LOG NO: JUN 0 1 1992 RD.
ACTION:
FILE NO:

ASSESSMENT REPORT

on the

1991 DIAMOND DRILLING PROGRAM

Clisbako A to E Groups
(Clisbako 1 to 10, Clisbako 13 to 20 inclusive)

CARIBOO MINING DIVISION

NTS 93C/9E, 16E 93B/12W, 13W

Lat 52°43'N Long 124°03'W

Owner and Operator:

Minnova Inc.
3-311 Water Street.
Vancouver, B.C.
V6B 1B8

GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,339

Dave Heberlein.
May, 1992.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES.

1. INTRODUCTION

1.1 General:

This report documents the results of a 19 hole, 3023.7m diamond drilling program carried out on the Clisbako property between August 12th and September 9th, 1991. The program tested three of the five known occurrences of epithermal style alteration on the property. Objectives of the drilling were to define the structural controls and geology of the alteration zones and to test for economic mineralization.

1.2 Location and Access (Fig. 1):

The Property is located in central British Columbia about 105km west-southwest of the town of Quesnel and approximately 40km southwest of the village of Nazko. It is centred at 52°43′ North and 124°03′ West.

1.3 Physiography and Vegetation:

The claims form an irregular rectangular block which covers an area of close to 10,000 hectares. East and northeast sides of the claim block cover low lying swampy meadow lands that form the headwaters of the Clisbako River system. Central, south and western parts of the property are hilly with relief in the order of 250m and maximum elevations reaching 1675m at Mt. Dent. The hills form an east west divide between the Clisbako drainage to the north and the Clusko River drainage to the south.

In the northeast and west parts of the property the ground is densely tree covered except where clear cut by recent logging. Timber consists mostly jack pine with local stands of spruce and fir along drainages. Swampy meadow lands to the east and north are

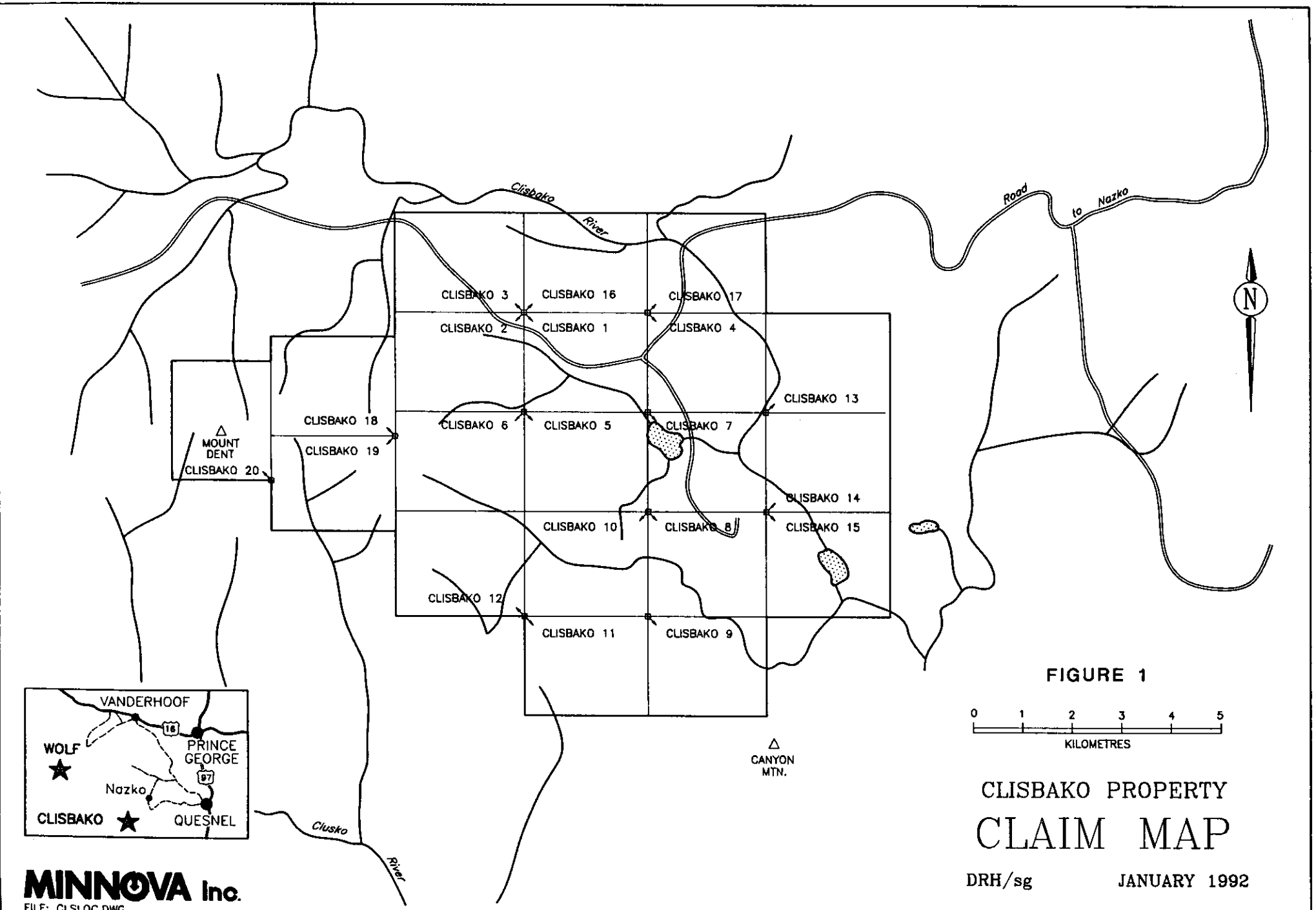


FIGURE 1

CLISBAKO PROPERTY

CLAIM MAP

DRH/sg JANUARY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG

sparsely treed. Much of the central and southern parts of the property have been burned by several large forest fires in the last 50 or 60 years.

Outcrop is rare and is usually found in deeply incised creek channels and logging road cuts. Most of the property is mantled by glacial till and stratified glacial outwash deposits. Overburden thickness is highly variable. It ranges from less than a metre to over 45m.

1.4 History:

There is no record or evidence of mineral exploration or mining activity on the Clisbako property prior to 1990. Several major companies have carried out regional reconnaissance programs for uranium, oil and gas and epithermal Au-Ag in the region. Most of these, however, were carried out to the south or northwest of the claim area.

The closest mineral property to Clisbako is Rio Algom's OBOY prospect. This is located about 4km northwest of the Clisbako 3 claim. Rio staked this property in the early 1980's and subsequently carried out geological, geochemical and geophysical surveys and a 3000' diamond drilling program. Their target was a weak zone of quartz stockworking with anomalous Au values up to 300 ppb. The property is not presently active.

Attention was focused on the area of the current Clisbako claims when zones or argillic alteration were noted during a regional reconnaissance program by Eighty Eight Resources Ltd. in the summer of 1990. Subsequent follow-up prospecting identified areas of glacial outwash deposits containing abundant epithermal quartz float. This float was eventually traced west and south to its sources and the main outcrops of altered rock were discovered.

Further work that year concentrated on defining the extents of the altered zones by surface mapping, rock and soil geochemistry.

Minnova optioned the property in the spring of 1991 and carried out an extensive program of trenching and detailed mapping and rock sampling on the North, Central, Discovery and South Zones. This program culminated in a 19 hole 3023.7m diamond drilling program in the fall of 1991. Results of this program are the subject of this assessment report.

2.0 CLAIMS

The Clisbako property consists of twenty MGS mineral claims totalling an area of 10,000 hectares. A list of these claims and their expiry dates is shown below.

Claim	Record No.	Units	Record Date	Expiry* Date
Clisbako 1	10634	20	06-03-90	06-03-96
Clisbako 2	10635	20	06-08-90	06-08-96
Clisbako 3	10636	20	06-05-90	06-05-96
Clisbako 4	10637	20	06-03-90	06-03-96
Clisbako 5	10638	20	06-08-90	06-08-96
Clisbako 6	10639	20	06-08-90	06-08-96
Clisbako 7	10640	20	06-05-90	06-05-96
Clisbako 8	10668	20	06-23-90	06-23-96
Clisbako 9	10669	20	06-26-90	06-26-96
Clisbako 10	10670	20	06-27-90	06-27-96
Clisbako 11	10883	20	09-19-90	09-19-92
Clisbako 12	10913	20	09-20-90	09-20-92
Clisbako 13	10897	20	09-29-90	09-29-94
Clisbako 14	10898	20	09-29-90	09-29-94
Clisbako 15	10899	20	09-29-90	09-29-94
Clisbako 16	11066	20	04-18-91	04-18-96
Clisbako 17	11067	20	04-18-91	04-18-96
Clisbako 18	11068	20	04-23-91	04-23-95
Clisbako 19	11069	20	04-23-91	04-23-95
Clisbako 20	11070	20	04-22-91	04-22-95
		400	Units	

* Assuming acceptance of this assessment report.

To file assessment, the claims are grouped into six groupings called Groups A to F in this report. Details of the groups are shown in Appendix IV.

3. GEOLOGY

The Clisbako claim area is predominantly underlain by a well differentiated sequence of subaerial, basaltic to rhyolitic pyroclastics and flows of probable Eocene age (Ootsa Lake Group equivalent). Remnants of a younger (Oligocene ?) rhyolitic pyroclastic unit unconformably overlie the Eocene volcanics in the east-central part of the property and cover a more extensive area immediately to the south. Flat-lying, red, scoriaceous and black vesicular basalt flows overlie the older felsic units and form a relatively broad, flat terrain to the north and east of the claims.

Extensive normal faulting has affected the volcanic pile resulting in an array of variably tilted blocks. Most structures trend in a north, northeast or northwest direction. The latter sets are responsible for the conspicuous orthogonal drainage patterns in the northeast claim area.

At least three major zones and a number of weaker zones of hydrothermal alteration occur in the eastern half of the property. They are epithermal in nature and characterized by widespread bleaching and argillic alteration of the hosting felsic volcanics. Within the argillic zones, local areas of quartz stockworking, silicification and hydrothermal brecciation are developed. The argillic zones contain on average less than 0.5% sulphide minerals. These are typically pyrite and marcasite. In the silicified zones, the sulphide content reaches up to 5% over narrow widths. Most occurs as fine grained disseminations in the matrices of siliceous hydrothermal breccias.

The alteration zones have a typical epithermal geochemical signature. Anomalous to highly anomalous values for As, Sb, Hg, Mo, Ba, Ag and Au are widespread. No ore grade material has yet been found on the property. Highest Au values obtained from grab samples range up to 3.1 g/t. Silver values in excess of 170 g/t have also been obtained.

Outcrop in the northeast property area is sparse and accounts for less than 4% of the total surface area. Bedrock exposures are mostly confined to the more incised drainage channels and steeper hillsides. Due to their more resistant nature, silicified and veined outcrops form some of the best and most continuous outcrops. For a complete description of the main geological units and details of each altered area, the reader is referred to the geological and geochemical assessment report on the property by Dawson (1991).

4. DIAMOND DRILLING

4.1 Program Summary:

A diamond drilling program consisting of 19 holes, totalling 3023.7 was carried out between August 12th and September 9th, 1991. Drilling was performed by Frontier Drilling Ltd. of Langely, B.C., using a skid-mounted Longyear Super 38 diamond drill and NQ rods. Drill core was logged by D. Heberlein and P. Thiersch at Minnova's core storage facility on the property (Fig. 2).

Drill core was routinely split in 2 metre sections (or less if lithology dictated) and half of the core was shipped to Minen Labs in North Vancouver for geochemical analysis. Gold was determined by fire assay with an AA finish and Ag, As, Bi, Cu, Pb, Zn and Sb by ICP. Mercury was determined by AA using the cold vapour technique.

Drill hole locations are shown in Figure 2 and summarized in the table below. All coordinates are in UTM grid units. Drill logs and analytical results are presented in Appendix 1.

DIAMOND DRILL HOLE LOCATIONS

HOLE	UTM EAST	UTM NORTH	ELEV.	AZM.	DIP	LENGTH
CL-91-01	429363	5841168	1315m	290°	-51°	194.2m
CL-91-02	429482	5841140	1316m	290°	-45°	181.2m
CL-91-03	429482	5841140	1316m	290°	-70°	184.2m
CL-91-04	429637	5841096	1313m	290°	-45°	202.7m
CL-91-05	429463	5841035	1321m	290°	-45°	177.1m
CL-91-06	429344	5841042	1317m	290°	-45°	201.8m
CL-91-07	429874	5840925	1312m	270°	-45°	183.5m
CL-91-08	429683	5841202	1310m	290°	-45°	147.8m
CL-91-09	429403	5841285	1312m	290°	-45°	184.4m
CL-91-10	429564	5841280	1306m	290°	-45°	154.5m
CL-91-11	429591	5841350	1305m	290°	-45°	194.1m
CL-91-12	429436	5841366	1300m	290°	-45°	197.2m
CL-91-13	429932	5839182	1290m	315°	-55°	151.5m
CL-91-14	429805	5839487	1311m	125°	-45°	124.1m
CL-91-15	429805	5839487	1315m	125°	-70°	160.0m
CL-91-16	429760	5839520	1316m	125°	-55°	162.8m
CL-91-17	429832	5839555	1323m	120°	-45°	67.0m
CL-91-18	429833	5839555	1323m	120°	-70°	63.1m
CL-91-19	429782	5839577	1323m	120°	-45°	92.5m
					TOTAL	3,023.7m

4.2 Results:

Results of the drilling program are summarized below.

North Zone:

Drill holes CL-91-1, 2, 3 and 4 were drilled on a section oriented at 315°. They were drilled to test north trending structures observed in surface exposures at the North Zone. Holes 1, 2 and 3 penetrated a relatively flat lying sequence of complexly inter-layered ash flow tuffs, glassy rhyolite flows, crystal tuff and heterolithic tuff breccia. In holes 2 and 3 an intermediate

feldspar-biotite-hornblende porphyry body, interpreted to be a sill, cuts the sequence. This unit is not present in hole 1.

Hole 4 intersected a different stratigraphy consisting of interbedded heterolithic block and tuff breccias and flow banded perlitic rhyolite. A fault is inferred to separate this sequence from that seen in holes 1, 2 and 3.

Rocks in holes 1, 2 and 3 are moderately to strongly clay altered throughout, and contain structurally localized zones of silicification and quartz stockworking. These reach up to 50m in width and contain varying amounts of pyrite and marcasite (trace to 5%). Sulphides are mostly concentrated in irregular, black quartz stringers and in the matrices of narrow breccia veins. Intensely silicified zones are commonly bounded by gougy faults or zones of intense clay alteration.

Strongly altered zones occur in hole 1 between 10.8 and 21.0m and 43.35 and 60.3m. The upper interval is highly anomalous for Ag (to 77.0 ppm) and Hg (to 12,375 ppb) while the lower zone is moderately anomalous for As (to 1842 ppm). Gold values are weakly anomalous throughout the altered zones (to 197 ppb). Similar weakly anomalous values occur in altered zones in holes 2 and 3. In hole 2, strong silicification is present between 78.4 and 124.8m. Gold values in this interval vary between 30 and 90 ppb with single sample highs up to 230 ppb. Arsenic and Hg values are slightly anomalous.

In hole 3, silicification occurs between 19.5 and 82.5m, 129.2 and 131.3m and 171.9 and 180.5m. Precious metal and trace element values are comparable to those in hole 2.

Drill holes CL-91-8, 9 and 10 were collared on a parallel section 150m to the north. Similar lithologies and alteration zones to those in holes 1, 2 and 3 were encountered. Hole 9, in

particular, intersected a wide zone of intensely clay altered, pyritic quartz stockwork from 0.0 to 76.5m. In this interval, Au values are about twice as high as in holes 1 to 4, with an average of 130 ppb. Silver and As are also quite anomalous with averages of 8 ppm and 1,419 ppm respectively.

In hole 10, values are generally weaker than in hole 9 despite intersecting several zones of argillization, silicification and stockworking. The most intense alteration occurs from 53.8 to 60.9m. Here, Au and Ag values are not anomalous, however Hg is strongly elevated (up to 17,000 ppb).

Holes CL-91-11 and 12 were drilled on a parallel section 100m to the north of holes 8, 9 and 10. Again, similar lithologies and alteration zones were encountered. Hole 12 intersected a wide zone of argillic alteration and pyritic quartz stockworking between 127.0 and 171.2m. Similar, but weaker zones are also present higher in the hole, between 99.7 and 106.8m and 123.0m to 127.0m. No significant precious metal values are present, however Au, Ag, As and Hg and geochemically anomalous in the most altered parts.

Holes CL-91-5, 6 and 7 were drilled on a parallel section 100m to the south of holes 1, 2, 3 and 4. Hole 5 intersected an interval of strongly argillized and variably silicified quartz feldspar porphyry. In the most intensely altered areas, the feldspar phenocrysts are completely corroded, leaving numerous open cavities. These frequently are lined with white clay and sometimes contain bladed marcasite crystals and possibly barite. Strongest silicification occurs between 70.6 and 76.0m, 117.5 and 150.0m and 154.3 and 156.0m. None of these zones are particularly anomalous for Au, Ag or trace metals.

A similar sequence to hole 5 occurs in the top 49.0m of hole 6. In addition to being acid leached and variably silicified, a

strong pyrite-quartz-calcite stockwork is present. This alteration is contained in and disrupted by a wide, gougy fault that parallels the hole to a depth of 118.0m. Clasts of amygdaloidal andesite are noted in the fault gouge. From 120.1 to the end of the hole at 201.8m, the sequence consists of interbedded tuff breccia, perlite and flow banded rhyolite; similar to the sequence in holes 4 and 8. No significant anomalies are present in the hole.

Central Zone:

Hole 7 was drilled to test the Central Zone. It penetrated a sequence of interlayered rhyolite breccias, flow banded rhyolite and amygdaloidal andesite flows. The rocks are weakly argillized throughout the hole. A zone of strong argillic (± chlorite) alteration and pyrite veining was intersected between 138.5 and 157.8m. Patchy silicification is present over narrow widths in this section. No significant Au or Ag values were obtained.

South Zone:

At the South Zone, a total of seven holes (CL-91-13 to 19) were drilled. Hole CL-91-13 was drilled to the west beneath the main surface showing. It intersected propylitized sequence of rhyolite breccias and feldspar-quartz porphyry flows and breccias. Alteration was only encountered in the top 12.8m of the hole. Here a zone intense silicification, brecciation and quartz-pyrite stockworking occurs in argillized amgydaloidal andesite. The alteration is sharply truncated by a fault at 12.8m. The silicified zone is moderately to strongly anomalous for As (1,037 ppm), Sb (36 ppm), Ag (4.3 ppm) and Hg (3,120 ppb). Underlying rocks returned only background values for these elements.

