

78-#68-#6656

Sullivan Mine COMINCO LTD. Kimberley, B.C.

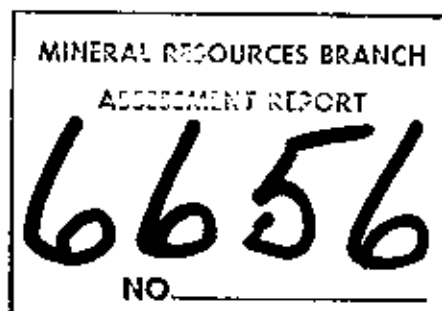
826/12W

DRILLING REPORT
D.D.C.H. 6422
MED 7 GROUP

6656

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MED 7 GROUP ASSESSMENT REPORT

The following report describes the results of drilling D.D.H. 6422, a 590 m hole in the Kimberley area on the MED 7 mineral claim located in the Fort Steele Mining Division.

The NTS location is 82 G/12.

Latitude $49^{\circ} 41'$ North.

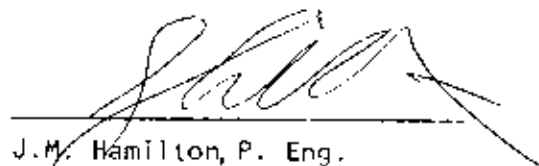
Longitude $115^{\circ} 55.6'$ West.

Cominco Ltd., owner of the claims, was the operator of the exploration program.

P.W. Ransom is author of this report.

Date of Submission: March 1978

Endorsed for
Release by :



J.M. Hamilton, P. Eng.
Chief Geologist, Kimberley

Introduction

i) Specific Location

D.D.H. 6422 is located 533 m south east of Meadowbrook School in Kimberley. Access to the drill site is by road through the property of I. Barrett. An index map, figure 1 is attached.

ii) Property Definition

The property being investigated forms part of the Sullivan Mine claim group, owned by Cominco Ltd. Cominco Ltd. has operated the mine for about 70 years. The Sullivan orebody is the richest ore deposit in British Columbia and it has contributed a major proportion of the mineral wealth generated in the province.

iii) One hole is being reported on in this report.

D.D.H. 6422 was drilled using H wireline tools, 9.6 cm in diameter, to a depth of 590 meters.

iv) D.D.H. 6422 was collared on the Med 7 mineral claim.

Author's Qualifications

As author 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 geology for twelve years.

I am a member of the Geological Association of Canada.

I supervised Cominco Ltd.'s Sullivan Mine area exploration drilling program in 1977.



P. W. Ransom

P.W. Ransom, G.A.C.

PWR:sjp
March 8, 1978

Detailed Technical Data and Interpretation

i) Purpose

The purpose of D.D.H. 6422 was to test at a depth of 500 m the mineral potential of the Concentrator Hill Horizon.

ii) Results

No mineralization of economic value was encountered in D.D.H. 6422. A descriptive log accompanies this report.

iii) Interpretation

The rocks cored were sediments typical of the Aldridge Formation and are interpreted as being Middle Aldridge. The bed thicknesses are predominantly medium and thin bedded; well laminated sections are common. The sediments are argillaceous siltstones and argillaceous quartzites and are interpreted as being turbidites. The siltstones and quartzites occur in clusters 10 to 50 m thick.

iv) Conclusions

D.D.H. 6422 cored a sequence of Middle Aldridge sediments and intersected the Concentrator Hill Horizon.

L. 11585

L. 1158

MED 8

MED 7
4999 E

D.D. 6422

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

6656

NO. _____

L. 11587

COMINCO LTD.

SULLIVAN MINE

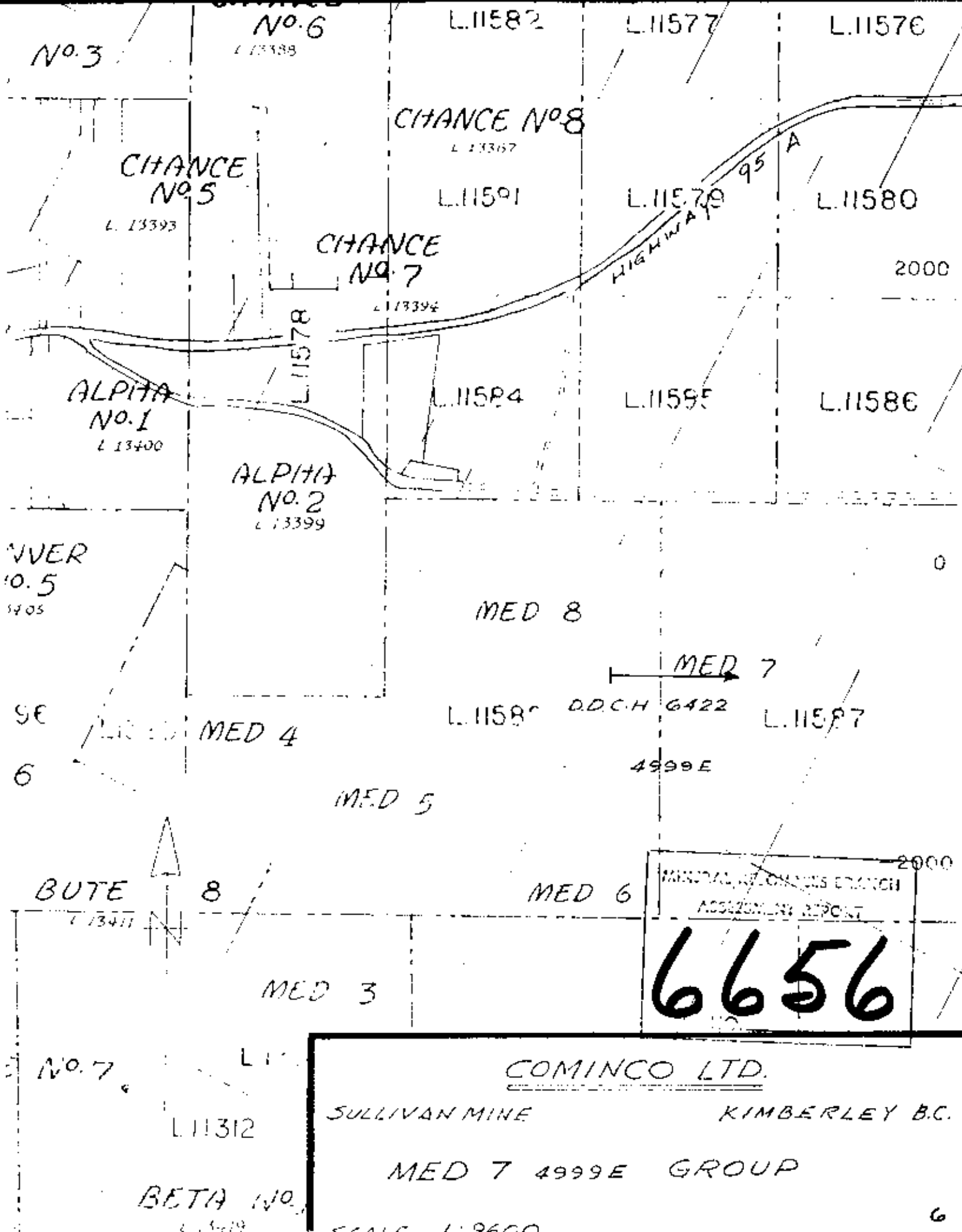
KIMBERLEY B.C.

MED 7 - D.D.C.H 6422

SURVEY - Chain & Compass

SCALE 1:3600

5



MINERAL REVENUE BRANCH
 ASSIGNMENT REPORT
6656

COMINCO LTD.
 SULLIVAN MINE KIMBERLEY B.C.
 MED 7 4999E GROUP
 SCALE 1:9600

Diamond Drill Geological Log



Objective: To intersect and test the Concentrator Hill Horizon
 Logged By: A.S. Hagen Date: Dec. 3/77
 Sampled: NOT SAMPLED
 Composites: Med 7 M.C.
 Hole No. West App. Dip: -63° Length: 1,936'

From	To	Description
0	14	Overburden
14	30	Medium bedded sediment, A-SA-AS-Q. Avg. 85° to core. Graded quartzites, considerable biotite throughout occasional clast and unconformable contact. Minor quartz-calcite healed shattering at 16' (7"). Minor weathering.
30	44	Thin bedded sediment, A-SA-AS. Fragmental zone (2") at 30'. Occasional weathering (bleaching). Broken core through this footage.
44	54	Thin bedded sediment, A-SA-AS-Q. Graded beds. Broken core.
54	82	Thin bedded - very thin bedded - laminated sediment. A-SA-AS-S. Laminations of silt through argillaceous beds are common. Avg. 85° to core.
82	95	Medium to thin bedded sediment. A-SA-AS-Q. Graded beds, occasional clasts such as at 92.5'.
95	147	Thick to medium bedded sediment. A-SA-AS-Q. Homogeneous quartzite bed from 97'-104'. Occasional clasts within silty and quartzitic sections. Laminated argillite tops in part. Some unconformable bases, flame structures at 126'.
147	150	Laminated to thinly laminated argillite. Narrow zones of laminations within this footage. Calcite healed shattering displaces beds slightly. Shattering 10P-15' to core. Bedding 80° to core.

