greenish grey, fine grained, sill.
167.5	176.0	Quartz arenite, light grey, thick bedded (30-40 cm) with wacke/subwacke or argillite tops 10 cm - 1 cm, bed contacts distinct and flat to wavy, beds are homogeneous over most of their thickness. Slickensides noted paralle and at small angle to bedding.
176.0	204.0	Wacke, subwacke, argillite and quartzwacke and quartz arenite, thin to very thin with few medium and thick beds, some laminated intervals, the thickest beds are more arenaceous, bed contacts are primarily sharp and flat, a few are wavy, slickensides are parallel to bedding on several contacts. Bedding to core 73° @ 174', 75° @ 191'.
204.0	214.5	Quartz arenite, minor wacke/subwacke/argillite, thick bedded with 1 foot interval of thin and very thin bedded wacke/subwacke/argillite 111.0 - 112.5', bed contacts distinct to sharp and flat to wavy. Slickensides noted on bedding surfaces 111.0 - 112.5. Bedding to core 80° @ 111.0'.

Drill Hole Record

Cominco

Property	Sullivan	District	Hole No.	DDH6463	
Commenced		Location	Tests at		Hor. Comp.
Completed		Core Size	Corr. Dip		Vert. Comp.
Co-ordinates			True Brg.		Logged by
Objective			% Recov.		Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
214.5	221.0	Wacke, subwacke/argillite, medium grey, medium and thin bedded, some weathering and broken core, bed contacts not clear.
221.0	228.0	Quartz arenite, quartzwacke minor wacke/subwacke/argillite, thick and medium bedded with short sections thin bedded to laminated, bed contacts sharp or distinct and generally flat, slickensides noted on bedding planes. Bedding to core 86° @ 223'.
228.0	235.0	Wacke, subwacke/argillite, medium grey, thin bedded to laminated bed contacts sharp and flat, some have slickensides. Bedding to core 79° @ 235'.
235.0	241.5	Quartz arenite, light grey, thick bedded, bed contacts (2) distinct, flat and wavy.
241.5	244.0	Wacke, subwacke/argillite, one quartz arenite, light to medium grey, thin and medium bedded, contacts sharp and flat to wavy, sandstone dike near top, slickensides on bed contacts. Bedding to core 86° @ 243'.
244.0	264.0	Quartz arenite, quartzwacke, wacke with minor subwacke/argillite, medium to light grey, thick to thin bedded, bed contacts sharp to distinct and generally flat (flame? or load feature at 247.5'), slickensides seen on only four bed surfaces. Bedding to core 87° @ 250'.
264.0	274.0	Wacke, with quartzwacke, quartz arenite, subwacke/argillite, medium grey, medium to thin bedded, bed contacts sharp to distinct generally flat, some slightly wavy, several beds contain rip-up clasts (usually of argillite tops) and near 273' several thin quartzwacke/argillite beds have shredded appearance. Bedding to core 85° @ 268'.
274.0	283.0	Quartz arenite, minor subwacke/argillite, light grey, thick bedded (thin subwacke/argillite (wacke) 277-278'), bed contacts distinct, slightly wavy.
283.0	293.0	Wacke, quartzwacke, quartz arenite, subwacke/argillite, medium grey, medium (quartzwacke/quartz arenite) and thin bedded, contacts sharp and flat to wavy, bed laminated

Drill Hole Record

Cominco

Property	Sullivan	District	Hole No.	DDH 6463	
Commenced		Location	Tests at		Hor. Comp.
Completed		Core Size	Corr. Dip		Vert. Comp.
Co-ordinates			True Brg.		Logged by
Objective			% Recov.		Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	Footage To	Description
283.0	293.0	(Cont'd.) 288 - 289'. Bedding to core 88° @ 288'.
293.0	331.0	Quartz arenite, some quartzwacke with lesser wacke and subwacke/argillite tops, light grey, thick bedded with a few medium beds and several short intervals (less than 30 cm) of thin beds, contacts sharp and flat to slightly wavy, slickensides noted on a few bed surfaces (core generally solid so not many bed contacts split), Bedding to core 84° @ 318'.
331.0	341.5	Wacke, minor quartzwacke, quartz arenite, subwacke/argillite tops, medium grey, thin bedded (few medium, 1 thick), bed contacts sharp to distinct and wavy to flat, a few beds have fine lithic clasts, slickensides are present on several bedding surfaces.
341.5	345.5	Wacke, subwacke, argillite, minor quartzwacke, medium to light grey, thin to very thin bedded, bed contacts sharp and wavy, cross bedding common (wavy laminated facies).
345.5	351.0	Quartz arenite (1 thick), quartzwacke and wacke, light grey, thick beds separated by 4 thin beds, contacts distinct and flat, one contact has slickensides and 5 mm of gouge.
351.0	363.0	Wacke, subwacke/argillite with few quartz arenite or quartzwacke beds, medium grey, thin with few medium beds, contacts sharp and flat with a few wavy ones, slickensides noted on several bedding contacts and a 3 cm crush zone bounded by strong slickensides at 354.5 displays reverse faults and pop-up structures. Bedding to core 70° @ 359'.
363.0	376.5	Quartz arenite, light grey, fine grained, thick bedded. Massive to thin bedded argillaceous intervals to 1'.
376.5	381.0	Wacke, subwacke/argillite, medium grey, thin bedded with 20 cm subwacke with wacke rip-up? clasts overlying 30 cm of predominantly subwacke laminite, slickensides noted on several bedding surfaces. Bedding to core 80° @ 380'.

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH 6463	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
381.0	403.0	Quartz arenite, wacke near base, subwacke/argillite tops, light grey, fine grained, thick bedded (some medium near base), contacts distinct flat to wavy, slickensides on and parallel to some bed contacts. Recoveries poor.
403.0	407.0	Wacke, subwacke/argillite, medium grey, thin and medium bedded, contacts distinct or sharp and flat to wavy, 50% broken.
407.0	432.0	Quartz arenite and quartzwacke, badly broken with poor recoveries, light grey, medium and thick bedded, few contacts preserved.
432.0	434.0	Wacke, subwacke and argillite, medium grey, medium to thin bedded, contacts distinct and flat, Bedding to core 80° @ 433'.
434.0	438.0	Quartz arenite, light grey, fine grained, thick bedded, contacts broken.
438.0	440.0	Wacke, subwacke and argillite, medium grey, thin and medium bedded, contacts sharp and flat. Bedding to core 80° @ 440'.
440.0	462.0	Quartz arenite, quartzwacke, minor wacke/subwacke/argillite, medium grey, medium (few thick and thin) bedded, contacts mostly broken (few sharp and flat), one set of slickensides noted parallel then at small angle to bedding.
462.0	477.5	Wacke, subwacke and argillite, medium grey, medium and thick units that are well to faintly laminated (flat parallel) throughout often without clear indication of what constitutes a complete bed, there are a few argillite units (typical of bed tops elsewhere) up to 1 cm thick and a couple of beds graded from quartzwacke are present. Sericite flecks up to 1 mm across occur densely in zones up to 10 cm wide, quartzwackes (one with chlorite) are calcareous. Slickensides noted on several bedding planes. Bedding to core 80° @ 463' and 80° at 476'.

211-0437

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH 6463	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	Footage To	Description
477.5	483.0	Wacke, subwacke and argillite, few quartzwacke beds, medium to light grey, thin bedded, contacts sharp and flat to wavy (some flames), slickensides or several bed surfaces.
483.0	540.0	Quartz arenite and quartzwacke with wacke/subwacke/argillite tops and interbeds intervals generally less than 60 cm thick, light grey, fine grained, thick and medium bedded with short intervals of thin beds, bed contacts sharp and distinct and flat to wavy and numerous ones have slickensides. Bedding to core 81° @ 495', 80° @ 520', and 80° @ 528'.
540.0	542.5	Wacke, subwacke and argillite, medium to light grey, very thin bedded to laminated, some beds internally laminated (dark grey), laminations and bed contacts are sharp and flat, slickensides on some bed contacts and one fracture at 20° to core. Bedding to core 80° @ 541.5'.
542.5	589.0	Quartz arenite, light grey, fine grained, thick bedded, bed contacts are sharp and distinct and generally flat on two of which slickensides were noted. Intervals up to 60 cm of thin wacke/subwacke (argillite) beds.
589.0	596.0	Wacke, subwacke and argillite, medium grey, thin bedded, bed contacts sharp and generally flat, a few are wavy or with flames, several sandstone dikelets, one wacke interval of 20 cm contains shredded argillaceous layers, slickensides noted on two bed contacts. Bedding to core 81° @ 590'.
596.0	652.0	Quartz arenite, light grey, fine some medium grained, thick bedded of which a few have current laminations otherwise fairly homogenous, bed contacts sharp and flat (few wavy). Intervals (about 10% of total) less than 60 cm (often 30 cm) of wacke, subwacke/argillite, medium grey, thin bedded with sharp flat contacts. Several bed contacts have slickensides. Crush zone (small fault) 10 cm wide parallel to bedding. Bedding to core 82° @ 608', 78° @ 631', 83° @ 651'.

211-0437

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH 6463	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
652.0	660.0	Wacke, medium (minor dark) grey, units 20 to 25 cm of laminite, massive sericite flecked wacke or quartz chlorite concretion, laminations are flat, parallel and paper thin. Bedding to core 80° @ 659'. Several sets of slickensides parallel to bedding.
660.0	672.0	Quartz arenite and quartzwacke with interbeds of wacke/subwacke/argillite to 10 cm, light grey, thick bedded, bed contacts sharp, appear flat but are inclined more than adjacent, eg. bedding to core 60° at 667'.
672.0	682.0	Wacke, subwacke and argillite, minor quartzwacke, medium to light grey, thin bedded, bed contacts sharp and flat (a few are irregular), one set of cross beds noted, Bedding to core 81° @ 680'.
682.0	717.0	Quartz arenite, minor wacke/subwacke/argillite fine grained, thick bedded with intervals generally 30 cm or less of wacke/subwacke/argillite thin beds and one laminite. Quartz vein (5 cm) 20° to core at 687' and another containing pyrrhotite at 699'. Pyrrhotite veinlet at 20° to core at 698'. Pyrrhotite blob 4 by 2 cm contains chalcopyrite with peripheral pyrrhotite grains at 713'. Bed contacts sharp, most flat some inclined to wavy and one has large sole feature. Bedding to core 81° @ 691' and 57° @ 706'.
717.0	720.5	Wacke, subwacke/argillite, minor quartzwacke, medium grey, thin bedded, contacts sharp (most) to vague, and flat, slickensides parallel to some of the bedding contacts. Bedding to core 82° @ 718'.
720.5	740.5	Quartz arenite, light grey, fine and medium grained, thick bedded, bed contacts sharp and flat to irregular (flames), argillaceous tops 5 cm or less, slickensides and small broken zone (5 cm) parallel or at small angle to bedding at 529'. Bedding to core 81° @ 730'.
740.5	746.0	Wacke, subwacke/argillite minor quartzwacke/quartz arenite, medium grey, thin (few medium) beds, contacts sharp and flat, minor shredding of argillaceous layers

811-0437

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH 6463	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
740.5	746.0 Cont'd.	over short intervals, very small fold in argillaceous material at 742', slickensides noted on a few bedding surfaces. Bedding to core 81° @ 746'.
746.0	751.0	Quartz arenite, light grey, fine to medium grained, thick and medium bedded, homogeneous.
751.0	771.5	Wacke, subwacke/argillite 60%, quartz arenite 40%, medium and light grey, former is medium and thin bedded with sharp flat and irregular contacts, the quartz arenite is medium and thick bedded with sharp and flat contacts. Slickensides noted on several bed contacts. Bedding to core 82° @ 758'.
771.5	781.0	Wacke, subwacke and argillite, first few feet is predominantly medium bed of wacke, bottom is thin bedded (wacke) subwacke/argillite beds. Slickensides noted on a few bed contacts; small crush zone at 777'. Bedding to core 81° @ 775'.
781.0	801.0	Quartz arenite, light grey, fine and medium grained, thick (few medium) beds, bed contacts sharp, some flat (others broken), some with slickensides, fracture 20° to core with slickensides at 797'. Bedding to core 70° @ 797'.
801.0	805.0	50% recovery, cave present so probably pulled rods (mislatch?). Argillite, subwacke, wacke broken, medium grey, possible cleavage at 30° to core between 804' and 805'.
805.0	824.0	Quartz arenite with lesser quartzwacke and subwacke/argillite tops to 20 cm thick, fine grained, light to medium grey, very thick bedded, bed contacts are sharp or distinct and brokon, a few slickensided surfaces noted.
824.0	839.0	Wacke, minor subwacke, argillite, medium grey, medium with possible thick beds (vague contacts etc.) and few thin beds, contacts sharp to diffuse making bed recognition difficult, comprises quartz, biotite, (garnet) segregations; slickensides noted on several bedding surfaces, some with thin gouge seams. Bedding to core 75° @ 830' and 79° @ 838'.

811-0437

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH 6463		
Commenced	Location	Tests at	Hor. Comp.	
Completed	Core Size	Corr. Dip	Vert. Comp.	
Co-ordinates		True Brg.	Logged by	
Objective		% Recov.	Date	

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
639.0	885.0	Quartzwacke, several beds verge on quartz arenite, includes about 20% wacke, minor subwacke/argillite, medium grey, thick beds with a few medium and thin, contacts distinct to vague and flat to wavy, most beds homogeneous with some disaggregated subwacke/argillite units, slickensides and thin gouge seams noted on and at low angle to a few bedding planes. Bedding to core 75° @ 854' and 65° @ 874'.
885.0	902.8	Wacke, medium grey, vaguely bedded (probably thick, medium and thin beds), intervals to about 30 cm are vaguely laminated, there appear to be vague structures indicative of synsedimentary extension, flame structure noted at 895'. A 15 cm wide incohesive fault breccia and gouge occurs at 894'. Slickensides noted parallel to several bedding planes. Bedding to core 64° @ 886' and 73° @ 896'.
902.8	930.6	Wacke, medium grey, uniformly laminated (shades of grey with fine biotite and a trace of pyrrhotite) almost entirely throughout interval (there are minor short faint sections where lams are altered or were not formed plus a couple of thin graded wacke beds). All laminations are flat and parallel. Although a bedding parallel fissility is sometimes present no significant slickensides noted. Bedding to core 81° at 910', 75° at 920' and 80° at 930'.
930.6	957.0	Wacke, subwacke/argillite, some quartzwacke (quartz arenite), medium to light grey, medium to thin (few thick) beds, contacts sharp and flat, short (<10 cm) internally laminated beds including darker grey interturbidite laminite, slickensided and a few thin gouge seams noted. Bedding to core 76° @ 940' and 77° @ 950'.
957.0	997.0	Quartzwacke and quartz arenite with tops and interbeds of wacke/subwacke/argillite, medium to light grey, fine and medium grained, thick and medium bedded with a few thin bed. Several of the medium grey beds contain coarse (up to 4 mm) clots of sericite. Concretionary zonations in quartz arenite bed at 970'. Slickensides and thin gouge seams present on several beds. Bedding to core 76° @ 960' and 76° @ 995'.
		***** END OF HOLE *****

211-0437

Drill Hole Record

Cominco

Property Sullivan	District	Hole No. DDH 6463		
Commenced	Location	Tests at	Hor. Comp.	
Completed	Core Size	Corr. Dip	Vert. Comp.	
Co-ordinates		True Brg.	Logged by	
Objective		% Recov.	Date	

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	To	Description

Runs	Shorts	Runs	Shorts	Runs	Shorts	Runs	Shorts	Runs	Shorts	Runs	Shorts	Runs	Shorts
10-17	5.0	121-125	2.0	121-263	(+1)	121-417	3.0	121-556	0.0	121-747	0.0	121-907	0.0
-27	1.5	-130	0.0	-273	0.0	-421	3.0	-566	0.0	-757	0.0	-917	0.0
-30	2.0	-137	1.0	-283	0.0	-426	3.0	-577	1.0	-766	0.0	-927	0.0
-37	2.0	-147	5.0	-293	0.0	-432	2.0	-585	0.0	-776	0.0	-937	0.0
-41	1.5	-151	0.5	-303	1.0	-440	0.0	-490	1.0	-786	0.0	-947	0.0
-47	3.5	-157	1.0	-309	0/5	-447	4.0	-603	0.0	-792	1.0	-957	0.0
-51	2.0	-167	0.5	-317	0.5	-452	3.0	-613	0.0	-799	2.0	-967	0.0
-55	0.8	-175	0.0	-327	0.5	-457	1.5	-623	0.0	-801	0.0	-977	0.0
-57	0.5	-179	0.0	-329	0.5	-459	0.5	-627	0.0	-803	1.0		
-66	0.0	-187	0.5	-337	0.5	-467	1.0	-637	0.0	-805	0.5		
-70	0.5	-197	0.5	-347	0.0	-477	0.0	-647	0.0	-812	0.0		
-72	1.5	-206	0.0	-354	0.0	-487	0.0	-657	0.0	-820	0.0		
-75	2.0	-214	0.0	-364	0.0	-492	0.0	-667	0.0	-825	0.0		
-77	1.0	-220	1.0	-367	1.0	-497	0.5	-675	0.5	-833	0.0		
-86	3.0	-225	1.0	-376	0.0	-503	0.0	-685	0.0	-843	0.0		
-90	2.0	-232	1.0	-387	0.0	-513	0.0	-694	0.0	-853	0.0		
-97	2.0	-237	0.0	-389	1.0	-520	0.0	-701	0.5	-863	0.0		
-103	1.0	-241	0.0	-397	5.0	-523	0.0	-707	1.0	-873	0.0		
-107	2.0	-247	0.5	-399	1.0	-532	0.0	-716	0.0	-877	0.5		
-115	1.0	-252	0.0	-405	1.0	-537	0.5	-726	0.0	-887	0.0		
-121	4.0	-257	0.0	-409	1.0	-546	0.0	-737	0.5	-897	0.0		

Diamond Drill Geological Log For D.D.H. 6464

LAT. 20,000'N DEP. 8,450'W ELEV. 5,500 feet
DIP: -68.5° AZIM.: 270° LENGTH: 5,701 feet
HORIZ. COMP. 975 feet VERT. COMP. 5,582 feet
DATE COLLARED: Nov. 3, 1987 DATE COMPLETED: Feb. 2, 1988
CORE STORAGE: Sullivan Mine
DRILLED ON CLAIM(S): Telfer and Burgess
OBJECTIVE: To explore for the continuation of the Sullivan orebody north of the Kimberley Fault.
PLANNED LENGTH: 6,500 feet
TERMINATION COMMENTS: Rig not capable of lowering NQ rods safely below 5,700 feet. Considering replacing rig.

DRILLED BY: Connors Drilling Ltd.
TYPE DRILL: 56HD
CORE SIZE: HQ, NQ
PERFORMANCE COMMENTS:

CASING REMAINING IN HOLE (LENGTH & SIZE): 2,030' NQ
42' HW
TYPE CAP & SEALING METHOD: 2' HW welded cap.

OTHER MATERIAL REMAINING IN HOLE:

SURVEY INSTRUMENT USED: Sperry Sun. See results to right.

ADDITIONAL DOWN HOLE TESTS: Temperature

Depth	Time thermometer on bottom	Temperature
5,578 feet	2 hours	115.5° F
5,701 feet	3 hours	118.5° F

GENERAL COMMENTS: Crew and first load arrived Oct. 28, rig arrived Oct. 31. Field Supervisor John Cantin, Drilling Forman John Corsi, Driller Richard Druske, helpers D. Goforth, Bill Gilroy, Rob Brown, cook C. Coomes. Residence at Kimbrook Crescent.