Holes CL-91-14, 15 and 16 were drilled as a fence to test the northern extension of the South Zone alteration. All three holes penetrated strongly argillized and quartz-pyrite±calcite

stockworked amygdaloidal andesite overlying propylitized interbedded rhyolite flows and breccias. At the fault contact between these two units a narrow (1.1 to 10m) zone of intensely silicified andesite breccia is present.

In hole 14, strongly developed quartz-pyrite±calcite stockwork zones were intersected between 34.8 and 49.2m, 53.2 and 60.5 and 73.0 to 82.8m. Despite being strongly altered, these zones are not highly anomalous for any of the analysed metals. The most anomalous trace metal is As, which reaches concentrations of 361 ppm. Identical zones in hole 15, also contain anomalous Hg values (to 3,650 ppb). Gold values are only slightly elevated (to 72 ppb) in these holes.

Strong silicification and quartz-pyrite stockworking was intersected between 86.5 and 134.2m in hole 16. Host rocks in this interval are intensely argillized and contain patches and veinlets of chlorite. Above the altered zone, the section consists of complexly interbedded lahar breccias and amygdaloidal andesite flows. These become increasingly argillized and veined towards the silicified zone. Below the alteration zone, interlayered rhyolite breccias and flow banded quartz-feldspar porphyries constitute the section.

CL-91-17, 18 and 19 were drilled on a parallel section 100m to the north of 14, 15 and 16. Hole 17 collared in a quartz-chalcedony-pyrite stringer zone which terminates at a fault at 41.3m. The alteration is hosted by amygdaloidal andesites and andesite breccias identical to those seen in holes 14 and 15. A narrow intensely silicified breccia vein is present at the fault between 39.2 and 40.3m. Below the fault, the hole penetrated a section of rhyolite flows and breccias.

Hole 18, drilled beneath hole 17 encountered an identical sequence. The strongly altered zone is present from 36.6 to 43.5m

with a narrow breccia vein between 41.4 and 43.5m. Weakly anomalous values for Au (to 310 ppb) and Ag (to 3.1 ppm) and moderately anomalous Hg (1,400 ppb) and As (595 ppm) values are present in the silicified zone in hole 17. Values of up to 122 ppb Au, 3.3 ppm Ag, 1,130 ppb Hg and 60 ppm As were returned from the alteration zone in hole 18.

Hole 19 was drilled beneath holes 17 and 18 to test the alteration zone at depth. It penetrated a sequence of unaltered to weakly altered lahar breccias, amygdaloidal andesite and rhyolite breccias. The lahar units correlate well with those present at the top of hole 16. Strong alteration was encountered between 81.7 and 85.6m; at the fault contact between the andesites and the rhyolite breccias. Strong silicification, hydrothermal brecciation and quartz-pyrite stockworking characterize this zone. Once again a narrow breccia vein is present at the fault contact, between 81.9 and 82.8m. No anomalous values were encountered.

5. SUMMARY AND CONCLUSIONS.

Drilling in the North Zone confirmed the presence of several sub-vertical, north trending zones of epithermal-style silicification and quartz-pyrite±calcite stockwork. These zones are hosted by strongly argillized felsic pyroclastics rocks. They have been tested over a strike length of at least 375m by the drilling. The alteration remains open to the north, south and west. On the east side it is bounded by a north trending fault. Geochemically anomalous values for Hg, As, Sb, Ag and Au are associated with the strongest alteration. No ore grade material was found by the drill program.

Drilling at the South Zone defined a narrow silicified zone at a fault contact between an amygdaloidal andesite and lahar unit and a sequence of rhyolite breccias and flows. In the hanging wall (west) of the fault, the country rocks are variably argillized and

stockworked with quartz-pyrite veinlets. The drilling has defined this zone for a strike length of about 100m. No economic values were encountered, however As, Sb, Au, Ag and Hg are locally geochemically anomalous in the most altered zones.

6. REFERENCES.

Dawson, J.M., 1991; Geological and Geochemical Report on the Clisbako Property. Assessment Report.

APPENDIX I
STATEMENT OF COSTS

STATEMENT OF COSTS

DIAMOND DRILLING

Direct Drilling Costs (3023.7m @ $48.58/m) (Frontier Drilling Ltd.).....	$146,902

ANALYTICAL COSTS

Min-En Labs, North Vancouver, B.C: (932 Geochem for Ag, As, Bi, Cu, Pb, Sb, Zn, Au, Hg @ $18.93/sample).....	$ 17,643

PERSONNEL

D. Heberlein - Senior Project Geologist	
16 days @ $250/day.....	$4,000
P. Thiersch - Project Geologist	
28 days @ $160/day.....	$4,480
Greg Duso - Assistant	
28 days @ $115/day.....	$3,220
Lloyd Cornish - Core Splitter	
18 days @ $105/day.....	$1,890
Nancy Kastelein - Cook	
19 days @ $115/day.....	$2,185

LOGISTICS

Vehicles:.....	$1,787
Room and Board: (106 mandays @ $25/day).....	$2,650
Sample Shipment:.....	$243

MISCELLANEOUS COSTS

Report Preparation.....	550
Supplies:.....	$175
Travel Expenses:.....	$1,211
TOTALS	**$186,936**

APPENDIX II
DIAMOND DRILL LOGS AND ANALYTICAL RESULTS

HOLE NUMBER: CL-91-01

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: North Zone

PLOTTING COORDS GRID:
NORTH: 41168.00N
EAST: 9363.00E
ELEV: 1315.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 1315.00

COLLAR DIP: -51° 0' 0"
LENGTH OF THE HOLE: 194.20m
START DEPTH: 0.00m
FINAL DEPTH: 194.20m

COLLAR GRID AZIMUTH: 290° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 13, 1991
DATE COMPLETED: August 14, 1991
DATE LOGGED: August 14, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: Frontier Drilling Ltd.
CASING: 10 ft. left in hole
CORE STORAGE: at camp

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
63.10	-	-50° 0'	ACID	OK	
114.90	-	-50° 0'	ACID	OK	
194.10	-	-54° 0'	ACID	OK	

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 9.10	«CASING»					Casing reamed down to 13.7 m
9.10 TO 10.80	«TILL»					
10.80 TO 28.00	«WEATHERED ZONE»	Colour: pale grey Basalt boulders, some oxidized qtz vein material; a zone of highly broken core made up of rounded qtz vein frags in a matrix of gougy clay; maybe a fault zone; clasts approx. 65%, 2-40 mm; below 14.2 m a pale grey highly argilized felsic volcanic (highly broken) dominates core ┤10.8-11.4├ «bx vn(s)» -med. grey -one or more narrow breccia veins 2-15 mm wall rock clasts ┤11.4-14.8├ «fault gouge» -unlithified fault breccia; consists of angular qtz and volcanic (bleached) clasts in a creamy white clay matrix Fragment supported; clasts range from < 1 mm to 30 mm ┤14.8-19.0├ «FXTF» -total replacement of rock by pale grey clay; some feldspar crystals still visible; these are replaced by medium green clay rock v. soft and crumbles easily ┤19.0-21.0├ «vn Bx» -one wide vein or a zone of smaller veins; difficult to tell; poor recovery - only rounded pebbles recovered; vein consists of grey glossy qtz with 40-60% argillitzed - angular wallrock clasts, clasts are of FXTF ┤21.0-27.4├ «gouge»		Intense argillite alteration - almost complete replacement of host rock; qtz vein frags up to 3.5 cm; converted to gougy zone near surface; maybe a result of weathering -composed of medium grey to white qtz contains angular clasts of completely silicified wall rock material; clasts rimmed by weakly banded qtz; light coloure qtz forms vein margin cl -Jarosite stained ┤14.8-19.0├ «S. Arg» -may be enhanced by near surface weathering -m. arg. of clasts	None visible, but weak limonite and jarosite staining suggests trace amounts ┤10.8-11.4├ «tr. py» -microscopic ┤15.4-15.6├ «pyritic str. -5%» -mod. jarosite staining of argillized clasts; clasts are cut by parallel fine chalcedony microveins prior to brecciation ┤21.0-27.4├ «m - s arg»	2 stages of Alteration 1. argillization and parallel qtz or chal micro veins 2. incorporation into qtz vein bx

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-green grey -a zone of homogeneous gouge - consiting of fine rock fragments in a green clay matrix; clasts comprise 75% of rock - most are < 1 cm; no other textures; large clast of FXFF @ 22.8 m; this block is > 10 cm in length and contains several qtz and chalcedony micro veins			-sparse qtz (vuggy) micro veins	-tr py in <'s
28.00 TO 29.60	«CLAY GOUGE »	Colour: green Massive, green clay zone - strong alteration of FXTF?		«I. arg» -a zone of massive green clay; almost a plastic consistency	-trace to 2% fine d. py ┤29.5-29.6├ « py str. zone - 5%»	
29.60 TO 37.90	«FXTF»	Colour: med. grey Moderately altered feldspar crystal tuff;- most primary textures are obliterated by argillization; some remnant feldspars noted; crude bedding between lapilli bearing and non bearing tuffs e.g. @ 31.1 m; some lapilli are preferentially pyritized ┤32.0-33.6├ «Qz stwk» -brecciated and heal wallrock; qtz stockworking forms networking texture around argillized and pyritized wallrock frags ┤33.6-34.2├ «Micro bx» -weakly pyritized wallrock frags (to 15 mm) make up 80+% of rock; matrix is comprised mostly of clay; clasts of cream coloured of Qz vein material suggest multistage alteration ┤34.2-35.4├ «Jigsaw bx» -angular wall rock frags separated by veins of black to dark grey qtz; veinlets are themselves microbrecciated to a mm scale; some of the larger veins are vuggy ┤35.4-37.91├ «Qz stwk» -see 32.0-33.6 m	45	«m. arg» -w. sil. - patchy qtz veins and jigsaw veins developed from 34.1 and 35.7 m; adjacent rocks weakly sil. and brecciated ┤32.0-33.6├ «m-s sil; m. arg» -qz stockwork vuggy microvein showing fine drusy and comb textures -some veinlets show slight banding in approx 2 bands ┤33.6-34.2├ «m. arg» ┤34.2-35.9├ «m. sil and w. arg of clast s»	«tr - 1 %» -fine py mostly in <'s as patches and selvages; some dusting of lapilli ┤32.0-33.6├ ««1% py» -<1% py as fine disseminations; py forms envelopes around early stringers; these are cut by late white vuggy <'s ┤33.6-34.2├ «1% py» -concentrated in argillized matrix as fine disseminations ┤34.2-35.4├ «tr - 1% as fine diss. in Qz veins»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
37.90 TO 45.35	«FXTF»	Colour: pale grey Grain Size: A highly argillized interval of the FXTF unit; all but a few remnants completely altered to a gougy grey clay; hazy breccia textures noted near top of the interval (37.9-40.5 m); intensity of alteration increases in central part of int.; here rock is reduced to a plastic clay gouge; -possibly a fault ┤37.9-40.5├ «Bx» -yellow clay highlights remnant wall rock frags these are quite large - up to 50 mm and appear to be angular; possibly a primary influence breccia ┤42.6-44.8├ «gouge» -a zone of intense clay gouge; few remnant frags of vein or wall rock; many v. small angular QZ - py frags - maybe vein remnants; clay has a putty like consistency		«X-ARG» A few hairline ch <'s noted in the more competent part of int. -pervasive alteration of clasts by yellow clay; matrix is a mixture of white and dark grey material contains fine disseminated py; yellow clay also forms veinlets that cut the matrix	«tr. diss. py» V. fine grained py cubes widely scattered through interval -possibly some remnant py veinlets	Fault?
45.35 TO 66.80	«DACITE TUFFS AND FLOWS» «MINERALIZED ZONE»	Colour: pale yellow grey A well laminated but unbedded feldspar crystal tuff; laminations are highlighted by a strong parallel microveining along the lam. planes; planes are spaced about 5-15 mm apart; the rock is compsed of 2-5 mm, euhedral KF and plagioclase laths (PF > KF) in a matrix of fine grained, ashy material; unaltered remnants show clear glassy shards - vitric!; the euhedral and randomly oriented feldspars may also indicate a flow rock ┤47.95-49.9├ «sil. bx» -crosscutting zone of brecciation in places appears to be a stockwork of breccia veins in		«s-arg; m-sil» -rock is altered by a reticulate network of condcordant and crosscutting Qz <'s; concordant <'s are spaced approx. 5-15 mm apart - may be following lamination or flow banding in host; around Qz <'s the rock is pervasively argillized (sericitized?) to a yellow colour; these argillic envelopes enclose remnants of weakly altered dacite; feldspars, particularly PF are sericitized to a medium green colour KF is unaffected Later zones of silicified breccia cut the rock; these are healed by Qz containing abundant py ┤47.95-49.9├ «s-sil; m-arg» -breccia matrix is strongly silicified with dark grey Qz; in places vuggy	«3-5% diss py» -py occurs through argillic envelopes as fine diss.; it also is present as selvages and patches in crosscutting Qz vein breccias; in breccia zones py may exceed 5% ┤47.95-49.9├ «py 1-3%» -mostly as remnants and clasts of earlier py veinlets	Note: vein breccia zone younger than py str and reticulate veining

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		others a silica healed breccia; lithic frags are angular and rotated; pyritic veins also fragmented		cavities are abundant; these are lined with small Qz crystals		
		⟨53.1-54.0⟩ «vein bx» -a cross cutting silicified breccia zones; irregular contacts; in places it is parallel to c.a. elsewhere almost perpendicular; textures more chaotic than previous interval; clasts angular and v. poorly sorted; range from 1 mm to > 40 mm		⟨53.1-54.0⟩ «s-sil; w-arg» -clasts are partly silicified in this interval; this overprints the earlier clay alteration; matrix completely replaced by grey, glassy Qz; in places vuggy	⟨53.1-54.0⟩ «1-2% py» -distinctive platy or fibrous forms noted. This may be marcasite; there crystals occur predominantly in the matrix; the dark coloration is caused by finely disseminated "dusty py"	
		⟨58.4-58.9⟩ «Jigsaw bx» -a narrow crosscutting breccia vein; more of a jigsaw breccia than the previous intervals; fragments only separated no rotated	10	⟨58.4-58.9⟩ «m-sil; m-arg»	⟨58.4-58.9⟩ «tr-1% py» -mostly in glassy Qz matrix	
		⟨59.8-60.35⟩ «Vein bx»		⟨59.8-60.35⟩ «w-sil; m-arg» -much less silicified than above examples	⟨59.8-60.35⟩ «1-3% py» -mostly as disseminations and dustings in wallrock clasts	
66.80 TO 69.10	«FAULT»	Colour: yellow, green and maroon As unmineralized fault zone juxtaposing dacitic flow and maroon and green volcaniclastic sediments; contact @ 67.1 m; rock units are highly broken and milled to a gouge		«w-arg» -alteration predates fault		
69.10 TO 72.60	«PERLITE»	Colour: pale green grey Interval has a distinctive web texture of Qz <'s these form rounded patterns reminiscent of perlitic texture in devitrified glassy flow; the unit is shot through with fine, irregular Qz <'s that form the matrix to a breccia; the clasts consist of spherulites (non argillized) and larger angular blocks of perlite; this texture suggests that the protolith was originally a glassy flow		«w-arg; w-m sil» The rock has been weakly argillized to a yellow coloured clay; perlitic fractures have been healed by Qz <'s to give the distinctive web texture, where brecciated, the matrix has been veined by Qz <'s which coalesce to form patches of silicification	«tr. py on <'s»	Odd perlitic texture may indicate a dentrified flow rock - rhyolite?
		⟨71.8-72.2⟩ «fault» -still coherent interval; clasts separated but no rotated; (colour: yellow grey); no healing although some fractures contain yellow clay; no signficant movement likely - just a minor crush zone		-yellow clay veinlets head some fracs in fault zone		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
72.60 TO 77.50	«BRECCIA»	Colour: green A coarse grained breccia composed of subangular clasts up to 10 cm across; a mixture of clasts are present; these include perlite, laminated sediment and dark green, intensely clay altered material, breccia is clast supported; matrix consists of dark green clay; some clasts of fsp phyric dacite also noted		«m to s-arg» -clasts are argillized to a yellow clay; matrix is composed mainly of dark green waxy clay silica veinlets head breccia over narrow intervals	«tr. py»	
77.50 TO 86.90	«PERLITE»	Colour: grey A very similar unit to the previous perlite; this to displays well developed web textures forming rounded spherulites or lithophysae; this is amost certainly a devitrification feature; the concentric fractures are healed by later hairline >'s of grey Qz; not as intense as in the previous interval; alteration balls up to 8 cm across present lower in interval		«w-arg; vw-sil» Rock is weakly altered by pervasive clay; below 78.8 m, the unit contains purplish balls; these appear to be a replacement feature as evidenced by fine concentric zoning and curvilinear contacts; some of the balls have 1-2 mm rims of micro crystalline Qz; balls are themselves cut by late pyritic st.	«tr py - 1%» Late py stringers are prevalent throughout interval; these cut all other textures except for narrow vuggy clear Qz veins which cut them; py abo present as hazy patches of fine crystals in the alteration balls and in the matrix; pyritization of balls suggests that reddish colour is due to hematite	Alteration Balls!!
86.90 TO 87.20	«FAULT»	Gougy brecciated zone	70			
87.20 TO 105.50	«HETEROLITH IC BRECCIA»	Colour: yellow grey An unusual unit composed of blocks of perlite and finely laminated tuffaceous sediment in a sandy tuffaceous matrix; clasts are angular to rounded with a maximum length of 150 mm; intervals within the breccia of bedded ash show a consistent orientation suggesting that they are sedimentary intercalations; some of these have been incorporated into the breccia i.e. rotated Bedding @ Some laminated sections are internally offset by sharp fault planes ┤101.0-102.4├ «FXAT» -a large clast or interval of argillized feldspar crystal ash tuff; unit shows a strong bedding fabric @	48 40	«m to s-arg; w-sil» Matrix is variably altered to a dark green clay; in places the breccia matrix consists of brown hematite; e.g. 91.4 m Clasts of perlite are strongly altered to yellow clay or sericite ┤101.0-102.4├ «s to i-arg» -various brightly coloured clays; matrix is dark green clay - white clasts are yellowish; green clay <'s also cut zone	«tr py» py occurs only in later cross cutting <'s and as sparse diss. ┤101.0-102.4├ «1-3% diss py» coarser clusters and patches of diss. crystals - mostly in tuff clasts e.g. 108 m	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
105.50 TO 110.60	«TUFF BX»	Colour: green Interval of breccia composed of large (20 cm) blocks of highly altered FXTF; the tuff contains flattened slivers of silica which could be vitric shards; round Qz crystals make up about 2% of unit feldspars pseudomorphs are visible in places; breccia is clast supported		«s-i arg» Clasts are strongly argillized to a yellow green colour; superimposed on this is a stockwork of dark green <'s; this mineral could be chlorite Traces of hematite occur with some to the larger veinlets; intensity of veining is approx 4-6/m	«diss. py 3%»	
110.60 TO 117.50	«PERLITE BX»	Colour: green A distinctive unit composed of angular to sub-rounded clasts (2-8 cm) of perlite; typical of web texture indicative of devitrification; rock is clast supported; matrix consists of finer grained breccia and breccia veins; these are intensely chloritized; a fine stockwork of calcite veinlets cuts both the fragments and the matrix ┤110.6-114.5├ «Perlite» -only slightly brecciated contact @ 117.5 m	 45	«s-chl; w-arg» Pervasive chloritization of the matrix and along fractures in the perlite; calcite veinlets superimposed on chl. some clasts are rimmed by pale green clay	«tr. py»	Propylitic alt.
117.50 TO 143.80	«FLOW BANDED RHYOLITE» (LATITE)	Colour: buff Grain Size: aphanitic Aphanitic - v. hard unit showing a fine regular parallel banding over the entire interval; bands caused by small scale spots that align to form strings; this may also be a devitrification texture; no Qz of Fx crystals visible Banding @ 134.4 m Black spots of chlorite may be after original biotite @ 136.2 m ┤126.0-126.6├ «chl vein bx» massive, dark green cl vein forming matrix to	 60 70 	«m-cl STWK» Propylitic alteration; the interval is cut by microveinlets of chlorite (+/- calcite); stringer density approx 80/m, most <1 mm wide ┤126.0-126.6├ «i-cl»	«py approx. 1%» These cut the flow banding and some of the cl stringers	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		brecciated interval; vein				
143.80 TO 151.50	«PERLITE»	Colour: grey to green Interval of perlite becoming progressively more brecciated and chloritize down hole; in upper part of interval perlitic or web textures are superimposed on the flow banding seen at lost interval {48.7-48.8} «hematic bx» -10 cm interval of heterolithic bx; clast of bedded ash tuff and argillized perlite are healed by orange brown goethite bedding @ Clasts angular frag supported texture	70	Weak cl near the top becoming stronger near bottom; fine calcite <'s occur throughout; these may reach 30/m	«tr py»	
151.50 TO 160.50	«HETEROLITHIC BX»	Colour: green Fragment supported breccia made up of bedded ash tuff and perlite clasts; textures vary from coarse poorly sorted to finer grained and less sorted; finer grained intervals are more matrix supported; tuff clasts are strongly argillized; many have fuzzy outlines suggesting partial destruction; coarser interval show less strongly altered clasts those have rinds of intense arg.; bedded intervals are thin 157.0-157.2 -vein like breccia cutting main unit; highly chloritic		«m-s arg; m-s chl; m-ca» calcite present in sparse <'s; bleached rims around bigger clasts are calcitic!! -s-cal is envelope around bx	«tr-1% diss py» Mostly as scattered xtals in matrix; some py aslo noted in more intensely argillized tuff frags	
160.50 TO 194.20	«FQXT»	Colour: l. grey Grain Size: medium A homogeneous unit of crystal tuff; it consists of PF and Qz fragments ranging from microscopic size to approx 8 mm; PF are randomly orientated and generally euhedral; Qz crystals are rounded and smokey with broken forms common; chloritic laths may have been primary biotites; matrix is ashy crystal material Weak banding or bedding present - no gradation Bedding @ 170.1 m	55	«m-ca; w-arg» Propylitization; PF altered to yellow green clay (or sericite); mafics chloritized; matrix moderately calcareous	«diss tr py»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	E.O.H.					