40 Scale

Color Plot & Dip	Ore Classes & Aver
	<p>LAMINAE</p> <p>BDOS</p> <p>Very Thick Bedded 100 cm</p> <p>Thick Bedded 30 cm</p> <p>Medium Bedded 10 cm</p> <p>Thin Bedded 3 cm</p> <p>Very Thin Bedded 1 cm</p> <p>Thinly Laminated 0.3 cm</p>

Hole No. 6422 Page 1

Diamond Drill Geological Log



Objective:		Sampled:		10 Scale	
Logged By: A. S. Hagen		Date:		Color Plot & Dip	
Block:		Composities:		Old Classes & Arw.	
Block:	Section:	Phase:	App. Bear:	App. Dip:	Length:
From:	To:	Discard:	Reason:		
150	155	Thick quartzite bed, upper 6" A-SA.	Slightly graded.		
155	194	Medium to thin bedded sediment. A-SA-AS-Q.	Minor laminations in some softer sediment. Occasional glass. Rock bleached at 184'. Core moderately broken.		
194	195	Very thin bedded to laminated argillite.	Bdg. 75° to core.		
195	231	Medium to thin bedded sediment. A-SA-AS-Q.	Some very thin bedded to laminated argillites with silty lenses. Cross bedding at 208'. Some unconformable bases.		
231	237	Thinly laminated to laminated A-SA.			
237	273	Medium to thin bedded A-SA-AS-S, some laminated to thinly laminated zones of A-SA.	One thick bed (5') from 241' to 246' of homogeneous SS.		
273	274	Quartzite, alternating dark-light laminated bed, bottom half chaotic.			
274	276	Same as from 237-273.			
276	277	Quartzite, dark-light laminated. Occ. healed fractures 10° to core.	Core Size		
277	289	Thin bedded sediment. A-SA-AS-S, some unconformable bases, altered (bleached) zones. Bdg. 80° to core.	HQ		
			Hole No.		Page
			6422		2

Diamond Drill Geological Log



40 Scale

Color Plot & Dip

Ore Grades & A-er.

Objective:

Sampled:

Logged By: A. S. Hagen

Date:

Composites:

Block: Sect: Place: App. Bear: App. Dip: Length

From	To	Diact. L.	Reason:
289	294	Siltstone bed, homogeneous, light altered zones throughout, partially vuggy.	
294	359	Medium to thin bedded sediment. A-SA-AS-S. Occasional unconformable contacts, some thinly laminated beds. Quartz-calcite healed fracturing noted occasionally. Minor shatter zone (6") at 351'. Ddg. 80° to core.	
359	361	Quartzites, 2 beds, rip-up like clasts in bottom bed.	
361	407	Medium to thin bedded sediment. A-SA-AS-S. A 1" bed of closely packed quartz grains at 364'. Minor cross bedding, some laminated to thinly laminated beds. Occasional clasts in silt beds, some lensy silts in argillites.	
407	410	Quartzite, well sorted, medium to light grey, closely packed medium to coarse qtz. grains, abrupt contacts. Ddg. 80° to core.	
410	415	Thin bedded sediment. A-SA-AS, laminated to thinly laminated in part.	
415	415.7	Quartzite, alternating dark-light laminated, unconformable base.	
415.7	416.7	Very thin bedded A-SA.	
416.7	419.5	Quartzite, well sorted, abrupt contacts, unconformable base, top .5' laminated.	

Core Size

HQ

File No.

6422

Page

3

207-10-04

Diamond Drill Geological Log



Objective:		Sampled:		40 Scale	
Logged By: A.S. Hagen		Date:		Color Plot & Dip	
Block:		Composites:		Dra Classes & Aver.	
Sect.:		Place:		Dip:	
App. Bear:		App. Dip:		Length:	
From	To	Descr:	Reason:		
419.5	423.5	Quartzites, 2 beds with 6' massive to thinly laminated argillite tops, bottom quartzite bed is partly laminated.			
423.5	433.0	Thin bedded sediment, A-SA-AS, occasional clasts, 1" brecciated zone normal to core at 427'. Cross bedding at 426.2'.			
433.2	435.2	Thick, graded bed, fine grained quartzite base grading to massive argillite top, clasts in lower 4".			
435.2	444	Medium to thin bedded sediment, A-SA-AS.			
444	445.2	Thick graded bed, fine grained, closely packed qtz. grains at base, grading to massive argillite top.			
445.2	463	Medium to thin bedded sediment, A-SA-AS. A 3" laminated quartzite bed at 449'. 8dg. 80° to core.			
463	464.5	Thick graded bed, Medium to fine grained quartzite at base grading upwards to 3" massive argillite top. Minor quartz healed fractures.			
464.5	467.5	Thin bedded to thinly laminated sediment, A-SA-AS.			
467.5	469	Thick, graded bed. Medium to fine grained quartzite grading to 6" massive argillite top. Irregular base with flame structure. Some quartz healed fractures in lower half of bed.			
			Core Site		
			HQ		
			Maple No.		
			6422		
			Page		
			4		

Diamond Drill Geological Log



Objective:		Sampled:	
Logged By: A.S. Hagen		Date:	
Blot:		Composites:	
Block:	Sec:	Place:	App. Bear.
			App. Dip:
			Length:
From	To	Discard:	Reason:
469	469.6		Thin bedded to thinly laminated sediment, A-SA.
469.6	470.6		Medium bed, fine grained quartzite base, grading to massive argillite top.
470.6	471.6		Thin bedded to thinly laminated sediment, A-SA.
471.6	481.8		Very thick bed, quartzite, closely packed medium to fine quartz grains, upper 2' grades from siltstone to massive, soft argillite. Some clasts noted at 475', a very thin soft argillite parting also at this footage, similar lenticular clast 14" above. Irregular base.
481.8	483.8		Thick bed, graded quartzite, fine, closely packed quartz grains grading upwards to a 3" massive argillite top. Soft, argillite lenticular inclusions in middle of bed.
483.8	497.7		Very thin bedded - laminated - thinly laminated sediment, A-SA-AS. * Features obscured by oil soaked core from 486.0' to 497.0'.
497.7	501		Very thick graded bed. Closely packed, fine grained quartz grains at base grading upwards to soft argillite top. * Features obscured by oil soaked core from 497.7 to 499.5.
501	507.5		Very thick graded bed. Predominantly quartzite. Medium to fine, closely packed quartz grains at the base grading upwards to v.f. quartzite to 5 to 7" massive argillite top. Laminated characteristics in upper half of bed.

40 Scale	
Color Plot & Ops	Core Classes & Aver.
0	
100	

Core Size
KQ

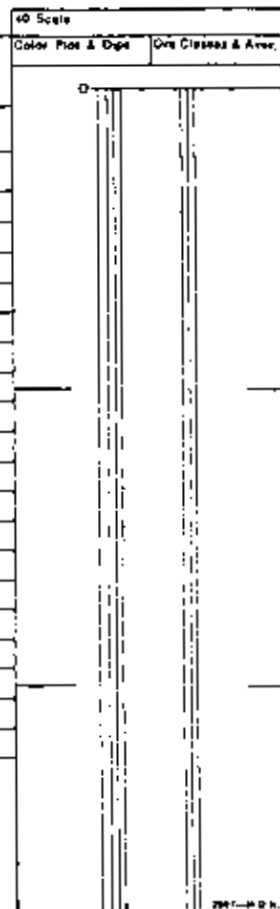
Core No.
6422

Page
5

Diamond Drill Geological Log



Objective:		Sampled:	
Logged By: A.S. Hagen		Date:	
Compos:		Compos:	
Block:	Sect:	Place:	App. Bear:
			App. Dip:
			Length:
From:	To:	Discard:	Reason:
507.5	509.1		Very thin bedded - laminated - thinly laminated sediment. A-SA-AS.
509.1	511.9		Thick bed, graded. Fine, closely packed quartz grains at base grading upwards to 1" massive argillite top. Some laminated features.
511.9	582		Very thin bedded - laminated - thinly laminated sediment, A-SA-AS. Bdg. 85° to core. Occasional cross bedding. Some minor quartz healed fractures at 10° to core.
582	582.4		Very thin bedded quartzite, well sorted, medium to fine grained with clasts (rip-up) throughout. Irregular base and top.
582.4	612		Thick to medium bedded sediment, A-SA-AS-S. Minor laminated to thinly laminated zones. Scattered fine quartz grains noted at the bases of some beds.
612	654.5		Very thin bedded - laminated - thinly laminated sediment.
654.5	658		Very thick bed, siltstone, bleaching alteration along tight fracturing.
658	661		Very thin bedded - laminated - thinly laminated sediment.