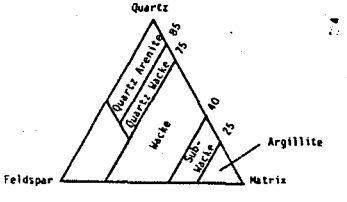
SPERRY SUN SURVEYS

Depth	Dip	Azm	Angle Unit	Depth	Dip	Azm	Angle Unit
0'	-68.0	270	90°	3901'	-84.3	260	20°
88'	-67.5	273	"	4111'	-84.1	not used	6°
498'	-70.5	279	"	4311'	-85.4	251	"
751'	-70.5	278	"	4521'	-86.0	243	"
1001'	-74.25	276	"	4719'	-86.2	261	"
1191'	-74.1	273	20°	4898'	-86.6	255	"
1391'	-75.0	268.5	"	5099'	-87.3	255	"
1611'	-77.0	262.5	"	5310'	-87.3	252	"
1801'	-77.5	261.5	"	5500'	-88.1	254	"
2011'	-78.1	261	"				
2321'	-79.1	264	"				
2521'	-80.4	262	"				
2701'	-80.4	264	"				
2911'	-80.5	263	"				
3121'	-81.5	260	"				
3311'	-82.2	262	"				
3521'	-83.0	262	"				
3701'	-84.0	260	"				

LOG LEGEND

BED THICKNESS CLASSIFICATION

BEDS	Very Thick Bedded	
	100 cm	
	Thick Bedded	
	30 cm	
	Medium Bedded	
	10 cm	
	Thin Bedded	
	3 cm	
	Very Thin Bedded	
	1 cm	
LAMINAE	Laminated	
	0.3 cm	
	Thinly Laminated	



LITHOLOGIC CLASSIFICATION

D.D.H. 6464

APPENDIX J

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 2

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet:

Analysis

Footage From	To	Description
0.0	14.0	Overburden
14.0	243.0	Wacke, subwacke and argillite; dark grey and medium grey; thin bedded with a few medium beds; bed contacts sharp and flat; about 70% of interval is laminite most of which is very dark grey with extremely thin laminae and which contains fine pyrrhotite, some beds are light grey with more widely spaced black laminae and with minor disseminated pyrrhotite, graded beds are present some with flat parallel current (?) lamination others without and most of which have minor disseminated pyrrhotite especially near the bases. The latter beds grade up, in some cases gradually and in others across a planar contact, into distinct argillite. In some sections, distinct argillite also occurs as the only lithotype alternating with the dark laminite. Two thick wacke/subwacke beds from 157.5 to 159.3 and 189.0 to 190.5 contain a few lithic clasts. Calcite is present as pale grey phenocrysts in many of the subwacke and wacke beds and in rare limy intervals up to a few cm long. Bedding to core 60° @ 18', 55° @ 32', 60° @ 61', 59° @ 87', 58° @ 115' 55° @ 140', 56° @ 170', 58° @ 196', 56° @ 223'.
243.0	264.0	Lithology described above continues with addition of quartz arenite that is light grey, fine grained and calcareous and containing some fine pyrrhotite, especially at the base. This new lithotype is not abundant, the two thickest beds are 243.0 to 243.7 and 246.0 to 247.1; it or quartz wacke forms the thin bases (less than 2 cm) of a few graded beds. Bedding to core 56° @ 264'.
264.0	336.0	Wacke, subwacke and argillite, much like first interval, medium to dark grey; thin bedded with rare medium beds; bed contacts sharp and flat; dark grey laminite with extremely thin laminations and very fine pyrrhotite alternate with (usually) beds graded from wacke to argillite. Of the latter the gradation may be impreceptable or abrupt with sharp internal contacts. Several beds noted with dark grey elongate

811-0437

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 3

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
264.0 (Cont'd.)	336.0	lensoid material in a lighter matrix, similar beds may have been precursors to laminites produced by dissolution stylolitization (267'). From 290 - 291' is an irregular wacke/subwacke with rip-up clasts and scattered pyrrhotite. Small pale grey calcite phenocrysts are common. Chlorite calcite vein @ 329'. Bedding to core 55° @ 276';, 57° @ 303', 55° @ 332'.
336.0	410.0	Wacke, subwacke and argillite; medium and dark grey; medium and thin bedded; bed contacts sharp and flat; beds graded to argillite alternate with laminites and both may have some fine weakly disseminated pyrrhotite. Small pale grey calcite phenocrysts noted. The graded beds are generally quite homogeneous however some have Bouma B type lamination usually in the lower portion. Bedding to core 57° @ 352', 57° @ 359', 58° @384', 59° @ 407'.
410.0	632.0	Wacke, subwacke and argillite; medium grey; thick bedded with thin and medium beds single or in small clusters; bed contacts are sharp to vague and flat; most beds are featureless with only subtle grading, very few laminites noted. Portion of very thick bed at 566' is convoluted. Pyrrhotite is rare in scattered weak disseminations or near some bed bases. Three beds between 581 and 587' contain elongate pyrrhotite wisps throughout. Bedding to core 55° @ 431', 57° @ 465', 59° @ 491', 58° @ 517', 59° @ 545', 56° 575', 64° @ 600', 61° @ 613'.
632.0	897.5	Quartz wacke and minor quartz arenite 60% of interval, wacke, subwacke and argillite; medium and light grey; thick and very thick bedded, medium beds are common and thin beds are present; bed contacts are sharp to distinct and wavy to irregular; most beds are graded to subwacke or argillite on top commonly with narrow intervals of reverse grading at bases, flame structures and convoluted bedding are common, there are occasional rip-up clasts. Short intervals of thin and medium beds (less than 5') are present and contacts vary from flat to irregualr. From 825 - 826' is a clacite, biotite chlorite alteration zone (concretion?). From 768.0 -768.5 crumbly core and 10 cm gouge, strong slickensides on surface parallel to bedding. Bedding (where flat) to core 55° @ 660', 56° @ 701', 67° @ 741', 72° @ 804', 67° @ 856', 73° @ 885'.

811-

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 4

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	To	Description
897.5	909.0	Wacke, subwacke and argillite; medium to dark grey; thin to very thin bedded; contacts sharp to distinct and wavy to flat; beds are graded, bases have flame structures, some faint cross laminations. Bedding to core 70° @ 903'.
909.0	934.0	Quartz wacke, wacke, minor subwacke and argillite; medium to light grey; thick and medium bedded; contacts sharp to distinct and flat, a few have small scale irregularities and one good load structure; beds are featureless except for grading. Minor bleaching on some fractures. At 922' is 10 cm zone of breccia and gouge parallel to bedding; slickensides on enclosing bedding surfaces (thrust?). Bedding to core 71° @ 923'.
934.0	1082.0	Intervals of quartz wacke, quartz arenite and wacke alternate with intervals of wacke, subwacke and argillite. The former are medium and light grey; thick and medium bedded; contacts are sharp to distinct and vary from flat to wavy or irregular; beds are featureless except for grading and tops are usually subwacke or argillite. The shorter intervals are medium and dark grey; medium, thin bedded and laminated; contacts are sharp to distinct, wavy to flat; beds are graded, some are laminites. Intervals of thinner beds are: 934.0 - 937.0'; 940.0 - 950.0'; 951.0 - 953.0'; 962.0 - 973.0'; 977.0 - 980.0'; 993.0 - 996.0'; 1008,5 - 1018.0'; 1020.0 - 1025.0'; 1036.4 - 1037.2'; 1042.3 - 1044.5'; 1046.5 - 1050.0'; 1056.5 - 1058.5'; (Run 1059.0 - 1061.5' is 1.5 feet short); 1071.5 - 1079.8. Bedding (where flat) to core: 70° @ 935'; 70° @ 966'; 70° @ 989'; 70° @ 1015'; 68° @ 1037'; 60° @ 1049'; 67° @ 1079'.
1082.0	1129.0	Wacke, subwacke and argillite; medium and dark grey; medium, thick and thin bedded; contacts sharp and flat; many beds graded, the coarsest (approach quartz wacke composition) generally have current laminations (Bouma B) and as well have disseminated pyrrhotite (represent about 25% of interval) - one bed 1104.0 - 1104.5' has pyrrhotite grains up to 3X5 mm at base and that grade in size to minute at the top. Also present are dark grey laminites and distinctive homogeneous subwacke/argillite bed tops. Bedding to core 74° @ 1086'; 68° @ 1111'; 70 @ 1128'.

211-943

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 5

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	To	Description
1129.0	1168.0	Quartz arenite, quartz wacke with, from 1143.0 - 1160.5', wacke, subwacke and argillite; medium and light grey; quartz arenite/ quartz wacke is thick and medium bedded; bed contacts sharp to distinct and flat to undulating; quartz arenite/ quartz wacke beds are graded otherwise featureless. Wacke/argillite beds are medium to thin bedded; contacts sharp to distinct and flat to undulating; a thick and several medium beds have shreds and clasts of argillite indicative of resedimentation. Bedding to core 71° @ 1143', 65° @ 1160'.
1168.0	1523.0	Wacke, subwacke and argillite; medium with some dark grey; medium and thin bedded with a few isolated thick beds; bed contacts are sharp and flat; grading is common often with disseminated pyrrhotite in bed bases and more weakly disseminated above, many of the thin beds are dark grey laminites, base of a thick bed at 1884' has Bouma B current laminations, medium beds of predominantly argillite have wacke wisps containing disseminated pyrrhotite, medium wacke bed at 1209' is calcareous and contains medium and fine quartz sand grains, medium beds of quartz wacke from 1226 - 1229', portion of a thick bed from 1286 - 1289' contains argillite clasts up to 1X4 cm in size and coarse (1-5 mm) grains of pyrrhotite disseminated throughout (and a 2 mm wide pyrrhotite-calcite fracture). From 1290 to 1510' bedding to core angle changes radically as large fold is penetrated, core in about 25% of this interval is badly broken. Pyrrhotite was noted in 1-3 mm seams on several bed contacts and rarely in veinlets. Broken core 1290 - 1336' with short segments of good core, gouge in intervals from 1326.5 - 1330.0, broken 1465 - 1508' with fair intervals. Bedding/with cleavage if present in opposite sense to bedding: 74° W 1169'; 67° @ 1179', 71° @ 1195'; 71° @ 1211'; 75° @ 1237'; 74° @ 1258'; 74° @ 1269'; 75° @ 1284'; 53° @ 1294'; 57° @ 1297'; 47°/30° @ 1300'; 40° @ 1301'; 15° @ 1302'; 6°/25°(?) @ 1305'; 22° @ 1306'; 14°/33°(?) @ 1309'; 0° from 1310-1312'; 49/21° @ 1313', passes 90° in irregular zone at 1315' to 30°/32° at 1315', 90° @ 1317'; 0° @ 1317.5'; 90° @ 1318'; 46° @ 1319'; 46°/40° @ 1324'; 30° @ 1329'; 22° @ 1337'; 26° @ 1342'; 25° @ 1346'; 22° @ 1353'; 25° @ 1362'; 30°/40° @ 1375'; 30° @ 1381', 28° @ 1389'; 30°/40° @ 1399'; 24° @ 1407'; 19° @ 1417'; 30°/39° @ 1420'; 17° @ 1427'; 25° @ 1433', 24° @ 1451'; 24° @ 1464'; 17° @ 1472'; 34°/40° @ 1482'; 54°/31° @ 1492', 59°/31° @ 1500', 62°/40° @ 1517'.

211-943

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property	Sullivan	District	Western	Hole No.	DDH6464
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	Footage To	Description
1523.0	1593.0	Quartz wacke and quartz arenite with intervals of wacke, subwacke and argillite. The former is light to medium grey; grains to fine sand size; thick, rarely medium bedded; contacts distinct to vague, most flat, some load features; Bouma AE beds, E portion is very minor. Alteration comprises minor silica enrichment along fractures, some quartz veinlets, patchy chlorite sericite. The wacke, subwacke and argillite, from 1539' - 1544', 1548 - 1564' and 1570 - 1576' is medium dark to dark grey; medium and thin bedded with some thick beds; contacts generally sharp and flat; beds are graded. Thick subwacke and argillite beds between 1584 and 1588' contain pyrrhotitiferous wacke dikes 0.5 to 1.5 cm wide, the dikes have been folded and separated into segments during compaction, pyrrhotite content is up ot 50%. Pyrrhotite and pyrite noted on fractures, most often parallel to bedding. Bedding to core: 68° (irregular) @ 1523', 70° @ 1539'; 69° 1552'; 65° @ 1562'; 65° @ 1570' and 69° @ 1575'.
1593.0	1789.0	Wacke, subwacke and argillite; medium and dark grey; 1593.0 - 1630.0' thin bedded; bed contacts sharp and flat or undulating; graded beds alternate with dark laminites; graded bases often have disseminated pyrrhotite and some are cross laminated (Bouma CE and CDE beds). 1630.0 - 1674.0' medium and thin bedded, few thick beds; of latter one is vaguely laminated wacke, another mostly wacke/subwacke with disseminated and blebs of pyrrhotite with a quartz wacke base overlying a medium quartz wacke bed (1664'). 1674.0 - 1680.0' thin bedded; contacts sharp and flat; small fold faulted at 1675.0. 1680.0 - 1712.0' medium and thin bedded, three thick beds; most beds graded, many of the wacke bases have weak disseminated pyrrhotite. Thin laminates frequently separate beds; bed contacts sharp to distinct and flat, rarely wavy. Disaggregated bed of argillite and subwacke at 1710'.

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Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property	Sullivan	District	Western	Hole No.	DDH6464
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	Footage To	Description
1593.0	1789.0 (Cont'd.)	1712.0 - 1718.0 two thick beds separated by 2.5' of thin beds. Both thick beds are disaggregated, most likely resedimented. Upper one is approaching quartz wacke composition and has numerous granule and slightly larger argillite and subwacke clasts in the basal half and scattered pyrrhotite throughout. Lower one is mostly argillite with fine wisps of slightly pyrrhotitic subwacke. 1718.0 - 1784.0 thin bedded with quite a few medium beds; dark grey laminites alternate with medium grey beds predominantly argillite with bases that grade from subwacke or wacke. Most of these bases and the few wacke/subwacke wispy layers in the argillite have disseminated pyrrhotite and in more weathered looking layers pyrite (often with minor calcite). Pyrrhotite is up to 50% across 1 cm. One quartz arenite sandstone dike cuts bedding near 90° @ 1771 - 1772'. 1784.0 - 1789.0' Argillite and subwacke and wacke, one or two graded intervals within which a faint lamination throughout is accentuated by disseminated pyrrhotite clustered and sometimes elongated grains of which are aligned parallel to bedding. Bedding to core: 55° @ 1597'; 55° @ 1608'; 55° @ 1625' with cleavage pyrrhotite in bed base with dip in opposite sense to bedding, at 12° (true dip of bedding is most likely 48° easterly); 61° @ 1640'; 58° @ 1660'; 60° @ 1662' with cleavage pyrrhotite in quartz wacke with dip opposite to bedding at 23° (true dip of bedding probably 43° easterly); 50° @ 1672'; 60° @ 1674' through 0° in fractured and faulted fold and back to 47° @ 1675'; 53° @ 1680'; 59° @ 1690' with cleavage pyrrhotite in quartz wacke with dip opposite to bedding at 26° (true dip of bedding probably 44° easterly); 58° @ 1705'; 58° @ 1720'; 49° @ 1730'; 50° @ 1740'; 52° @ 1753'; 52° @ 1760' with cleavage pyrrhotite in subwacke with dip opposite to bedding at 28° (true dip of beds probably 51° easterly).
1789.0	1917.5	Quartz arenite and quartz wacke with some bed tops and a few beds of wacke, subwacke or argillite, intervals predominantly or entirely quartz arenite 1831.0 - 1865.0' and 1889.0 - 1917.5'; medium to light grey, some of the quartz arenite is dark grey; medium and fine grained; thick and very thick bedded with a few medium beds,

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Scale

Colour Plot & Dips

Drill Hole Record

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Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
1789.0	1917.5 (Cont'd.)	some intervals are amalgamated beds; bed contacts vary but most are distinct and flat to wavy, some irregular; most beds are 95% or more Bouma A turbidites, a few quartz wacke beds near start contain pale grey argillite rip-up clasts; pyrrhotite is rare but present in veinlets near top and bottom of interval and in bed bases in a predominantly wacke interval 1865.0 - 1889.0'. Brittle white fractures below 1890' and a few chlorite veinlets below 1900.0'. Bedding to core: 23° @ 1803', 37° @ 1806', 72° @ 1814', 60° @ 1830', 55° @ 1866', 55° @ 1872' with scattered cleavage chlorites at about 13° average in opposite sense to bedding, 53° @ 1885', 40° and 45° @ 1900'.
1917.5	2116.0	Gabbro, dark green, medium and coarse grained with a 3 foot fine grained base. Top contact is sharp and at 40° to core; basal contact is sharp and at 65° to core. There are a few quartz veins up to 10 cm wide, some contain feldspar, biotite, chlorite and rarely pyrrhotite and most are brecciated and healed.
2116.0	2211.0	Wacke, subwacke and argillite with several beds of quartz wacke to 2135.0; medium and dark grey; medium and thin bedded with some thick beds to 2135.0; bed contacts sharp and flat; grading is common however some units of argillite as well as the usual dark grey laminites show no internal variations, there are a few isolated rip up clasts of argillite. Pyrrhotite is sometimes present disseminated in portions of the wacke beds, in particular at the base and in silty wisps and laminations, the basal 1 to 5 mm of some beds contains greater than 50% pyrrhotite. Biotite alteration due to intrusion noted to 2135.0'. Bedding to core 73° @ 2119', 52° @ 2138', 53° @ 2154' with cleavage pyrrhotite at 27° in opposite sense to bedding, 59° @ 2179', 59° @ 2195', 58° @ 2210' with cleavage, pyrrhotite at 23° in opposite sense to bedding.
2211.0	2308.0	Wacke and quartz wacke (rarely quartz arenite) alternates with intervals of subwacke and argillite with some wacke; medium grey; the former is thick and medium bedded, latter is medium and thin bedded; bed contacts are sharp to distinct and flat to wavy; a few beds have argillite wisps and some appear disaggregated, probably have been resedimented. Pyrrhotite is almost absent, cleavage chlorites are common.

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Colour Plot & Dips

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Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
2211.0	2308.0 (Cont'd.)	The medium and thin bedded subwacke intervals are: 2234-2240', 2255-2263', 2268-2273', 2280-2285', 2300-2304'. 15 cm gouge zone, mostly clay with about 10% small fragments <0.5 cm. Bedding to core 55° @ 2237' with cleavage chlorites at 20° opposite sense to beds, 50° @ 2280' with cleavage chlorites at 11° in opposite sense to beds, 55° with cleavage chlorites in opposite sense at 15°.
2308.0	2325.0	Subwacke and argillite (one medium bed of quartz wacke); medium grey with dark grey intervals from 2309-2314' and 2318-2320'; medium to thin bedded and laminated, bed contacts and laminations are sharp and flat, faint calcite laths and rhombs in upper dark zone, good cleavage chlorites in lighter grey argillites and some disseminated pyrrhotite in siltier parts of beds. Pyrrhotite blebs and coarse disseminations in medium and thin beds 2321-2325'. Bedding to core 51° with cleavage chlorites 20° opposite at 2309', 53° with cleavage chlorites 19° opposite at 2321'.
2325.0	2351.0	Quartz wacke (as part of thick beds above 2338') wacke and subwacke, minor argillite; medium grey; thick and medium (rarely thin) bedded; bed contacts sharp to distinct and flat (rarely slightly wavy); some bases of beds are fine grained, most beds are graded. Pyrrhotite is usually disseminated throughout the thick quartz wacke beds and in siltier bases of other beds. Bedding to core 54° with cleavage chlorites 18° opposite at 2339'.
2351.0	2435.0	Wacke, subwacke and argillite, calcareous; medium and dark grey; thin (more in upper half of interval) and medium bedded; bed contacts are sharp and flat; beds are graded, typically with pyrrhotite disseminated in the wacke portions, particularly near the bases; dark grey laminites 1 to 10 cm thick alternate with the graded beds. About 70% of interval, both graded beds and laminites, is weakly to moderately calcareous. From 2420-2435' limy wacke bases (50%) are cross laminated (several sets 2422-2423'). Lithic wackes with clasts to 0.5 X 2 cm from 2403.5 - 2404 with wavy bed contacts appear to be resedimented. Bedding to core/with pyrrhotite cleavage in opposite sense: 490/18° @ 2355', 530/240 @ 2378', 520/290 @ 2410', 520/280 @ 2425'.