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44156	10.80	11.40	0.60	77.3	236	1	92	11	38	5	164	635		
44157	11.40	12.80	1.40	17.6	351	1	26	17	13	3	46	2930		
44158	13.70	15.50	1.80	5.9	92	1	56	22	18	22	25	3200	100	
44159	15.50	17.50	2.00	0.1	72	1	27	14	24	6	12	3755	100	
44160	17.50	19.00	1.50	0.7	76	1	93	10	34	4	19	12375	100	
44161	19.00	21.00	2.00	17.1	149	1	39	9	21	4	65	2130	100	
44162	21.00	23.00	2.00	2.3	33	1	13	13	19	2	39	230	19	
44163	23.00	25.00	2.00	2.4	70	1	8	16	30	3	44	230	32	
44164	25.00	27.00	2.00	2.9	758	1	36	14	36	6	78	320	42	
44165	27.00	29.70	2.70	3	1163	1	54	13	47	16	102	355	100	
44166	29.70	31.00	1.30	1.7	1053	1	50	10	41	26	71	180	22	
44167	31.00	32.10	1.10	1.1	1138	1	104	8	44	8	76	330	28	
44168	32.10	33.40	1.30	1.2	601	1	58	5	27	10	54	395	100	
44169	33.40	35.50	2.10	2.4	906	1	40	8	39	19	75	510	70	
44170	35.50	37.20	1.70	2	1842	1	78	6	70	22	197	395	100	
44171	37.20	38.40	1.20	1.7	1177	1	53	7	49	10	102	320	50	
44172	38.40	40.50	2.10	1.7	1067	1	42	10	47	25	79	175	30	
44173	40.50	42.60	2.10	1.3	453	1	18	12	24	38	38	200	39	
44174	42.60	44.80	2.20	2.2	286	1	9	15	20	40	22	370	70	
44175	44.80	45.35	0.55	2.8	458	1	7	11	26	58	47	405	5	
44176	45.35	47.40	2.05	2.9	306	1	10	10	17	33	29	840	32	
44177	47.40	47.95	0.55	3.9	221	1	10	9	13	18	24	305	8	
44178	47.95	49.90	1.95	3.7	657	1	9	11	24	22	60	760	21	
44179	49.90	51.90	2.00	3.3	854	1	10	12	34	32	46	1390	19	
44180	51.90	53.60	1.70	3.7	840	1	12	12	31	41	41	700	13	
44181	53.60	55.40	1.80	2.1	760	1	9	13	23	27	32	305	12	
44182	55.40	57.30	1.90	2.7	949	1	11	12	23	46	74	300	9	
44183	57.30	58.40	1.10	2.9	959	1	12	16	26	62	66	305	5	
44184	58.40	58.90	0.50	3	1870	1	11	15	50	34	105	285	2	
44185	58.90	59.85	0.95	2.9	1122	1	11	19	36	47	86	665	4	
44186	59.85	60.35	0.50	3.2	390	1	10	16	18	52	36	860	14	
44187	60.35	62.80	2.45	1	342	1	6	12	13	28	23	545	44	
44188	62.80	64.40	1.60	1.1	286	1	5	12	11	28	18	535	50	
44189	64.40	66.10	1.70	0.7	169	1	4	12	7	19	19	405	20	
44190	66.10	66.80	0.70	0.7	109	1	5	30	4	45	7	325	13	
44191	66.80	68.10	1.30	0.5	184	2	14	16	5	61	22	300	7	
44192	68.10	70.00	1.90	0.9	197	2	19	15	9	42	25	410	31	
44193	70.00	71.20	1.20	0.5	54	2	17	15	3	42	4	150	23	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
44194	71.20	72.60	1.40	0.7	309	1	20	15	14	45	17	725	18
44195	72.60	74.65	2.05	0.6	85	2	22	12	5	36	10	90	12
44196	74.65	76.50	1.85	0.8	181	1	18	11	10	45	19	180	19
44197	76.50	77.50	1.00	1.3	646	1	23	11	26	46	42	245	10
44198	77.50	79.40	1.90	1.2	540	1	19	14	18	47	75	240	15
44199	79.40	81.40	2.00	0.9	224	1	17	12	8	48	15	100	8
44200	81.40	81.80	0.40	1.2	572	1	19	18	21	28	78	85	1
44201	81.80	83.50	1.70	0.9	474	1	16	13	18	41	59	145	19
44202	83.50	85.40	1.90	0.9	275	1	19	15	10	44	37	205	11
44203	85.40	86.80	1.40	0.9	236	1	19	18	7	47	14	545	5

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44156	10.80	11.40	0.60	77.3	236	1	92	11	38	5	164	635	
44157	11.40	12.80	1.40	17.6	351	1	26	17	13	3	46	2930	
44158	13.70	15.50	1.80	5.9	92	1	56	22	18	22	25	3200	100
44159	15.50	17.50	2.00	0.1	72	1	27	14	24	6	12	3755	100
44160	17.50	19.00	1.50	0.7	76	1	93	10	34	4	19	12375	100
44161	19.00	21.00	2.00	17.1	149	1	39	9	21	4	65	2130	100
44162	21.00	23.00	2.00	2.3	33	1	13	13	19	2	39	230	19
44163	23.00	25.00	2.00	2.4	70	1	8	16	30	3	44	230	32
44164	25.00	27.00	2.00	2.9	758	1	36	14	36	6	78	320	42
44165	27.00	29.70	2.70	3	1163	1	54	13	47	16	102	355	100
44166	29.70	31.00	1.30	1.7	1053	1	50	10	41	26	71	180	22
44167	31.00	32.10	1.10	1.1	1138	1	104	8	44	8	76	330	28
44168	32.10	33.40	1.30	1.2	601	1	58	5	27	10	54	395	100
44169	33.40	35.50	2.10	2.4	906	1	40	8	39	19	75	510	70
44170	35.50	37.20	1.70	2	1842	1	78	6	70	22	197	395	100
44171	37.20	38.40	1.20	1.7	1177	1	53	7	49	10	102	320	50
44172	38.40	40.50	2.10	1.7	1067	1	42	10	47	25	79	175	30
44173	40.50	42.60	2.10	1.3	453	1	18	12	24	38	38	200	39
44174	42.60	44.80	2.20	2.2	286	1	9	15	20	40	22	370	70
44175	44.80	45.35	0.55	2.8	458	1	7	11	26	58	47	405	5
44176	45.35	47.40	2.05	2.9	306	1	10	10	17	33	29	840	32
44177	47.40	47.95	0.55	3.9	221	1	10	9	13	18	24	305	8
44178	47.95	49.90	1.95	3.7	657	1	9	11	24	22	60	760	21
44179	49.90	51.90	2.00	3.3	854	1	10	12	34	32	46	1390	19
44180	51.90	53.60	1.70	3.7	840	1	12	12	31	41	41	700	13
44181	53.60	55.40	1.80	2.1	760	1	9	13	23	27	32	305	12
44182	55.40	57.30	1.90	2.7	949	1	11	12	23	46	74	300	9
44183	57.30	58.40	1.10	2.9	959	1	12	16	26	62	66	305	5
44184	58.40	58.90	0.50	3	1870	1	11	15	50	34	105	285	2
44185	58.90	59.85	0.95	2.9	1122	1	11	19	36	47	86	665	4
44186	59.85	60.35	0.50	3.2	390	1	10	16	18	52	36	860	14
44187	60.35	62.80	2.45	1	342	1	6	12	13	28	23	545	44
44188	62.80	64.40	1.60	1.1	286	1	5	12	11	28	18	535	50
44189	64.40	66.10	1.70	0.7	169	1	4	12	7	19	19	405	20
44190	66.10	66.80	0.70	0.7	109	1	5	30	4	45	7	325	13
44191	66.80	68.10	1.30	0.5	184	2	14	16	5	61	22	300	7
44192	68.10	70.00	1.90	0.9	197	2	19	15	9	42	25	410	31
44193	70.00	71.20	1.20	0.5	54	2	17	15	3	42	4	150	23
44194	71.20	72.60	1.40	0.7	309	1	20	15	14	45	17	725	18

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
44195	72.60	74.65	2.05	0.6	85	2	22	12	5	36	10	90	12
44196	74.65	76.50	1.85	0.8	181	1	18	11	10	45	19	180	19
44197	76.50	77.50	1.00	1.3	646	1	23	11	26	46	42	245	10
44198	77.50	79.40	1.90	1.2	540	1	19	14	18	47	75	240	15
44199	79.40	81.40	2.00	0.9	224	1	17	12	8	48	15	100	8
44200	81.40	81.80	0.40	1.2	572	1	19	18	21	28	78	85	1
44201	81.80	83.50	1.70	0.9	474	1	16	13	18	41	59	145	19
44202	83.50	85.40	1.90	0.9	275	1	19	15	10	44	37	205	11
44203	85.40	86.80	1.40	0.9	236	1	19	18	7	47	14	545	5

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
51.00	53.00	2.00	55.00	*****	18	9.00	0	0.00	0	
55.00	57.00	2.00	55.00	*****	15	7.50	0	0.00	0	
57.00	59.00	2.00	80.00	*****	23	11.50	0	0.00	0	
61.00	63.00	2.00	20.00	*****	30	15.00	0	0.00	0	
65.00	67.00	2.00	50.00	*****	40	20.00	0	0.00	0	
69.00	71.00	2.00	70.00	*****	17	8.50	0	0.00	0	
73.00	75.00	2.00	110.00	*****	16	8.00	0	0.00	0	
80.00	82.00	2.00	150.00	*****	13	6.50	0	0.00	0	
84.00	0.00	-84.00	120.00	*****	14	-0.17	0	0.00	0	
88.00	90.00	2.00	85.00	*****	16	8.00	0	0.00	0	
92.00	94.00	2.00	180.00	*****	10	5.00	0	0.00	0	
96.00	98.20	2.20	150.00	*****	17	7.73	4	1.82	0	
98.20	100.20	2.00	180.00	*****	8	4.00	1	0.50	0	
104.20	106.20	2.00	170.00	*****	12	6.00	0	0.00	0	
108.20	110.20	2.00	180.00	*****	15	7.50	0	0.00	0	
115.00	116.80	1.80	160.00	*****	10	5.56	2	1.11	0	
116.80	117.40	0.60	20.00	*****	15	25.00	0	0.00	0	
118.00	120.00	2.00	155.00	*****	9	4.50	0	0.00	0	
120.00	122.30	2.30	150.00	*****	16	6.96	0	0.00	0	
122.30	123.30	1.00	70.00	*****	7	7.00	0	0.00	0	
123.30	123.70	0.40	20.00	*****	5	12.50	0	0.00	0	
123.70	125.70	2.00	110.00	*****	18	9.00	0	0.00	0	
128.00	130.00	2.00	125.00	*****	16	8.00	0	0.00	0	
133.00	135.00	2.00	175.00	*****	13	6.50	0	0.00	0	
137.00	139.00	2.00	130.00	*****	18	9.00	4	2.00	0	
141.00	143.00	2.00	140.00	*****	10	5.00	1	0.50	0	
145.00	147.00	2.00	40.00	*****	20	10.00	0	0.00	0	
147.00	149.00	2.00	70.00	*****	27	13.50	0	0.00	0	
150.00	152.00	2.00	180.00	*****	17	8.50	0	0.00	0	
153.30	154.30	1.00	40.00	*****	13	13.00	0	0.00	0	
154.30	156.30	2.00	70.00	*****	29	14.50	0	0.00	0	
156.30	158.30	2.00	80.00	*****	23	11.50	0	0.00	0	
158.30	159.60	1.30	10.00	769.2	20	15.38	1	0.77	0	
159.60	160.00	0.40	0.00	0.0	20	50.00	0	0.00	0	
160.00	162.00	2.00	90.00	*****	23	11.50	0	0.00	0	
164.00	166.00	2.00	110.00	*****	14	7.00	0	0.00	0	
168.00	170.00	2.00	115.00	*****	19	9.50	0	0.00	0	
172.00	174.00	2.00	180.00	*****	7	3.50	0	0.00	0	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: CL-91-02

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41140.00N
EAST: 9482.00E
ELEV: 1316.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 181.20m
START DEPTH: 0.00m
FINAL DEPTH: 181.20m