Core Site: HQ

Hole No.: 6422

Page: 6

Diamond Drill Geographical Log



Objective:		Sampled:		40 Scale	
Logged By: A.		Compositor:		Color Plot & Dips	
Block:		App. Rock:		Ore Classes & Aver.	
From	To	Interval	Interval	Interval	Interval
661	750	Medium to thin bedded sediment, A-SA-AS-S. Occasional laminated to finely laminated zone. Rarely moderately to badly broken. Fractures in rock of this formation. Serial noted at 690', 720', 747 and 795'. Minor alteration.			
750	757	Medium bedded sediment, new as to 757'. Moderately to badly broken to narrow (1/2") gouge along bed. Minor alteration.			
757	813	Medium to thin bedded sediment, A-SA-AS-S. Moderately to badly broken core. Fracture associated hematite. Some nodules at 771', 773' and 792'. Broken core continued to 814'. Slickensided features from parallel to 40° to core, some along bedding planes. Minor			
813	836	Thin bedded - very thin bedded - laminated - finely laminated. ss. A-SA-AS-S. Occasional clasts and cross bedding. 840, 850 - 860 in core.			
836	862	Thin to medium bedded sediment, A-SA-AS-S. Quartz veins (fine) well at 840', base of graded bed. Rare, minor, healed fractures.			
862	866	Very thin to thinly laminated sediment. Minor quartz veins. Core Size			
866	876	Thin to medium bedded sediment, A-SA-AS-S. Siltstone base. Extensive groglike tops, variable mudstone through beds. Lower bed shows wavy mottling feature. Core Size	HQ		
			Plot No.	Page	
			6422	7	



Diamond Drill Geological Log



Objectives:							40 Scale	
Logged By: A.S. Hegen							Color Plot & Dips	
Date:							Gr. Classes & Avar.	
Composites:								
Block	Sect.	Place:	App. Bed.	App. Dip:	Length:			
From	To	Discard:	Reason:					
876	886		Very thin bedded - laminated - thinly laminated sediment. A-SA-AS. Cross bdg. and irregular contacts. Quartz-calcite healed fracturing at 884' (minor). Bdg. 82° to core.					
886	971		Thick to medium bedded sediment. A-SA-AS-S. Some graded beds with fine qtz. grns. at the base. Irregular contacts common. Variable (not graded) hardnesses through some beds. Occasional hard, black lenticular and/or rounded, black clast up to 6 cm long. Other clasts, possibly rip-up type, occur in minor amounts. Calcite and quartz healed fractures from 887' to 889' (minor). Bdg. 85° to core.					
971	974.5		Very thin bedded - laminated - thinly laminated sediment. A-SA-AS. Bdg. 80° to core.					
974.5	1009		Medium to thin bedded sediment. A-SA-AS-S. Both conformable and irregular contacts noted, also a few lenticular to oval shaped, hard, black clasts. Bdg. 85° to core.					
1009	1011.5		Very thin bedded - laminated - thinly laminated sediment. A-SA-AS. Some cross bedding features. Bdg. 82° to core.					
1011.5	1022.5		Medium to thin bedded sediment. A-SA-AS. Fine, closely packed quartz grains noted for 4" at base of beds at 1012.5' and at 1019.B', uppermost bed has narrow (up to 5mm) lenses of fine qtz. through A-SA.					
1022.5	1026		Thick siltstone bed topped by 2" of massive, soft argillite.	Cone Size	HQ			
1026	1033		Medium to thin bedded sediment. A-SA-AS.	Note No.	6422	Page	8	

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Diamond Drill Geological Log



Objective:		Sampled:		AD Scale	
Logged By: A. S. Hagen		Date:		Color Plot & Dip	
Composites:		Core Class & Area:			
Block:	Section:	Place:	App. Bear:	App. Dip:	Length:
From	To	Interval:	Reason:		
1033.0	1033.3		Thinly laminated argillite.		
1033.3	1081.5		Medium to thin bedded sediment, A-SA-AS. Some graded beds with soft, massive argillite tops. Occasional cross bedding. Some beds include sparse, hard, black oval to lenticular clasts up to 3 cm. in length. Irregular basal concavities are common. Shattered core from 1053' to 1064.5' with fracturing from parallel to 45° to core, quartz-calcite healed in part, appears a minor break.		
			* There is a distinctive rock colour change from 1054' to 1070'. Rock through this footage, when wet, appears light grey to green to purplish in colour making the bed features more distinctive than in the usual medium to dark grey rock.		
1081.5	1083.5		Thick quartzite bed. Well sorted, closely packed, medium to fine quartz grains. Top 2" grading to siltstone.		
1083.5	1088.0		Medium to thin bedded sediment, A-SA-AS, graded beds. Ddg. 78° to core.		
1088.0	1090.7		Thick quartzite bed. Well sorted, closely packed, medium to fine quartz grains, abrupt base and top.		
1090.7	1095.6		Thin bedded very thin bedded laminated sediments, A-SA-AS. Bottom 1' shows disrupted and/or discordant bedding contacts possibly the result of slumping.		
			Core Size	HQ	
			Map No	6422	
			Page	9	

Diamond Drill Geological Log



Objective:		Sampled:		10 Scale		
Logged By: A. S. Hagen		Date:		Color Plot & Dip		
Block:		Composities:		Dry Gases & Aves		
From	To	Discard	Reason:	App. Bear:	App. Dip:	Length:
876	886		Very thin bedded - laminated - thinly laminated sediment. A-SA-AS. Cross bdg. and irregular contacts. Quartz-calcite healed fracturing at 884' (minor). Bdg. 82° to core.			
886	971		Thick to medium bedded sediment. A-SA-AS-S. Some graded beds with fine qtz. grains at the base. Irregular contacts common. Variable (not graded) hardnesses through some beds. Occasional hard, black lenticular and/or rounded, black clast up to 6 cm long. Other clasts, possibly rip-up type, occur in minor amounts. Calcite and quartz healed fractures from 887' to 889' (minor). Bdg. 85° to core.			
971	974.5		Very thin bedded - laminated - thinly laminated sediments. A-SA-AS. Bdg. 80° to core.			
974.5	1009		Medium to thin bedded sediment. A-SA-AS-S. Both conformable and irregular contacts noted, also a few lenticular to oval shaped, hard, black clasts. Bdg. 85° to core.			
1009	1011.5		Very thin bedded - laminated - thinly laminated sediment. A-SA-AS. Some cross bedding features. Bdg. 82° to core.			
1011.5	1022.5		Medium to thin bedded sediment. A-SA-AS. Fine, closely packed quartz grains noted for 4" at base of beds at 1012.5' and at 1019.8', uppermost bed has narrow (up to 5mm) lenses of fine grt. through A-SA.			
1022.5	1026		Thick siltstone bed topped by 2" of massive, soft argillite.	Core Size	HQ	
1026	1033		Medium to thin bedded sediment. A-SA-AS.	Photo No.	6422	Page 8

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Diamond Drill Geological Log



Objective:		Sampled:		40 Scale	
Logged By: A. S. Hagen		Date:		Color Plot & Dip	
Block:		Composites:		Ore Grades & Area	
From	To	Discard	Reason		
1095.6	1097.3		Thick quartzite bed, well sorted, closely packed, medium to fine quartz grains, abrupt base and top. Top is disrupted.		
1097.3	1119.0		Thin bedded - very thin bedded - laminated sediment - thinly laminated sediments, A-SA-A5. Cross bedding common. 1" healed fragmental at 1114' (slumping?).		
1119.0	1138.6		Medium bedded - thin bedded sediment, A-SA-A5-S. 75% of this core is badly broken with some quartz-calcite fragments at 1127'. No major break indicated here, core appears to be from a strongly fractured zone causing the rock to break up during drilling. Cross bedding is noted, also a narrow (3") zone of laminated to thinly laminated A-SA-A5.		
1138.6	1150.0		Medium bedded-thin bedded sediment, A-SA-A5-S-Q. Predominantly quartzite. Some beds with tops of up to 3" grading to laminated and/or massive argillite. The quartz ls of medium to fine, closely packed grains. Some contacts are irregular. Quartz-calcite, coarse biotite and chlorite healed fracture 30° to core at 1150'.		
1150.0	1155.0		Thin bedded sediment, A-SA-A5-S-Q. Graded beds with some containing clasts (rio up). Very fine quartz grains, close to silt classification.		
1155.0	1158.6		Very thin bedded-laminated-thinly laminated sediment. Cross beds common. Bds. 78° to core.		
1158.6	1171.0		Thick bedded to medlym bedded sediment, A-SA-A5-S-Q. Predominantly well sorted quartzite with thin (1" - 3") coars.		
				Core Size	HQ
				Hole No.	6422
				Page	10

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Diamond Drill Geological Log



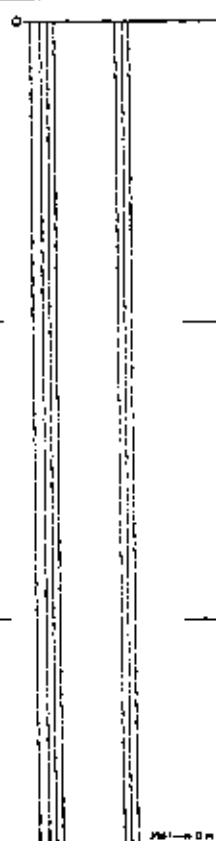
Objective:		Sampled:		40 Scale	
Logged By: A. S. Hagen		Date:		Color Plot & Dip	
Compositer:		Old Classes & Aver.			
Block:	Section:	Place:	App. Bear:	App. Dip:	Length:
From:	To:	Discard:	Reason:		
1171.0	1184.0		Medium bedded-thin bedded sediment, A-SA-A5-S. Some beds contain clasts (rip up). 2 oval to lenticular, hard, black clasts noted. Lenses of soft argillaceous material occur within the silt on some beds. Minor finely laminated zones. The bottom 2' of this footage is of alternating siltstone and massive argillite with abrupt contacts.		
1184.0	1203.5		Very thick bedded-thick bedded sediment, A-SA-A5-S-Q. Predominantly quartzite and siltstone. This footage appears to consist of two beds, the upper (2.9') is siltstone capped by 1.5" of massive argillite above 4' of AS, contact between A and AS is abrupt. The lower bed (16.6') is a massive Q-S bed capped by 4" of laminated argillite, contact is abrupt. A thin zone (2") at 1,199' is indicated to be slightly argillaceous, however, no bed separation is apparent.		
1203.5	1215.0		Medium bedded-thin bedded sediment, A-SA-A5-S. Abrupt changes from argillites to siltstones. From 1,209' - 1210' is massive argillite with discontinuous silt lenses (1 mm to 3 cm) throughout. In other beds, argillite lenses appear as rip up clasts in silt. The lower 1' has 2 thin (up to 3") zones of very thin laminations (calcareous-see final log entry).		
1215.0	1225.0		Thick bedded to medium bedded sediment, A-SA-A5-S. Massive silt beds separated by thin (up to 3"), argillaceous material. Irregular contact at 1220.5'.		
1225.0	1233.0		Thin bedded-laminated-thinly laminated sediment, A-SA-A5. Bdg. 78 ⁰ core. Moderately broken core.		
			Core Size		
			HQ		
			Hole No	6422	Page
					11