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Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Sheet

Analysis

Footage From	To	Description
2435.0-	2520.0	Wacke, quartz wacke, subwacke and argillite (not calcareous); predominantly thick bedded wacke and quartz wacke with intervals of medium and thin bedded wacke, subwacke and argillite from: 2445.5-2447.0, 2484-2488', 2495-2498' and 2512-2516', medium grey, bed contacts are sharp to distinct and flat, a few appear to have been disturbed, most beds are graded, two sets of calcareous cross beds are present (2474', 2513'). From 2500-2502' is top portion of a thick graded bed that is disaggregated argillite and subwacke, appears resedimented. Pyrrhotite is present but only weakly disseminated and within cleavage near bed bases, rare cleavage chlorites noted in argillite tops. A 4 cm quartz vein at 2468' contains some coarse pyrrhotite and chlorite. Bedding to core/with cleavage in opposite sense: 49°/30° @ 2454', 52°/24° W 2484', 50°/25° @ 2503', 47°/32° @ 2519'.
2520.0 -	2583.0	Wacke, subwacke and argillite, calcareous; medium and dark grey; thin and medium bedded; bed contacts are sharp and flat; graded beds alternate with relatively thinner dark grey laminites. About 50% of interval is calcareous, the most calcareous are light grey laminated bases some of which have fine irregularities and are probably dissolution stylolites; also quite limy are intervals to 10 cm that have uniform medium grey matrix and wavy or discontinuous white calcite. This latter texture appears to be tectonic and appears to be an end member of textures that grade to bedding parallel calcite seams. Chloritic partings, sometimes with slickensides, and small gouge zones, were noted parallel to bedding. Short limy cross bedded zones are present but rare. One quartz wacke, medium bed, noted at 2535' has a convoluted upper portion (wacke overlain by argillite) however the argillite top is flat. Pyrrhotite, typically accentuating cleavage, is noted in most bed bases, including those that are limy. Bedding/cleavage in opposite sense to bedding, to core: 51°/22° @ 2521', 49°/27° @ 2548', 38°/19° @ 2582'.
2583.0 -	2600.0	Quartz wacke, wacke, subwacke and minor argillite, possibly a little quartz arenite; medium grey; medium bedded with a few thin beds above 2593' and thick beds below 2595'; bed contacts sharp to distinct, some are flat most wavy or irregular (no

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Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
2583.0 - 2600.0 (Cont'd.)		dark laminites is main distinction between upper 10' of this interval and preceeding). Minor pyrrhotite disseminated in the quartz wacke. Interval is not calcareous. Bedding/cleavage, in opposite sense to bedding, to core: 46°/32° @ 2598'.
2600.0 -	2612.0	Wacke, subwacke, and argillite. (not limy); medium grey; thin to thick bedded; weak narrow dark laminites developed; bed contacts sharp and flat (two are convoluted), two sets of cross beds, one limy, noted; beds graded, one thick bed contains fine argillite rip-ups and is probably resedimented.
2612.0 -	2635.0	Quartz wacke and quartz arenite (more of a guess from 2623.0 - 2635.0 as core is soaked in diesel); light grey; thick bedded; pyrrhotite noted in graded bed bases below 2628'. Quartz vein less than 10 cm wide cuts core at 12°. Bedding/cleavage, in opposite sense to bedding, to core 42°/35° @ 2630'.
2635.0 -	2653.0	Wacke, subwacke and argillite with narrow limy units, medium grey; medium, some thin bedded; bed contacts are sharp and flat; beds are graded, tops of some are convoluted indicating minor resedimentation, a few narrow dark grey laminites are present. 10 cm gouge and broken core at 2538' narrow gouge zones, some parallel to bedding, at 2653'. Bedding/cleavage, in opposite sense to bedding, to core 48°/12° @ 2652'.
2653.0 -	2658.0	Argillite with wisps of subwacke; light grey; bedding not always clear but some thin and very thin beds noted, some are contorted, pyrrhotite is present often concentrated in laminations and in some of the contorted subwacke.
2658.0 -	2802.0	Wacke, subwacke and argillite with numerous beds of quartz wacke, often calcareous; medium and dark grey; typically thin bedded with few medium and rare thick beds; bed contacts are sharp and flat; typically graded beds alternate with relatively thinner dark grey laminite, the graded beds often have limy bases some of which also have cleavage pyrrhotites and others have faint cross laminations. Three thin isolated limy medium grained quartz arenite beds occur over 15 cm at 2780'.

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Scale

Colour Plot & Dips

Drill Hole Record

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Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	To	Description
2658.0	2802.0 (Cont'd.)	Portion of small fold cored over 15 cm at 2722'. Bedding/cleavage in opposite sense to bedding, to core: 45°/27° @ 2673', 53°/23° @ 2708', 52°/21° @ 2730', 45°/28° @ 2750', 50°/10° @ 2775', 49°/29° @ 2801'.
2802.0	2819.0	Quartz wacke and quartz arenite and altered (silicified) sediments, medium grey; thick bedded with thin beds from 2812 - 2815'. Biotite development with strong bleaching along fractures 2814 - 2819'.
2819.0	2880.0	Gabbro, upper contact is about 50° to core, lower contact is not distinct (appears to be gradational and incorporates some sedimentary material from 2878 - 2880'). Chilled contact with amphibole phenocrysts to 5 mm long 2819 - 2824', then fine grained to 2829. Most of interval is medium to coarse grained with a few quartz veinlets and calcite veinlets. Fine grained lower portion 2875 - 2879'.
2880.0	2914.0	Wacke, subwacke and argillite; light medium grey; medium and thin bedded; bed contacts sharp and flat; beds are graded, bases of some beds have one to three cm of limy quartz wacke a couple of which are cross laminated. Limy cross laminations noted in central portion of one bed. Most of this interval is bleached and fine biotite is developed in the wackes, the biotite highlights even parallel laminated basal and central portions (Bouma B?) of most beds. Bedding to core 52° @ 2888', 55° @ 2900', 50° with subtle pyrrhotite cleavage of 28° in opposite sense to bedding at 2903', 48° @ 2914'.
2914.0	2926.5	Calcareous quartz arenite and quartz wacke with minor (est. 20%) wacke, subwacke and argillite; medium and light grey; to coarse grained; thick and medium, with about 20% thin, bedded; bed contacts are sharp and flat to irregular, one erosional; beds are graded, thickest have Bouma A bases. Some disaggregated beds, and apparently, some slumped beds (based on low core angle). Bedding to core: 57° @ 2916', 48° @ 2921', 45° @ 2916', 50° @ 2926.5'.

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Scale

Colour Plot & Dips

Drill Hole Record

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Property Sullivan	District Western	Hole No. DDH6464	
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Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length

Analysis

Footage From	To	Description
2926.5	2933.0	Wacke, subwacke and argillite, more quartzitic portion of lowest bed is calcareous; two medium beds separated by thin bedded argillite and subwacke, portions of which are disaggregated. The two medium beds contain shredded wisps and clasts of argillite.
2933.0	2941.0	Quartz arenite with portions weakly calcareous; medium grey; to medium grained; thick bedded, 3 cm of gouge at 2935.5' may be sheared argillite, if so then two beds. Base is a quartz wacke (20 cm); this is essentially a Bouma A turbidite(s?).
2941.0	2976.0	Wacke, subwacke and argillite, wacke proportion increases with depth, with isolated medium beds of medium grained calcareous quartz arenite and quartz wacke from: 2948-2942' (two 15 cm beds), 2950.5-2952.0' (single bed), 2955.3-2956.5', 2959.5-2964.0' (4 beds), 2972.0-2974.0' (two beds). Medium to dark grey, medium and thin bedded, bed contacts are sharp and from flat (most) to wavy and irregular, both graded beds and dark grey laminites are present and from 2971.0 - 2971.5' are several sets of calcareous cross laminations. Bedding/pyrrhotite cleavage, in opposite sense to bedding: 54°/15° @ 2946', 52°/28 @ 2966', 50°/36° @ 2976'. 0.5 to 1.0 cm of 50% pyrrhotite at base of thin quartz wacke bed between laminites at 2970'.
2976.0	3028.0	Quartz arenite, minor quartz wacke, wacke, subwacke and argillite; light grey; coarse, some very coarse grained; very thick bedded, amalgamated; bed contacts vague and irregular, argillite rip-up clasts and contorted bed tops.
3028.0	3034.5	Wacke, subwacke and argillite; thin bedded; with two thin beds of quartz arenite; medium grey; bed contacts sharp and flat to wavy (load features on the quartz arenite); beds graded, some thin laminites, 5 cm calcareous cross laminated zone; fine disseminated pyrrhotite in narrow silty layers, some in cleavage and a 2 mm thick layer at base of the quartz arenite bed. Bedding/cleavage, in opposite sense to bedding: 55°/15° @ 3031'.
3034.5	3041.0	Quartz arenite, calcareous; coarse grained, light grey, two beds, 3034.5 - 3036' and 3036 - 3041', contact diffuse, the thick bed is coarse grained except top 6".

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Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Analysis

Footage From	To	Description
3041.0	3096.0	Wacke, subwacke, argillite and quartz wacke, calcareous; to medium grained; medium and dark grey; thin bedded with less than 20% of interval medium bedded; bed contacts sharp and flat (generally) to wavy; graded beds usually alternate with dark grey laminites 1 to 10 cm thick, the quartz wacke bases are usually calcareous and many contain disseminated pyrrhotite. In the basal portions, pyrrhotite is often concentrated in 2 or 3 mm wide zones at the base and it also is present in the cleavage. Calcite fractures below 3075', brownish appearance of some beds noted below 3085' (biotite). Massive biotite for 10 cm cuts bedding at 45°. Bedding/cleavage, in opposite sense to bedding: 50°/20° @ 3045', 45°/10° @ 3054', 36°/33° @ 3060', 42° to 13° on cleavage parallel break of 40°, at 3064' (over 5 cm), 50°/22° @ 3065.5', sudden change at 3066', 0°/45° @ 3066' for 10 cm, 23°/40° (necessary to rotate core about 45°) @ 3067', 22°/43° @ 3076', 23°/45° @ 3082', 0° @ 3082.5, then several fold hinges to 3084', 35°/40° @ 3084.2, 35°/35° @ 3120'.
3096.0	3122.0	Gabbro, fine to medium grained; chilled upper margin with amphibole phenocrysts and some biotite; considerable biotite 3120 to 3122' with chilled lower margin containing amphibole phenocrysts. Upper contact 43°, lower contact is sharp at 46°.
3122.0	3189.5	Wacke, subwacke and argillite with calcareous zones, medium and dark grey; medium bedded with a few thin beds; bed contacts are sharp and flat; many beds are graded and often have a calcareous laminated base, dark grey laminites up to 30 cm thick commonly separate the graded beds. Bedding/cleavage, in opposite sense to bedding: 41° @ 3122.5', 25° @ 3150', 19°/27° @ 3153', 16°/50° @ 3155', 22° @ 3162', 20°/35° @ 3168', 14°/45° @ 3171', 30°/40° @ 3182', 40°/37° @ 3187'. Fault zone: 3169 - 3182' core is shattered with short intervals of breccia and or gouge. A few calcite veinlets occur.
3189.5	3262.0	Quartz arenite, quartz wacke with substantial wacke below 3235'; some beds fine grained, medium grey (dark when wet) with the wacke dark grey; thick bedded with some medium beds below 3275'; bed contacts sharp to vague, the sharp ones are flat; beds are graded and some have argillite tops, dark grey laminites up to

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Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
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Claim | T Brg. | Collar Dip | Elev. | Length | Analysis

Footage From	To	Description
3189.5 (Cont'd.)	3262.0	20 cm wide 3240 - 3243'. No cleavage observed. Below 3250' pyrrhotite is disseminated in wisps to 0.5 cm wide and concentrated in a few thin quartz wacke beds. Bedding to core 75° @ 3203', 58° @ 3211', 71° @ 3220', 74° @ 3236', 76° @ 3241', 75° @ 3260'. 3199 - 3220' Core shattered, some incohevise weakly sheared zones, some slickensides parallel to bedding. Crush breccia and gouge 3216.5 - 3220'.
3262.0	3307.0	Wacke, dark grey and light grey, laminated throughout, rare thin bed. Bedding to core 74° @ 3270', 75° @ 3300'.
3307.0	3415.0	Wacke is predominant, with quartz arenite, quartz wacke, subwacke and argillite; medium to light grey; thick and medium bedded; bed contacts sharp to distinct, rarely diffuse, and flat to wavy; most beds are graded to argillite, some argillite tops and rare sets of argillaceous thin beds are convoluted, a few lithic clasts noted in first 10', calcareous concretions noted at wide spaced intervals. Cleavage pyrrhotite noted in first 15' then cleavage chlorite is commonly developed in argillaceous zones; it dips in opposite sense than bedding. Slickensides and small gouge zones are developed on several bed contacts. Bedding/cleavage to core: 75°/11° @ 3315', 74° @ 3342', 62°/25° @ 3360' (bedding irregular here), 70°/12° @ 3408'.
3415.0	3424.0	Subwacke and argillite; medium grey with some dark grey 3415 - 3417'; thin and very thin bedded with medium beds below 3421'; bed contacts are sharp to 3421', then diffuse, and flat. Cleavage chlorites throughout dip in opposite sense to bedding. Bedding/cleavage to core: 75°/37° @ 3420'.
3424.0	3465.0	Quartz wacke, some quartz arenite, wacke, subwacke and argillite; medium and fine grained; medium and light grey; thick bedded with medium and thin beds 3424 - 3430' and rarely below; bed contacts sharp to diffuse and flat to irregular; beds are grded, primarily AE turbidites. Calcareous patches are present in some of the thicker beds; these patches are irregular and appear to be an alteration;

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Scale

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Completed	Core Size	Corr. Dip	Vert. Comp.
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Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
3424.0 - 3465.0 (Cont'd.)		there are also intervals of quartz arenite that have a weakly calcareous interstitial fill. From 3438 to 3444', primarily quartz arenite and some argillite, is a partially healed crush zone. Gouge and slickensides noted on bed contacts at 3444.5 and 3455'. Bedding/with cleavage dipping in opposite sense: 80°/25° @ 3445'.
3465.0 - 3486.0		Wacke, subwacke and argillite with minor quartz wacke; medium grey; medium bedded with few thin beds; bed contacts generally vague, some are flat; slickensides and minor gouge noted on a few bedding planes and some fractures. Bedding/cleavage, dipping in opposite sense to bedding: 78°/31° at 3479'.
3486.0 - 3501.0		Quartz wacke, some quartz arenite, wacke, subwacke and argillite; fine grained; light grey; thick bedded; bed contacts sharp to gradational and flat to wavy; beds are graded, through to argillite, some beds have unsorted (wacke) bases; some beds have pale calcareous patches and some quartz arenites have weakly calcareous intervals in which fine interstitial calcite grains are present. Bedding to core 73° @ 3497'.
3501.0 - 3519.0		Wacke, subwacke and argillite; medium to light grey; medium and thin bedded, two thick beds; bed contacts sharp to diffuse and flat to wavy; one flame noted; beds are graded (AE turbidites) with some beds having irregular bleached (one calcareous) patches. Bedding to core is 80° with cleavage dipping 30° in the opposite sense, at 3505'.
3519.0 - 3575.0		Quartz wacke, wacke, subwacke and argillite; fine grained; medium grey; thick bedded with a few medium beds; bed contacts sharp to distinct and flat, wavy and irregular (some flames); beds are graded, AE turbidites. A few dark argillite clasts noted in wacke portion of thick bed at 3565'. Bases of most beds are quartz wacke. Slickensides noted on many bed contacts. Bedding/cleavage, dipping in opposite sense to bedding, to core: 84°/26° @ 3550'.

211-9437

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
3575.0 - 3599.0		Wacke, subwacke and argillite with about 10% quartz wacke; medium grey; medium and thin bedded (the quartz wacke beds are thick); bed contacts distinct to vague and flat to irregular; many beds are graded however there are some argillite dominated intervals in which internal features are obscured by bit grooving. Slickensides are commonly developed on bedding contacts and on fractures subparallel or at a small angle to bedding. Very small scale tectonic folds and thrusts are developed in the argillaceous intervals. Cleavage chlorites are plentiful. Bedding/cleavage (sense relative to bedding) to core: 72° to 14° on opposite limb/22° (in same sense as 72° limb and opposite the 14° limb) @ 3577', 75°/22° (opposite) @ 3589', 84° (enveloping small thrusts)/36° (same), 43° and 24° (in same sense on overturned limb)/39° (same, axial planar) @ 3598.5'.
3599.0 - 3620.0		Fault zone, 10 feet of core loss, core is shattered with 3 incohesive zones recovered. Predominant lithotype is wacke. Slickensides are not as abundant as might be expected, but they are most strongly developed parallel to bedding, sometimes parallel to cleavage or other fractures sub-parallel to bedding. On one steep highly polished slickenside surface (12° to core at 3613') the slickenside lineation is parallel to bedding.
3620.0 - 3725.0		Wacke, subwacke and argillite with a few beds of quartz wacke and lesser quartz arenite. Bed thickness and proportion of latter two lithotypes increases with depth; medium grey; medium and thin bedded, thick beds are rare above 3698', common below; bed contacts sharp to vague and flat to irregular (flames noted), much of interval is broken; beds are generally graded, some are uniform, above 3698' a few of the thicker beds have a 3-10 cm quartz arenite base. Above 3665' are several calcareous beds (usually thicker beds) and occasional calcareous portions of beds (up to 5 cm), the few cross laminated intervals are calcareous. Subwacke-argillite portions of two thick beds between 3675 - 3680' are convoluted, possibly primary overprinted by tectonic. Single bed of quartz arenite 3717 - 3724'.

211-9437

Drill Hole Record

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Footage From	To	Description	Analysis
3620.0 (Cont'd.)	3725.0	Slickensides noted on several bedding contacts, especially where lithologic contrast is great, and on some fractures at small angle to bedding; one fracture parallels 20 cm of unbroken core has well developed slickenside lineation near-parallel to bedding (3658'). Bedding/cleavage (sense of dip relative to bedding) to core: 81° @ 3663', 86°/04° (opposite) @ 3647', 85°/10° (opposite) @ 3665', 87°/20° (same) @ 3678', 78°/22° (same) @ 3688', 72° @ 3714'.	
3725.0	3731.0	About 3' short. Fault zone gouge, light grey fine clay with grit and small rock fragments.	
3731.0	3740.0	Quartz arenite and quartz wacke; medium grey; thick bedded; no bed contacts observed. Fractures common, from 0° to 25° to core. At 3732' is a 10 cm gouge zone containing rock fragments to 1 cm across.	
3740.0	3751.0	Wacke, subwacke and argillite; medium grey; thin bedded; bed contacts sharp or distinct to flat (most) or wavy. Bedding to core 57° at 3745'.	
3751.0	3793.0	Wacke and quartz wacke, minor more argillaceous rock; medium grey; commonly broken but seems mostly medium bedded, probably some thick beds; contacts rare. Rock is crushed in broken zones, rarely see slickensides until last 5 feet. Minor gouge noted, mainly in last 5 feet.	
3793.0	3809.0	Quartz arenite, quartz wacke and wacke, medium to light grey; thick bedded; bed contacts broken, vague.	
3809.0	3828.0	Wacke, subwacke and argillite; medium grey; medium and thin bedded and a few laminations; to 3815' several beds have been disaggregated and have rip up clasts or a shredded appearance; bed contacts are sharp and flat to wavy. Two graded beds have quartz arenite bases, one is calcareous and the other has calcareous patches. Bedding to core: 47° @ 3810', 43° @ 3822', small fold at 3824' where bedding to core is 0° over 1 cm, 43° @ 3828'.	

211-8437

Drill Hole Record

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Footage From	To	Description	Analysis
3828.0	3874.0	Quartz arenite, quartz wacke with wacke/subwacke/argillite tops; light grey; fine to very fine grained; thick bedded; bed contacts sharp and flat to wavy; beds are graded, several have rip up clasts or shreds in upper parts, typically Bouma A-D turbidites (none are lixy). Small crush (some gouge) zone at 3835'. Bedding to core: 44° @ 3838', 40° @ 3862'.	
3874.0	4080.0	Wacke, subwacke and argillite with less than 10% quartz wacke above 3995' and about 25% quartz wacke and quartz arenite below; medium grey; medium with some thin and some thick beds, especially below 3995'; bed contacts sharp to distinct and generally flat or structurally irregular; most beds are graded but otherwise featureless, a few clasts noted between 3874 and 3886', flame structures and shredded thin beds are present below 4010', one unusual bed from 4061 - 4065' is wacke with a pale brownish colour containing irregular blebs, patches and wisps of light grey quartz wacke (probably an unstable sediment that disaggregated). This entire interval has a variable but often strong tectonic overprint as follows: 3874 - 3891' are many shredded thin bedded intervals and abundant cleavage chlorite. 3891 - 3916 within this interval are several zones of intense strain that are cohesive. Slickensides are <u>not</u> well developed however there are many fractures with fine chlorite coatings. At several points rock appears to be fractured and healed. Most intense strain development is from 3914 - 3916' where texture is schistose (core angle 24° - 42°) and is accompanied by quartz segregation. 3916 - 4013 bedding in this interval is parallel or within 20° of core. 4013 - 4080 bedding to core angel increases, at 4013.5' is 3 cm zone of incohesive gouge and crushed rock fragments. Only other tectonic features might be several of the shredded thin beds, a feature that could also be ascribed to syn-sedimentary tectonic activity. Bedding contrast and minor bleaching are contact metamorphic effects of underlying intrusion.	