COLLAR GRID AZIMUTH: 290° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 15, 1991
DATE COMPLETED: August 16, 1991
DATE LOGGED: August 16, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: HQ,NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 8.9M, 4.5' LEFT IN HOLE
CORE STORAGE: AT CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
60.90	-	-47° 0'	ACID	OK		-	-	-	-	-	
99.60	-	-45° 0'	ACID	OK		-	-	-	-	-	
152.40	-	-46° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 8.90	«CASING»					
8.90 TO 18.40	«OXIDIZED ZONE-FLOW BANDED LATITE»	Orange. A highly limonite stained interval of well banded, aphanitic to feldspar phyric latite. Banding texture interpreted to be flow banding and or deritrefication. Banding @ 10.2m.... Quartz breccia veins cut the interval at: 8.9m, 10.1m, 10.8m, 12.2m, 17.0m. [12.8-14.4] «Broken Core» Interval contains 1-3mm dark veinlets-weak stockwork.	70	«M-ARG;W-SIL» The rock is pervasively argillized along the banding. Clay rich bands are separated by hairline silica veinlets. There are spaced approx. 2-5mm apart. The interval is cut by various quartz vein breccias. These range from 20-100mm in width cut the core axis at angles of 45-90 degrees. [8.9-9.0] «Qz Vein Bx» Cutting core at 45 degrees consists of argillized, angular wall rock clasts up to 25mm in a matrix of dark grey to black quartz. Breccia is fragment supported.	«Present» None visible, but a significant pyrite content is implied by the strong limonite oxidation.	This unit correlates with the bedded
18.40 TO 38.30	«FB-LATITE» PORPHYRY [29.3-29.9]	Medium grey. Fine grained. A fine grained well flow banded porphyry flow. Phenocrysts of pinkish xf and green. If well preserved-though variably altered. Pheno's randomly oriented and sparse-~5% of rock. Maximum size ~2mm. All are enhadral and some show evidence of growth zoning. «Gouge»		«W-M Arg» Pervasive argillization along flow bands has caused a bleached striped appearance. Unaltered remnants occur throughout. There are pink and glossy. Fine quartz <'s follow flow bands. [32.1-32.3] «I-Sil» Pervasive sil of latite around cross-cutting qz-py vein. The vein is irregular and branching and contains vuggy . The lower part of the vein is cored by fine grained pyrite. [32.5] «M-Sar G» Rapid increase in the intensity of argillic alteration to bottom of interval. Textures in the latite become progresively destroyed.	«Py Stwk - 1-3%» Randomly oriented py <'s up to 10mm wide crosscut flow banding veins occur about every 50cm throughout. D.py also noted in trace amounts. «Py 5% in vein» Pyrite exhibits an unusual bladed morphology. It looks like pyrite selvages that have been repeatedly ripped off the vein wall.	Identical texture to Canyon Mtn. Latite flows.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
38.30 TO 47.00	«LATITE»	Yellow/green. Completely argillized interval of the latite porphyry. Just about all primary textures are lost. In places the unit is brecciated. Isolated angular clasts (or unaltered remnants) are present. These, however are rare.		«I-Arg» Rock completely replaced by a mixture of green and yellow clays. Green clay occurs as angular or rounded dpatches perhaps replacing breccia clasts?	«Py-rare» Only seen in 3cm qz-py veinlet at 41.4m. Here again the pyrite is growing as fine blades or plates - Marcasite??	Bladed pyrite.
47.00 TO 55.40	«LATITE»	Pale grey. Same latite unit. In this interval the alteration has graded from S-intense argillitic to moderate silicification. Qz-py veinlets are more abundant ~16/m.		«M-Sarg; M Sil» Yellow and green clays still dominate alteration. Silicification is more tense - occurring as irregular patches of qz flooding around quartz veinlets.	«Py 3%» More abundant in this interval. Most occurs in vuggy quartz <'s, but in places hazy patches are also present in the wall rock.	
55.40 TO 64.10	«LATITE»	Yellow. Intensely argillic alteration has obliterated primary texture. Rock is now a bright yellow colour and very soft as a result of the alteration. The top 1.7m of the interval is moderately silicified.		«I-Arg» Pervasive alteration of latite groundmass by yellow clay. Feldspar laths are still visible in most places despite alteration intensity. ┤55.4-56.3├ «M-Sil» Pervasive silicification of groundmass. A few pyrite micro veins noted.	«Py-tr»	
64.10 TO 66.70	«LATITE»	Pale yellow-grey. The same unit, though much less argillized. Throughout this interval the latite becomes progressively more veined and silicified. Breccia vein @ 64.4m	20	«W-M Arg, M-Sil» Silica is replacing latite groundmass at the expense of clay. Breccia veins up to 4cm occur at 64.4m.	«Py tr-1%» Pyrite is restricted mainly to the grey quartz groundmass.	
	┤64.1-64.55	«Qz Vein Bx» Bounded by sharp contacts dipping 20 degrees to core axis. Fragment supported bx with angular clasts composed entirely of the flow banded latite. Glassy clear to black quartz matrix contains finely disseminated and dusty pyrite. Some open space cavities. Clasts range from 2mm to 5cm.		«I-X Sil» Clasts are variably silicified and apparently overprinting the argillization. Some patches of nearly massive yellow-green clay noted.	«Py <1%» as in the vein matrix.	
66.70 TO 68.20	«VEIN BX»	Dark grey. An interval of extreme silicification veining and brecciation. The morphology of the vein is complex. At the top and bottom there are silicified wallrock envelopes that extend 30cm into the hosting latite. At the upper contact from 66.5-68.8m, the vein consists of white to pinkish quartz showing well developed bladed textures. Cutting this zone is a pyritic phase (66.8-67.2m). This is typified by bladed pyrite and brecciated bladed quartz. Contact @ 66.8m Upper Contact @ 66.7m	25 20	«X-Sil» Pervasive silicification forms envelopes of 20-30cm into wallrocks at vein margins.	«Py 10%» or bladed forms in the core of the vein. ┤66.8-67.2├ «Py 10%» As dusty patches in quartz vein matrix. ┤67.5-68.0├ «Py 15-20%» As bladed forms composed of fine crystals - hosted in black to grey glassy quartz.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		From 67.2-67.4m the vein contains breccia frags of white quartz up to 25mm across in a siliceous matrix containing bladed pyrite. 67.4-68.0m: Bladed quartz to vein contact. Lower Contact @ 68.0m 68.0-68.2m: Silicified wallrock.	44			
68.20 TO 73.80	«LAPILLI TUFF»	Medium to dark grey. A volcanic fragmental unit composed of lithic lapilli (40-60%) in a fine grained ashy matrix. Lapilli range in size from 5mm to 35mm. The are subangular to rounded in shape. The dominant clast type is a porphyritic rock composed of 20-30% exhedral pla phenocrysts in a fine to aphanitic matrix. This type comprises about 50% of the clast population. About 30% are flow banded latite, identical to those seen higher in the hole. There contain phenocrysts of both XF & PF.		«M-Sil W-Arg» The interval is variably silicified throughout. Quartz floodeing occurs as vein-like bands that engulf the matrix material. The clasts are argillized but silicified close to quartz-pyrite stringers. Pervasive argillic alteration is strongest near top of the interval - decreasing and giving away to silicification downhole. Vuggy quartz-pyrite <'s form a weak stockwork. {68.2-71.2} «M-Arg» {71.2-71.7} «S-Sil» {72.2-72.4} «S-Sil»	«Py 1-3%» Mostly as bands of fine grained material in quartz veins. Pyrite is very sparsely disseminated throughout remainder of interval.	
73.80 TO 74.75	«FAULT»	Orange. Limonite stained fault zone (non gougy) in the lapilli tuff unit.			Strong limonite staining.	
74.75 TO 78.35	«CROWDED PORPHYRY»	Grey. Medium to coarse grained. A porphyritic volcanic rock composed of closedly packed or crowded plagroclose phenocrysts in a fine grained - aphanitic groundmass. KF phenocrysts also noted. These are zoned and smaller than the PF crystals.		«W-Arg» Not as strongly altered as the above intervals. Feldspars and groundmass clay altered -> powdered. The degree of silicification rapidly diminishes below last interval. Quartz veinlets up to 1cm wide are sparsely distributed throughout.	«Tr Py» entirely hosted in quartz stringer.	
78.35 TO 82.50	«BRECCIA»	Dark grey. An intensely silified breccia. About 40% of the interval consists of a sparse wall rock breccia with unsorted angular wallrock fragments (mostly latite). Largest clasts measure 45mm across (e.g. @ 81.1m). The top third of the breccia zone is pervasively silicified crowded porphyry. At least three hydrothermal breccia veins cut the interval, these are: {78.5-78.9} «Vein Bx»	75	«I-Sil» Faulted upper contact. This interval is pervasively silicified throughout. Very tight-flow stringers or veinlets. Clasts in the breccia are moderately argillized.	«Py Tr-1%» as disseminated crystals and hazy patches or clasts in the breccia. Vein breccia matrix contains up to 5%	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		⟨80.1-80.4⟩ «Vein Bx» Upper Contact Lower Contact ⟨81.6-81.8⟩ «Vein Bx»	50 15		fine grained pyrite.	
82.50 TO 83.00	«FAULT»	Broken limonitic interval of argillized crowded porphyry.				
83.00 TO 87.10	«TUFF BRECCIA»	Grey. Breccia - perhaps depositional with a hydrothermal overprint. Consists of clasts of flow banded latite and feldspar porphyry in a highly silicified tuffaceous matrix. Both frags and matrix are cut by a network of black chalcedonic stringers which form & grow breccia textures. Banded chalcedony fills a 30mm void space @ 84.5m.		«S-Sil,M-Arg» Quartz-pyrite stockworking more intense than previous breccia interval.	«Tr, Py» in black chalcedony microveins.	
87.10 TO 119.80	«TUFF BRECCIA»	Yellow-grey. Fine to coarse grained. Similar to the above unit. This unit consists of pea to boulder size clasts of feldspar porphyry and flow banded latite in a feldspar crystal tuff matrix. Clast abundance and size vary throughout the unit. Largest clast noted is over 50cm long. Breccia is generally matrix supported, although locally it can be clast supported.		«M-Arg-M-S Sil» Alteration variable alternates between argillization and pervasive silicification. Clay rich zones are a distinct yellow colour. In these the matrix and clasts are altered. In the silicified areas only the tuffaceous matrix is silicified - the frags remain argillized. ⟨87.1-92.1⟩ «M Arg» Pale yellow grey clay cut by grey qz <'s. ⟨92.1-95.9⟩ «M-S Sil» Silicification of matrix and frags. ⟨95.9-96.2⟩ «M Arg» ⟨96.2-96.4⟩ «W-Sil, M Arg» Late white vuggy veins. ⟨96.4-98.4⟩ «M Arg» ⟨98.4-100.5⟩ «M-S Sil» Argillized fragments of latite. ⟨100.5-103.3⟩ «S-Arg» ⟨103.3-109.7⟩ «S-Sil» ⟨109.7-113.2⟩ «M-Arg;M-Sil» ⟨113.0-113.4⟩ «I-Sil»	«Py Tr-3%» mostly concentrated in veins and in the darker silica matrix. Crystal aggregates of coarser pyrite (aggr to 3mm) are disseminated in argillized sections. Some aggregates show bladed or platg marcositic forms. Fine pyrite stockworking, «Py 1-3%». Patches of vuggy clear quartz noted at 89.6m. «Py Diss-5%» «Py 5-10%»	
	⟨113.0-113.4⟩	Alteration Contact «Bx Vein and Jigsaw Bx» Black sulphidic matrix. Highly siliceous. Upper 20cm of interval consists of a vuggy jigsaw bx.	15			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	ǂ114.5-114.7ǂ	«Jigsaw Bx & Breccia Vein»			«Py 5-10%»	
119.80 TO 124.80	«TUFF BRECCIA»	Yellow-grey. Completely argillized tuff breccia. Hazy outlines of former frags visible, but only just. Clasts are more intensely altered than matrix. Core surface has a sandy appearance-possibly caused by the drill. Rock is not to -> becoming gougy in places - probably not a fault.		«I-Arg» Some milky qz <'s.	«Diss Py-3%» as euhedral cube and crystal aggregates.	
124.80 TO 125.30	«FAULT GOUGE»					
125.30 TO 130.30	«HB-BI-PF PORPHYRY»	Green-grey. Medium grained. A sparse porphyry unit possibly intrusive consisting of euhedral PF, crystals in a fine grained groundmass. Scattered phenocrysts of biotite and possibly HB also present. These are chloritized. This interval is strongly clay altered and in places brecciated. This may be caused by faulting as there are several faults in this part of the hole. Gougy aspect.		«S-Arg, W-Cl» Wery strong clay alteration-in places bright yellow coloured. Most primary texture lost or obscured. Veining is minimal. Hair-like quartz stringers, some with pyrite are noted. These, however are not too significant. Patchy silicification noted around 120-121m.	«Tr Py» in hair-line <'s.	
130.30 TO 130.50	«FAULT»		88	«W-Cl»		
130.50 TO 141.60	«PF-BI PORPHYRY»	Grey. Relatively unaltered intrusive. Euhedral, tabular feldspars are clay altered to a brown or medium green colour. BI is chloritized. Staining shows the groundmass to be KF rich indicating a latite composition (or micro). No qz seen. No KF pheno's noted.		«W-Cl,Tr,Ca» W-Arg. Chloritization of mafics and clay alteration (a of PF).		136.2m: Markers are out by 10'to bottom of hole (ie subtract 3.1m from
	ǂ141.25-141.6ǂ	«Fault»-Gouge zone. Sharp contacts.	45			
141.60 TO 147.00	«LATITE PORPHYRY»	Pinkish grey. Fine grained. Same unit as previous interval. Contains patches and fine <'s of secondary KF alteration. Glomeroporphortic textures formed by clumps of euhedral PF. Resembles `Snow Flake' textures common in ankerites.		«W-M Cl,W.KF; W.Ca» Complete chloritization of mafic pheno's. Groundmass weakly chloritized and argillized. PF altered to green clay or perhaps sericite. Some Cl <'s noted. Chloritization of PF clusters.	Trace - almost none present.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	ǀ144.2-144.5ǀ	«Fault Zone-Gouge»		K feldspar alteration noted. Microveinlets to K and irregular patches (e.g. @ 141.65m).		
	ǀ145.5-145.7ǀ	«Fault Gouge»		Lower in the interval KF replaces groundmass to give a pinkish colour to the rock.		
147.00 TO 150.00	«PF PORPHYRY»	Grey-green. Gougy zone of crowded PF porphyry. Not as much chlorite noted. Looks like argillic alteration is picking up again downhole. Possible fragments of porphyry in interval. These are highly argillized.		«M-Arg» Sudden change from alteration to moderate argillic across fault. Blob of calcite noted at 147.7m.	Very sparse pyrite.	
	ǀ147.0-148.6ǀ	«Fault» - Gougy, broken zone.				
150.00 TO 152.30	«FAULT GOUGE»	A faulted zone-highly broken, but coherent core. Host rock is a weakly silicified and moderately argillized porphyry.		«W-Sil;M-Arg» No calcite noted. Looks like we are back into higher grade alteration.	«Py 1-3%» in distinct <'s and as disseminations in wallrock clasts.	
152.30 TO 156.00	«PORPHYRY»	Very pale grey. Fine grained. A fine grained porphyry unit with a crowded texture. PF pheno's make up 76% of the rock. These range up to 3mm in length. There is a weak orientation of PF crystals. Chloritic streaks may be psendomorphs after BI. The ground mass is very fine grained.		«M-Arg;W-Cl» Pervasive argillization and possibly sericitization of both the feldspars and groundmass.	«Py Tr-1%» as disseminations and rare pyrite <'s.	
	ǀ153.1-153.5ǀ	«Breccia» Coarse angular and rounded clasts to 35mm from a fragment supported breccia. Clasts and matrix appear to be porphyry material - possibly agmatitic bx?				
	ǀ153.85-154.5ǀ	«Breccia» as previous interval.				
	ǀ154.5-154.6ǀ	«Fault» Upper Contact	20			
	ǀ155.8-156.0ǀ	«Fault»				
156.00 TO 160.10	«PERLITE & PERLITE BX»	Grey. Web textured perlitic unit, identical to those seen in hole 91-1. The rock is weakly argillized, more bleaching than anything. Over narrow sections the unit is brecciated. This may be a primary feature.		«VW-Arg» Maybe some extremely weak chloritization. This causes a green tint in places.	«Py Tr-1%» Sparse pyrite microveins. Overall poorly mineralized.	These perlites were most probably glassy flow rocks - re that occur on the margins of large flows.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
160.10 TO 160.70	«QZ HEALED JIGSAW BX»	Yellow-grey. Narrow zone of jigsaw bx. Angular wallrock frags are pushed apart and healed by grey qz. Clasts are moderately argillized, possibly perlitic material.		«M-Arg;M-Sil» Argillization of wallrock frags. Qz heals breccia.	«Py ~1-3%» As disseminated cubes up to 1mm and as patches in qz <'s.	
160.70 TO 173.40	«PERLITE»	Grey. Fairly wide interval of the web textured perlite. The unit shows a gradual increase in alteration intensity downhole. The top third to the interval is quite crumbly with narrow gougy and brecciated zones. These are late-fault-related features. ┤163.4-164.5├ «Fault» ┤166.7-167.0├ «Fault» Alteration balls present at 167.5m and 167.9m. These are fairly large - up to 35mm across. The higher one is by a slip plane. Both occur adjacent to a narrow quartz vein breccia.		«W->M Arg;W-Sil» Alteration intensity of silicification and argillization increases down interval.	┤167.65-167.75├ «Vein Bx» «Py 10%» as 1cm on upper contact. Alteration balls seem to be preferentially pyritized -> Iron Source??	
173.40 TO 181.20	«LAMINATED ASH TUFFS»	Finely laminated, siliceous ash tuffs. These rocks are banded on a 5-10mm scale. Interval is highly disrupted and altered by a wide gougy fault zone.		«M-S-Arg, Patchy Sil» The faulted section is strongly altered to a pale green clay. This is mostly concentrated in the gougy matrix of the fault bx.	«Py Tr» not well mineralized.	
	┤173.4-173.6├	«Vein Bx» Silica healed breccia zone containing a lot of fine dusty pyrite. Clasts in the bx are angular and range in size from 1mm to 15mm. Most seem to be silicified wallrock material.		«I-Sil»	«Py 10-15%»	
	┤173.6-175.3├	«Fault Bx» A zone of brecciated wallrock. Poorly lithofied gouge material hosts angular frags (up to 8cm long) of laminated ash. The matrix and some clasts are altered to a bright green clay. The distribution of this mineral is patchy, but in general terms is more intense near vein breccias.		«S-Arg»	«Py 1-3%»	
	┤175.3-175.7├	«Vein Bx» Silicified fault breccia cut by late vuggy qz <'s. Veins.....	40	«I-Sil» Cut by late vuggy qz stringer.	«Py 1%»	
	┤175.9-176.3├	«Perlite» Possibly a large clast or inclusion in the fault zone.		«W-Sil»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	⎨176.3-179.9⎬	«Fault Zone»		«I-Arg» Strong to intense green clay alteration of the gougy clay matrix.		
	⎨179.9-181.2⎬	«Heterolithic Bx» Green-yellow. Possibly a depositional or volcanic bx. Rounded clasts (to 40mm) of fine grained PF porphyry occur in a tuffaceous matrix. END OF HOLE.		«M-Arg;W-Sil»	«Py Tr»	Perlite clasts in breccia @ 180.4m.