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Diamond Drill Geological Log



Objective:		Sampled:		40 Scale	
Logged By: A.S. Hagen		Date:		Color Plot & Dip	
Block:		Composites:		One Classes & Aver.	
Sect:		Place:			
App. Bear:		App. Dip:			
Length:					
From	To	Distard:	Reason:		
1273.0	1277.0		Medium bedded-thin bedded sediment. A-SA-AS. Predominantly silty. Some clasts (rip up) noted. Occasional irregular contacts. Calcareous spots few to 2 cm diameter from 242' to 245'. Fine, speckled ankerite (?) 248' to 250'. Badly broken core from 1258' to 1261' contact 39° to core, possible fault zone. Core moderately broken 1265' to 1275'		
1277.0	1281.0		Thin bedded-very thin bedded-laminated sediment. A-SA-AS. Some lensy silt through massive argillites from 1281' - 1282'. occasional clasts.		
1283.0	1284.0		Very thin bedded-laminated-thinly laminated sediment. A-SA-AS.		
1284.0	1300.0		Medium bedded-thin bedded sediment. A-SA-AS. Some abrupt changes from silty to argillaceous material. Also some lenses of argillites within silts. Occasional clasts (rip up?) noted. Rock is mostly argillite from 1295.5' to 1296.5'. thin bedded and laminated with silt lenses.		
1300.0	1301.8		Thick bed. quartzite. Conformable basal contact with 1/8" concentrated pyrite flecks. Bottom 1.3' is of well sorted medium to fine quartz grains, upper .5' grades from fine quartzite to argillite top, quartzite is laminated where grading begins.		
1301.8	1304.5		Laminated to thinly laminated argillite, core moderately broken.		
				Cave Site	
				HQ	
				Hole No.	Page
				6422	12



Diamond Drill Geological Log



Objective:		Sampled:		14 Scale	
Logged By: A. S. Hagen		Date:		Color Plot & Dip	
Composited:		Ore Grades & A.M.			
Block:	Sect:	Place:	App. Dev:	App. Dip:	Length:
From:	To:	Record:	Reason:		
1304.5	1322.0	Thin bedded-very thin bedded-laminated sediment. A-SA-AS. Some typical shaly laminated interbeds illustrating cross bedding.			
1322.0	1334.0	Medium bedded-thin bedded sediment. A-SA-AS. Predominantly SA-AS topped by thin zones of argillite, graded.			
1334.0	1345.5	Medium bedded-thin bedded sediment. A-SA-AS. This sediment indicates a more active type of sedimentation with lenticular fragments and/or clasts throughout (chip ups). Eccentric lenses of argillite are noted throughout much of the silt. 3" well sorted quartzite at 1321' with cross bedding at base.			
1345.5	1353.5	Medium bedded-thin bedded sediment. A-SA-AS. Predominantly AS. Some cross bedding and thin shaly laminated zones.			
1353.5	1363.0	Very thick to thick bedded sediment. Predominantly quartzite with interbeds of from thin bedded to shaly laminated A-SA.			
		1353.5 to 1354.5 - 2' well sorted quartzite topped by 3' massive SA, irregular base.			
		1354.5 to 1355.1 - 2' slightly graded quartzite topped by 3' of massive A-SA.			
		1355.1 to 1363.0 - 6.2' of well sorted med. - f. grained quartzite topped by 1.7' of massive to laminated, shaly laminated A-SA. The upper 1.3' of this top contains laminae of pyrophyllite and is similar in character to the Concentrator Hill Horizon.			
1363.0	1366.8	Medium bedded to thin bedded sediment, A-SA. Pyrophyllite laminations give a similar appearance to some sections of the Concentrator Hill Horizon.			
			Core Size	HQ	
			Note No.	6422	Page 13

Diamond Drill Geological Log



Objective:		Sampled:		Color, Pct. & Dip:		Core Classes & Av.:	
Logged By: A. S. Kagen		Date:		Composites:			
Block:	Seal:	Place:	App. Bear:	App. Dip:	Length:		
From	To	Discard:	Reason:				
1366.6	1376.0		Very thick to thick bedded sediment. Predominantly quartzites with A-SA interbeds. 1366.6 to 1370.0 - 2.9' of well sorted med.-f. quartz grains topped by .5' of massive A-SA. 1370.0 to 1374.8 - 4.7' of well sorted med.-f. quartz grains topped by .1' of massive A-SA. 1374.8 to 1376.0 - .2' of slightly med.-f. quartz grains topped by .5' of faintly bedded A-SA minor pyrrhotite laminations.				
1376.0	1377.9		Medium to thin bedded sediment. Graded beds. Two beds with fine quartz grains at the base grading to A-SA tops. One irregular clast (1 cm x 3 cm) noted in upper bed quartzite zone. Some pyrrhotite laminae in upper .5' of this footage.				
1377.9	1379.6		Thick bedded quartzite. Bottom 1.2' is of well sorted med.-f. quartz grains. Upper portion grades to massive A-SA top. Some lenticular clasts in graded section.				
1379.6	1380.1		Thin bedded to very thin bedded sediment. A-SA. Two thin beds topped by very thin bedded A-SA with minor pyrrhotite laminae. Bdg. 76° to core.				
1380.1	1381.8		Thick bedded quartzite. Slightly graded bed of med.-f. quartz grains grading to a massive A top.				
1381.8	1383.4		Medium to thin bedded A-SA-AS graded beds.				
1383.4	1386.2		Thick bed. A-SA-AS-Q. Graded bed. fine grained quartzite grades to AS in middle of bed.				

Core Size: HQ

How No. 6422 Page 14

Diamond Drill Geological Log



Objective:		Sampled:		40 Scale	
Logged By: A.S. Hagen		Date:		Color Plot & Desc	
Blot:		Composites:		Core Classes & Aver	
Block:	Sect:	Face:	App. Bear:	App. Dip:	Length:
From	To	Interval:	Reason:		
1386.2	1442.0		Thick to medium bedded sediments, A-SA-AS-S. This zone demonstrates current activity with resultant lenses and clasts within the beds. Occasional periods of quiescence are illustrated by narrow from thin bedded to laminated sections. Unusual clusters of calcareous material at 1420' to 1421'.		
1442.0	1466.5		Thin bedded laminated-thinly laminated sediments. Alternating thin beds and laminated sections. There are two medium beds up to .7' within this zone. There is a healed shattered zone at 1465' (.5') with highly fractured thin laminations. Some cross beds are noted.		
1466.5	1476.5		Thick to medium bedded sediments. A-SA-AS. Minor thin laminations and cross bedding. Rock is moderately shattered at 1470' with quartz and calcite healing. Discontinuous healed fractures at 10° to core at 1475' some colour alteration.		
1476.5	1479.0		Same rock types bedding characteristics as from 1442.0' to 1466.5'.		
1479.0	1497.0		Medium to thin bedded sediments. A-SA-AS. Very minor thin laminations. Quartz-calcite healed fractures running parallel to core from 1487' to 1490'.		
1497.0	1501.4		Very thick bed, graded quartzite, irregular base. Upper 1.5' shows grading with abrupt change from AS to massive .4' argillite top.		
			Core Bits		
			30		
			100		
			6422	Page	15

Diamond Drill Geological Log



Objective:		Sampled:				40 Scale	
Logged By: A.S. Hagen		Date:		Composites:		Color Plot & Desc. On Chases & Avar.	
Block:	Sec:	Place:	App. Bear:	App. Dip:	Length:		
From	To	Discard:	Reason:				
1501.6	1511.0		Medium to thin bedded sediment, A-SA-AS, similar to 1386.2 to 1442.0, showing current activity with some lenses and lenticular clasts.				
1511.0	1523.0		Very thick to thick siltstone beds. Bottom 5' has quartz-blebbed healed fracturing, rock partially brecciated near the base, not a prior break. Some erratic banding at 1518.5'.				
1523.0	1590.0		Thick to medium bedded sediment, same as from 1386.2' to 1442.0' and from 1501.6' to 1511.0'. A 6' section of very thin bedded sediment at 1539'. Some badly broken core 1552' - 1559' (result of shattered section - minor break), a few thin beds at 1579'. Clasts (rip-up) and lens fractures are common. Very minor arsenopyrite flecks noted with pyrrhotite near base.				
1590.0	1593.5		Thick siltstone bed, 1" massive argillite top, 1" qtz. healed fracture 15° to core cuts this bed, mineralized with pyrrhotite and biotite.				
1593.5	1632.0		Thick to medium bedded sediment, mainly graded beds. Some thin laminated sections, occasional cross bedding, some calcareous flecks.				
1632.0	1636.0		Very thick siltstone bed, homogeneous with a 2" A-SA top.				
1636.0	1641.0		Thick to medium bedded sediment A-SA-AS, graded beds. At 1639' there is a section of highly contorted, leasy sediments with lenticular clasts (possible slump). Narrow fracture zone (?) running 40° to core at 1641'.				
			Core Site				
			MQ				
			Note No		Page		
			6422		16		

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Diamond Drill Geological Log



Objective:		Sampled:		40 Scale	
Logged By: A. S. Hagen		Date:		Color Proc & Dye	Ore Classes & Assay
Block:	Sect:	Place:	App. Bear:	App. Dip:	Length
From:	To:	Descr:	Reason:		
1654.0	1668.5	Thick to medium bedded sediment, A-SA-AS. Similar to 1.386.2' to 1.442.0'. Current related deposition with lenses and clasts.			
1668.5	1690.0	Thick to medium bedded sediment, A-SA-AS. Mainly graded beds, rare beds with abrupt upper contacts from coarser silt to fine grained argillaceous material. Some laminated sections within graded beds. Bdp. 70° to core.			
1690.0	1693.0	Same as 1.654.0' to 1.668.5'. Some badly broken and/or ground core.			
1693.0	1730.0	Very thick to thick quartzite beds with alternating sections of thin bedded to laminated sediments with current lenses and/or fragmentals (rip-up). Quartz, calcite and eq.; biotite healed fractures at 1.700' and 1.727'.			
1730.0	1739.5	Medium to thin bedded sediment, similar to 1.386.2' to 1.442.0'.			
1739.5	1748.0	Very thin bedded-laminated-finely laminated sediments. A 5' f.g. well sorted quartzite bed with abrupt contacts at 1.746.5'.			
1748.0	1772.5	Thick to medium bedded sediments, A-SA-AS. Interbeds of dark-light very thin bedded to laminated A-SA illustrating current effects. Slickensided shearing from parallel to 80° to core from 1764' to 1771'. Ground core 1757' to 1759'.			
1772.5	1777.5	Thinly laminated sediment. A unique section of continuous, very thinly laminated SA. Very rare beds of up to 1 cm. Laminations 72° to core.			