211-84

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
3874.0	4080.0 (Cont'd.)	Bedding/cleavage (sense of cleavage relative to bedding): 13° @ 3875', 25° @3876', 37°/0° (N.A.) @ 3877', 37° @ 3903', 04° @ 3920', 15°/47° (opposite) @ 3922', 65°/40° (opposite) @ 3922.1, 25°/40° (opposite) @ 3922.2' (in these last 3 bedding dips are all in same direction), 20°/0° @ 3927', 02° to 12°/00° to 16° (opposite) @ 3938', 14° @ 3950', 05° @ 3965', (at 3975' is a small fold consistent with overturned bedding), 03° @ 3980', 08° @ 3990', 00°/60° (N.A.) @ 4006', 18° @ 4015', 28° @ 4020', 35° @ 4025', 38° @ 4037', 40° @ 4047', 45° @ 4066', 45° @ 4077'.
4080.0	4456.0	Gabbro, at top contact is a zone of about 40 cm than contains an 8 cm biotite segreg- ation or vein, 15 cm of sediment, and 15 cm of irregular patches of chilled gabbro. Then is very uniform gabbro, at first it is fine grained with a biotititic selvage that is likely a conformable contact (41°). Fine grained to 4090' then medium grained to 4110', coarse grained to 4205', medium grained to 4320', fine and medium grained to 4456'. Basal contact is sharp at 37°. Several small quartz veins noted, one at 4115' is yellowish (ankerite + quartz) has a sheared appearance. Largest quartz veins are from 4254 - 4257' (is grey and contains chlorite and ankerite), 4289 - 4293' (is white and contains 30% ankerite) and 4303 - 4304' (grey). Pyrrhotite is present but rare.
4456.0	4494.0	Wacke, subwacke and argillite, unusually hard because of contact alteration; medium to dark grey; medium and thin bedded; bed contacts sharp and flat; beds some probably originally quartz wacke, often internally laminated, cross laminations noted in upper 10 feet of interval. Bedding to core 60° @ 4461', 45° @ 4480', 45° @ 4494'.
4494.0	4510.5	Quartz wacke and some quartz arenite; medium to light grey; thick bedded; bed contacts distinct to vague, some flat (not all seen as core is moderately broken). At 4507 - 4508' core is fractured (not broken) above a small crush zone (5 mm gouge and sheared fragments) at 60° to core over 5 cm of healed chloritic breccia with slip surfaces.

211-9437

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
4510.5	4523.5	Wacke, subwacke and argillite; medium grey; medium bedded; bed contacts sharp to vague and flat; below 4515' most beds have faint internal flat parallel laminations. Several bed contacts have chloritic slickenside surfaces. Bedding/cleavage dipping in opposite sense, to core: 59° @ 4511', 52°/22° @ 4516', 60° @ 4520'.
4523.5	4546.0	Quartz wacke, some beds possibly quartz arenite, calcareous above 4526' only; light grey; thick bedded with some medium and thin beds to wacke, subwacke and argillite above 4531'; bed contacts usually sharp and flat, some wavy; one bed from 4526-27' is coarse grained, some are medium and most are fine grained; most beds have vague internal features mainly contacts that indicate amalgamation, vague crosscutting bleached fractures are common. Black argillite clast 0.5 X 2cm @ 4535'. Several bed contacts, especially in more argillaceous zones, have well developed slickenside surfaces. Bedding to core 73° @ 4527', 66° @ 4535', 61° @ 4546'.
4546.0	4556.5	Wacke, subwacke and argillite; medium to dark grey; medium, thin bedded and laminated; bed contacts sharp to distinct and flat (one wavy); in upper 2 feet beds have several small lithic clasts, several of the beds are graded. Bedding to core 60° @ 4549', 60° @ 4556'.
4556.5	4566.5	Quartz wacke and quartz arenite; medium to light grey; fine grained; thick bedded; bed contacts distinct, flat and wavy; beds homogenous with graded tops. Well developed slickensides on several broken fragments at 4564'.
4566.5	4572.0	Wacke, subwacke and argillite; medium grey; medium bedded, few thin beds; bed contacts sharp and flat; most beds are graded, three have black argillite clasts to 1 X 2 cm with rare very fine argillite and these are shredded yet overlying bed contact is flat. Bedding to core 60° @ 4568'.
4572.0	4580.0	Quartz wacke and quartz arenite, minor wacke; medium grey; thick bedded; fine grained; graded. Fault breccia (healed) with short interval of not badly sheared broken core with chlorite, slickensides and small gouge zone 5 mm wide near top cutting core at 62°.

211-9437

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
4580.0	4586.0	Wacke, subwacke and argillite, minor quartz wacke; thin bedded with 3 medium beds; bed contacts sharp and flat; graded, weak cross-laminations noted at top of one bed, top half of one medium bed contains angular argillite (shredded) clasts in wacke matrix. Bedding/cleavage, dip in opposite sense, to core: 65°/35° @ 4581'.
4586.0	4599.0	Quartz arenite, quartz wacke with tops less than 10 cm grading to argillite; light grey; thick bedded; bed contacts distinct to diffuse and flat to slightly irregular. One 10 cm cream coloured calcareous patch.
4599.0	4607.0	Quartz wacke 60%; medium to light grey; thin (2 medium) bedded and wacke, subwacke and argillite; medium grey; thin bedded; contacts sharp and flat to wavy, flames noted; most beds are graded, one contains a black argillite clast 0.8 X 3 cm. Bedding/cleavage, opposite sense, to bedding: 62°/65° @ 4605'.
4607.0	4618.0	Quartz arenite, graded through quartz wacke to argillite; medium grey; thick to medium bedded; bed contacts sharp and flat to wavy; graded, some subwacke/argillite tops have shredded character.
4618.0	4622.0	Wacke, subwacke and argillite; medium to dark grey; thin bedded to laminated; bed contacts sharp and flat with short intervals shredded. Bedding/cleavage, in opposite sense, to core: 60°/75° @ 4621'.
4622.0	4634.0	Quartz wacke, some quartz arenite, some wacke, all grade to subwacke or argillite; medium grey; thick and medium bedded with several thin beds and laminations; bed contacts sharp and flat to wavy; tops of some beds have shredded apprearance; bedding/cleavage, in opposite sense, to core: 63°/60° @ 4628'.
4634.0	4660.5	Wacke, subwacke and argillite with 3 calcareous quartz wacke beds 4652 - 4656'; medium grey, medium and thin bedded, rare laminations; bed contacts sharp and flat to wavy; beds are graded, several have distinct light grey argillite tops.

211-943

Scale

Colour Plot & Dips

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Sheet

Analysis

Footage From	To	Description
4634.0 (Cont'd.)	4660.5	top portions of a few beds have disaggregated, shredded appearance. The calcareous quartz wacke beds are primarily Bouma B laminated, one has Bouma C cross-laminations. Bedding/cleavage, in opposite sense, to core: 67°/40° @ 4640', 73°/38° @ 4650'.
4660.5	4664.5	Porphyritic diabase intrusion, upper contact 55°, lower contact 45' however because of shift in bedding (see below) it could be either a sill or dike. Porphroblasts are often rounded to subangular and constitute only 5% of rock, except in one dense cluster about 10 cm long. Groundmas appears finely chloritic.
4664.5	4684.0	Quartz wacke and wacke, possibly some beds quartz arenite, the basal 1 meter is a calcareous quartz arenite; light grey, thick bedded; bed contacts are sharp to distinct and flat; one two foot thick bed is a lithic wacke containing abundant small 1 - 3 mm elongate clasts and one large clast. Portions of the wacke, subwacke are laminited. One quartz wacke is a Bouma B turbidite. Bedding/cleavage, in opposite sense, to core: 22°/23° @ 4667', 59°/71° @ 4675', 70° @ 4678'.
4684.0	4686.5	Wacke, subwacke and argillite; medium grey; thin bedded and laminated; bed contacts sharp and flat; one zone of argillite rip-up clasts.
4686.5	4706.0	Quartz wacke; light grey; fine and medium grained; thick and very thick bedded; bed contacts distinct to vague and flat, probable amalgamation of some beds. About 2 cm of gouge and platy argillite at 4695'. At 4699' in argillaceous contact are numerous calcareous prismatic laths.
4706.0	4725.0	Wacke, subwacke and argillite; medium grey; thin bedded to laminated with a few medium beds; bed contacts are sharp to distinct and flat to wavy, some shredded and disaggregated during tectonism. Calcareous masses as rectangular laths to equant or subrounded shapes are common below 4716'. Bedding/cleavage, in opposite sense to bedding, to core: 65°/80° @ 4711', 65° @ 4724'.

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 24

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
4725.0	4740.0	Quartz arenite and quartz wacke' portions of which have very fine calcite grains weakly disseminated; light grey; thick to very thick bedded; bed contacts vague (some amalgamated). From 4736 to 4738.5' core is fractured, some broken with at least 4 cm of incoheisve gouge (mostly rock chips and very little clay); and a 2 cm wide breccia with 40% chlorite matrix is present across half of the core, terminating against a vertical fracture. A small amount of gouge is also present at 4736'. There is no core loss at runs ending at 4738.5' or 4749.0'.
4740.0	4749.0	Wacke, subwacke and argillite; medium grey; thin bedded and laminated with 2 medium beds at base; bed contacts sharp and flat; bedding/cleavage (?), in oppoiste sense to bedding, to core 64°/45° @ 4743'. Small crush zone and gouge at 4743'; slickensides developed on many bedding surfaces.
4749.0	4757.0	Quartz arenite with relatively thin tops graded to argillite; several very thin beds in intervals up to 15 cm thick; fine grained; medium grey; thick and medium bedded; bed contacts sharp and flat to wavy; some cross laminations in the wavy thin beds; black rip-up clast 0.5 X 4 cm at bed top.
4757.0	4792.0	Wacke, with lesser subwacke, argillite and quartzitic wacke; medium grey; medium bedded with several thin beds and a few thick beds; bed contacts are sharp and flat, rarely slightly wavy; a few beds a internally laminated, and near top of interval some have cross laminations, one dark 0.5 X 3 cm clasts noted at 4790'; numerous bed contacts have slickensided surfaces. Bedding/cleavage, in opposite sense to bedding, to core: 72°/45° @ 4769', 55°/14° @ 4791'. There appears to be a second cleavage developed in the more argillaceous beds below 4777'.
4792.0	4847.0	Quartz wacke, a few beds in upper part of interval possibly are quartz arenite, in about 40% of interval bed bases are wacke, all beds grade to subwacke or argillite, thin bedded to laminated argillaceous intervals 4812.5 - 4814.0' and 4827.0 - 4830.0'; medium grey; thick and medium bedded; bed contacts sharp, a few gradational, and flat (most), one flame noted, some are irregular and shredded 4812 - 4815'; two dark grey rip-up clasts noted. Slickensides present on some bed surfaces.

211-9437

Scale

Colour Plot & Dips

Drill Hole Record

Cominco Page 25

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. | Sheet

Analysis

Footage From	To	Description
4792.0 (Cont'd.)	4847.0	Core broken 4837 - 4839'. A small amount of gouge, crush rock with a calcite vein with slickensides on a bed contact at 4839.5'. Bedding/cleavage, in opposite sense to bedding, to core: 75°/57° @ 4804'; 60°/90°, with S_2 kink 6° in same sense as bedding, @ 4828', 50° @ 4844'.
4847.0	4867.0	Wacke, subwacke and argillite; dark grey; medium and thin bedded and laminated, two thick quartz wacke beds 4863 - 4867'; bed contacts sharp to gradational and flat; laminations noted are often quite faint and they are present throughtout intervals of 10 to 20 cm. Calcareous laths noted in some fo the laminites. Bedding/cleavage, in opposite sense to bedding, to core: 46°/30° @ 4955'. Pyrrhotite grains define the cleavage.
4867.0	4875.0	Wacke, subwacke and argillite; dark grey; thin bedded with laminite in intervals up to 30 cm thick; laminations are faint but easily recognized throughout; bed contacts are sharp and flat. Bedding/cleavage (pyrrhotite), in opposite sense to bedding, to core: 55°/55o @ 4875'.
4875.0	4882.5	Quartz arenite to quartz wacke; medium grey; two medium beds over single very thick bed; contacts sharp and flat.
4882.5	4885.0	Argillite and subwacke; medium grey; laminated; all laminations are graded. At 4884.5', bedding is 60°; pyrrhotite cleavage is 83° in opposite sense to bedding in light grey subwacke and bundled sericitic cleavage present only in some argillites is 17° in same sense as bedding.
4885.0	4903.0	Quartz wacke and wacke with relatively thin tops graded to subwacke or argillite; medium grey; thick (most of interval) and medium bedded; bed contacts sharp (most) to gradational, possibly amalgamated, most are flat.

211-9437

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Sheet

Analysis

Footage From	To	Description
4903.0	4906.0	Wacke, subwacke and argillite; medium and dark grey; laminated and thin bedded; bed contacts are sharp and flat; laminated intervals are up to 10 cm thick. Bedding to core 60°. Small shear up to 8 mm wide appears to have an s-c fabric and a calcite seam (1mm) on hangingwall.
4906.0	4931.0	Quartz wacke, one bed of quartz arenite, graded through wacke, subwacke and argillite; medium and fine grained; medium to light grey; thick bedded; contacts sharp to vague and flat to irregular; some bed bases are reverse graded over a few cm. The quartz arenite thick bed is very weakly calcareous.
4931.0	4943.0	Wacke, subwacke and argillite, minor quartz wacke; medium grey; thin bedded and laminated with medium and thick beds over 50% of interval; bed contacts sharp and flat to, rarely, wavy, shredded over 15 cm at 4942'. Most beds are graded; some have fine nearly disaggregated clasts in the upper portion of the bed, one dark grey argillite clast noted. Bedding to core 60° @ 4933'.
4943.0	4968.0	Quartz wacke and wacke with minor subwacke argillite in tops, some beds have quartz arenite bases; fine grained; medium to light grey; thick bedded with a few medium and thick beds; bed contacts sharp to gradational and flat to wavy, flames noted; graded, some internal contacts in tops are shredded to convoluted. Slickensides present on some bedding surfaces. Bedding/cleavage (opposite) to core: 50°/06° @ 4959'.
4968.0	4978.0	Wacke, subwacke and argillite, medium, thin bedded, and laminated; with 50% of interval of wacke and quartzitic wacke in medium, and one thick, beds; medium grey; bed contacts are sharp and flat to wavy, flame structures noted. From 4975.5 to 4978.0' interval is wavy laminated throughout. Bedding to core 60° @ 4971'.
4978.0	5007.0	Wacke, minor quartz wacke, subwacke and argillite; medium grey; medium to thick bedded with few thin beds; bed contacts sharp and flat with some flame structures. Bedding/cleavage (opposite) to core: 58° @ 4988', 44°/10° @ 5000', 25°/55° @ 5007'.

211-0437

Drill Hole Record

Cominco

Property Sullivan	District Western	Hole No. DDH6464	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Sheet

Analysis

Footage From	To	Description
5007.0	5053.0	Quartz wacke, quartz arenite, with a fair amount of wacke and minor subwacke and argillite; thick bedded; bed contacts sharp and flat, some slightly wavy. Predominantly argillite 5020 - 5023.5' has a 10 cm fault of gouge and rock chips, upper contact of fault cuts core at 40°. Bedding to core: curves from 35° to 15° @ 5020', cleavage is opposite at 63°, 45° @ 5033'.
5053.0	5065.0	Wacke, subwacke and argillite; medium grey; thin bedded, rarely laminated; bed contacts sharp and wavy (folding?); beds are graded. Core is broken from 5060 - 5065'. Slickensides noted on some bedding planes, but not common. Bedding/cleavage (opposite?) 42°/02° @ 5057'.
5065.0	5290.0	Lithotypes and cyclic type of sedimentation typical of last several hundred continues to 5290'.
5290.0	5652.0	Predominantly subwacke and argillite, some wacke and minor quartz wacke. Bedding is near parallel and parallel to core throughout this interval.
5652.0	5701.0	Wacke, subwacke and argillite; medium grey; medium to thin bedded; bed contacts sharp and flat. Bedding to core 75°.

211-0437

APPENDIX K

SULLIVAN MINE GROUP OF MINERAL CLAIMS

NOVEMBER 27, 1986

		Number of Units	
1.	Crown-Granted M.C.		680
2.	Held by Assessment:		
	2(a) TWO POST CLAIMS		
	Luke Group	75	
	Rho Group	20	
	Med Group	15	
	Donna, Etc. Group	15	
	Uke Group	11	
	Mar Group	17	
	Bad Group	36	
	Late Group	91	
	Mat Group	268	
	Jackpot	1	549
	2(b) REVERTED CROWN GRANTED MINERAL CLAIMS		
	Tip 4-12	9	
	Hope 2-12	11	
	Sun 2-12	11	
	Cue 2-12	11	
	B.C., Silver Bell, Tarrant	3	
	Black Hills, Yankee Girl, Wasp Fr.	3	
	Blue Dragon	1	49
	2(c) MINERAL CLAIMS (54)		
	Dip 1-8	56	
	Fal 1-14	84	
	Golf 1-3	17	
	Quark 1&2	12	
	Fin 1-3	18	
	Mead 1-3	36	
	Gin 1-9	110	
	Clair 24-32	56	
	Mark 1-3	17	406
3.	Greenhorn Mineral Lease		1
	GRAND TOTAL (1 + 2 + 3)		1,685

PWR/lrm

APPENDIX L

STATEMENT OF QUALIFICATIONS

As author of Part 1 and Part 2 of this report, I, Paul W. Ransom, certify that:

I am a geologist active in minerals exploration.

I am a graduate of McGill University with a degree of Bachelor of Science.

I have been continuously engaged in mining and exploration since 1966.

I am a member of the Geological Association of Canada.

I supervised Cominco Ltd.'s Sullivan Mine area exploration drilling program in 1987.

P.W. RANSOM, G.A.C.

COMINCO LTD

EXPLORATION

GEOPHYSICS

NTS:82/F9,16

- PART 3 -

MATHEW CREEK 1987

UTEM SURVEY

Latitude: 49 45'N

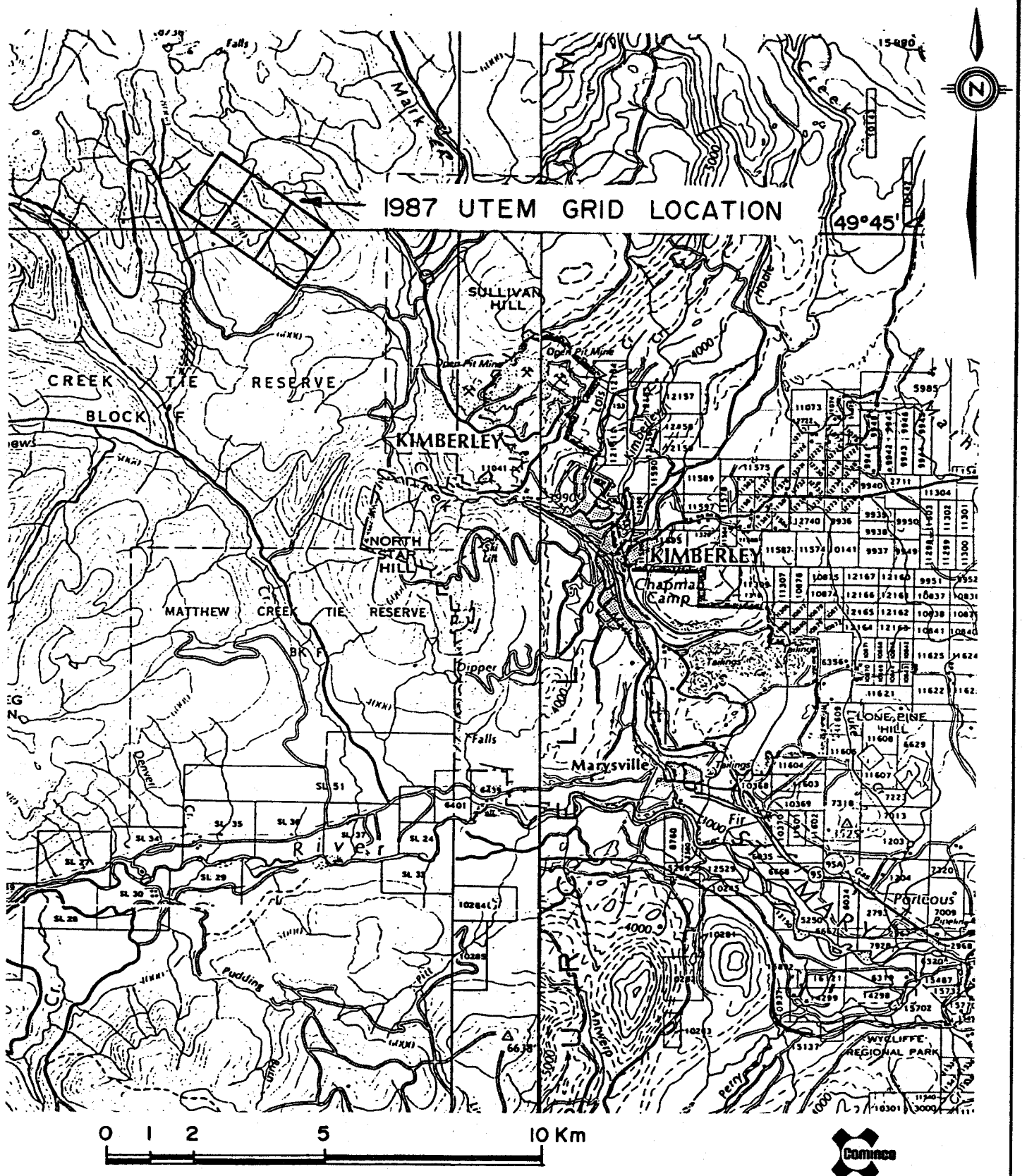
Longitude: 116 05'W

Work Performed by: I. Jackish and J. Vyselaar

Claim Owner and Operator: Cominco Ltd.