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43426	9.00	11.00	2.00	2.7	738	1	16	16	51	10	98	500	35	
43427	11.00	13.00	2.00	1.8	991	2	21	14	45	25	34	435	27	
43428	13.00	14.60	1.60	3.5	1316	1	20	17	69	44	132	530	40	
43429	14.60	17.80	3.20	6	820	1	50	14	39	24	104	1325	38	
43430	17.80	18.50	0.70	1.4	322	1	18	16	16	18	32	635	5	
43431	18.50	20.50	2.00	2.5	199	1	40	16	20	9	37	520	27	
43432	20.50	22.50	2.00	3.4	233	1	19	17	21	16	43	805	18	
43433	22.50	24.50	2.00	3.2	310	1	17	16	23	18	47	1465	31	
43434	24.50	26.50	2.00	5.9	238	1	15	13	27	24	63	1555	30	
43435	26.50	28.50	2.00	1.9	450	1	23	13	23	28	54	225	33	
43436	28.50	29.90	1.40	2	381	1	23	16	21	36	37	220	23	
43437	29.90	31.90	2.00	1.7	855	1	14	14	33	38	42	375	14	
43438	31.90	33.90	2.00	3.8	921	1	24	14	37	25	112	585	17	
43439	33.90	35.90	2.00	3.4	1001	1	25	15	37	44	135	235	20	
43440	35.90	37.90	2.00	2.7	850	1	22	15	38	54	63	650	19	
43441	37.90	39.90	2.00	0.5	258	1	19	19	18	66	17	395	23	
43442	39.90	41.90	2.00	0.5	45	1	21	15	5	57	10	135	24	
43443	41.90	43.90	2.00	0.7	36	1	18	17	4	39	7	100	20	
43444	43.90	46.00	2.10	0.8	121	1	19	13	9	43	20	175	17	
43445	46.00	47.00	1.00	1	281	1	15	11	14	61	27	120	8	
43446	47.00	49.00	2.00	1.9	282	1	7	11	17	31	51	520	25	
43447	49.00	51.00	2.00	2.9	341	1	10	15	27	34	15	855	19	
43448	51.00	53.00	2.00	1.5	471	1	12	17	24	42	41	535	17	
43449	53.00	55.00	2.00	2.6	259	1	13	16	21	41	35	975	14	
43450	55.00	55.40	0.40	1.2	167	1	10	15	9	40	32	400	4	
43451	55.40	57.40	2.00	1.6	407	1	14	16	15	38	43	415	16	
43452	57.40	59.40	2.00	0.5	79	2	15	18	6	70	20	155	22	
43453	59.40	61.50	2.10	0.9	170	1	15	17	9	76	21	145	17	
43454	61.50	63.50	2.00	3.4	936	1	15	15	35	45	70	815	100	
43455	63.50	64.10	0.60	3.1	840	1	17	18	35	47	58	385	2	
43456	64.10	64.50	0.40	3.8	1711	1	13	13	65	37	180	390	1	
43457	64.50	66.10	1.60	3.4	1030	1	15	11	42	34	93	365	15	
43458	66.10	67.00	0.90	9	2470	1	18	13	105	14	162	1065	8	
43459	67.00	68.20	1.20	8.7	655	1	14	9	40	15	112	1560	10	
43460	68.20	70.20	2.00	6.4	913	1	22	16	55	11	92	735	9	
43461	70.20	71.40	1.20	5.3	367	1	22	16	40	11	93	465	8	
43462	71.40	71.90	0.50	3.4	777	1	17	11	43	12	62	355	4	
43463	71.90	73.90	2.00	3.7	838	1	17	19	47	15	71	345	11	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43464	73.90	75.90	2.00	3.7	894	1	14	11	59	27	97	295	26
43465	75.90	78.20	2.30	4.6	573	1	28	12	56	16	98	345	18
43466	78.20	79.20	1.00	4.4	1712	1	18	14	82	24	66	545	6
43467	79.20	79.60	0.40	6.6	3880	1	12	15	167	27	230	390	2
43468	79.60	80.60	1.00	9	890	1	17	14	54	14	90	700	9
43469	80.60	81.60	1.00	2.1	418	1	15	12	30	19	50	200	10
43470	81.60	83.10	1.50	2.4	133	2	12	13	28	27	40	125	19
43471	83.10	84.10	1.00	2.4	232	1	21	19	16	13	47	200	4
43472	84.10	85.10	1.00	1.7	133	1	14	10	16	20	27	90	12
43473	85.10	86.10	1.00	1.6	211	1	15	14	16	21	39	140	19
43474	86.10	87.10	1.00	5.2	707	1	14	14	42	19	107	580	3
43475	87.10	89.10	2.00	1.9	497	1	14	13	27	47	61	205	21
43476	89.10	91.10	2.00	2	425	1	16	14	22	43	40	190	14
43477	91.10	92.10	1.00	1.7	236	1	12	13	13	19	43	145	8
43478	92.10	94.10	2.00	2.7	567	2	17	13	33	25	52	345	13
43479	94.10	95.90	1.80	2.5	681	1	15	12	27	24	81	185	16
43480	95.90	96.95	1.05	1.9	1174	1	12	12	35	43	138	85	7
43481	96.95	98.45	1.50	2.6	630	1	13	17	29	30	65	110	11
43482	98.45	100.40	1.95	2.1	579	1	16	11	28	26	37	105	17
43483	100.40	102.40	2.00	3.3	1126	1	12	14	43	38	80	250	7
43484	102.40	103.30	0.90	3.5	1223	1	13	16	48	43	61	65	7
43485	103.30	104.00	0.70	2.1	1179	1	12	14	42	27	93	115	8
43486	104.00	105.20	1.20	2.5	1103	2	17	16	41	42	105	50	16
43487	105.20	106.20	1.00	2.3	493	1	15	13	22	30	60	60	7
43488	106.20	107.20	1.00	2.3	449	1	14	11	22	37	52	100	7
43489	107.20	108.20	1.00	2.2	598	1	15	9	26	39	71	125	3
43490	108.20	109.70	1.50	2.6	885	1	15	11	37	55	63	205	5
43491	109.70	111.70	2.00	2.9	695	1	11	12	31	32	55	315	27
43492	111.70	113.20	1.50	2.9	804	1	11	13	33	33	60	90	13
43493	113.20	114.20	1.00	6	2034	1	21	14	75	37	114	330	5
43494	114.20	115.20	1.00	1.9	1360	1	9	12	45	31	121	150	8
43495	115.20	117.20	2.00	2.3	596	1	10	15	23	42	73	140	19
43496	117.20	119.00	1.80	1.1	101	1	7	12	6	37	12	80	21
43497	119.00	121.00	2.00	1.8	246	1	6	14	13	41	38	90	16
43498	121.00	123.00	2.00	1.7	341	1	8	14	13	39	41	150	20
43499	123.00	124.80	1.80	1.1	151	1	6	19	8	69	21	170	15
43500	124.80	125.60	0.80	0.7	180	2	13	19	9	80	7	600	5
43501	125.60	127.60	2.00	0.6	175	2	21	19	7	92	3	705	17

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43502	127.60	129.60	2.00	0.9	382	1	19	20	14	71	10	2455	15
43503	129.60	130.20	0.60	0.5	95	2	16	16	3	58	7	480	6
43504	130.20	132.20	2.00	0.6	124	2	22	18	4	73	8	685	14
43505	132.20	134.20	2.00	0.5	104	2	18	21	4	69	11	740	20
43506	134.20	136.20	2.00	0.6	312	2	16	21	17	64	12	5750	25
43507	136.20	138.20	2.00	0.5	155	2	18	16	8	50	9	1540	17
43508	138.20	140.20	2.00	0.3	106	1	26	17	4	55	3	775	20
43509	140.20	142.20	2.00	0.1	197	1	38	19	9	64	1	900	19
43510	142.20	143.80	1.60	0.3	96	1	34	18	3	57	2	200	15
43511	143.80	145.60	1.80	0.7	31	2	56	21	1	50	1	145	15
43512	145.60	146.80	1.20	2.5	1981	2	22	18	77	46	232	115	13
43513	146.80	148.80	2.00	1.8	295	2	20	18	17	42	20	75	10
43514	148.80	150.80	2.00	1.8	582	2	22	21	44	55	38	65	12
43515	150.80	153.00	2.20	0.7	158	1	27	15	14	49	3	105	17
43516	153.00	155.00	2.00	0.5	145	2	29	18	13	54	19	45	23
43517	155.00	157.10	2.10	0.6	159	2	22	17	9	43	35	65	16
43518	157.10	157.60	0.50	1.2	221	2	23	15	14	44	43	80	5
43519	157.60	159.80	2.20	0.6	168	2	20	16	8	39	30	65	21
43520	159.80	161.80	2.00	0.6	103	2	23	19	7	50	27	65	17
43521	161.80	164.00	2.20	0.6	578	2	18	17	19	54	30	75	30
43522	164.00	166.00	2.00	1	334	2	18	12	13	41	45	40	13
43523	166.00	168.00	2.00	1.5	328	1	33	15	16	47	51	65	13
43524	168.00	170.00	2.00	0.7	210	2	29	13	8	45	30	105	5
43525	170.00	170.40	0.40	1.6	918	1	29	11	26	40	98	30	22
43526	170.40	170.60	0.20	0.7	375	1	17	11	13	21	52	45	1
43527	170.60	172.80	2.20	1.1	411	1	26	10	17	47	44	70	17
43528	172.80	174.80	2.00	0.6	197	1	24	12	11	50	31	65	11
43529	174.80	176.90	2.10	0.2	79	1	19	13	7	49	20	25	7
43530	176.90	178.90	2.00	0.1	21	2	20	17	1	37	17	10	25

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43426	9.00	11.00	2.00	2.7	738	1	16	16	51	10	98	500	35
43427	11.00	13.00	2.00	1.8	991	2	21	14	45	25	34	435	27
43428	13.00	14.60	1.60	3.5	1316	1	20	17	69	44	132	530	40
43429	14.60	17.80	3.20	6	820	1	50	14	39	24	104	1325	38
43430	17.80	18.50	0.70	1.4	322	1	18	16	16	18	32	635	5
43431	18.50	20.50	2.00	2.5	199	1	40	16	20	9	37	520	27
43432	20.50	22.50	2.00	3.4	233	1	19	17	21	16	43	805	18
43433	22.50	24.50	2.00	3.2	310	1	17	16	23	18	47	1465	31
43434	24.50	26.50	2.00	5.9	238	1	15	13	27	24	63	1555	30
43435	26.50	28.50	2.00	1.9	450	1	23	13	23	28	54	225	33
43436	28.50	29.90	1.40	2	381	1	23	16	21	36	37	220	23
43437	29.90	31.90	2.00	1.7	855	1	14	14	33	38	42	375	14
43438	31.90	33.90	2.00	3.8	921	1	24	14	37	25	112	585	17
43439	33.90	35.90	2.00	3.4	1001	1	25	15	37	44	135	235	20
43440	35.90	37.90	2.00	2.7	850	1	22	15	38	54	63	650	19
43441	37.90	39.90	2.00	0.5	258	1	19	19	18	66	17	395	23
43442	39.90	41.90	2.00	0.5	45	1	21	15	5	57	10	135	24
43443	41.90	43.90	2.00	0.7	36	1	18	17	4	39	7	100	20
43444	43.90	46.00	2.10	0.8	121	1	19	13	9	43	20	175	17
43445	46.00	47.00	1.00	1	281	1	15	11	14	61	27	120	8
43446	47.00	49.00	2.00	1.9	282	1	7	11	17	31	51	520	25
43447	49.00	51.00	2.00	2.9	341	1	10	15	27	34	15	855	19
43448	51.00	53.00	2.00	1.5	471	1	12	17	24	42	41	535	17
43449	53.00	55.00	2.00	2.6	259	1	13	16	21	41	35	975	14
43450	55.00	55.40	0.40	1.2	167	1	10	15	9	40	32	400	4
43451	55.40	57.40	2.00	1.6	407	1	14	16	15	38	43	415	16
43452	57.40	59.40	2.00	0.5	79	2	15	18	6	70	20	155	22
43453	59.40	61.50	2.10	0.9	170	1	15	17	9	76	21	145	17
43454	61.50	63.50	2.00	3.4	936	1	15	15	35	45	70	815	100
43455	63.50	64.10	0.60	3.1	840	1	17	18	35	47	58	385	2
43456	64.10	64.50	0.40	3.8	1711	1	13	13	65	37	180	390	1
43457	64.50	66.10	1.60	3.4	1030	1	15	11	42	34	93	365	15
43458	66.10	67.00	0.90	9	2470	1	18	13	105	14	162	1065	8
43459	67.00	68.20	1.20	8.7	655	1	14	9	40	15	112	1560	10
43460	68.20	70.20	2.00	6.4	913	1	22	16	55	11	92	735	9
43461	70.20	71.40	1.20	5.3	367	1	22	16	40	11	93	465	8
43462	71.40	71.90	0.50	3.4	777	1	17	11	43	12	62	355	4
43463	71.90	73.90	2.00	3.7	838	1	17	19	47	15	71	345	11
43464	73.90	75.90	2.00	3.7	894	1	14	11	59	27	97	295	26

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43465	75.90	78.20	2.30	4.6	573	1	28	12	56	16	98	345	18
43466	78.20	79.20	1.00	4.4	1712	1	18	14	82	24	66	545	6
43467	79.20	79.60	0.40	6.6	3880	1	12	15	167	27	230	390	2
43468	79.60	80.60	1.00	9	890	1	17	14	54	14	90	700	9
43469	80.60	81.60	1.00	2.1	418	1	15	12	30	19	50	200	10
43470	81.60	83.10	1.50	2.4	133	2	12	13	28	27	40	125	19
43471	83.10	84.10	1.00	2.4	232	1	21	19	16	13	47	200	4
43472	84.10	85.10	1.00	1.7	133	1	14	10	16	20	27	90	12
43473	85.10	86.10	1.00	1.6	211	1	15	14	16	21	39	140	19
43474	86.10	87.10	1.00	5.2	707	1	14	14	42	19	107	580	3
43475	87.10	89.10	2.00	1.9	497	1	14	13	27	47	61	205	21
43476	89.10	91.10	2.00	2	425	1	16	14	22	43	40	190	14
43477	91.10	92.10	1.00	1.7	236	1	12	13	13	19	43	145	8
43478	92.10	94.10	2.00	2.7	567	2	17	13	33	25	52	345	13
43479	94.10	95.90	1.80	2.5	681	1	15	12	27	24	81	185	16
43480	95.90	96.95	1.05	1.9	1174	1	12	12	35	43	138	85	7
43481	96.95	98.45	1.50	2.6	630	1	13	17	29	30	65	110	11
43482	98.45	100.40	1.95	2.1	579	1	16	11	28	26	37	105	17
43483	100.40	102.40	2.00	3.3	1126	1	12	14	43	38	80	250	7
43484	102.40	103.30	0.90	3.5	1223	1	13	16	48	43	61	65	7
43485	103.30	104.00	0.70	2.1	1179	1	12	14	42	27	93	115	8
43486	104.00	105.20	1.20	2.5	1103	2	17	16	41	42	105	50	16
43487	105.20	106.20	1.00	2.3	493	1	15	13	22	30	60	60	7
43488	106.20	107.20	1.00	2.3	449	1	14	11	22	37	52	100	7
43489	107.20	108.20	1.00	2.2	598	1	15	9	26	39	71	125	3
43490	108.20	109.70	1.50	2.6	885	1	15	11	37	55	63	205	5
43491	109.70	111.70	2.00	2.9	695	1	11	12	31	32	55	315	27
43492	111.70	113.20	1.50	2.9	804	1	11	13	33	33	60	90	13
43493	113.20	114.20	1.00	6	2034	1	21	14	75	37	114	330	5
43494	114.20	115.20	1.00	1.9	1360	1	9	12	45	31	121	150	8
43495	115.20	117.20	2.00	2.3	596	1	10	15	23	42	73	140	19
43496	117.20	119.00	1.80	1.1	101	1	7	12	6	37	12	80	21
43497	119.00	121.00	2.00	1.8	246	1	6	14	13	41	38	90	16
43498	121.00	123.00	2.00	1.7	341	1	8	14	13	39	41	150	20
43499	123.00	124.80	1.80	1.1	151	1	6	19	8	69	21	170	15
43500	124.80	125.60	0.80	0.7	180	2	13	19	9	80	7	600	5
43501	125.60	127.60	2.00	0.6	175	2	21	19	7	92	3	705	17
43502	127.60	129.60	2.00	0.9	382	1	19	20	14	71	10	2455	15

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43503	129.60	130.20	0.60	0.5	95	2	16	16	3	58	7	480	6
43504	130.20	132.20	2.00	0.6	124	2	22	18	4	73	8	685	14
43505	132.20	134.20	2.00	0.5	104	2	18	21	4	69	11	740	20
43506	134.20	136.20	2.00	0.6	312	2	16	21	17	64	12	5750	25
43507	136.20	138.20	2.00	0.5	155	2	18	16	8	50	9	1540	17
43508	138.20	140.20	2.00	0.3	106	1	26	17	4	55	3	775	20
43509	140.20	142.20	2.00	0.1	197	1	38	19	9	64	1	900	19
43510	142.20	143.80	1.60	0.3	96	1	34	18	3	57	2	200	15
43511	143.80	145.60	1.80	0.7	31	2	56	21	1	50	1	145	15
43512	145.60	146.80	1.20	2.5	1981	2	22	18	77	46	232	115	13
43513	146.80	148.80	2.00	1.8	295	2	20	18	17	42	20	75	10
43514	148.80	150.80	2.00	1.8	582	2	22	21	44	55	38	65	12
43515	150.80	153.00	2.20	0.7	158	1	27	15	14	49	3	105	17
43516	153.00	155.00	2.00	0.5	145	2	29	18	13	54	19	45	23
43517	155.00	157.10	2.10	0.6	159	2	22	17	9	43	35	65	16
43518	157.10	157.60	0.50	1.2	221	2	23	15	14	44	43	80	5
43519	157.60	159.80	2.20	0.6	168	2	20	16	8	39	30	65	21
43520	159.80	161.80	2.00	0.6	103	2	23	19	7	50	27	65	17
43521	161.80	164.00	2.20	0.6	578	2	18	17	19	54	30	75	30
43522	164.00	166.00	2.00	1	334	2	18	12	13	41	45	40	13
43523	166.00	168.00	2.00	1.5	328	1	33	15	16	47	51	65	13
43524	168.00	170.00	2.00	0.7	210	2	29	13	8	45	30	105	5
43525	170.00	170.40	0.40	1.6	918	1	29	11	26	40	98	30	22
43526	170.40	170.60	0.20	0.7	375	1	17	11	13	21	52	45	1
43527	170.60	172.80	2.20	1.1	411	1	26	10	17	47	44	70	17
43528	172.80	174.80	2.00	0.6	197	1	24	12	11	50	31	65	11
43529	174.80	176.90	2.10	0.2	79	1	19	13	7	49	20	25	7
43530	176.90	178.90	2.00	0.1	21	2	20	17	1	37	17	10	25