Cone Size

HQ

Code No

6422

Page

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Diamond Drill Geological Log



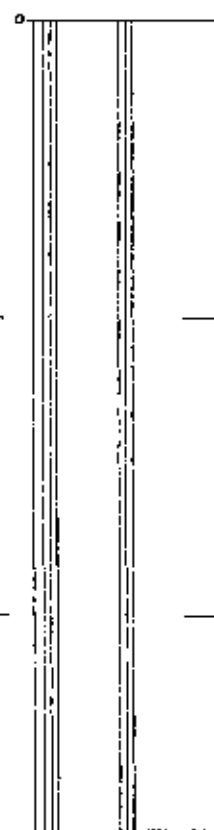
Objective:		Sampled:	
Logged By: A. S. Hagen		Date:	
Blk.:		Composites:	
From	To	Discard:	Reason:
1791.7	1795.0		Thick bed, quartzite, well sorted, fine grained, vaguely laminated in part.
1795.0	1808.0		Thick to medium bedded sediment. A-SA-AS-S. Some laminated sections. Laminated to thinly laminated from 1,803' to 1,804'.
1808.0	1812.0		Thin bedded to very thin bedded sediments. A-SA. Beds are mostly finely laminated SA-AS.
1812.0	1819.0		Medium to thin bedded sediment. A-SA-AS. 2 beds, upper 8", lower 16", vaguely grade to laminated, finely laminated tops.
1819.0	1826.9		Concentrator Hill Horizon.
	1814.0 - 1816.2		Pyrrhotite-pyrite laminae within laminated-thinly laminated SA-AS.
	1817.2 - 1819.0		Vaguely graded AS-S bed, rare vague laminations, mainly massive bed. 4" pyrrhotite-pyrite concentrated at base.
	1819.0 - 1824.0		Pyrrhotite-pyrite laminae within laminated-thinly laminated SA-AS (a 3" massive AS bed at 1821', a 2" massive AS bed at 1822.5').
	1824.0 - 1824.9		Massive SA-AS bed, minor pyrrhotite-pyrite in blebs and fractures.
	1824.9 - 1826.9		Pyrrhotite laminae within laminated-thinly laminated SA-AS (a 2.5" massive SA-AS bed with erratic pyrrhotite at 1825.5', also two thin and very thin massive beds at base).
There is a noticeable amount of fine rusty to red material throughout the laminated sections giving the impression of sphalerite, however, it does not produce the usual red streak when scratched. Bdg. 75' to core.			Core Size HQ
			Mole No 6422
			Page 18

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Diamond Drill Geological Log



Objective:		Sampled:		40 Scale	
Logged By: A. S. Hagen		Date:		Color Plot & Dip	
Block:		Compos: Lab:		One Clast & Aver	
From	To	Descr	Reason	App. Bear:	App. Dip:
1826.9	1827.5	Medium bed, massive, pyroxenite speckled AS.			
1827.5	1829.2	Very thin bedded-laminated-thinly laminated SA-AS. (one 2" bed within this section) Similar in character to the Concentrator Hill horizon but with considerably less siltstone, could be included in the GSH section as representing a part of the same depositional process.			
1829.2	1834.0	Thick bedded-medium bedded sediments, SA-AS. Few vague laminations.			
1834.0	1842.0	Medium bedded-thin bedded-very thin bedded-laminated sediments, some thin beds are finely laminated with pyroxenite common in laminations. Cross bedding noted.			
1842.0	1857.5	Thick bedded sediment A-SA-AS, graded beds. Some fine clasts noted. Narrow thin bedded to very thin bedded zones at 1843.5' (.4') and 1853' (.5').			
1857.5	1867.0	Thin bedded-very thin bedded sediment, A-SA-AS. Some beds finely laminated. Bdg. 72° to core.			
1867.0	1872.0	Medium-thin bedded sediments, A-SA-AS, graded, some irregular contacts.			
1872.0	1886.0	Thin bedded-very thin bedded-laminated sediments. Alternating dark and light coloured sediment with speckled pyroxenite, most common in darker beds.			



Diamond Drill Geological Log

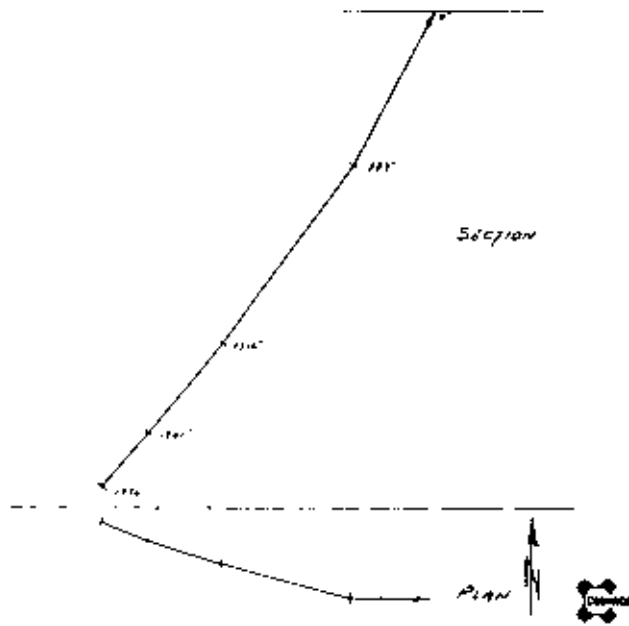


Objective:		Sampled:		AS Scale	
Logged By: A.S. Kagan		Date:		Color Phot & Dip	
Block:		Composies:		Core Cresses & Arth.	
From	To	Descr:	Reasch:	App. Bear:	App. Dip:
1886	01908.0	Medium bedded-thin bedded sediment, occasional light grey, very thin bed with abrupt contacts. Grading indicated, pyrochloite speckled throughout most of the darker sediment.			
1908	01920.0	Thick bedded to medium bedded sediment. A-SA-AS-S. Graded beds.			
1920	01929.0	Medium bedded sediment. A-SA-AS. Occasional very thin, light grey sediment bed.			
1929	01936.0	Medium bedded-thin bedded-very thin bedded sediment. A-SA-AS. Typical fourwall type of alternating dark to light coloured thin to laminated bedding. At 1,933.5' is the base of a graded bed .7' thick with well sorted medium to fine quartz grains for .5' from the base. Some cross bedding indicated. Bdd. 70° to core.			
END OF HOLE.					
NOTE: A noticeable hangingwall stratigraphic feature is the occurrence of finely laminated, calcareous beds occurring commonly in the thin bedded to laminated sections of the sediment. The carbonate material is from extremely fine to fine granular in texture and up to 25% of some beds. See noted to effervesce with the application of 10% HCl.					
LATITUDE		702.945			
DEPARTURE		21,875.45F			
ELEVATION		3,633.02			
DIP		-63°			
		Core Size		10Q	
		Hole No.		5422	
		Page		20	
* casing remains in hole, capped.					

<u>RDG. SEQUENCE</u>	<u>FOOTAGE</u>	<u>DIP</u>	<u>AZIMUTH</u>
1	1166'	-54°	264° + 22° = 286°
2	1466'	-51.5°	266° + 22° = 288°
3	1936'	-50°	270° + 22° = 292°

EXTRAPOLATION

<u>FOOTAGE</u>	<u>DIP</u>	<u>AZIMUTH</u>	<u>H.C.</u>	<u>V.C.</u>
0-583'	-63°	270°	264.68'	519.46'
583'-1316'	-54°	286°	430.85'	593.01'
1316'-1701'	-51.5°	288°	239.66'	301.29'
1701'-1936'	-50°	292°	<u>151.05'</u>	<u>180.02'</u>
		<u>TOTALS</u>	<u>1086.24'</u>	<u>1593.78'</u>



Drawn by <i>ASWayer</i>		Traced by:		<p><i>SPERRY SUN SINGLE SHOT SURVEY</i></p> <p><i>D.D. 6422</i></p>
Revised by	Date	Revised by	Date	
Scale: <i>1" = 400'</i>		Date: <i>January 178</i>		Plate:

COMINCO LTD.

SULLIVAN MINE

COST SUMMARY

KIMBERLEY, B.C.