FEBRUARY, 1988

JULES J. LAJOIE



Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

MATTHEW Ck.

Location Map

Scale: 1:125,000 | Date: JAN. 1988 | Plate: 333-87-1

NCI - 112A - CL

210-0610

TABLE OF CONTENTS

COMINCO LTD

EXPLORATION GEOPHYSICS

NTS: 82F/9,16

- MATHEW CREEK 1987 UTEM SURVEY -

INTRODUCTION

This report describes a Utem electromagnetic survey performed in the Mathew Creek area, located 10 kilometres northwest of Kimberley, B.C. The area is underlain by rocks of the Aldridge Formation which are known to host the Sullivan orebody at Kimberley, B.C.

Access to the grid is westerly from Marysville along the St. Mary's lake road for about 7 kilometres, then north on the Mathew Creek road.

16 kilometres of Utem surveying were completed.

FIELD WORK

The field work was carried out between October 1 to 6, 1987, inclusive, by geophysicists I. Jackish, J. Vyselaar, and assistants S. Kempt, E. Ricketts, and D. Murphy. Two transmitter loops were used for the survey.

DESCRIPTION OF THE UTEM SYSTEM

UTEM is an acronym for "University of Toronto ElectroMagnetometer". The system was developped by Dr. Y. Lamontagne (1975) while he was a graduate student of that university.

The field procedure consists of first laying out a large loop of single strand insulated wire and energizing it with current from a transmitter which is powered by a motor

generator. Survey lines are generally oriented perpendicular to one side of the loop and surveying can be performed both inside and outside the loop.

The transmitter loop is energized with a precise triangular waveform at a carefully controlled base frequency (30.974Hz for this survey). The receiver system includes a sensor coil and backpack portable receiver module which has a digital recording facility on cassette magnetic tape. The time synchronization between transmitter and receiver is achieved through quartz crystal clocks in both units, and it must be accurate to about one second in fifty years.

The receiver sensor coil measures the vertical component of the electromagnetic field and responds to its time derivative. Since the transmitter current waveform is rectangular, the receiver coil will sense a perfect square wave in the absence of geologic conductors. Deviations from a perfect square wave are caused by electrical conductors which may be geologic or cultural in origin. The receiver stacks any pre-set number of cycles in order to increase the signal to noise ratio.

The UTEM receiver gathers and records 9 channels of information at each station. The higher number channels (7-8-9) correspond to short time or high frequency while the lower number channels (1-2-3) correspond to late time or low frequency. Therefore, poor or weak conductors will respond on channels 9, 8, 7, and 6. Better conductors will give responses on progressively lower number channels as well. For example, massive, highly conducting sulphides or graphite will produce a response on all nine channels.

At the end of the day the casette tape is played back into a Pascal microengine computer at the base camp. The computer is used to process the data and control the plotting on an 11" x 15" graphics plotter. Data are portrayed on Data Sections as profiles of each of the nine channels, one section for each survey line.

DATA PRESENTATION

The results of this survey are presented in one compilation map and 8 Data Sections which all face N.

The maps are listed as follows:

Plate 333-87-1: Location Map (in text)

Plate 333-87-2: Utem Grid and Compilation Map (in text)

A legend for the compilation map and data sections is included. The data sections are arranged in order of loop number, then in order of line number. Loop number defines a loop survey area for purposes of data processing and data management.

The magnetic field amplitudes from both the transmitter loop (primary field) and from the electric currents induced in the ground (secondary field) vary considerably from the beginning of a line near the transmitter loop, to the end of the survey line far from the transmitter loop. To present such data, a normalizing scheme must be used. In this survey, the primary field from the loop is used for normalizing and presenting the data according to the following schemes:

1. Continuously normalized plots.

This is the standard normalization scheme.

a) For channel 1:

$$\%\ \text{Ch.1 anomaly} = \frac{\text{Ch.1} - P}{P} \times 100\%$$

where P is the primary field from the loop at the station and Ch.1 is the observed amplitude for channel 1.

b) The remaining channels (n=2 to 9) are channel 1 reduced and channel 1 normalized:

$$\%\ \text{Ch.n anomaly} = \frac{\text{Ch.n} - \text{Ch.1}}{\text{Ch.1}} \times 100\%$$

where Ch.n is the observed amplitude of Channel n (n=2 to 9).

2. Point normalized plots.

These plots display an arrow at the top of the section indicating the station to which all data on the line are normalized. The purpose of point normalized plots is to display only the relative amplitude variation of the

secondary field along the line, that is, only that magnetic field from the currents induced in the ground.

a) For Channel 1:

$$\% \text{ Ch.1 anomaly} = \frac{\text{Ch.1} - \text{Ppn}}{\text{Ppn}} \times 100\%$$

where Ppn is the primary field from the loop at the point norm station and Ch.1 is the observed amplitude for Channel 1.

b) The remaining channels (n=2 to 9) are channel 1 reduced and channel 1 normalized:

$$\% \text{ Ch.n anomaly} = \frac{\text{Ch.n} - \text{Ch.1pn}}{\text{Ch.1pn}} \times 100\%$$

where Ch.n is the observed amplitude of Channel n and Ch.1pn is the observed channel 1 amplitude at the point norm station.

Point normalized plots are usually produced on data sections containing anomalies to help interpretation by providing a different perspective to the data. They are identified by an arrow at the top of the plot which denotes the station used for point normalization; the latter is usually chosen as a station which is at a constant separation from the loop for the whole grid, or, if there is an anomaly, at a station near the center of the anomalous response.

The above normalizing procedures result in chaining error displayed in Channel 1 only.

INTERPRETATION

The results are shown in the Data Sections and compiled in Plate 333-87-2. A few regions of lower resistance than background have been identified by a stronger gradient in the early time channels (9-8-7). No anomalies from good conductors are interpreted.

CONCLUSIONS

16 kilometres of Utem electromagnetic surveying were

completed in a small area about 10 kilometres NW of Kimberley, B.C. Half of this is overlap from two transmitter loops so that the effective line coverage is 12 kilometres. No good conductors were found in this survey.

Report by:

Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist, Cominco Ltd.

Approved for release by:

J. M. Hamilton, Manager,
Western District Exploration,
Cominco Ltd.

Distribution:
Ministry of Energy, Mines,
& Petroleum Resources (2)
Sullivan Mine
Kootenay Exploration
Western District

REFERENCES

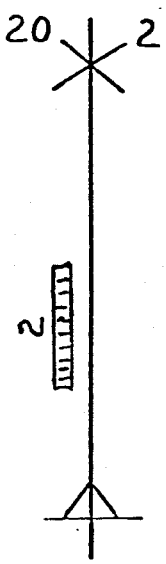
Lamontagne, Y., 1975, Applications of Wideband, time-domain EM measurements in mineral exploration: Ph.D. thesis, U. of Toronto.

LEGEND

UTEM COMPILATION MAP AND DATA SECTIONS

SYMBOL	CHANNEL	MEAN DELAY TIME
		30 Hz
	1	12.8 ms
	2	6.4
	3	3.2
	4	1.6
	5	0.8
	6	0.4
	7	0.2
	8	0.1
	9	0.05
	10	0.025

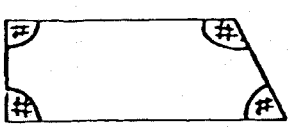
In the data sections, the upper graph contains Channels 9 to 5, the centre graph contains Channels 5 to 2, and the lower graph contains Channel 1. Station numbers are indicated along the abscissa. Elevations along the survey line are shown by the solid profile in the lower graph, the scale for which is the ordinate on the right hand side of the graph.



Axis of a crossover anomaly. The right superscript indicates the latest anomalous channel. The left superscript indicates depth to current axis in metres, or S = shallow depth, M = moderate depth and D = deep.

Indicates a negative anomaly of width shown by the dash. The latest anomalous channel is shown. Can sometimes be confused with the negative part of a crossover anomaly.

Indicates contact between two regions of differing resistivity. Arrow points to low resistivity zone.



Outline of a transmitter loop

APPENDIX I

IN THE MATTER OF THE B.C. MINERAL ACT

AND THE MATTER OF A GEOPHYSICAL PROGRAMME

CARRIED OUT ON THE MAT 65

AND ADJOINING MINERAL CLAIMS

LOCATED 10 KM NW OF KINBERLEY, B.C.

IN THE FORT STEELE MINING DIVISION OF THE

PROVINCE OF BRITISH COLUMBIA, MORE PARTICULARLY

N.T.S. 82 F/9,16

A F F I D A V I T

I, Jules J. Lajoie, of the City of West Vancouver in the Province of British Columbia, make oath and say:

1. THAT I am employed as a geophysicist by Cominco Ltd. and, as such have a personal knowledge of the facts to which I hereinafter depose;

2. THAT annexed hereto and marked as "Exhibit A", to this statement is a true copy of expenditures incurred on a geophysical survey on the Mat 65 and adjoining mineral claims;

3. THAT the said expenditures were incurred between October 1 and 6, 1987, for the purpose of mineral exploration of the above-noted claims.

Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist, Cominco Ltd.

APPENDIX II

EXHIBIT 'A'

STATEMENT OF GEOPHYSICAL EXPENDITURES (1986)

MAT 65 AND ADJOINING CLAIMS CLAIMS

1. SALARIES

P. Ransom, geological supervision, 2 days @ $250.00/day	$500.00	
I. Jackish, geophysicist, 6 days @ $285.00/day	$1710.00	
J. Vyselaar, geophysicist, 6 days @ $290.00/day	$1740.00	
S. Kemp, assistant, 6 days @ $125.00/day	$750.00	
D. Murphy, assistant, 6 days @ $110.00/day	$660.00	
E. Ricketts, assistant, 4 days @ $102.50/day	$410.00	
		$5770.00

2. OPERATING DAY CHARGES

Note: This charge is applied for those days on which useful data are acquired, to cover the costs of data compilation, drafting, interpretation, and report.

5 days @ $300.00/day	$1500.00

3. EQUIPMENT RENTAL

Utem system: 5 days @ $150.00/day:	$750.00
Additional Receiver: 1 day:	$75.00
	$825.00

4. EXPENSE ACCOUNTS (incl. accom., meals, fuel)

I. Jackish	$766.38
J. Vyselaar	$238.96
	$1005.34

5. LINECUTTING (D. Calder, Cranbrook)

22.522 km @ $382.50/km $8614.67

5. MISCELLANEOUS

Trucks (two 4X4): 6 days @ $90.00/day: $540.00

T O T A L $18,255.01

I certify this to be a true statement of expenditures for the geophysical program on the Mat 65 and adjoining claims in 1987.

Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist, Cominco Ltd.

APPENDIX III

C E R T I F I C A T I O N

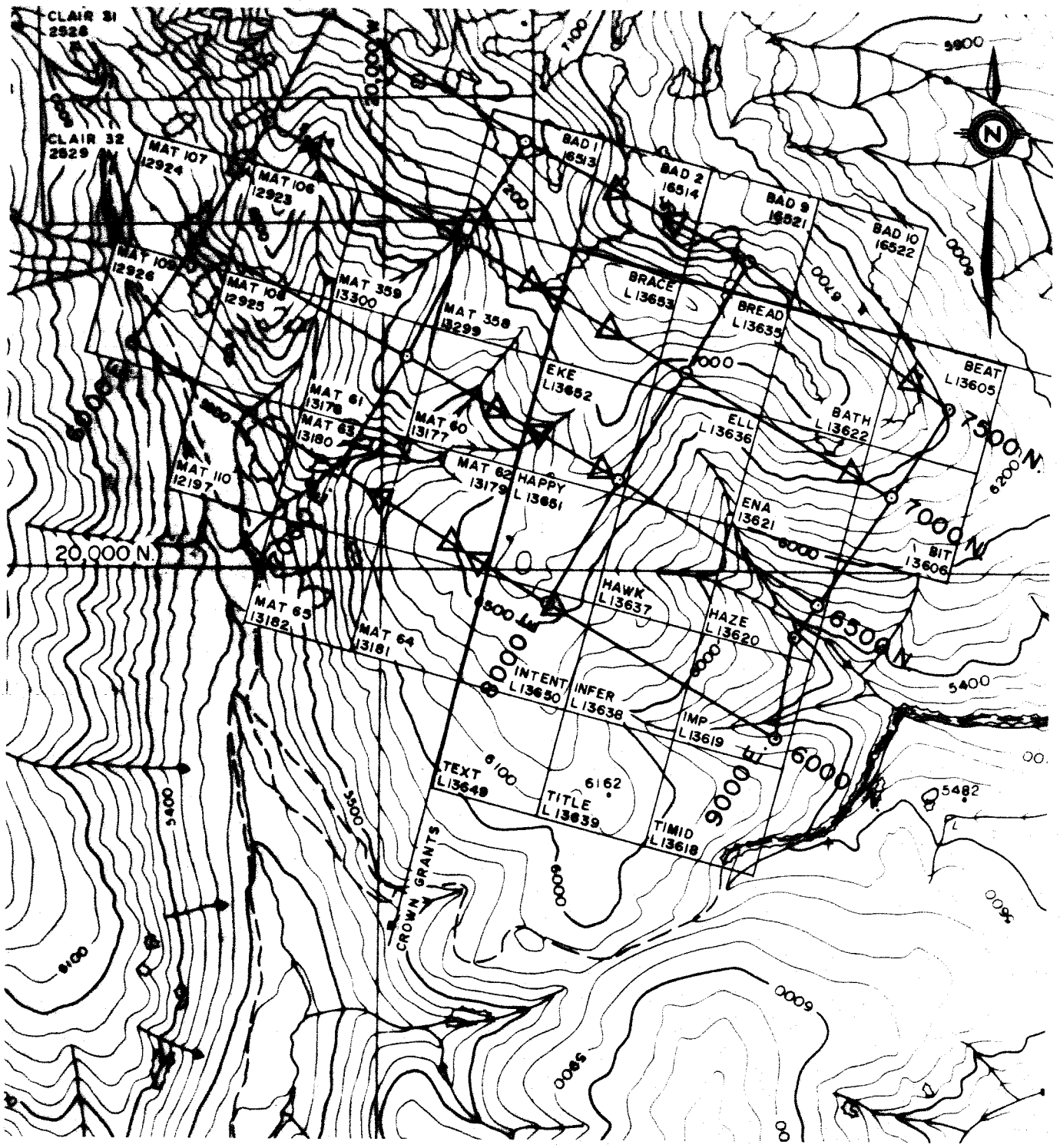
I, Jules J. Lajoie, of 5655 Keith Road, in the City of West Vancouver, in the Province of British Columbia, do hereby certify that:

1. I graduated from the University of Ottawa in 1968 with an Honours B.Sc. in Physics, from the University of British Columbia in 1970 with an M.Sc. in Geophysics, and from the University of Toronto in 1973 with a Ph.D. in Geophysics.

2. I am a registered member (#12077) of the Association of Professional Engineers of the Province of British Columbia, the Society of Exploration Geophysicists, and the British Columbia Geophysical Society.

3. I have been practicing my profession for the past fourteen years.

Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist, Cominco Ltd.



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Revised by	Date	Revised by	Date