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
23.20	25.30	2.10	25.00	*****	18	8.57	0	0.00	0	OXIDIZED
25.30	25.90	0.60	10.00	*****	9	15.00	0	0.00	0	OXIDIZED. BX.
25.90	27.60	1.70	45.00	*****	18	10.59	0	0.00	0	OXIDIZED
27.60	29.60	2.00	85.00	*****	18	9.00	0	0.00	0	OXIDIZED
29.60	31.80	2.20	120.00	*****	25	11.36	0	0.00	0	OXIDIZED
31.80	32.60	0.80	20.00	*****	19	23.75	0	0.00	0	
32.60	34.60	2.00	45.00	*****	25	12.50	0	0.00	0	
34.60	36.00	1.40	50.00	*****	17	12.14	0	0.00	0	
36.00	36.50	0.50	15.00	*****	5	10.00	0	0.00	0	
36.50	38.10	1.60	55.00	*****	17	10.63	0	0.00	0	
38.10	38.40	0.30	10.00	*****	4	13.33	0	0.00	0	
38.40	39.30	0.90	10.00	*****	14	15.56	0	0.00	0	
39.30	39.80	0.50	15.00	*****	6	12.00	0	0.00	0	
39.80	41.10	1.30	10.00	769.2	14	10.77	0	0.00	0	
69.30	71.30	2.00	60.00	*****	24	12.00	0	0.00	0	BX.
71.30	74.20	2.90	80.00	*****	20	6.90	0	0.00	0	BX.
74.20	75.30	1.10	0.00	0.0	18	16.36	0	0.00	0	BX.
75.30	77.30	2.00	45.00	*****	41	20.50	0	0.00	0	BX.
77.30	80.10	2.80	110.00	*****	23	8.21	0	0.00	0	BX.
80.10	81.40	1.30	35.00	*****	12	9.23	1	0.77	0	
81.40	83.90	2.50	35.00	*****	29	11.60	1	0.40	0	SX STR 3
83.90	85.90	2.00	145.00	*****	12	6.00	0	0.00	0	SX STR 2
85.90	87.90	2.00	65.00	*****	24	12.00	0	0.00	0	SX STR 2
91.90	93.40	1.50	80.00	*****	13	8.67	1	0.67	0	
93.40	94.10	0.70	55.00	*****	3	4.29	1	1.43	0	
94.10	94.80	0.70	50.00	*****	5	7.14	2	2.86	0	
95.50	96.20	0.70	0.00	0.0	0	0.00	0	0.00	0	
154.50	154.80	0.30	25.00	*****	2	6.67	0	0.00	0	HEMATITIC BX.
154.80	155.10	0.30	25.00	*****	2	6.67	0	0.00	0	HEMATITIC BX.
155.10	157.30	2.20	75.00	*****	25	11.36	0	0.00	0	HEMATITIC BX.
157.30	158.20	0.90	30.00	*****	11	12.22	3	3.33	0	HEMATITIC BX.
178.90	180.90	2.00	185.00	*****	9	4.50	0	0.00	0	HEMATITIC BX.
187.80	188.90	1.10	50.00	*****	10	9.09	0	0.00	0	
188.90	189.30	0.40	25.00	*****	4	10.00	1	2.50	0	
189.30	190.80	1.50	50.00	*****	18	12.00	0	0.00	0	
194.30	194.70	0.40	30.00	*****	1	2.50	0	0.00	0	SX STR 1
194.70	195.40	0.70	55.00	*****	15	21.43	0	0.00	0	SX STR 1
195.40	196.00	0.60	45.00	*****	6	10.00	0	0.00	0	SX STR 2/10

HOLE NUMBER: CL-91-03

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41139.00N
EAST: 9481.00E
ELEV: 1316.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -70° 0' 0"
LENGTH OF THE HOLE: 184.20m
START DEPTH: 0.00m
FINAL DEPTH: 184.20m

COLLAR GRID AZIMUTH: 290° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 16, 1991
DATE COMPLETED: August 17, 1991
DATE LOGGED: August 19, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD
CASING: TO 20'(10' LEFT IN HOLE)
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
47.80	-	-70° 0'	ACID	OK	
160.60	-	-71° 0'	ACID	OK	
191.10	-	-71° 0'	ACID	OK	

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.10	«CASING»	Basalt till boulders.				
6.10 TO 19.50	«OXIDIZED ZONE-LATITE»	Yellow-brown. Medium grained. Strongly, argillized and weathered. Flow banded latite patchy silcification and moderate quartz stockwork. Stockwork Quartz Vein	45	«St Arg» Abundant fe-oxide. «Mod Stockwork»	«Limonitic» original pyrite weathered to limonite.	
19.50 TO 41.30	«LATITE FLOW»	Grey-yellow. Medium grained. Strongly argillized flow banded latite. Banding (40-70 degrees). W-M pyrite stringers locally gougy, also patchy silicification around pyrite stringers and small micro breccias @ 27.5m, 30.8m.	55	«Mod Sil» «St-Lat Arg» Abundant yellow clay replaces feldspar phenos and alternate bands between silicified laminations argillic alteration and yellow clay content increases down section.	«W-M Py Str 3%» Pyrite to 5% is latest stage in 2-5cm vuggy quartz micro breccia veins and forms stringers up to 1cm wide.	
41.30 TO 56.00	«TUFF BRECCIA»	Grey-yellow. Medium grained. Strongly argillized depositional breccia of latite/porphyry fragments in tuffaceous matrix frags vary from 40-80%, matrix to clast supported. Frags dominently latite flow, but also fs-hb porphyry and aphanitic ash tuff interval.		«St Arg» «St Sil-Patchy» Interval is strongly argillized with abundant yellow clay replacing fragments and matrix. Silicification is locally strong but very patchy and post dates arg altn.	«W Py Str, 3%» Fine grained pyrite occurs as rare discrete stringers and disseminated in patchy black siliceous breccia matrix.	
	⎨41.4-41.5⎬	«Fault» Clay rich gouge.	?			
	⎨41.5-42.1⎬	«Breccia Vein» Black sulphide quartz breccia with yellow argillized wallrock fragments. Frags 30% wallrock 30% previous white quartz.	?	«St Arg» wallrock frags. «I Sil»	«Dis Py 5%» in the black quartz matrix.	
	⎨54-54.2⎬	«Fault» 10cm grey clay gouge.	45			
	⎨53-53.3⎬	«Breccia Vein» Black sulphide quartz breccia st argillite (yellow clay) w/r frags in black quartz matrix. Rebrecciated and healed by white quartz final stage is grey chalcedony filling large 10cm across. Wallrock frags only 20%.	30	«St Arg» «I Sil» St yellow clay argillization of wallrock frags.	«Dis Py 3%» Occurs disseminated in black quartz matrix.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
56.00 TO 66.50	«TUFF BRECCIA»	Yellow-green. Intense to extreme argillically altered tuff breccia, weak patchy silicification surrounding sparse pyrite stringers, breccia frags dominantly latite flow. Similar to previous interval, but much increased argillization.		«I-X Arg» «W Sil» Locally intense argillite altn results in gougy zones.	«W Py Str,2%» Fine to coarse euhedral pyrite in sparse quartz stringers and silicified patches.	
	⎨62.3-62.4⎬	«Pyritic Breccia» Pyrite rich breccia.		«S Sil»	«Pyrite 5%»	
	⎨61.7-61.8⎬	«Qtz Brx Vein» 3cm quartz breccia vein.		«Int Sil»	«Pyrite 3%» as selvage within vein.	
66.50 TO 68.20	«FAULT ZONE»	Grey-green. Extreme argillization, abundant clay gouge and rotated rounded of intensely argillized latite, and broken pyritic quartz vein.		«X Arg»	«Tr Py»	Rotated rounded frags.
68.20 TO 68.80	«SIL BRECCIA»	Grey. Intensely silicified tuff brx, partly vein breccia. Clast supported fragments of latite flow and crowded PF porphyry, frags to 10cm. Dark grey sulphide quartz breccia vein forms 30% of interval and is weakly vuggy.	45	«S Arg» overprinted by «I Sil» Clear to grey quartz matrix carries 2% disseminated pyrite frags are strongly silicified after strong argillization.6	«2% Dis Py» in black quartz breccia matrix. «Trace Grey Flakes» in earlier quartz breccia frags.	
68.80 TO 72.30	«LATITE»	Pale green. Strongly argillized flow banded latite overprinted by banding..... Moderate patchy silicification.	20	«St Arg» «M Sil»	«W Py Str 2%»	
72.30 TO 82.50	«STOCKWORK BRECCIA»	Grey-green. Wide zone of sulphidic quartz breccia and stockwork veins. In strongly argillized and silicified latite flow. Latite Flow Banding Interval is perhaps 40% breccia + stockwork.	40	«St Arg» overprinted by patchy «St Sil» Remnant texture.	«Py 5%» in irregular black quartz breccia and stringers pyrite is fine grained occurs as sulvages and blebs to 1cm.	Good looking 10m zone of sulphide quartz stockwork and breccia.
	⎨72.8-74.2⎬	«Breccia Vein» Dark grey. Black sulphidic quartz breccia vein. Fragments of flow banded latite to 10cm commonly show remnant retievlate texture. St silicification overprints st argillization. Minor vugs to 1cm. Frags pale grey, clast supported.		«Int Sil» black sulphidic matrix. «St Sil» of wallrock fragments after st argillic alteration.	«Py 3%» fine grained pyrite as irregular blebs and "lacey" selvages. Also trace bladed in late white quartz.	Trace bladed
	⎨82-82.5⎬	«Breccia Vein» Black sulphide breccia vein as above, borders on jigsaw breccia.		«St Sil» after «St Arg»	«Py 3%» as previous.	Sharp angular frags.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
82.50 TO 83.20	«FAULT»	Pale green. Extreme argillization below fault @ 82.6m.		«Arg» Total clay gouge.	«Trace Py»	
83.20 TO 90.90	«TUFF BRECCIA»	Pale green. 1-10cm angular fragments in strongly to intensely argillized depositional breccia with tuffaceous matrix. Frags strongly argillized to moderately silicified and chloritized feldspar/ash tuffs, frags crudely bedded. Crude Bedding	50	«S-I Arg» Intense argillization in top 1/2 of interval decreasing down section. Upper 1/2 is locally gougy. Minor quartz frags suggest local faulting.	«Trace Py»	
90.90 TO 92.70	«FAULT»	Extreme argillization of apparent faulted contact between tuff breccia and underlying porphyry. Local gouge, minor patchy silicification, one disrupted pyrite stringer.		«X Arg» «W Sil» Extreme argillization of apparent fault breccia. Locally total gouge.	«Trace Py» 3% pyrite in one disrupted pyrite stringer.	
92.70 TO 110.30	«FS-HB-BI PORPHYRY»	Grey-green. Moderately argillized and chloritized feldspar hornblende biotite porphyry, all phenos 2-5mm feldspars gone to pale green clay, mafics are chloritized. Stronger argillic bleaching occurs in irregular patches.		«M Arg, M Chl» Plus patchy strong argillic bleaching. Upper 1/2 of interval is somewhat more argillized.	Not even a trace!	
	⎨93.8-94⎬	«Fault» Minor gouge.		«I Arg»		
	⎨96.9-97.5⎬	«Bleached Breccia» with chloritic quartz matrix.		«S Arg»	«Trace Py»	
	⎨98.9-99.6⎬	«Bleached»		«S Arg»		
	⎨100.8-101⎬	«Fault» Minor gouge.		«I Arg»		
	⎨103-103.2⎬	«Fault» Minor gouge.		«I Arg»		
	⎨104.6-104.7⎬	«Fault» Minor gouge.				
	⎨106.4-107.7⎬	«Bleached» patch with single white quartz vein 1cm @ 106.4m.		«S Arg» «W Sil»		
	⎨108.1-108.7⎬	«Bleached» patch with chloritic pyrite stringers.		«W Sil» «S Arg»	«Trace Py Str»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
110.30 TO 119.30	«FS-HB-BI PORPHYRY»	Dark green. Same lithology as previous interval, new strongly chloritized, matrix and phenos, hematite laminations. Definite Flow Banding Strongest chloritization between 114.6-115.1m.	45	«S Chl,M Sil» patches of moderte argillic bleaching.	«Trace Py» in sparse white quartz stringers.	Weak fizz with acid.
	⎨113.3-114.4⎬	«Stockwork» Pale green. Argillically bleached zone of weak quartz pyrite chlorite stockwork veining.		«M Arg» «M Sil»	«Py 3%» in chloritic quartz strings fine to medium grained disseminated and selvages.	
119.30 TO 119.80	«FAULT»	Pale green. Fault gouge, abundant clay.		«I Arg» Strong clay gouge.	«Trace Py»	
119.80 TO 129.20	« BRECCIA»	Pale green, and red. Strong to intense argillically altered tuff breccia with pale green Frags in matrix. Locally gougy, interval appears to be exclusively faulted. Some frags are strongly silicified and bear pyritic quartz stringers.		«S-I Arg» «M-S H »	«Trace Py» in disrupted quartz stringers.	
	⎨122.1-122.8⎬	«Fs Hb Bi Porphyry» Pale green. Medium grained. Intensely argillized feldspar biotite porphyry with moderately pyritic micro stockwork.	70	«I Arg» «S Sil»	«1% Py» in quartz micro stockwork.	
	⎨122.8-123.1⎬	«Fault» Clay rich fault.		«I Arg» Abundant clay.		
	⎨123.1-126.5⎬	«Lapilli Breccia» Pale grey. Strongly bleached and argillized lapilli tuff with 1cm (.5-10cm) angular figs of fine grained fs? ash tuff. Frags are intensely argillized, yellow-green clay pyrite occurs disseminated throughout. *This unit bears minor bright green lapilli (1cm rounded very similar to those observed in the North Zone major culvert outcrop.		«S-I Arg» Strongly argillized matrix, intensely argillized fragments.	«1% Py» as blebby disseminations throughout.	
129.20 TO 131.30	«SIL BRECCIA»	Grey. Silicified stockwork and locally brecciated lapilli breccia. Fragments of wallrock strongly argillized weakly silicified, in grey quartz matrix with late crosscutting pyrite stringers.		«S Arg» overprinted by «I Sil» and late quartz-pyrite stockwork veins.	«Py 3%» as late pyritic quartz stringers. Also weakly disseminated blebs as phenocryst replacements.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
131.30 TO 132.30	«FAULT»	Extremely argillized, gougy fault zones.	40	«X Arg»	«Trace Py»	
132.30 TO 149.00	«QTZ-PY STOCKWORK»	Strong pyritic quartz stockwork zone. Quartz stringers <1cm are grey to black, carrying up to 5% fine grained pyrite as selvages and tiny bladed aggregates. Wallrock is weakly flow banded FS MB BI. Porphyry-which appears rather tuffaceous in places. Pf 1-3mm are altered to pale green clay, phenos. Sparse 1cm lapilli frags (or glamerophorphyreclasts?) are chloritized and pyritic.	45 20	«M Arg» overprinted by «M Sil» and strong quartz-pyrite stockworking with minor microbreccias.	«3% Py» as pyritic quartz stringers <1cm and weakly disseminated in wallrock.	FS HB BI porphyry flow or tuff? Promising looking zone looks similar areas in North Zone that best
149.00 TO 153.60	«FAULT BRECCIA»	Dark grey. A wide fault zone of intense argillization, brecciation and weak quartz-pyrite sockworking. Breccia frags generally 1-5cm of feldspar porphyry or ash tuff are intensely argillized clast supported. 30% of frags are strongly silicified pyritic and may represent broken quartz vein material. Lower half of interval is very gougy, with minor hematite and abundant green clay.		«I Arg» of wallrock fragments and «M Sil» of matrix with late crosscutting pyritic stringers 4cm.	«Py 2%» disseminated and in quartz stringers.	
153.60 TO 158.30	«FS-HB-BI PORPHYRY»	Green. Medium grained. feldspar and biotite porphyry with marked flow banding.... Interval is weakly stockworked with black pyritic stringers.	45	«M Chl» «M Sil» Pervasive chloritization and patchy silicification around quartz stringers.	«1% Py» in black quartz stringers.	
	⌊157-158.3⌋	«Sil Breccia» Quartz + chlorite cemented breccia, grey locally quartz +/- chlorite + pyrite cementing strongly silicified porphyry breccia.		«S Chl» «S Sil»	«Trace Py»	
158.30 TO 164.30	«BANDED FLOW»	Dark green. Aphanitic. An aphanitic flow, with moderately hematized. Flow Bands (80-90deg) Almost parallel to core axis. Contact is sharp at 158.3m, although 1cm wide micro breccia suggests contact is faulted.	85	«M Sil» «M,Chl,M Hem» Hematite occurs along <1cm spaced flow bands chlorite along late fractures.	«Trace Py» in chloritic fractures.	Angular
	⌊160.5-162.5⌋	«Sil Breccia» Vuggy drusy white quartz cements an open wallrock breccia. Fragments 1-4cm in size, lie along a bedding plane "vein" several cm in width.		«I Sil»	«Trace Py» Quartz is essentially barren, chloritic fractures carry more pyrite than quartz does.	Beddding parallel. "Vuggy vein vold"

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
164.30 TO 171.80	«BANDED FLOW» ┤166.4-166.5├	Aphanitic. Same lithology, but chlorite + hematite alteration, decreased silicification. Fracture intensity increases down section, producing locally gougy intervals with st argillic alteration. «Qtz Vein» White pyritic quartz vein 2cm.	30	«M Sil,M Arg» «S Chl,S Hem» Hematite occurs along flow bands. Chlorite (+/- pyrite) coats late fractures, fills minor micro breccias. Argillization increases down section.	«Trace Py» «1% Dis Py»	
171.80 TO 171.90	«FAULTS»	Highly fractured, brecciated contact with st argillic alteration and moderate clay gouge.		«St Arg»		
171.90 TO 180.10	«ALTERATION BALLS»	Olive green. Aphanitic. Fine grained ash or sediment unit with abundant alteration balls. pale green to buff matrix and brown oval balls entire interval is extensively fractured. 50% is gougy, looks faulted late fractures host minor calcite and abundant chlorite.		«W Sil» «W Arg» «W Chl,Hem» ┤175.-180.1├	«Trace Dis Py» «Fault Zone» Highly fractured gougy interval.	Classic alteration balls.
180.10 TO 180.50	«SIL BRECCIA»	Grey. Open vuggy breccia cemented by quartz and pyrite. Fragments are dark grey silicified mud stone. Probably hydrothermal breccia essentially no matrix only pyritic quartz rims fragments.		«I Sil»	«5% Pyrite As Breccia Cement»	
180.50 TO 181.80	«HEMATITE BRECCIA»	Black and red. Gougy hematite rich fault breccia, probably a continuation of fault zone from 175-181.8m, now in a dark grey siliceous mud stone. 50% of interval is gougy.		«M-S Argillization» «S Hematite» in matrix. Fragments are moderately silicified.	«Trace Py»	Black areas are voids completely coated by fine grained pyrite in quartz rims.
181.80 TO 184.20	«HEMATITE BRECCIA»	Red & green. Hematite rich depositional breccia, similar to above interval, but not gougy only weakly argillic. Green fine grained sed frags in fine grained hematitic matrix.		«W Arg» «S Hem»	«Trace Py»	
184.20 TO 191.10	«ASH TUFF»	Dark green. Well bedded fine grained ash tuffs or mudstones, with hematized fractures & alternating beds, minor micro breccias are strongly chloritized, hematized and carry trace pyrite. Sparse calcite stringers. Bedding(0-20deg) END OF HOLE.	10	«M-S Chl, Hem» «M Sil»	«Trace Py»	First significant appearance of calcite veinlets.