DDCH #6422 - MED. 7. GROUP

Footage:

0 to 709	Invoice #4160C	\$12,971.00	
709 to 1452	Invoice #4169C	14,569.00	
1452 to 1936	Invoice #4177C	10,334.00	\$37,874.00

Hourly Charges:

Invoice 4160C	\$ 1,015.00	
Invoice 4169C	1,475.00	
Invoice 4177C	3,827.00	\$ 6,317.00

Materials:

Invoice 4160C	HW Shoe	+ 10% = 165.00	
Invoice 4177C	1 HQ Bit, 15 HW Casing	+ 10% = 1,166.41	\$ 1,331.41

Drilling Mud Supplies:

Prorated from attached invoices	\$ 6,551.38
---------------------------------	-------------

Core Boxes:

98 Boxes @ 3.10 = 303.80 + 7% (\$21.27) = 325.07	
Freight 98 x 11.2 ÷ 100 x 6.20 = 68.05 = 393.12 + 10% O/H	\$ 432.43

Water Haul:

Sunrise Exc. Ltd. 107,000 gallons of water	\$ 2,284.40
--	-------------

Cominco Charges:

Equipment rental for rehabilitating existing road, site and sump preparation, set up and tear down.	\$ 1,092.00
Geology supervision and truck rental at \$1.50/ft. drilled	2,904.00
Core storage facility 1977 cost = \$0.15/foot of core (1936'-18)	288.00

Original Mob/Demob:

Prorate @ \$.296/foot drilled	\$ 573.00
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TOTAL COST	\$59,647.62
------------	-------------

Tonto Drilling Company
1215 West 7th Avenue
VANCOUVER, B.C. V6H 1B7

ACCOUNT WITH

Cominco Ltd.
P.O. Box 2000
Kimberley, B.C.
V1A 2G8

CONTRACT NO. 287
INVOICE NO. 5030M
DATE October 19, 1977
TO

PROPERTY Sullivan Mine PO S12515R

TO ADJUST PREVIOUS INVOICES AS PER THE FOLLOWING:

Invoice No. 4200C

Charge	592' x .85 =	503.20		
Credit	7 1/2 hrs. x 50.00 =	(375.00)	Total	128.20 ✓

Invoice No. 4188C

Charge	725' x .85 =	616.25		616.25 ✓
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Invoice No. 4177C

Charge	576' x .85 =	489.60		489.60
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Invoice No. 4177C

Credit	23/08/77 hole no. 6418 12 hrs. extra labour @ \$18.50/hr.			<u>(222.00)</u>
				<u>\$ 1,012.05</u> ✓

*This invoice
finalizes all corrections
to the end of TD 6423*

KAMLOOPS
 TELEPHONE 374-1152
 TELEFAX 0488154

THE TONTO GROUP OF COMPANIES
 TONTO DRILLING COMPANY
 1215 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

COMINCO
 AUG 16 1977
 PURCHASE ORDER

ACCOUNT WITH

COMINCO LTD.
 P. O. BOX 2000
 KIMBERLEY, B. C.
 VIA 2G3

CONTRACT NO. 287
 INVOICE NO. 4160C
 DATE 12/08/77

PROPERTY COMINCO - SULLIVAN MINE PO 312515R 16/07/77 TO 31/07/77

FOOTAGE DRILLED

RIG#	HOLE	SIZE	FROM	TO	ANGLE	RATE	TOTAL
CP51	6418	424.00 FEET HQ	✓ 2576.00	3000.00		25.00	10600.00
CP51	6418	244.00 FEET HQ	3000.00	3244.00	✓	28.00	6832.00
							<u>17432.00</u>
44-4	6421	286.00 FEET HQ	✓ 214.00	500.00		18.00	5148.00
44-4	6421	102.00 FEET HQ	500.00	602.00	✓	19.00	1938.00
							<u>7086.00</u>
4-4	6422	18.00 FEET HW	✓ .00	18.00		18.00	324.00
4-4	6422	482.00 FEET HQ	18.00	500.00		18.00	8676.00
44-4	6422	209.00 FEET HQ	500.00	709.00	✓	19.00	3971.00
							<u>12971.00</u>

TOTAL

O. B. FOOTAGE 18.00
 CORED FOOTAGE 1747.00
 TOTAL FOOTAGE 1765.00

That party is correct.

ACCOUNT WITH

COMINCO LTD.
P. O. BOX 2000
KIMBERLEY, B. C.
V1A 2G3

CONTRACT NO. 287
INVOICE NO. 4160C
DATE 12/08/77

PROPERTY COMINCO - SULLIVAN MINE PO S12515R 16/07/77 TO 31/07/77

HOURLY CHARGES

25/07/77	6418	✓ 1.00 HOURS	REAMING	50.00	50.00
29/07/77	6418	✓ 1.00 HOURS	REAMING	50.00	50.00
30/07/77	6418	✓ 1.00 HOURS	CONDITION HOLE	50.00	50.00
31/07/77	6418	✓ 2.00 HOURS	CONDITION HOLE	50.00	100.00
10/07/77	6421	✓ 1.00 HOURS	CONDITION HOLE	50.00	50.00
20/07/77	6422	✓ 10.00 HOURS	MOVING (NOB/DEMOB)	40.00	400.00
20/07/77	6422	✓ 8.00 HOURS	MOVING (NOB/DEMOB)	40.00	240.00
20/07/77	6422	✓ 2.00 HOURS	SETTING CASING	50.00	100.00
23/07/77	6422	✓ 3.00 HOURS	SETTING CASING	50.00	150.00
23/07/77	6422	✓ 1.50 HOURS	REAMING	50.00	75.00
30 7	6422	1.00 hr	conditioning hole	50	50.00 ¹⁰¹⁵
					<u>1265.00</u>

MUD CIRCULATION PRODUCTS

✓ 251.00	BBS.	QUICK-GEL	5.19	1302.69
12500.00	LBS	FREIGHT PER 100 LBS	1.16	145.58
✓ 192.00	BBS.	QUICK-TROL	6.85	1315.20
384.00	LBS	FREIGHT PER 100 LBS	1.16	4.45
✓ 393.00	GALS	DIESEL	.60	235.80
3930.00	LBS	FREIGHT PER 100 LBS	1.16	45.59
✓ 180.00	GALS	KUTWELL	1.35	243.00
1800.00	LBS	FREIGHT PER 100 LBS	1.16	20.88
✓ 5.00	BBS.	ASBESTOS	19.66	98.30
500.00	LBS	FREIGHT PER 100 LBS	1.16	5.80
✓ 6.00	BBS.	SLUGGETS	21.23	127.38
300.00	LBS	FREIGHT PER 100 LBS	1.16	3.48
PLUS 10.00	%			354.82
				<u>3902.97</u>

MATERIALS CONSUMED

21/07/77	6420	✓ 1.00	10" HW CASING	117.97	117.97
21/07/77	6420	✓ 3.00	2" HW CASING	34.29	102.87
21/07/77	6421	✓ 1.00	5" HW CASING	66.29	66.29
26/07/77	6422	✓ 1.00	HW SHOE #1369	150.00	150.00
PLUS 10.00	%				43.71
					<u>480.84</u>

OTHER CHARGES

4149C	✓ 12.00	BAGS	SLUGGETS ON PREVIOUS INVOICE - 4149C	21.23	254.76
PLUS 10.00	%				25.48
					<u>280.24</u>

KAMLOOPS
TELEPHONE 374-1152
FLEX 0488154

THE TONTO GROUP OF COMPANIES

TONTO DRILLING COMPANY
1215 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

ACCOUNT WITH

COMINCO LTD.
P. O. BOX 2000
KIMBERLEY, B. C.
V1A 2G3

CONTRACT NO. 287
INVOICE NO. 4160C
DATE 12/08/77

PROPERTY COMINCO - SULLIVAN NINE PG S12G1GR 16/07/77 TO 31/07/77

THIRD PARTY CHARGES

E. G. WHALLEY & SON LTD.		
8047	<i>200 boxes</i>	663.40
MILLAR & BROWN		
103368872		124.62
103376459		40.30
PLUS 10.00 %		82.83

911.15

TOTAL AMOUNT OF INVOICE

44329.20

TONTO DRILLING COMPANY
1210 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

300 WITH

INCO LTD.
BOX 2000
BERLEY, B.C.
268

CONTRACT NO. 237
INVOICE NO. 41690
DATE 15/08/77
TO 15/08/77

PROPERTY CONTINCO - SULLIVAN MINE FO 813013A 31/08/77

FOOTAGE DRILLED

#	HOLE	SIZE	DEPTH	FOOTAGE	RATE	TOTAL
01	6418	208.00 FEET HQ	8218.00	3000.00	26.00 ✓	7168.00
01	6418	500.00 FEET HQ	3000.00	4000.00	31.00 ✓	15500.00
01	6418	258.00 FEET HQ	4000.00	4206.00	33.00 ✓	8960.00
						<u>31628.00</u>
4	6422	291.00 FEET HQ	1000.00	1000.00	15.00 ✓	5519.00
4	6422	402.00 FEET HQ	1000.00	1452.00	20.00 ✓	7040.00
TOTAL						<u>14569.00</u> 46197.00 ✓

40.00 FEET HQ 1.00
CONC'D FOOTAGE 1733.00
TOTAL FOOTAGE 1743.00

TONTO DRILLING COMPANY
1215 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