MATTHEW CREEK

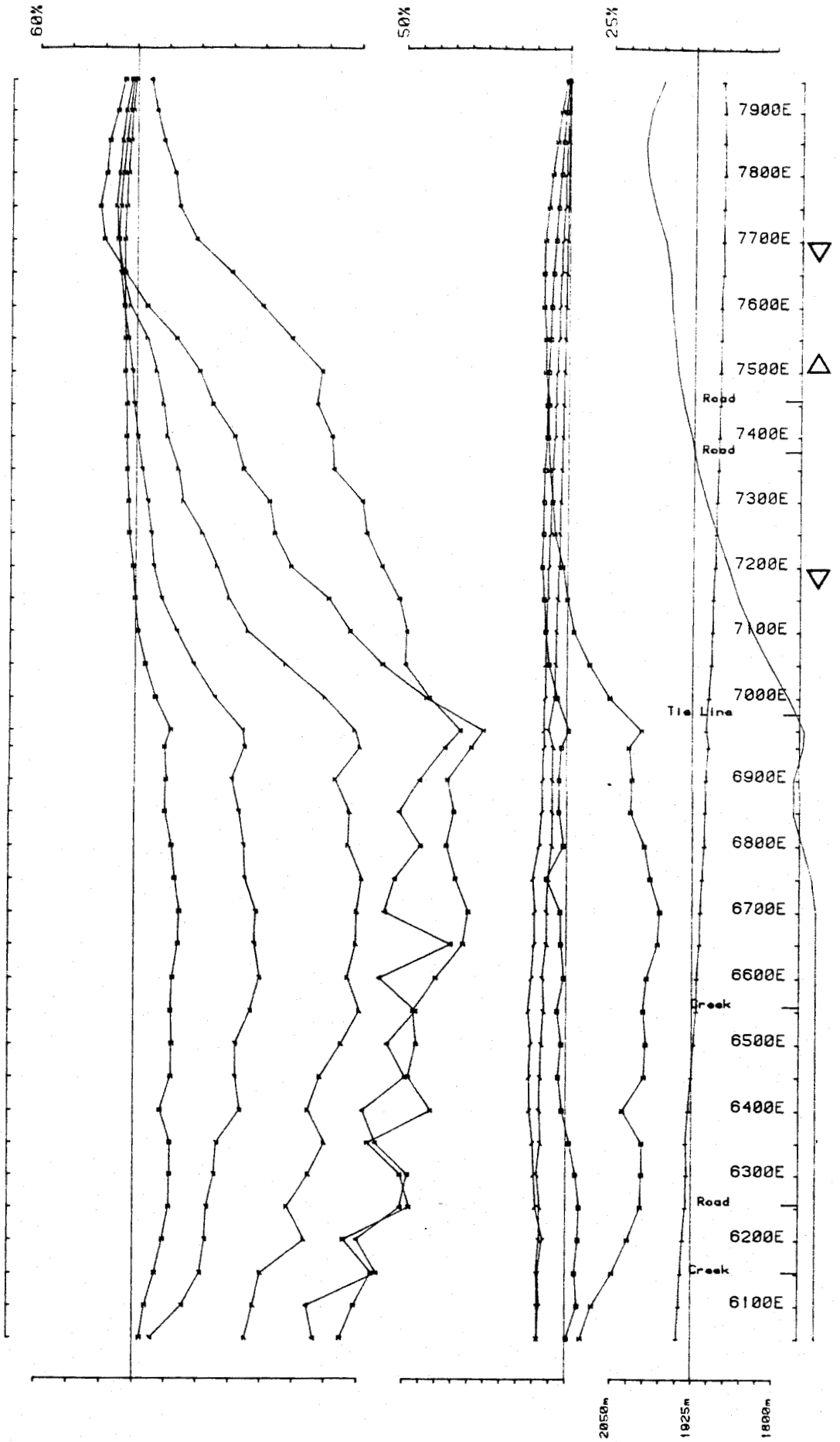
UTEM GRID & COMPILATION MAP

Scale: 1 : 2500 | Date: JAN. 1988 | Plate: 333-87-2

NCI - 112A - CL

210-0610

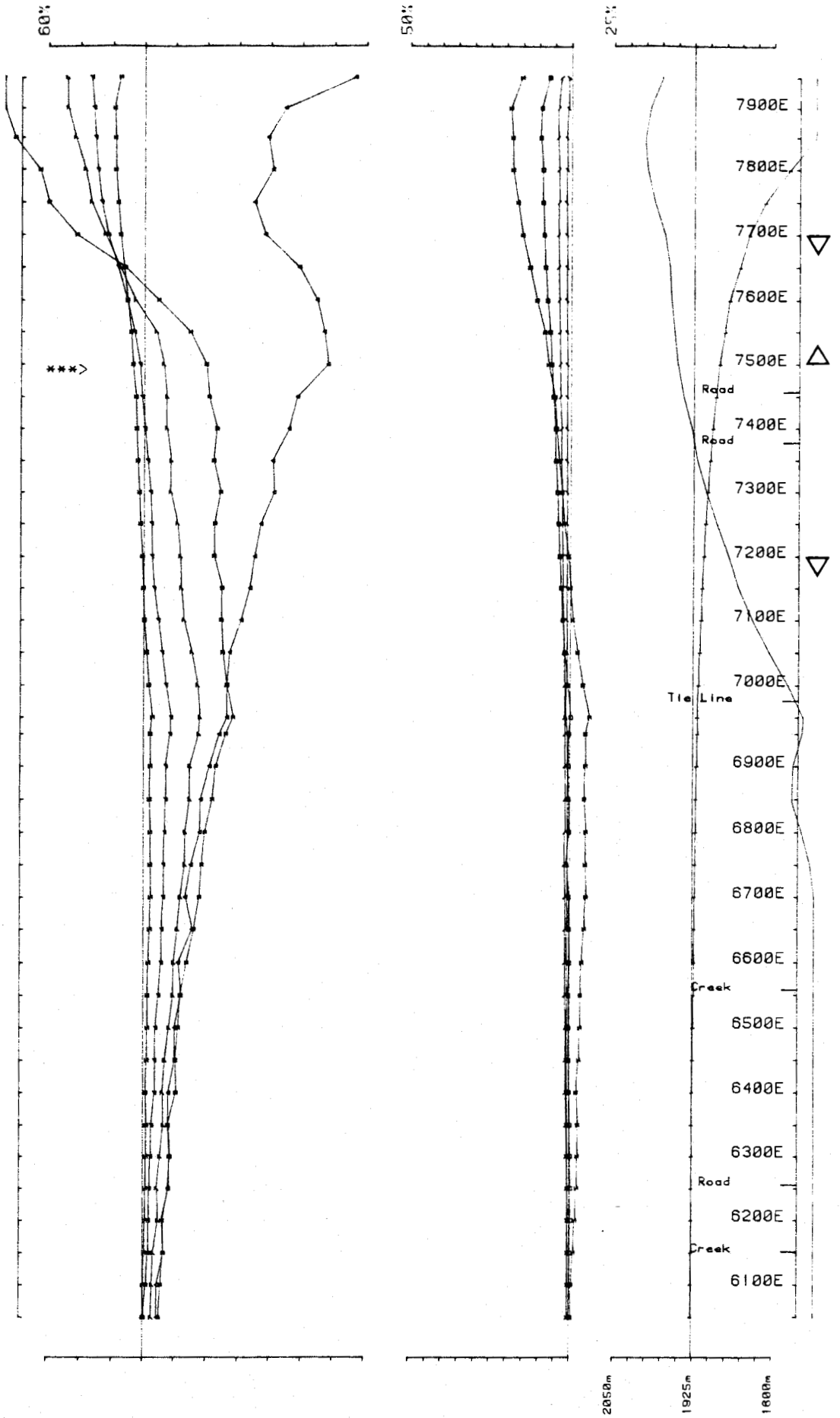
DATA SECTIONS



Area MATTHEW CREEK COMINCO operator IJ JV freq(hz) 30.974

Loopno 5 Line 6000N component Hz secondary Ch 1 normalized Ch 1 reduced

D.S. 1



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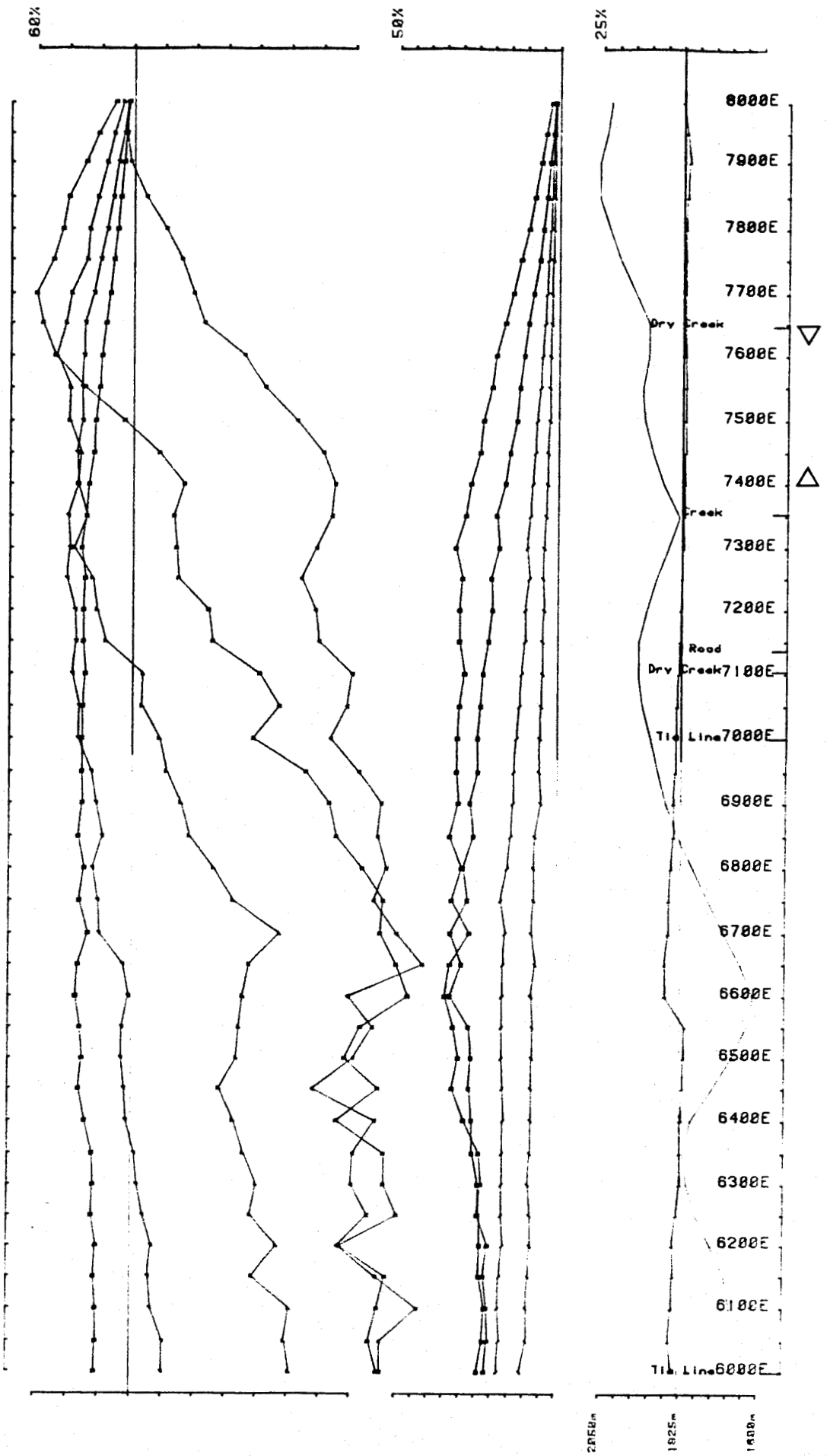
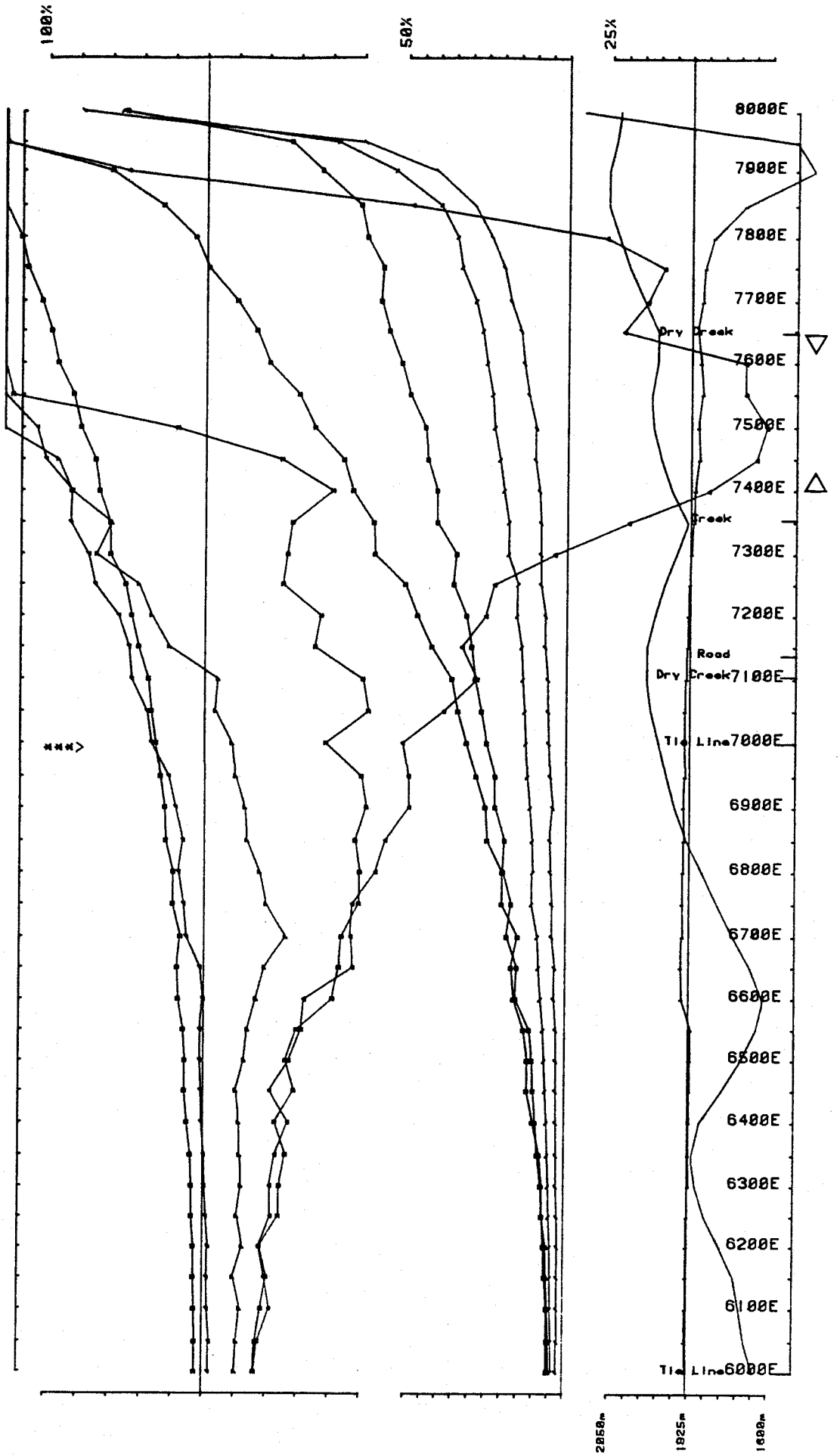
D.S. 1a



Area MATTHEW CREEK COMINCO operator IJ JV freq(hz) 30.974

Loopno 5 Line 6500N component Hz secondary Ch I normalized Ch I reduced

D.S. 2



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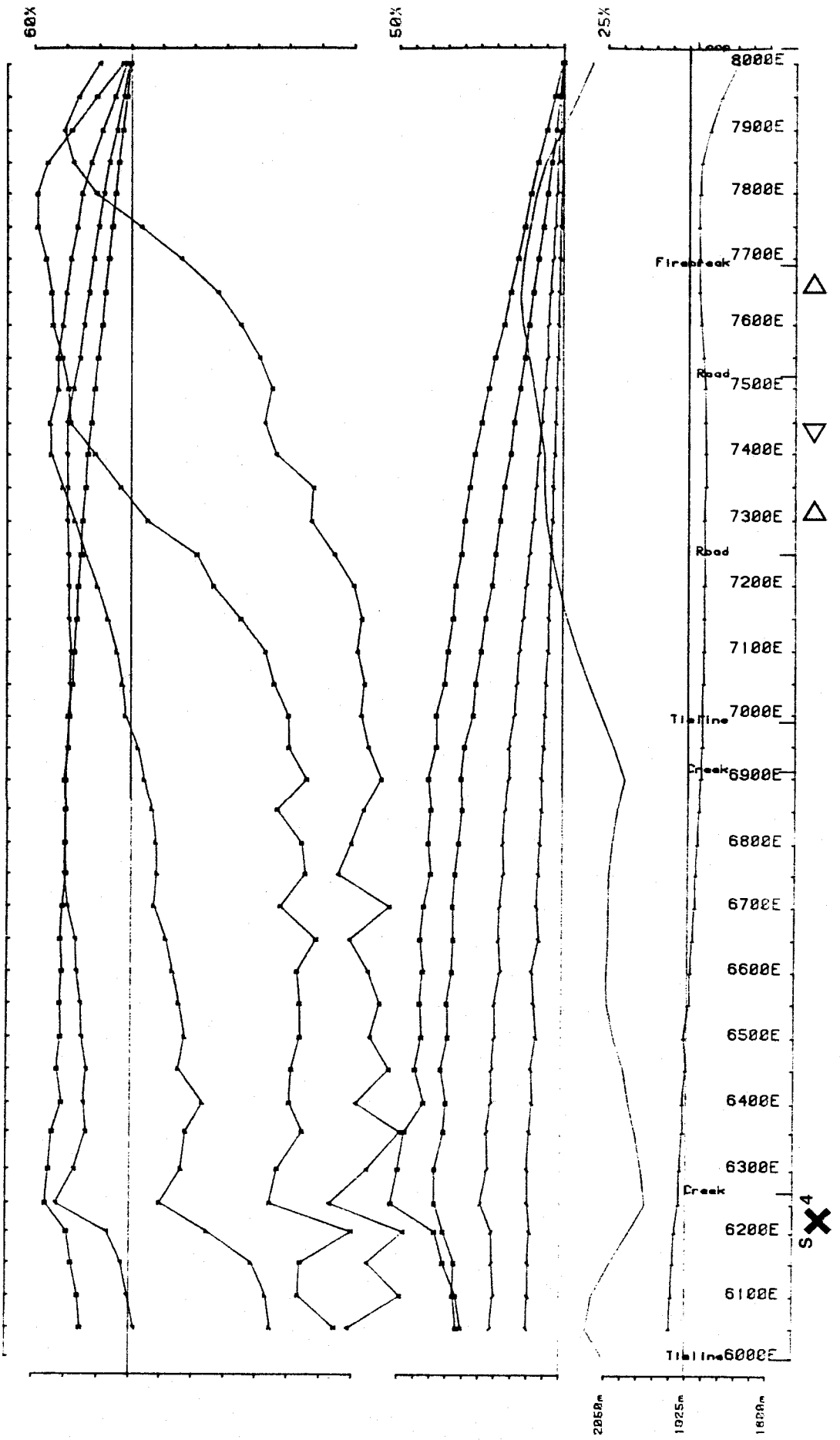
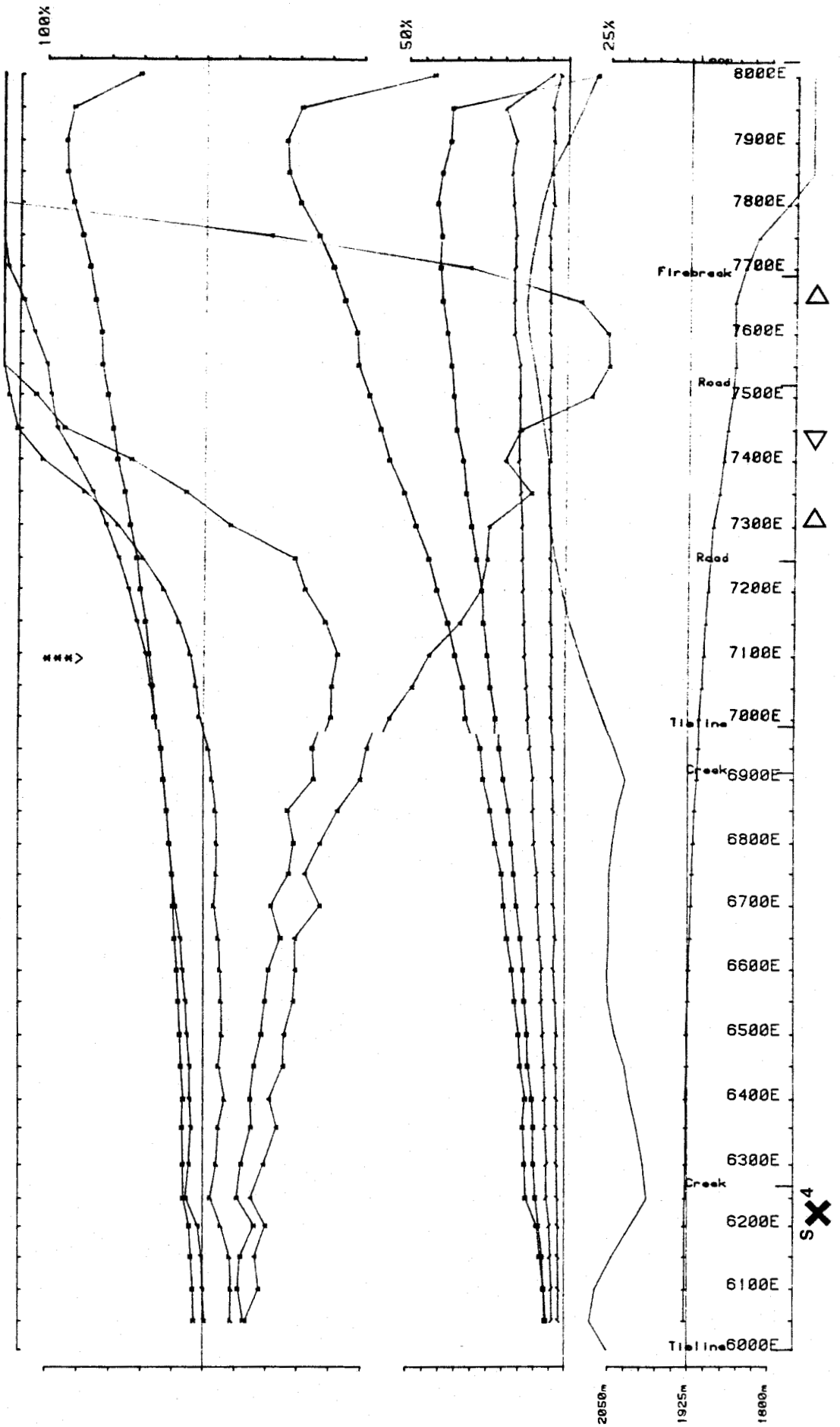
Loopno 5 Line 6500N component Hz secondary Ch I normalized Ch I reduced

D.S. 2a


60%
50%
25%
Loop
8000E
7900E
7800E
Firebreak
7700E
7600E
Road
7500E
7400E
7300E
Road
7200E
7100E
Tieline
7000E
Creek
6900E
6800E
6700E
6600E
6500E
6400E
6300E
Creek
6200E
6100E
Tieline
6000E
S 4
2050m
1925m
1800m
Area MATTHEW CREEK COMINCO operator IJ JV freq(hz) 30.974
Loopno 5 Line 7000N component Hz secondary Ch I normalized Ch I reduced