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43532	8.20	10.20	2.00	2.3	977	1	18	11	50	21	47	410	22	
43533	10.20	12.20	2.00	1.9	979	1	15	9	35	23	59	500	30	
43534	12.20	14.20	2.00	3.1	1118	1	17	12	37	28	74	505	20	
43535	14.20	16.20	2.00	2	1128	1	19	11	31	22	53	410	25	
43536	16.20	19.50	3.30	2.3	478	1	19	8	26	14	38	395	38	
43537	19.50	21.50	2.00	1.6	140	1	17	14	13	43	22	265	23	
43538	21.50	23.50	2.00	1.3	327	1	17	13	21	56	25	345	25	
43539	23.50	25.50	2.00	1.3	199	1	14	16	12	38	19	375	13	
43540	25.50	27.50	2.00	4.2	728	1	17	10	34	24	61	1100	22	
43541	27.50	29.50	2.00	7.7	1426	1	16	15	63	27	118	3560	21	
43542	29.50	31.50	2.00	2.8	708	1	26	13	30	42	53	430	16	
43543	31.50	33.50	2.00	1.4	382	1	16	12	17	60	35	235	17	
43544	33.50	35.50	2.00	2	691	1	17	14	27	60	134	145	12	
43545	35.50	37.50	2.00	1.3	545	1	17	15	25	46	39	440	25	
43546	37.50	39.50	2.00	1.3	959	2	17	14	38	46	90	215	21	
43547	39.50	41.30	1.80	1.5	189	1	15	16	14	39	36	245	18	
43548	41.30	42.10	0.80	3.2	1024	1	16	22	46	33	120	1295	14	
43549	42.10	44.10	2.00	1.8	773	1	18	13	26	43	66	335	18	
43550	44.10	46.10	2.00	2.1	1434	1	15	12	46	42	122	255	26	
43551	46.10	48.10	2.00	1.5	1038	1	14	10	37	44	67	260	32	
43552	48.10	50.00	1.90	2.2	200	1	17	14	12	50	28	240	23	
43553	50.00	52.00	2.00	3.8	1596	1	18	15	50	49	91	550	28	
43554	52.00	54.00	2.00	3.8	2492	1	11	13	66	35	204	440	22	
43555	54.00	56.00	2.00	1.9	666	1	15	14	25	45	67	260	23	
43556	56.00	58.00	2.00	1.6	721	1	17	11	23	29	70	125	15	
43557	58.00	60.00	2.00	1.4	319	1	17	15	16	49	38	200	23	
43558	60.00	62.00	2.00	1.8	1206	1	19	13	41	42	78	180	18	
43559	62.00	64.00	2.00	1.8	690	2	20	17	27	61	59	185	17	
43560	64.00	65.50	1.50	1.8	1655	2	18	12	54	27	162	110	5	
43561	65.50	66.50	1.00	1.6	1040	2	18	14	30	45	106	75	4	
43562	66.50	68.20	1.70	2.2	627	2	10	13	28	46	59	215	7	
43563	68.20	70.00	1.80	1.3	813	2	8	7	27	21	104	105	1	
43564	70.00	70.80	0.80	2	699	1	8	14	22	34	76	175	8	
43565	70.80	72.30	1.50	1.4	359	1	5	12	11	26	33	255	8	
43566	72.30	72.80	0.50	1.7	501	1	7	13	14	29	38	185	4	
43567	72.80	74.20	1.40	2.9	1406	1	7	11	39	33	125	500	8	
43568	74.20	76.20	2.00	3.3	1194	1	10	12	34	43	122	685	16	
43569	76.20	78.20	2.00	3.1	1312	1	9	13	43	34	143	860	8	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43570	78.20	80.10	1.90	3.3	1448	2	9	15	47	36	96	2120	17
43571	80.10	82.00	1.90	1.2	440	1	7	12	14	37	37	610	10
43572	82.00	82.50	0.50	2.6	2218	2	7	15	71	47	200	1300	2
43573	82.50	83.20	0.70	0.6	248	1	7	14	7	75	19	290	4
43574	83.20	85.20	2.00	0.5	90	2	15	16	1	71	8	365	13
43575	88.90	90.90	2.00	0.2	57	2	17	17	1	69	15	205	17
43576	90.90	92.70	1.80	0.7	224	1	24	15	5	70	18	655	16
43577	92.70	94.70	2.00	0.3	51	2	18	14	1	74	16	155	27
43578	94.70	96.70	2.00	0.5	62	3	20	18	1	79	7	145	30
43579	96.70	98.70	2.00	0.2	37	3	22	18	1	72	5	125	24
43580	98.70	99.70	1.00	0.5	63	3	22	14	1	69	17	170	17
43581	99.70	101.70	2.00	0.4	86	3	20	15	1	66	14	230	36
43582	101.70	103.70	2.00	0.2	63	2	20	15	1	63	19	200	12
43583	103.70	106.10	2.40	0.2	58	3	23	14	1	69	10	215	25
43584	106.10	108.10	2.00	0.3	15	2	19	17	1	54	82	115	17
43585	108.10	110.30	2.20	0.2	45	2	34	9	1	47	8	275	26
43586	110.30	112.30	2.00	0.1	51	2	23	10	1	53	6	215	12
43587	112.30	114.30	2.00	0.3	69	2	32	11	1	56	5	305	15
43588	114.30	116.30	2.00	0.5	43	3	33	11	1	52	2	160	9
43589	116.30	118.30	2.00	0.6	104	3	30	18	1	54	17	250	13
43590	118.30	119.80	1.50	0.2	24	4	35	18	1	77	2	205	7
43591	119.80	121.80	2.00	0.8	81	3	404	43	1	363	21	270	18
43592	121.80	123.10	1.30	1	144	2	91	23	7	347	18	575	17
43593	123.10	125.10	2.00	1.4	116	1	53	23	7	103	20	195	16
43594	125.10	126.50	1.40	1	130	2	25	16	10	55	13	245	8
43595	126.50	128.20	1.70	1.4	523	2	92	18	20	47	40	505	22
43596	128.20	129.20	1.00	1.2	254	2	61	16	14	63	16	415	10
43597	129.20	131.30	2.10	1.3	327	2	32	17	20	63	22	1065	22
43598	131.30	132.30	1.00	1.3	438	2	23	17	23	55	26	310	8
43599	132.30	134.30	2.00	1.3	364	2	18	14	18	49	32	775	25
43600	134.30	136.20	1.90	0.8	112	1	15	12	8	46	18	425	21
43601	136.20	138.20	2.00	1	213	2	96	19	11	60	21	690	27
43602	138.20	140.20	2.00	1.6	259	1	90	22	15	52	38	685	19
43603	140.20	142.20	2.00	1.6	186	1	19	18	11	39	19	480	18
43604	142.20	144.20	2.00	2.1	245	2	17	15	17	34	22	400	11
43605	144.20	146.20	2.00	1.7	353	1	19	14	19	32	36	465	17
43606	146.20	148.20	2.00	2.1	561	2	23	14	30	46	39	585	19
43607	148.20	149.00	0.80	0.9	544	1	71	18	26	39	23	340	12

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43608	149.00	151.00	2.00	1.5	1685	1	33	17	59	53	42	845	23
43609	151.00	153.60	2.60	2.1	908	1	22	14	32	39	64	300	26
43610	153.60	155.60	2.00	0.4	119	1	12	15	7	40	21	130	29
43611	155.60	157.00	1.40	0.6	79	1	10	16	5	34	19	210	18
43612	157.00	158.30	1.30	0.6	43	1	12	18	6	43	2	120	22
43613	158.30	159.30	1.00	0.6	134	1	19	18	5	43	46	90	24
43614	159.30	160.50	1.20	1.1	267	1	28	18	6	47	61	205	25
43615	160.50	161.50	1.00	0.8	138	1	23	16	6	38	43	75	18
43616	161.50	162.50	1.00	0.4	125	1	18	17	4	37	49	35	26
43617	162.50	164.50	2.00	0.3	57	1	26	19	6	49	3	45	48
43618	164.50	166.60	2.10	0.8	107	1	22	15	8	43	18	55	27
43619	166.60	168.60	2.00	1	286	1	20	17	13	42	17	135	16
43620	168.60	170.60	2.00	0.7	126	1	23	19	8	42	5	185	21
43621	170.60	171.80	1.20	0.5	31	1	26	18	5	34	2	45	100
43622	171.80	173.80	2.00	0.5	58	1	27	19	6	37	1	40	40
43623	173.80	175.80	2.00	0.5	82	1	24	18	8	36	16	70	100
43624	175.80	177.80	2.00	2.5	273	2	29	21	17	43	20	110	100
43625	177.80	180.10	2.30	1.6	770	1	26	22	38	42	18	710	50
43626	180.10	180.50	0.40	0.7	1187	1	14	17	128	28	82	1645	3
43627	180.50	180.50	0.00	0.9	380	1	24	19	17	50	36	890	17
43628	181.90	184.20	2.30	0.6	107	1	18	23	8	41	15	100	18
43629	186.80	188.70	1.90	0.6	26	2	26	20	7	39	6	55	7

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43532	8.20	10.20	2.00	2.3	977	1	18	11	50	21	47	410	22
43533	10.20	12.20	2.00	1.9	979	1	15	9	35	23	59	500	30
43534	12.20	14.20	2.00	3.1	1118	1	17	12	37	28	74	505	20
43535	14.20	16.20	2.00	2	1128	1	19	11	31	22	53	410	25
43536	16.20	19.50	3.30	2.3	478	1	19	8	26	14	38	395	38
43537	19.50	21.50	2.00	1.6	140	1	17	14	13	43	22	265	23
43538	21.50	23.50	2.00	1.3	327	1	17	13	21	56	25	345	25
43539	23.50	25.50	2.00	1.3	199	1	14	16	12	38	19	375	13
43540	25.50	27.50	2.00	4.2	728	1	17	10	34	24	61	1100	22
43541	27.50	29.50	2.00	7.7	1426	1	16	15	63	27	118	3560	21
43542	29.50	31.50	2.00	2.8	708	1	26	13	30	42	53	430	16
43543	31.50	33.50	2.00	1.4	382	1	16	12	17	60	35	235	17
43544	33.50	35.50	2.00	2	691	1	17	14	27	60	134	145	12
43545	35.50	37.50	2.00	1.3	545	1	17	15	25	46	39	440	25
43546	37.50	39.50	2.00	1.3	959	2	17	14	38	46	90	215	21
43547	39.50	41.30	1.80	1.5	189	1	15	16	14	39	36	245	18
43548	41.30	42.10	0.80	3.2	1024	1	16	22	46	33	120	1295	14
43549	42.10	44.10	2.00	1.8	773	1	18	13	26	43	66	335	18
43550	44.10	46.10	2.00	2.1	1434	1	15	12	46	42	122	255	26
43551	46.10	48.10	2.00	1.5	1038	1	14	10	37	44	67	260	32
43552	48.10	50.00	1.90	2.2	200	1	17	14	12	50	28	240	23
43553	50.00	52.00	2.00	3.8	1596	1	18	15	50	49	91	550	28
43554	52.00	54.00	2.00	3.8	2492	1	11	13	66	35	204	440	22
43555	54.00	56.00	2.00	1.9	666	1	15	14	25	45	67	260	23
43556	56.00	58.00	2.00	1.6	721	1	17	11	23	29	70	125	15
43557	58.00	60.00	2.00	1.4	319	1	17	15	16	49	38	200	23
43558	60.00	62.00	2.00	1.8	1206	1	19	13	41	42	78	180	18
43559	62.00	64.00	2.00	1.8	690	2	20	17	27	61	59	185	17
43560	64.00	65.50	1.50	1.8	1655	2	18	12	54	27	162	110	5
43561	65.50	66.50	1.00	1.6	1040	2	18	14	30	45	106	75	4
43562	66.50	68.20	1.70	2.2	627	2	10	13	28	46	59	215	7
43563	68.20	70.00	1.80	1.3	813	2	8	7	27	21	104	105	1
43564	70.00	70.80	0.80	2	699	1	8	14	22	34	76	175	8
43565	70.80	72.30	1.50	1.4	359	1	5	12	11	26	33	255	8
43566	72.30	72.80	0.50	1.7	501	1	7	13	14	29	38	185	4
43567	72.80	74.20	1.40	2.9	1406	1	7	11	39	33	125	500	8
43568	74.20	76.20	2.00	3.3	1194	1	10	12	34	43	122	685	16
43569	76.20	78.20	2.00	3.1	1312	1	9	13	43	34	143	860	8
43570	78.20	80.10	1.90	3.3	1448	2	9	15	47	36	96	2120	17

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43571	80.10	82.00	1.90	1.2	440	1	7	12	14	37	37	610	10
43572	82.00	82.50	0.50	2.6	2218	2	7	15	71	47	200	1300	2
43573	82.50	83.20	0.70	0.6	248	1	7	14	7	75	19	290	4
43574	83.20	85.20	2.00	0.5	90	2	15	16	1	71	8	365	13
43575	88.90	90.90	2.00	0.2	57	2	17	17	1	69	15	205	17
43576	90.90	92.70	1.80	0.7	224	1	24	15	5	70	18	655	16
43577	92.70	94.70	2.00	0.3	51	2	18	14	1	74	16	155	27
43578	94.70	96.70	2.00	0.5	62	3	20	18	1	79	7	145	30
43579	96.70	98.70	2.00	0.2	37	3	22	18	1	72	5	125	24
43580	98.70	99.70	1.00	0.5	63	3	22	14	1	69	17	170	17
43581	99.70	101.70	2.00	0.4	86	3	20	15	1	66	14	230	36
43582	101.70	103.70	2.00	0.2	63	2	20	15	1	63	19	200	12
43583	103.70	106.10	2.40	0.2	58	3	23	14	1	69	10	215	25
43584	106.10	108.10	2.00	0.3	15	2	19	17	1	54	82	115	17
43585	108.10	110.30	2.20	0.2	45	2	34	9	1	47	8	275	26
43586	110.30	112.30	2.00	0.1	51	2	23	10	1	53	6	215	12
43587	112.30	114.30	2.00	0.3	69	2	32	11	1	56	5	305	15
43588	114.30	116.30	2.00	0.5	43	3	33	11	1	52	2	160	9
43589	116.30	118.30	2.00	0.6	104	3	30	18	1	54	17	250	13
43590	118.30	119.80	1.50	0.2	24	4	35	18	1	77	2	205	7
43591	119.80	121.80	2.00	0.8	81	3	404	43	1	363	21	270	18
43592	121.80	123.10	1.30	1	144	2	91	23	7	347	18	575	17
43593	123.10	125.10	2.00	1.4	116	1	53	23	7	103	20	195	16
43594	125.10	126.50	1.40	1	130	2	25	16	10	55	13	245	8
43595	126.50	128.20	1.70	1.4	523	2	92	18	20	47	40	505	22
43596	128.20	129.20	1.00	1.2	254	2	61	16	14	63	16	415	10
43597	129.20	131.30	2.10	1.3	327	2	32	17	20	63	22	1065	22
43598	131.30	132.30	1.00	1.3	438	2	23	17	23	55	26	310	8
43599	132.30	134.30	2.00	1.3	364	2	18	14	18	49	32	775	25
43600	134.30	136.20	1.90	0.8	112	1	15	12	8	46	18	425	21
43601	136.20	138.20	2.00	1	213	2	96	19	11	60	21	690	27
43602	138.20	140.20	2.00	1.6	259	1	90	22	15	52	38	685	19
43603	140.20	142.20	2.00	1.6	186	1	19	18	11	39	19	480	18
43604	142.20	144.20	2.00	2.1	245	2	17	15	17	34	22	400	11
43605	144.20	146.20	2.00	1.7	353	1	19	14	19	32	36	465	17
43606	146.20	148.20	2.00	2.1	561	2	23	14	30	46	39	585	19
43607	148.20	149.00	0.80	0.9	544	1	71	18	26	39	23	340	12
43608	149.00	151.00	2.00	1.5	1685	1	33	17	59	53	42	845	23

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43609	151.00	153.60	2.60	2.1	908	1	22	14	32	39	64	300	26
43610	153.60	155.60	2.00	0.4	119	1	12	15	7	40	21	130	29
43611	155.60	157.00	1.40	0.6	79	1	10	16	5	34	19	210	18
43612	157.00	158.30	1.30	0.6	43	1	12	18	6	43	2	120	22
43613	158.30	159.30	1.00	0.6	134	1	19	18	5	43	46	90	24
43614	159.30	160.50	1.20	1.1	267	1	28	18	6	47	61	205	25
43615	160.50	161.50	1.00	0.8	138	1	23	16	6	38	43	75	18
43616	161.50	162.50	1.00	0.4	125	1	18	17	4	37	49	35	26
43617	162.50	164.50	2.00	0.3	57	1	26	19	6	49	3	45	48
43618	164.50	166.60	2.10	0.8	107	1	22	15	8	43	18	55	27
43619	166.60	168.60	2.00	1	286	1	20	17	13	42	17	135	16
43620	168.60	170.60	2.00	0.7	126	1	23	19	8	42	5	185	21
43621	170.60	171.80	1.20	0.5	31	1	26	18	5	34	2	45	100
43622	171.80	173.80	2.00	0.5	58	1	27	19	6	37	1	40	40
43623	173.80	175.80	2.00	0.5	82	1	24	18	8	36	16	70	100
43624	175.80	177.80	2.00	2.5	273	2	29	21	17	43	20	110	100
43625	177.80	180.10	2.30	1.6	770	1	26	22	38	42	18	710	50
43626	180.10	180.50	0.40	0.7	1187	1	14	17	128	28	82	1645	3
43627	180.50	180.50	0.00	0.9	380	1	24	19	17	50	36	890	17
43628	181.90	184.20	2.30	0.6	107	1	18	23	8	41	15	100	18
43629	186.80	188.70	1.90	0.6	26	2	26	20	7	39	6	55	7