WITH

ICO LTD.
BOX 2000
RILEY, B. C.
63

CONTRACT NO. 287
INVOICE NO. 41490
DATE 15/08/77
TO 15/08/77

TY COMINCO - SULLIVAN MINE PO 812513R 01/08/77

HOURLY CHARGES

/77 6418	1.00 HOURS	CONDITION HOLE	✓	30.00	50.00
/77 6418	2.00 HOURS	CONDITION HOLE	✓	30.00	100.00
/77 6418	2.00 HOURS	REPAIRING	✓	30.00	100.00
/77 6418	1.00 HOURS	CONDITION HOLE	✓	30.00	50.00
/77 6418	1.00 HOURS	REPAIRING		30.00	50.00
/77 6418	1.00 HOURS	CONDITION HOLE		30.00	50.00
/77 6418	1.25 HOURS	REPAIRING		30.00	62.50
/77 6418	1.50 HOURS	TESTING/LOG/SURVEY		30.00	75.00
/77 6418	1.50 HOURS	CONDITION HOLE	✓	30.00	75.00
/77 6422	✓	0.50 HOURS	REPAIRING	30.00	25.00
/77 6422	✓	3.00 HOURS	RECOVER EQUIP/FISHING	30.00	150.00
/77 6422	✓	3.00 HOURS	RECOVER EQUIP/FISHING	30.00	250.00
/77 6422	✓	1.00 HOURS	CONDITION HOLE	30.00	50.00
/77 6422	✓	2.00 HOURS	CONDITION HOLE	30.00	125.00
/77 6422	✓	3.00 HOURS	REPAIRING	30.00	150.00
/77 6422	✓	1.50 HOURS	TESTING/LOG/SURVEY	30.00	75.00
/77 6422	✓	4.00 HOURS	CONDITION HOLE	30.00	200.00
/77 6422	✓	3.00 HOURS	REPAIRING	30.00	175.00
/77 6422	✓	1.50 HOURS	CONDITION HOLE	30.00	75.00
/77 6422	✓	1.00 HOURS	CONDITION HOLE	30.00	50.00
/77 6422	✓	1.00 HOURS	CONDITION HOLE	30.00	50.00
/77 6422	✓	2.00 HOURS	REPAIRING	30.00	100.00

512.50

1475.00

2087.50

MUD CIRCULATION PRODUCTS

✓	318.00	BOG.	QUICK-DEL	0.19	2688.42
	20900.00	LBS	FREIGHT PER 100 LBS	1.16	300.44
✓	962.00	BOG.	QUICK-TRUL	0.85	3164.70
	724.00	LBS	FREIGHT PER 100 LBS	1.16	10.72
✓	1.00	BOG.	FIBERTEA	13.64	13.64
	40.00	LBS	FREIGHT PER 100 LBS	1.16	.46
✓	1.00	BOG.	KWIK SEAL	28.41	28.41
	40.00	LBS	FREIGHT PER 100 LBS	1.16	.46
✓	762.00	GALS	DIESEL	.60	457.20
	7620.00	LBS	FREIGHT PER 100 LBS	1.16	88.39
✓	225.00	GALS	KUTWELL	1.35	303.75
	2250.00	LBS	FREIGHT PER 100 LBS	1.16	26.10
✓	3.00	GAL	TORQUE TRIP	11.93	39.65
	30.00	LBS	FREIGHT PER 100 LBS	1.16	.38
✓	2.00	BOG.	ASBESTOS	19.66	39.32
	200.00	LBS	FREIGHT PER 100 LBS	1.16	2.32
✓	3.00	BOG.	SLUGGETS	21.23	63.69
	100.00	LBS	FREIGHT PER 100 LBS	1.16	1.74
FLUG	10.00	2.			725.00

7974.99

OTHER CHARGES

3 PTY

1.00

RE INV. NO. 41490 14.88
TO CHARGE 10% ON 3RD PTY CHGS

14.88 ✓

TONTO DRILLING COMPANY
1215 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

WITH

400 LTD.
BOX 2000
SERLEY, B. C.
V6G 2G3

CONTRACT NO. 237

INVOICE NO. 41690

DATE 15/08/77

RTY CONINGO - SULLIVAN MINE PO S12513R

01/08/77

TO 15/08/77

HOURLY

2.00 PER HR	TO ADJUST INV. 41690	50.00	100.00 ✓
	2 HRS TESTING - 04/08/77		
1.00 PER HR	TO ADJUST INV. 41690	50.00	50.00 ✓
	1 HR CONDITIONING - 30/07/77		

NOB

1.00 PER BAG	RE INV. NO. 41490	20.82	20.82- ✓
	GR 1 BG ASBESTOS INCL. FRGHT		

144.06 ✓

THIRD PARTY CHARGES

MILNER & BROWN LTD.
103 378-103

E. G. WHALLEY & SON LTD.
8009

JOHN NIELSEN'S WELDING
04/08/77

PLUS 10.00 %

331.98

15.00

68.20 ✓

248.78 ✓

15.00 ✓

26.38 ✓

358.36

TOTAL AMOUNT OF INVOICE

36761.91

10% only based on 2

rdpty invoices

331.98

26.38

6.82

INITIALS AN	EQUIP NO NO D EQUIP	SHIPPER'S BIL NO NO DU COMA DE L'EXP	MONTH MOIS	DAY JOURS	YEAR ANNEE	SHIPPER'S CODE CODE DE L'EXPÉDITEUR	CONSIGNEE CODE CODE DU CONSIGNATAIRE	103 378403
CONNECTING CARRIER - NAME & PRO NO NOM DE CAMIONNEUR INTERMÉDIAIRE ET NO. DU PRO			ADVANCE FRAIS AVANCÉS		REVENUE REVENU		BEYOND FRANS AU-DELA	
RECEIVED FROM - REÇU DE			TRANSFERRED TO - TRANSFÉRÉ À		D-U-N-S 20-095-4717			

RECEIVED AUG 8 1977

CONSIGNEE - CONSIGNATAIRE
TONTO DRILLING LTD
KIMBERLEY BC
 SHIPPER - EXPÉDITEUR

MILLAR & BROWN LTD.

DIRECT WHOLESALE TRANSPORT LIMITED - DIRECT WHOLESALE EXPRESS (OVERSEAS) LIMITED
 DIRECT WHOLESALE TRANSPORT (WESTERN) LIMITED

Remit to *Fabre Remise à*

E.G. WHALLEY & SON LTD
5791 BERESFORD ST
BURNABY BC

MILLAR & BROWN LIMITED

2857 DOUGLAS ROAD
 2024 VANCOUVER BC

NO. PACKS NO. PAQUETS	DESCRIPTION OF ARTICLES AND MARKS DESCRIPTION DES ARTICLES ET MARQUES	WEIGHT POIDS	TAXES TAXES	AMOUNT MONTANT	PAID PAIÉ
20	200 BOLS CORE - BOXES	1100		620 68.20 PPD	
CHGE TONTO DRILLING LTD PAYABLE 1215 W 7TH AVE VANCOUVER BC PAYABLE DANS LES 7 JOURS					
ENTERED AUG 24 1977 <i>815 000 187</i>					

PLEASE RETURN DUPLICATE WITH YOUR PAYMENT
 S'IL VOUS PLAÎT RETOURNER DUPLICATA AVEC VOTRE PAIEMENT

4 ORIGINAL INVOICE / FACTURE ORIGINALE

C.O.D. COLLECTIONS MUST BE CASH OR MARKED CHECKS.
 LES LIVRAISONS C.O.D. SONT PAYABLES COMPTANT OU PAR CHÈQUE VISE

TONTO DRILLING COMPANY
1215 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

ACCOUNT WITH

COMINCO LTD.
P. O. BOX 2000
KIMBERLEY, B. C.
V1A 2G3

CONTRACT NO. 287

INVOICE NO. 4177C

DATE 31/08/77

PROPERTY COMINCO - SULLIVAN MINE FO S1251GR 16/08/77 TO 31/08/77

FOOTAGE DRILLED

RIG#	HOLE	SIZE	FROM	TO	ANGLE RATE	TOTAL
CP501	6418	244.00 FEET HQ	4256.00	4500.00	35.00 ✓	<u>8540.00</u>
44-4	6422	48.00 FEET HQ	1452.00	1500.00	20.00 ✓	960.00
44-4	6422	436.00 FEET HQ	1500.00	1936.00	21.50 ✓	<u>9374.00</u>
44-4	6423	32.00 FEET HW	.00	32.00	18.00 ✓	<u>576.00</u>
TOTAL						19450.
O. B. FOOTAGE			32.00			
CORED FOOTAGE			728.00			
TOTAL FOOTAGE			760.00			