D.S. 3


100%
50%
25%
8000E
7900E
7800E
Firebreak
7700E
7600E
Road
7500E
7400E
7300E
Road
7200E
7100E
Tieline
7000E
Creek
6900E
6800E
6700E
6600E
6500E
6400E
6300E
Creek
6200E
6100E
Tieline
6000E
S4
2050m
1925m
1800m
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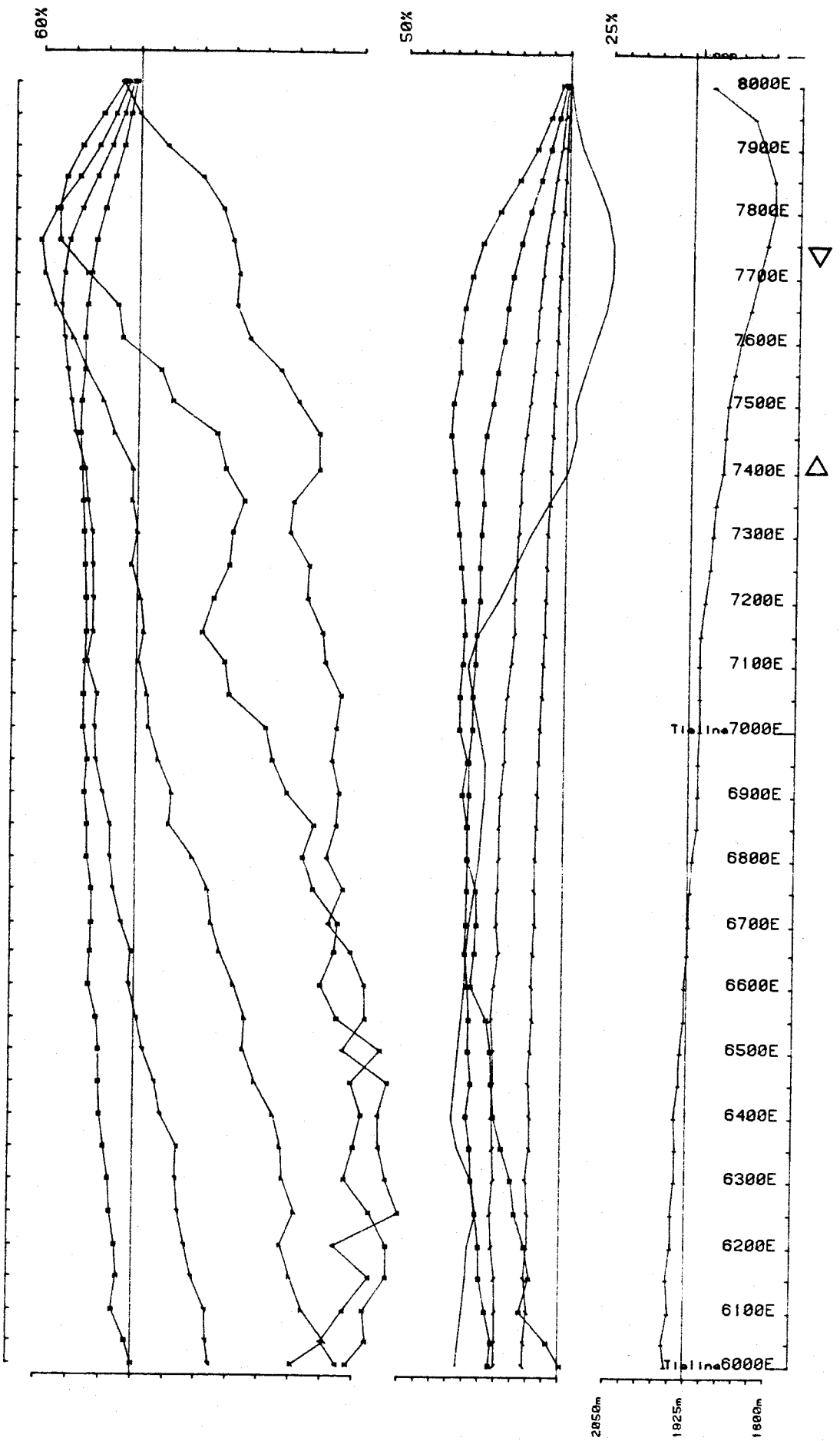

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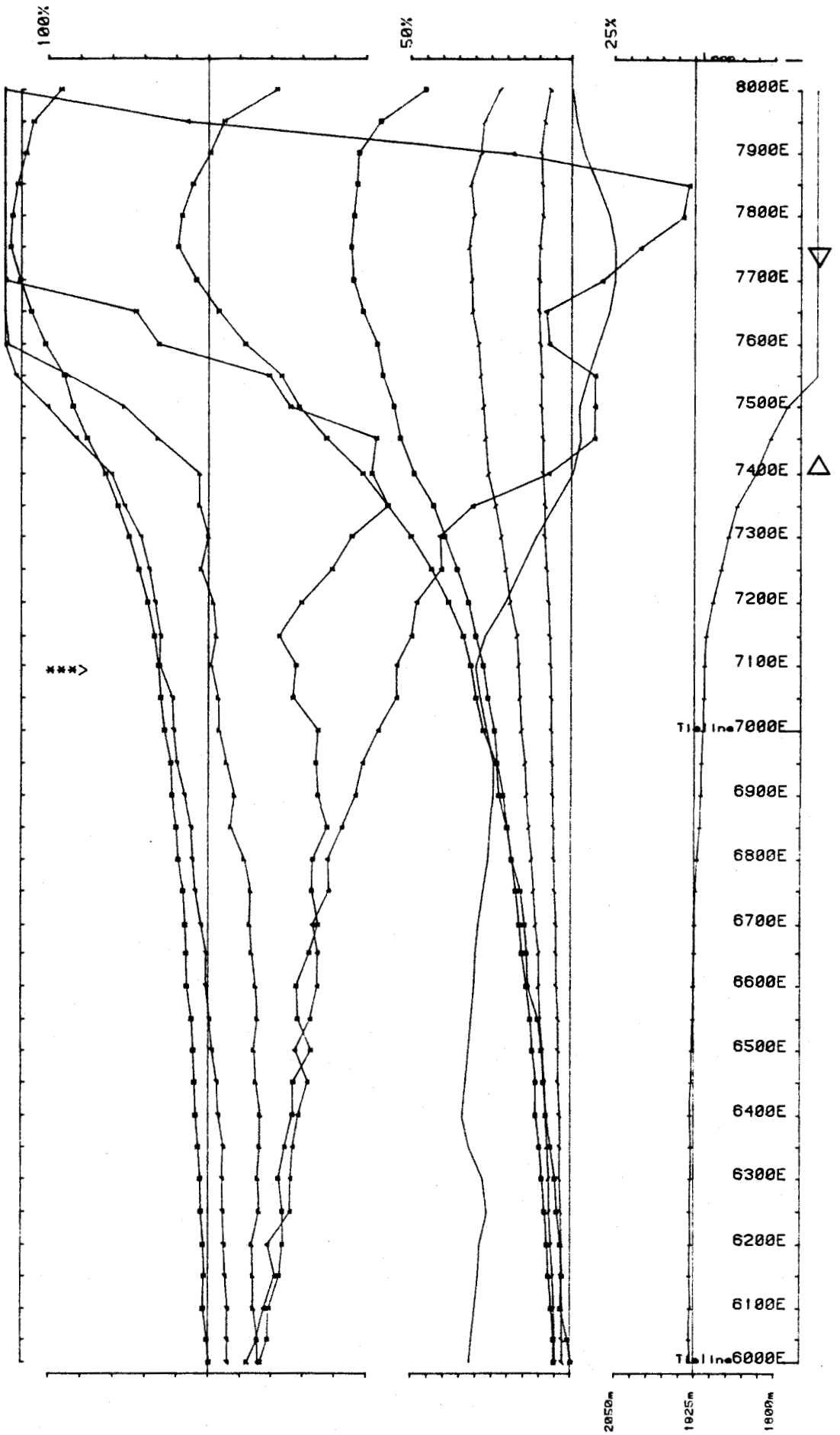
D.S. 4



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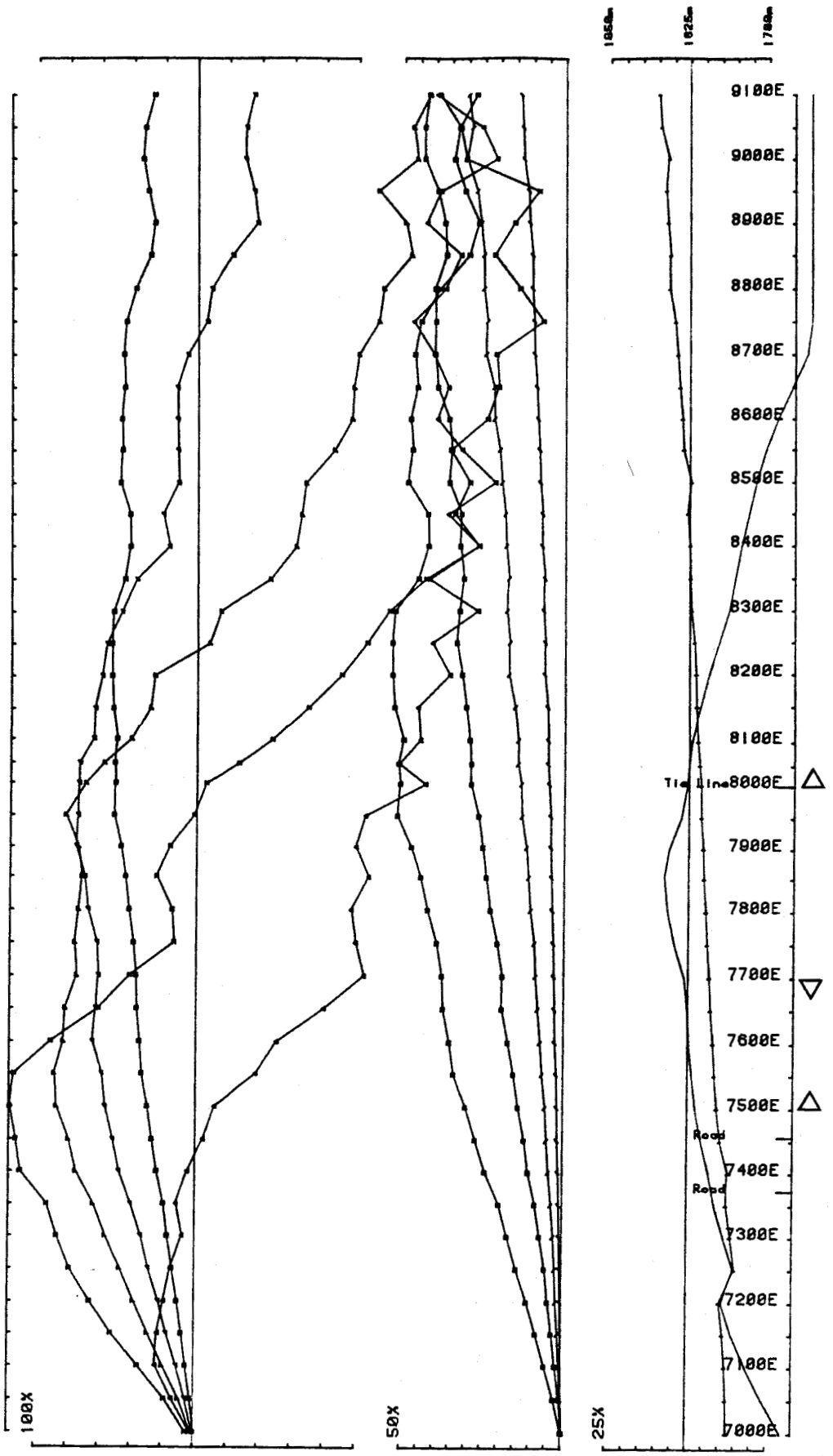
D.S. 4a



Area MATTHEW CREEK COMINCO operator IJ JV freq(hz) 30.974

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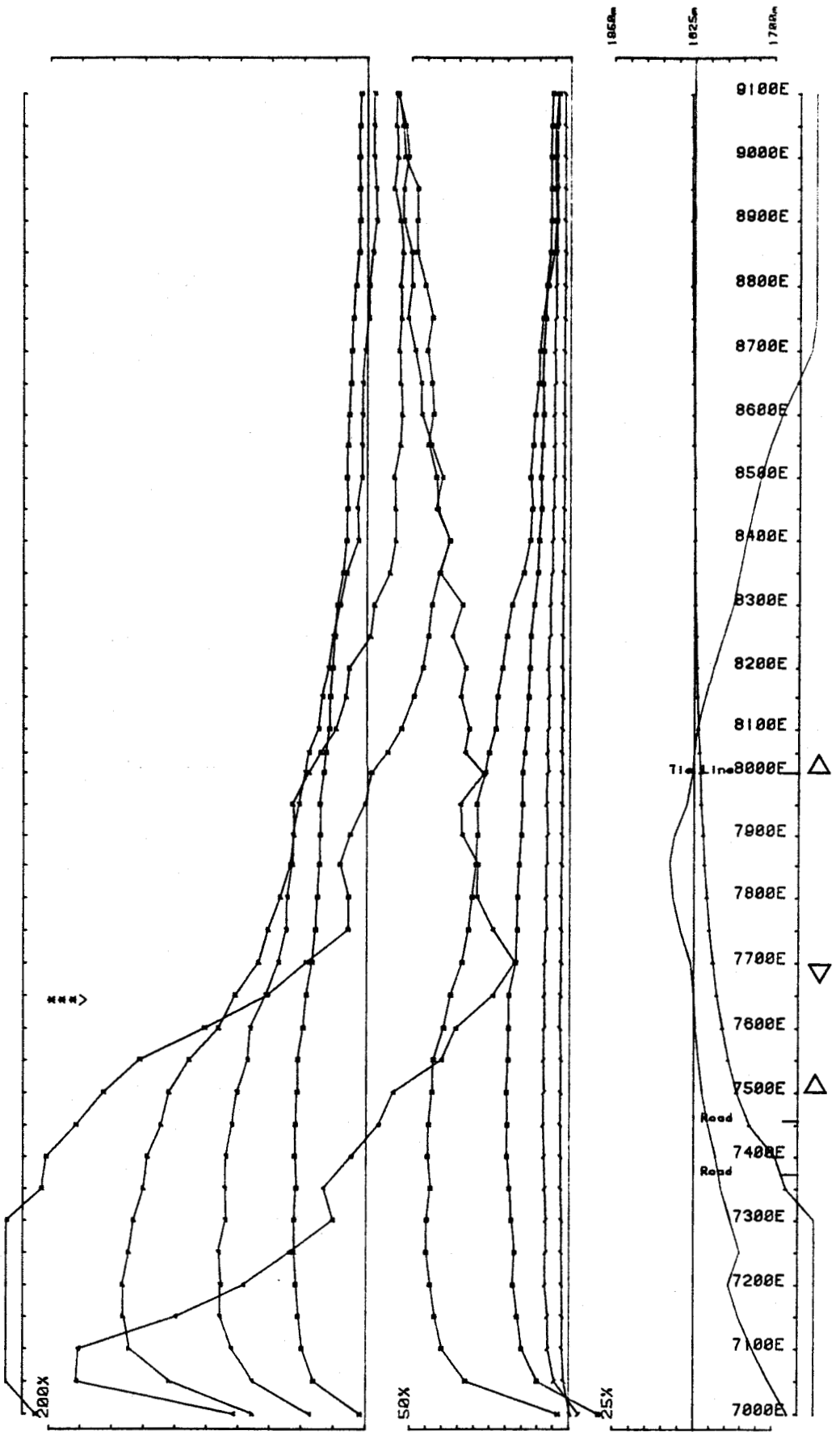
D.S. 5



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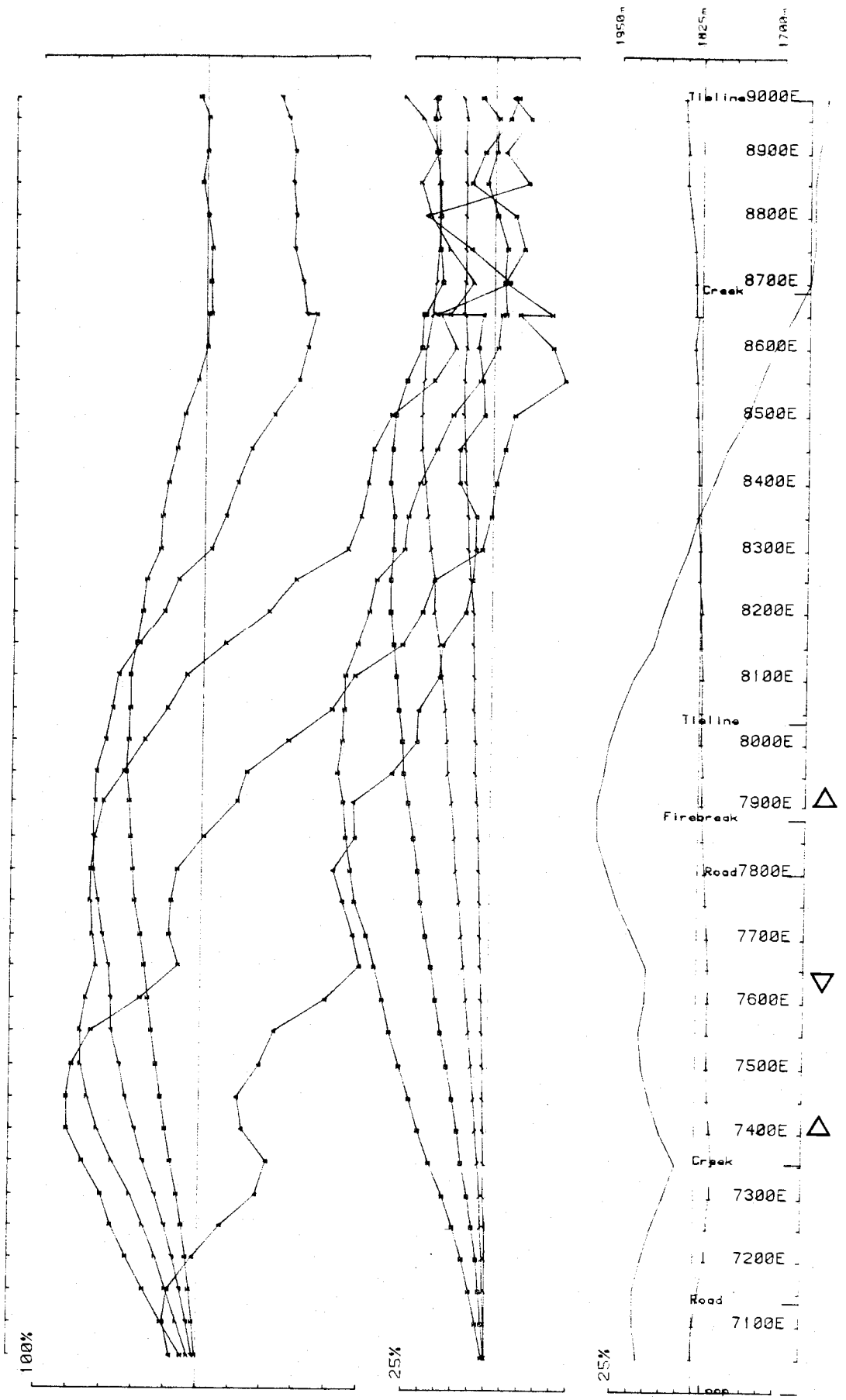

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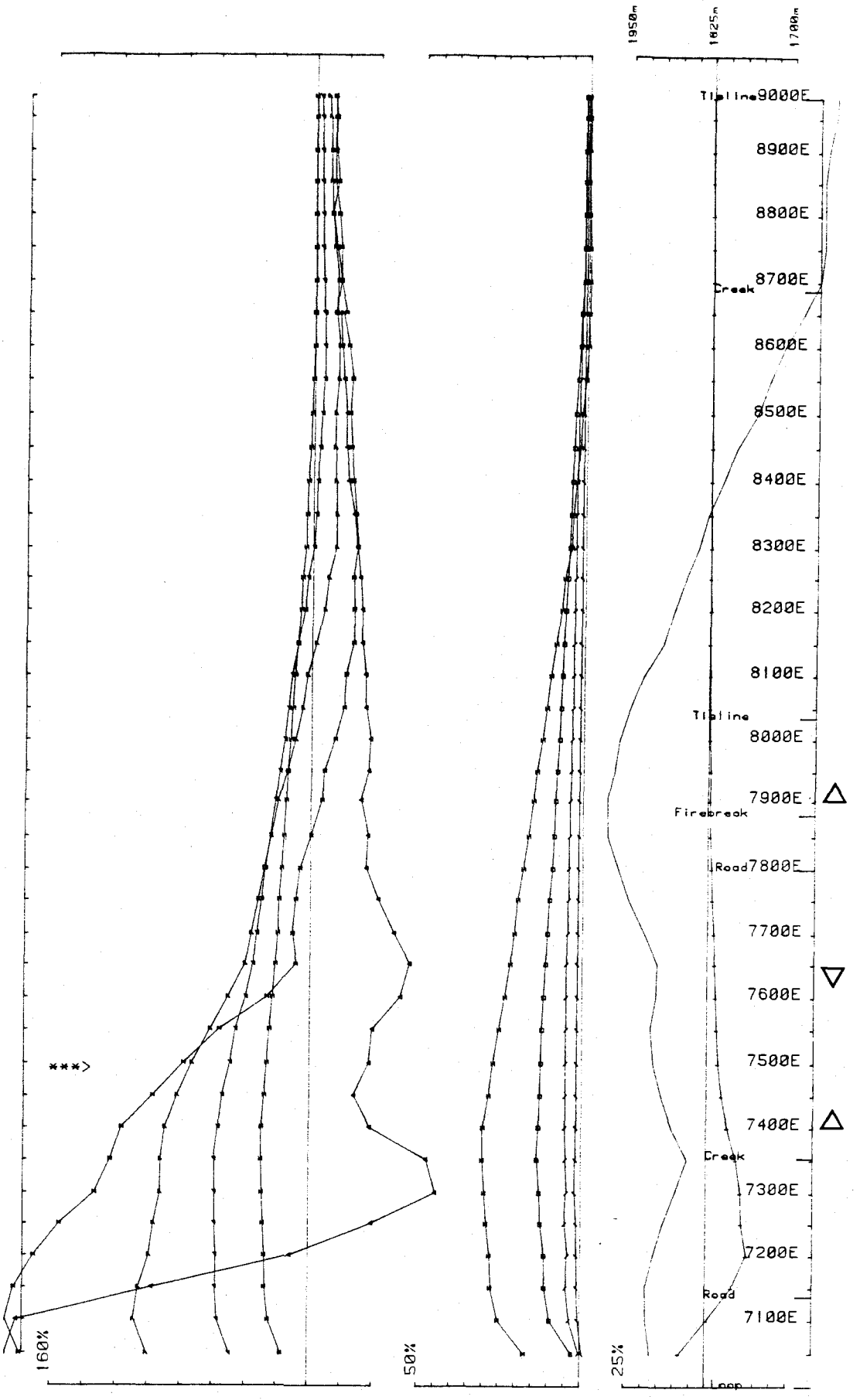

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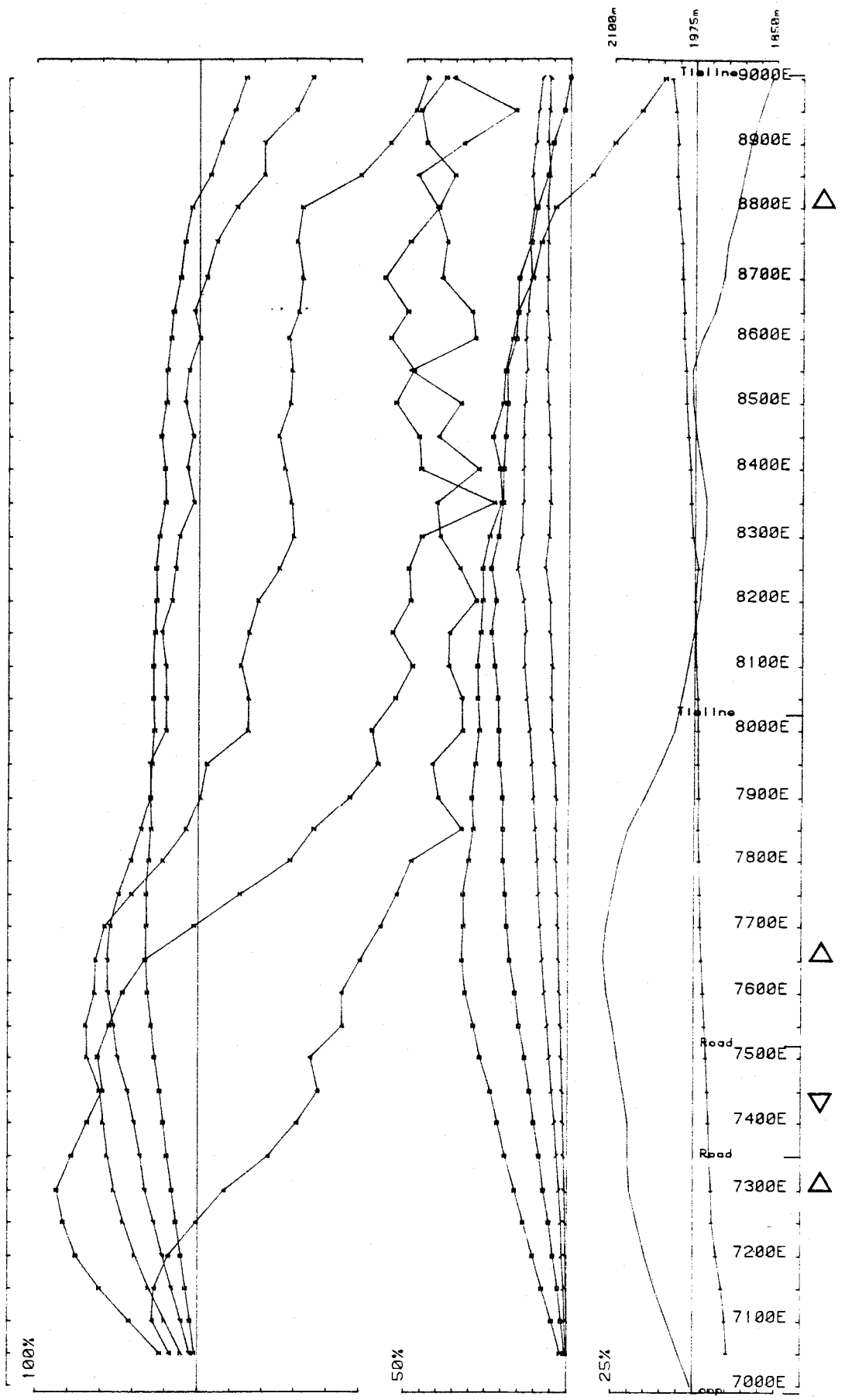

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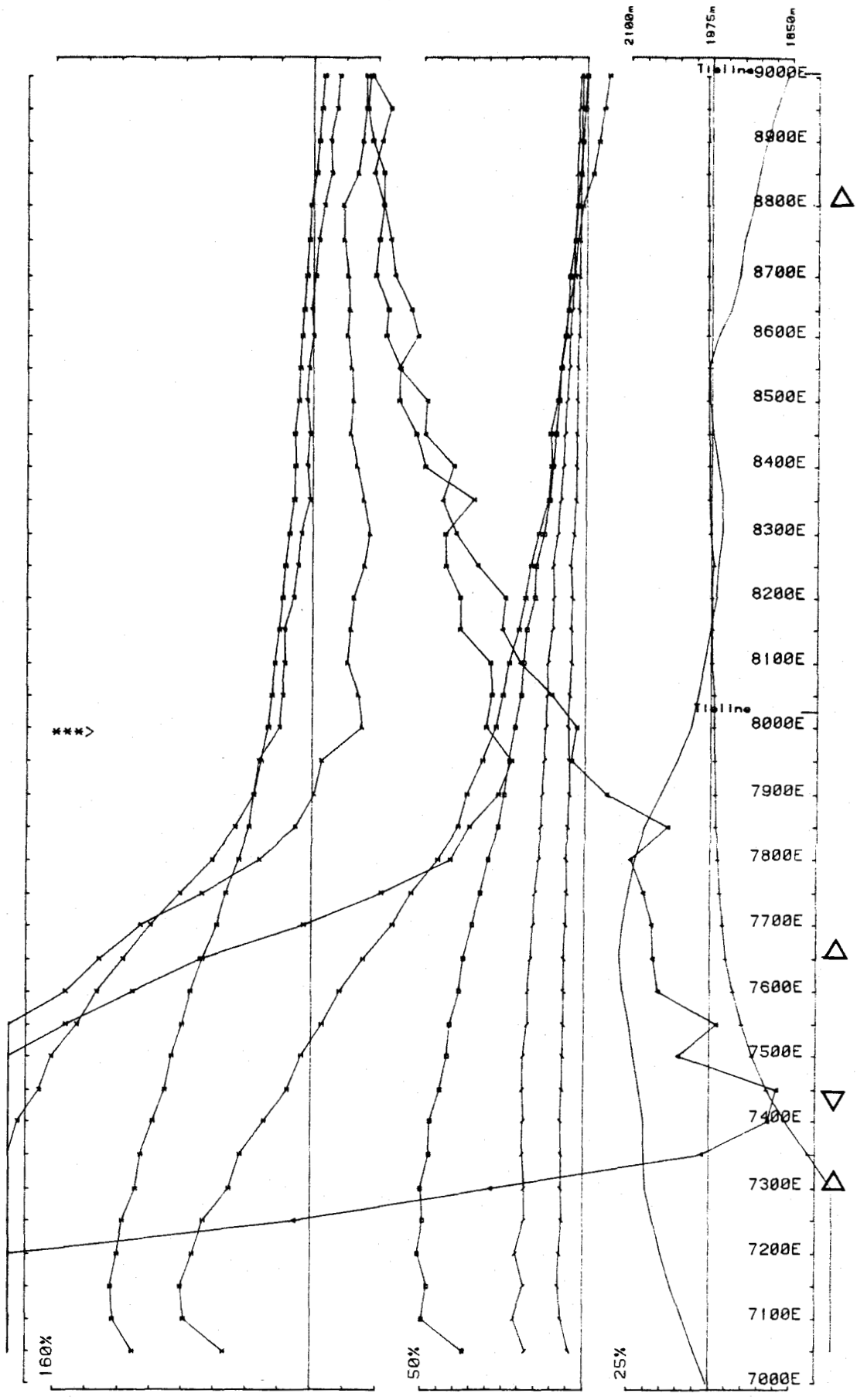

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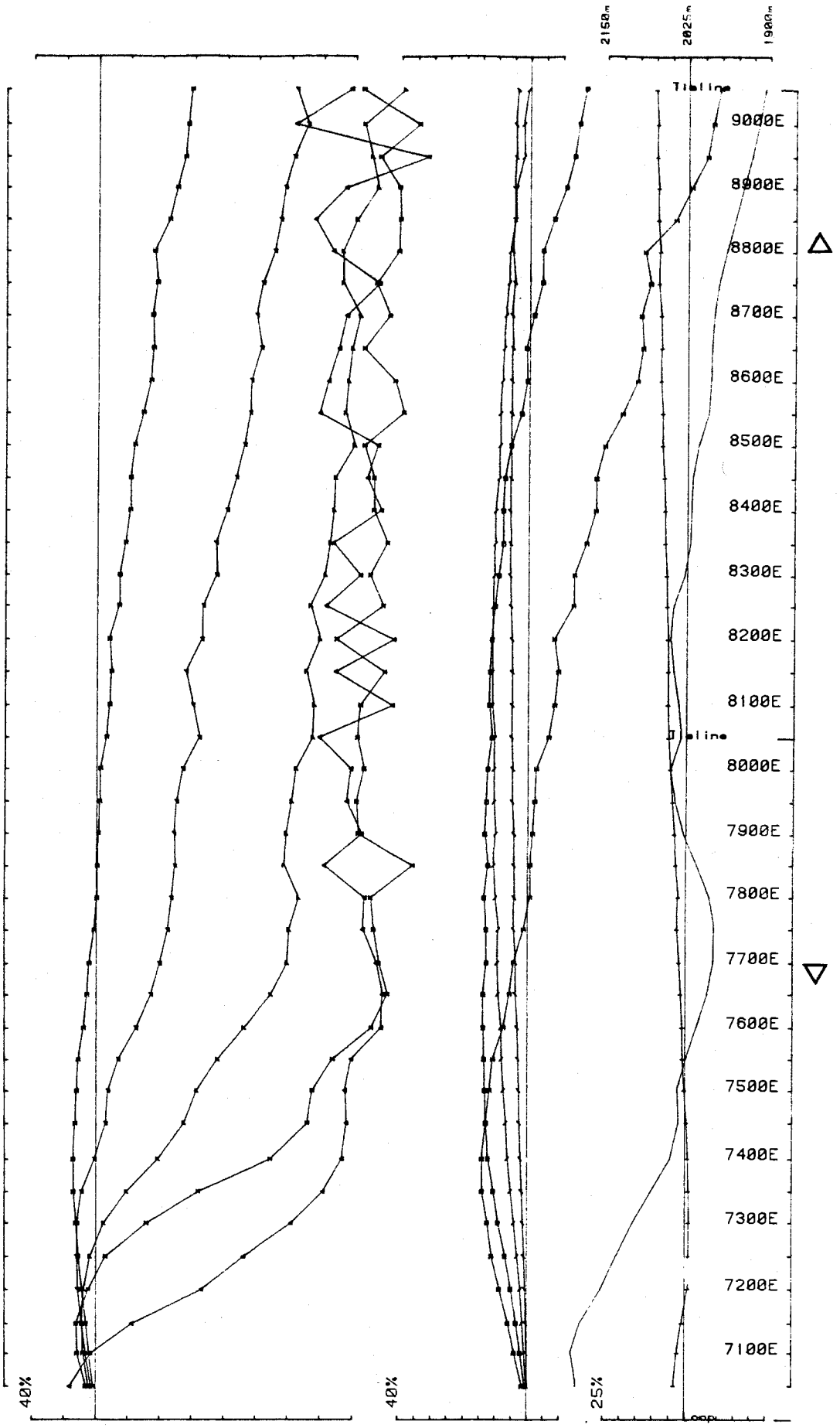
D.S. 7a



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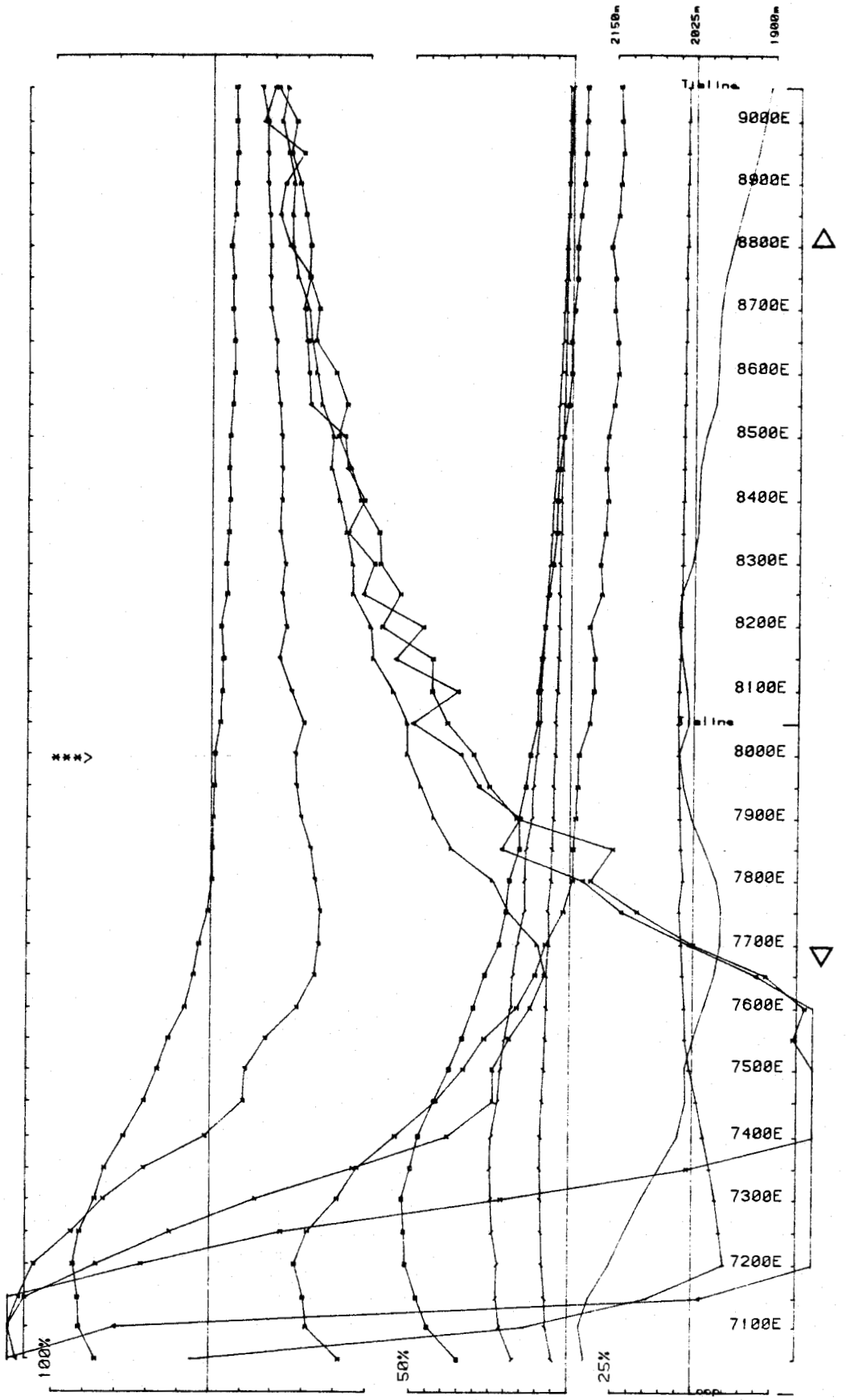
D.S. 8



Area MATTHEW CREEK COMINCO operator IJ JV freq(hz) 30.974
Loopno 6 Line 7500N component Hz secondary Ch I normalized Ch I reduced

D.S. 8a


L.C.
U.A.
M.A.
R
UPPER ALDRIDGE FM.
SECTION 5514 000 N
Mark Creek
Mather
Lost
Cabin
Creston Fm.
Upper Aldridge Fm.
116° W
82 F16 E
49° 45' N
82 G 13 W
116°00'
573000m E.
1 KM
LEGEND
L.C. LOWER CRESTON FM.
U.A. UPPER ALDRIDGE FM.
M.A. MIDDLE ALDRIDGE FM.
R IMPORTANT RUBBLE LOCALITY
BEDDING
CLEAVAGE
BEDDING/CLEAVAGE INTERSECTION
GEOLOGICAL CONTACT DEFINED, APPROXIMATE, ASSUMED
NORMAL FAULT DEFINED, APPROXIMATE, ASSUMED
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,732
GEOLOGICAL MAPPING
Cominco
Iss'd To:
Date:
UPPER MARK CREEK, SULLIVAN MINE AREA
FAME PROGRAM REPORT - GRANT #10963-M18
SULLIVAN PROJECT 1987
Drawn by: PWR
Scale: Shown
Date: February '88
Plate: Fig.1

COMINCO CLAIM BOUNDARY

CUE FAULT

CUB FAULT

KENT FAULT

116° W

49° 45' N

KIMBERLEY FAULT

L.C.

U.A.

M.C.

U.C.

K.

DH 6462

DH 6463

DH 6464

DH 6461

DH 6460

M.A.

L.A.

S.H.

FAULT

THRUST

BOOTLEG

MARK CREEK

MATTHEW CREEK

SULLIVAN ORE BODY

STEMWINDER

NORTH STAR

LEGEND

- U.C. UPPER CRESTON FM.
- M.C. MIDDLE CRESTON FM.
- L.C. LOWER CRESTON FM.
- U.A. UPPER ALDRIDGE FM.
- M.A. MIDDLE ALDRIDGE FM.
- S.H. SULLIVAN HORIZON
- L.A. LOWER ALDRIDGE FM.
- .... LOWER ALDRIDGE FM. FOOTWALL QUARTZITE MEMBER
- GABBRO INTRUSIONS (MOYIE)
- PRECAMBRIAN PEGMATITIC INTRUSIONS
- GEOLOGICAL CONTACT DEFINED, APPROXIMATE, ASSUMED
- STRIKE FAULT DEFINED, APPROXIMATE, ASSUMED
- NORMAL FAULT DEFINED, APPROXIMATE, ASSUMED
- THRUST FAULT DEFINED, APPROXIMATE, ASSUMED

GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,732

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SULLIVAN AREA GEOLOGY
FAME PROGRAM REPORT - GRANT #10963-M18
SULLIVAN PROJECT 1987

Drawn by: PWR | Scale: 1 km | Date: February '88 | Plate: Fig. 3

BCIL - 3271 - C.L.