ACCOUNT WITH

COMINCO LTD.
P.O. BOX 2000
IMBERLEY, B.C.
1A 2G3

CONTRACT NO. 287
INVOICE NO. 4177C
DATE 31/08/77

PARTY COMINCO - SULLIVAN MINE PO S12515R 16/08/77 TO 31/08/77

HOURLY CHARGES

6/08/77	6418	✓	1.50 HOURS	TESTING/LOG/SURVEY	✓	50.00	75.00
9/08/77	6418	✓	1.50 HOURS	TESTING/LOG/SURVEY		50.00	75.00
0/08/77	6418	✓	1.00 HOURS	TESTING/LOG/SURVEY		50.00	50.00
0/08/77	6418	✓	4.00 HOURS	MOVING (MOB/DEMOB)		40.00	160.00
1/08/77	6418	✓	12.00 HOURS	MOVING (MOB/DEMOB)		40.00	480.00
1/08/77	6418	✓	24.00 HOURS	EXTRA LABOUR		18.50	444.00
2/08/77	6418	✓	8.00 HOURS	MOVING (MOB/DEMOB)		40.00	320.00
2/08/77	6418	✓	16.00 HOURS	EXTRA LABOUR		18.50	296.00
2/08/77	6418	✓	12.00 HOURS	EXTRA LABOUR	*	18.50	222.00
6/08/77	6422	✓	1.50 HOURS	TESTING/LOG/SURVEY		50.00	75.00
0/08/77	6422	✓	1.50 HOURS	RECOVER EQUIP/FISHING		50.00	75.00
0/08/77	6422	✓	1.00 HOURS	CONDITION HOLE		50.00	50.00
0/08/77	6422	✓	1.00 HOURS	WAITING TIME		50.00	50.00
1/08/77	6422	✓	2.00 HOURS	RECOVER EQUIP/FISHING		50.00	100.00
1/08/77	6422	✓	1.00 HOURS	CONDITION HOLE		50.00	50.00
2/08/77	6422	✓	12.00 HOURS	TRIPPING RODS		50.00	600.00
3/08/77	6422	✓	1.00 HOURS	CONDITION HOLE		50.00	50.00
3/08/77	6422	✓	2.00 HOURS	WAITING TIME		50.00	100.00
4/08/77	6422	✓	11.50 HOURS	TRIPPING RODS		50.00	575.00
5/08/77	6422	✓	3.00 HOURS	DRILLING - CAVE/SAND		50.00	150.00
5/08/77	6422	✓	7.00 HOURS	TRIPPING RODS		50.00	350.00
6/08/77	6422	✓	3.00 HOURS	DRILLING - CAVE/SAND		50.00	150.00
6/08/77	6422	✓	1.00 HOURS	CONDITION HOLE		50.00	50.00
7/08/77	6422	✓	2.00 HOURS	WAITING TIME		50.00	100.00
8/08/77	6422	✓	3.50 HOURS	TESTING/LOG/SURVEY		50.00	175.00
8/08/77	6422	✓	7.00 HOURS	MOVING (MOB/DEMOB)		40.00	280.00
9/08/77	6422	✓	11.00 HOURS	MOVING (MOB/DEMOB)		40.00	440.00
9/08/77	6422	✓	22.00 HOURS	EXTRA LABOUR		18.50	407.00
3/77	6423	✓	7.00 HOURS	MOVING (MOB/DEMOB)		40.00	280.00
1/08/77	6423	✓	4.00 HOURS	SETTING CASING		50.00	200.00
1/08/77	6423	✓	2.00 HOURS	REAMING		50.00	100.00

6529.00

MUD CIRCULATION PRODUCTS

315.00	BGS.	QUICK-GEL	5.19	1634.85
15750.00	LBS	FREIGHT PER 100 LBS	1.16	182.70
315.00	BGS.	QUICK-TROL	6.85	2157.75
630.00	LBS	FREIGHT PER 100 LBS	1.16	7.31
437.00	GALS	DIESEL	.60	262.20
4370.00	LBS	FREIGHT PER 100 LBS	1.16	50.69
332.00	GALS	KUTWELL	1.35	448.20
3320.00	LBS	FREIGHT PER 100 LBS	1.16	38.51
PLUS	10.00	%		478.22

5260.43

MATERIALS CONSUMED

9/08/77	6418	✓	11.00	10 FT. LENGTH HW CASING	117.97	1297.67
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COPIES
NO 374-1188
9488188

THE TONTO GROUP OF COMPANIES
TONTO DRILLING COMPANY
1215 WEST 7TH AVENUE

VANCOUVER, B.C. V6H 1B7

ACCOUNT WITH

COMINCO LTD.
P. O. BOX 2000
KIMBERLEY, B. C.
V1A 2G3

CONTRACT NO. 287
INVOICE NO. 4177C
DATE 31/08/77

PROPERTY	COMINCO - SULLIVAN MINE FO S12515R	16/08/77	TO	31/08/77
19/08/77 6418 ✓	2.00 5 FT. LENGTH HW CASING		66.29	132.58
19/08/77 6418 ✓	2.00 2 FT. LENGTH HW CASING		34.29	68.58
19/08/77 6418 ✓	1.00 HW SHOE S/N 1321		160.50	160.50
24/08/77 6422 ✓	1.00 HQ BIT S/N 40518		876.11	876.11
30/08/77 6423 ✓	1.00 HW CASING 10 FT		117.97	117.97
30/08/77 6423 ✓	1.00 HW CASING 5 FT.		66.29	66.29
	PLUS 10.00 %			271.97 106
				1166.41
				2991.67

OTHER CHARGES

3 PTY	1.00	TO CHARGE 10% ON THIRD PARTY	6.82	6.82 ✓
CREDIT	1.00 HR	CREDIT RE INVOICE 4169C 1 HR. REAMING	50.00	50.00- ✓
	1.00 HR	CREDIT RE INVOICE 4169C 1 HR CONDITIONING	50.00	50.00- ✓
				✓ 93.18

TOTAL AMOUNT OF INVOICE 34137.92

SHIPPED TO

ADDRESS Meadowbank Dr. Stone Co

TERMS
FORM

INVOICE

30/07	2000 Water + pump	2	19.50	39.00
31/07	2000 ✓	1	19.50	39.00
01/08	1000 ✓	1	19.50	19.50
04/08	1000 ✓	1	19.50	19.50
13/08	1000 ✓	1	19.50	19.50
21/08	1000 ✓	1	19.50	19.50
05/08	1000 ✓	1	19.50	19.50
16/08	2000 ✓	2	19.50	39.00
07/08	5000 ✓	3	19.50	71.50
08/08	4000 ✓	4	19.50	78.00
				290.00

REG FORM 2532

OLD TO

COMINGO # 6422

CUSTOMER'S ORDER
12792R
SALESMAN
TERMS
FORM

SHIPPED TO

ADDRESS Meadowbank DRILL SITE

INVOICE

20/07	70450 LEAD TANK - CHINA	1.5	25.00	37.50
20/07	MUVE WATER STORAGE TANK TO SITE	1.0	30.00	30.00
20/07	3 MEN ASSIST UNLOADING TANK 3x 15 x 7.00	3	10.50	31.50
21/07	6 IN POLD TRUCK SET UP TANK	2	26.00	52.00
21/07	2 MEN PREPARE LEAD SITE 2x 2 x 7.00	2	14.00	28.00
21/07	1000 GAL WATER + PUMP	1.0	19.00	19.00
21/07	SET UP PUMP - PUMP - FILTER UNIT 2x 1.6 x 7.00	2	11.20	22.40
				220.40

SUNRISE EXCAVATING LTD.
BOX 214
KIMBERLEY, B.C. V1A 2Y6

SOLD TO

COMINGO # 6422

TRUCK NUMBER	49465
DATE	
CUSTOMER'S ORDER	12792R
SALESMAN	
TERMS	
FORM	

SHIPPED TO

ADDRESS Meadowbank DRILL SITE

INVOICE

1000 GAL LEAD - 18" Pump 1.50 LEAD				
22/07	2000 GAL WATER + PUMP	2	19.50	39.00
22/07	2000 GAL WATER + PUMP	2	19.50	39.00
23/07	✓ ✓	2	19.50	39.00
24/07	✓ ✓	2	19.50	39.00
25/07	✓ ✓	2	19.50	39.00
26/07	1000 ✓	1	19.50	19.50
25/07	2000 SPRAYED ON ROAD	2	18.00	36.00
27/07	1000 GAL WATER + PUMP	1	19.50	19.50
28/07	2000 GAL WATER + PUMP	1	19.50	39.00
29/07	2000 ✓	1	19.50	39.00

REG FORM 2532

Payment Aug 17/77

SOLD TO

Common
6422

SHIPPED TO

ADDRESS Meadowsbrook Drill Site

DATE
NO. 312957R
TERMS

INVOICE

09/08	1000	6725	water with pump	1.0	19.50	19.50
10/08	1000	✓	✓	1.0	19.50	19.50
11/08	6000	✓	✓	6.0	19.50	117.00
12/08	7000	✓	✓	7.0	19.50	136.50
13/08	2000	✓	✓	2.0	19.50	39.00
14/08	2000	✓	✓	2.0	19.50	39.00
15/08	3000	✓	✓	3.0	19.50	58.50
16/08	1000	✓	✓	1.0	19.50	19.50
17/08	1000	✓	✓	1.0	19.50	19.50
18/08	4000	✓	✓	4.0	19.50	78.00
						546.00

REG FORM - 7432

SHIPPED TO

ADDRESS Meadowsbrook Drill Site

NO. 312957R
TERMS

INVOICE

19/08	5000	6725	water with pump	5.0	19.50	97.50
20/08	1000	6725	water with pump	1.0	19.50	19.50
21/08	3	6725	water with pump	3.0	19.50	58.50
24/08	1	6725	water with pump	1.0	19.50	19.50
23/08	7	6725	water with pump	7.0	19.50	136.50
24/08	4	6725	water with pump	4.0	19.50	78.00
25/08	4	6725	water with pump	4.0	19.50	78.00
26/08	2	6725	water with pump (DOW)	2.0	19.50	39.00
26/08	5000	6725	water with pump (DOW)	5.0	19.50	97.50
27/08	7000	6725	water with pump (DOW)	7.0	19.50	136.50
27/08	1000	6725	water with pump	1.0	19.50	19.50
			END OF DRILLING - @ MEADOWSBROOK			780.00

REG FORM - 7431

SITE #1

SHIPPED TO

ADDRESS Drill Hole # 6423

TERMS
F.O.B.

INVOICE

Moving from old well 560 Meadowsbrook to new well						
highway to new site						
29/08	TRUCK + TRAILER	move tank		4.0	35.00	80.00
29/08	2 MEN	@ 4.5 hr	assist in moving tank - move new site setup	7.5	8.00	60.00
29/08	COMING	DRILL HOLE TANK		1/2	2/2	
						140.00

REG FORM - 7431