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
28.50	30.50	2.00	160.00	*****	12	6.00	0	0.00	0	
30.50	34.50	4.00	140.00	*****	18	4.50	0	0.00	0	
36.50	38.50	2.00	150.00	*****	12	6.00	0	0.00	0	
40.50	42.50	2.00	95.00	*****	14	7.00	0	0.00	0	FAULT DIP 1
44.50	46.50	2.00	110.00	*****	20	10.00	0	0.00	0	
48.00	49.00	1.00	90.00	*****	3	3.00	0	0.00	0	
49.00	51.00	2.00	140.00	*****	14	7.00	0	0.00	0	FAULT DIP 1
51.00	53.00	2.00	160.00	*****	18	9.00	0	0.00	0	FAULT DIP 1, BX.
53.00	55.40	2.40	210.00	*****	12	5.00	0	0.00	0	FAULT DIP 1, BX.
55.40	57.00	1.60	120.00	*****	9	5.62	0	0.00	0	FAULT DIP 1
57.00	58.00	1.00	70.00	*****	9	9.00	0	0.00	0	FAULT DIP 1, SX STR 1
58.00	60.00	2.00	180.00	*****	10	5.00	0	0.00	0	SX STR 12
60.00	61.60	1.60	90.00	*****	14	8.75	0	0.00	0	SX STR 6
61.60	62.50	0.90	60.00	*****	5	5.56	0	0.00	0	FAULT DIP 1
62.50	64.50	2.00	185.00	*****	8	4.00	0	0.00	0	FAULT DIP 1, SX STR 7
64.50	66.50	2.00	190.00	*****	13	6.50	0	0.00	0	FAULT DIP 1, SX STR 8
66.50	68.50	2.00	150.00	*****	10	5.00	0	0.00	0	FAULT DIP 1
68.50	70.50	2.00	150.00	*****	13	6.50	0	0.00	0	FAULT DIP 1
70.50	72.50	2.00	160.00	*****	10	5.00	0	0.00	0	FAULT DIP 1
72.50	74.50	2.00	160.00	*****	9	4.50	0	0.00	0	FAULT DIP 1
74.50	76.50	2.00	160.00	*****	7	3.50	0	0.00	0	FAULT DIP 1
76.50	78.50	2.00	180.00	*****	9	4.50	0	0.00	0	FAULT DIP 1
78.50	80.40	1.90	190.00	*****	7	3.68	0	0.00	0	FAULT DIP 1
80.40	82.50	2.10	90.00	*****	16	7.62	0	0.00	0	FAULT DIP 1
82.50	83.40	0.90	40.00	*****	7	7.78	0	0.00	0	FAULT DIP 1
83.40	85.40	2.00	170.00	*****	9	4.50	0	0.00	0	FAULT DIP 1
85.40	87.40	2.00	180.00	*****	6	3.00	0	0.00	0	FAULT DIP 1
87.40	89.40	2.00	140.00	*****	12	6.00	0	0.00	0	FAULT DIP 1
89.40	91.50	2.10	140.00	*****	9	4.29	0	0.00	0	FAULT DIP 1
91.50	93.60	2.10	180.00	*****	10	4.76	0	0.00	0	FAULT DIP 1
93.60	96.60	3.00	0.00	0.0	100	33.33	0	0.00	0	FAULT DIP 1
96.60	99.20	2.60	160.00	*****	13	5.00	0	0.00	0	FAULT DIP 1
99.20	100.80	1.60	80.00	*****	10	6.25	0	0.00	0	FAULT DIP 1, SX STR 6
100.80	102.20	1.40	100.00	*****	7	5.00	0	0.00	0	FAULT DIP 1, SX STR 10
102.20	104.20	2.00	80.00	*****	11	5.50	0	0.00	0	FAULT DIP 1
104.20	106.20	2.00	90.00	*****	16	8.00	0	0.00	0	FAULT DIP 1
106.20	108.20	2.00	40.00	*****	9	4.50	0	0.00	0	FAULT DIP 1
108.20	110.20	2.00	30.00	*****	100	50.00	0	0.00	0	FAULT DIP 1
110.20	112.20	2.00	10.00	500.0	100	50.00	0	0.00	0	FAULT DIP 1
112.20	114.20	2.00	15.00	750.0	100	50.00	0	0.00	0	FAULT DIP 1
114.20	116.20	2.00	150.00	*****	8	4.00	0	0.00	0	FAULT DIP 1
116.20	118.20	2.00	130.00	*****	8	4.00	0	0.00	0	FAULT DIP 1
118.20	120.10	1.90	40.00	*****	100	52.63	0	0.00	0	FAULT DIP 1
120.10	122.10	2.00	100.00	*****	19	9.50	0	0.00	0	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
124.10	126.10	2.00	110.00	*****	9	4.50	0	0.00	0	FAULT DIP 1
127.00	129.10	2.10	110.00	*****	19	9.05	0	0.00	0	
131.10	133.10	2.00	70.00	*****	15	7.50	0	0.00	0	FAULT DIP 1
135.10	137.10	2.00	110.00	*****	14	7.00	0	0.00	0	
137.10	139.10	2.00	110.00	*****	16	8.00	0	0.00	0	
139.10	141.10	2.00	110.00	*****	21	10.50	0	0.00	0	
141.10	142.20	1.10	60.00	*****	8	7.27	0	0.00	0	SX STR 3
142.20	144.20	2.00	20.00	*****	50	25.00	0	0.00	0	FAULT DIP 1, SX STR 1
144.20	146.20	2.00	10.00	500.0	50	25.00	0	0.00	0	FAULT DIP 1, SX STR 1
146.20	148.20	2.00	0.00	0.0	50	25.00	0	0.00	0	FAULT DIP 1
148.20	150.00	1.80	0.00	0.0	50	27.78	0	0.00	0	FAULT DIP 1
150.00	152.00	2.00	30.00	*****	50	25.00	0	0.00	0	
152.00	154.00	2.00	60.00	*****	25	12.50	0	0.00	0	
154.00	156.00	2.00	80.00	*****	15	7.50	0	0.00	0	SX STR 1
156.00	158.00	2.00	140.00	*****	8	4.00	0	0.00	0	SX STR 2/40
158.90	160.90	2.00	80.00	*****	16	8.00	0	0.00	0	SX STR 2
160.90	163.20	2.30	110.00	*****	21	9.13	0	0.00	0	
163.20	166.00	2.80	0.00	0.0	100	35.71	0	0.00	0	FAULT DIP 1, SX STR 3
166.00	168.00	2.00	80.00	*****	20	10.00	0	0.00	0	FAULT DIP 1
168.00	169.50	1.50	30.00	*****	100	66.67	0	0.00	0	FAULT DIP 1
169.50	171.50	2.00	40.00	*****	28	14.00	0	0.00	0	
171.50	173.40	1.90	20.00	*****	20	10.53	0	0.00	0	
173.40	175.40	2.00	70.00	*****	40	20.00	0	0.00	0	FAULT DIP 1
175.40	177.80	2.40	120.00	*****	17	7.08	0	0.00	0	FAULT DIP 1
177.80	178.80	1.00	40.00	*****	12	12.00	0	0.00	0	SX STR 3
178.80	179.80	1.00	50.00	*****	10	10.00	0	0.00	0	
179.80	180.80	1.00	40.00	*****	10	10.00	0	0.00	0	SX STR 4
180.80	181.80	1.00	40.00	*****	16	16.00	0	0.00	0	SX STR 3
181.80	183.00	1.20	60.00	*****	9	7.50	0	0.00	0	SX STR 1
183.00	184.00	1.00	30.00	*****	9	9.00	0	0.00	0	SX STR 3
184.00	186.00	2.00	70.00	*****	21	10.50	0	0.00	0	SX STR 4
186.00	187.00	1.00	50.00	*****	18	18.00	0	0.00	0	SX STR 3
187.00	188.00	1.00	20.00	*****	12	12.00	0	0.00	0	
188.00	189.00	1.00	70.00	*****	8	8.00	0	0.00	0	SX STR 2
189.00	190.00	1.00	10.00	*****	10	10.00	0	0.00	0	SX STR 1
190.00	190.90	0.90	30.00	*****	12	13.33	0	0.00	0	SX STR 3
190.90	193.00	2.10	50.00	*****	14	6.67	0	0.00	0	SX STR 3
193.00	195.00	2.00	60.00	*****	25	12.50	0	0.00	0	
195.00	197.00	2.00	90.00	*****	11	5.50	0	0.00	0	
197.00	199.00	2.00	100.00	*****	21	10.50	0	0.00	0	FAULT DIP 1
199.00	200.40	1.40	20.00	*****	18	12.86	0	0.00	0	FAULT DIP 1
200.40	201.80	1.40	50.00	*****	30	21.43	0	0.00	0	

HOLE NUMBER: CL-91-04

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41096.00N
EAST: 9637.00E
ELEV: 1313.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 202.70m
START DEPTH: 0.00m
FINAL DEPTH: 202.70m

COLLAR GRID AZIMUTH: 290° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 18, 1991
DATE COMPLETED: August 19, 1991
DATE LOGGED: August 22, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD
CASING: 10" LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
64.90	-	-46° 0'	ACID	OK	
163.30	-	-48° 0'	ACID	OK	
202.70	-	-48° 0'	ACID	OK	

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 23.20	«CSG/OB»					
23.20 TO 25.90	«FB LATITE»	Pale grey. Strongly weathered and oxidized section of crystal ash tuff or flow banded latite. Very difficult to tell. The interval is criss-crossed by limonite veins (after py). Fine quartz stockworking also noted. This is strongest from 24.2-24.7m.		«M-Arg,W-Sil» Pervasive argillization enhanced by near surface weathering. Difficult to get an accurate estimate of the degree of alteration. Quartz <'s and pyrite veins suggest that it is quite strong overall.	«Py 3%» as veins. These are completely oxidized to limonite. Vein orientations are random.	Oxidized to 32.6m.
	25.3-25.8	«Breccia Vein» or narrow zone of fault breccia. Dark grey. Consists of yellow argillized wallrock clasts in a medium grey argillic matrix. Matrix supported.		«M-S-Arg,W-Sil» Breccia matrix only weakly silicified.	Fine limonite veinlets abundant in bx. These are most probably after original pyrite.	
		Upper Contact	06			
25.90 TO 26.10	«FAULT»	Narrow gouge zone.				
26.10 TO 26.70	«TUFFACEOUS SANDSTONE»	Pale grey -> orange. Volcaniclastic sediment distinguished by the amount of well rounded and somewhat sorted quartz grains. These are the more weathered surfaces. Rounded feldspar clasts also present.		«W-Sil,W-Arg» Silicified envelopes noted around some of the more permanent fractures. These reach a maximum of 2cm.	veinlets after pyrite.	
	26.5-26.65	«Fault» Broken - gougy zone.				
	27.1-27.2	Amygoaloidal Clast A section containing well defined - quartz fitted pipe amydules. This interval is most likely an exotic clast of flow material in the volcaniclastic bed.				
26.70 TO 32.40	«TUFFACEOUS SANDSTONE»	Grey-brown. Fine grained. A fairly homogeneous rock composed of fine sand sized crystals of qtz + feldspar. A rude banding - possibly depositonal limination is highlighted by the limonite staining. Banding @ 29.3m Rounded quartz grains can be seen with handlense. This suggests reworking - of tuffaceous material.	40	Extremely fine veinlets of quartz(?) form a micro - stockwork. At 29.8m these form a web texture similar to that seen in the perlite.	None seen.	
	31.7-32.4	«Fault»			None-strong Li staining.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Slightly brecciated at upper contact-becoming more dis aggregated downhole. Upper Contact	40			
32.40 TO 36.00	«MICRO STWK»	Yellow-grey. A moderate to strongly banded rock showing a variety of textures. These vary from perlite to fine lamination - indicating the rock may have been a fragmental. There are no frags preserved. Primary textures have been destroyed by argillic and quartz micro stockwork.		«M-S Arg,W-M Sil» Pervasive clay alteration has destroyed most original textures so that host is not identifiable. A dense network of quartz micro veins per the interval. These veinlets have pyritic envelopes in distinct patches.	«Py 1-2%» as microscopic envelopes around quartz <'s. Disseminated crystals noted in groundmass. These are subhedral and reach 1-2mm. At 33.2m lens shaped zones of fine pyrite occur as a bleached veinlet.	
	35.35-35.5	Flow Banding Finely banded interval. Bands occur on a 1-5mm scale. Pale yellow grey lams appear to be clay rich. Darker grey to brown ones quartz rich. Laminations @ 35.4m In the middle of the interval the laminations are folded - soft sed?	55			
	35.55-36.00	Py Micro Stwk A weakly fragmental and strongly pyrite veined interval. Pyrite stringers form a network of micro veinlets that essentially create a pseudo breccia. This may be a mineralized (i.e. early) fault. «Fault» Contact @ 36.0m	45	«S Arg» Tuffaceous host is completely altered to soft yellow clay quartz stringer noted.	«Py 3-5%» as micro stockworking. Much of the pyrite is altered to the	
36.00 TO 36.50	«TUFF BX»	Green. Narrow interval of breccia. It consists of coarse, angular tuff clasts (up to 5cm) in a massive green clay matrix. The breccia appears to be primary ie depositional. Matrix supported.		«I.X Arg» Bright green clay the matrix of the breccia. The green clay zones seem to form vein-like crosscutting features that is yellow clay altered tuff clasts.	«Py Tr»	
36.50 TO 41.10	«TUFF BX»	Grey-yellow. An odd breccia unit composed predominantly of block sized clasts of finely bedded crystal ash. The lamination in the clasts is randomly oriented. Maximum clast size is at least 40cm. The matrix, which makes up around 10% of the rock (i.e. frag supported) is a similar green clay to that seen above. Individual clasts are made up mostly of 2-10mm yellow clay altered ash beds. There are seperated by narrow bands of dark material which appears to be more quartz rich.		«I-Arg» Yellow clay alters frags-matrix is medium green clay. Matrix is slightly hematitic in this zone.	«Py Tr»	Talus?

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	⟦38.1-38.35⟧	«Micro Stockwork/Breccia» Intensely microveined interval. Grey to pinkish quartz <'s from a web textured stockwork. This texture is identical to the micro stockwork in previous interval. Argillized wallrock forms rounded pseudo clasts. Not a true breccia. Textures similar to perlite. Possibly a perlite clasts.		«M-Sil;S-Arg» Strong replacement of host by yellow clay. Original textures obliterated.		
	⟦39.5-39.8⟧			«M-Sil» Pervasively silicified zone in the breccia. Quartz replaces green clay matrix.	Moderate Li staining over interval.	
	⟦40.0-40.1⟧	«Fault»				
	⟦40.5-40.7⟧	«Fault»	65			
41.10 TO 51.30	«TUFF BRECCIA» or Lahar	Pale green. Coarse grained. A coarse grained clast supported breccia of tuffaceous clasts. At least three types noted: -FB latite/rhyolite -Perlite -Crystal tuff + HB-Bi, porphyry. The clasts are blocky and angular and range in size from 2cm up to nearly 60cm. The matrix is a fine grained tuffaceous material. Poor sorting indicates that it most likely formed from slumping or mud flow.		«M Ch,M-S Arg» Medium green colour caused by pervasive chloritization. No calcite noted.	None.	This type of coarse depositional breccia may be caused by slumping i.e talus or by mud flow.
	⟦50.7-50.9⟧	«Fault»				
51.30 TO 69.30	«BLACK BX»	Very coarse gained depositional breccia. Clasts generally greater than lapilli size make up 80+% of rock. intervals of lapilli size clasts occur every so often. These are more matrix supported. The matrix to there intervals can be strongly hematitic. Same clast types as above interval.		«W-Cl;W-M Arg»	None-trace.	
	⟦53-53.1⟧	«Fault Gouge»				
	⟦57.9-58.4⟧	«Lapilli Bx» Clasts 5-20mm, angular-matrix supported.		M. hem in matrix. S. arg of tuff clasts.		
	⟦62.1-62.4⟧	«Lapilli Bx» Originally a hematitic matrix with angular, highly argillized clasts of tuff. This seems to have been overprinted by a fairly hard greenish matrix which				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		could be alteration or tuffaceous breccia matrix. i.e. brecciated.				
	⟨66.1-69.2⟩	Interval contains clasts. Veniular material has been in with late chlorite. Some veniles definately flattered.		«W Cl»		
69.30 TO 75.30	«HEMATITIC TUFF BRECCIA»	Maroon-grey. Lapilli breccia composed of angular clasts of argillized and unaltered oriented and very poorly sorted. The matrix (30-40%) consists of fine lithic fragments-sub lapilli sized-almost a milled rock texture. Much of the matrix is hematite stained to a purple brown colour. It is hard and possibly weakly silicified.		«M-Hem,M-Cl,W-M Sil»		
	⟨70.9-71.1⟩			«W Sil» of matrix.		
	⟨71.8-72.1⟩			«W Sil» of matrix.		
	⟨74.2-74.4⟩	«Fault» - Gouge zone.				
	⟨75.1-75.3⟩	«Fault?»				
75.30 TO 97.50	«HETEROLITHIC BRECCIA»	Maroon-green. Coarse grained. Similar to preceeding intervals. Unit consists of Block -> Lapilli sized clasts of chloritized bedded ash lapilli tuff, porphyry and perlite (lower down). The matrix is composed of hematite stained tuffaceous material mostly very fine. Breccia in clast supported. Fragments reach 20cm in size.		«W-M Arg,W-S Sil,M-Cl» Lithic clasts are variably clay altered some completely replaced. The matrix is pervasively silicified and variably hematized. In places the rock is strongly silicified. Reaction rims seen around some clasts - mainly strong bleaching.	«Py Tr» Mostly as disseminations in some clasts - particularly the most argillicly altered.	
		⟨83.65-83.7⟩ «Fault»		⟨70.9-72.1⟩ «M Sil»		
		⟨91.9-97.5⟩ Breccia frags composed predominantly of perlite. «Perlite Bx»		⟨75.3-80.1⟩ «W Sil»		
				⟨80.1-80.5⟩ «W.M Sil»		
				⟨83.7-83.9⟩ «S Sil» Pervasive silicification of matrix.		
				⟨83.9-93.4⟩ «M.S Sil» A gradual increase in the intensity of silicification of the matrix. Quartz injected between clasts. Vuggy veins noted throughout interval. Incipient		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				brecciation present @ 94.7m.		
97.50 TO 132.70	«PERLITE»	Grey. Fine grained. Classic example of perlite. This unit is consistent from top to bottom of interval. Typified by web texture of perlitic devitrification cracks. There are sup on primary flow banding. Spherulitic sections noted. The spherulites consist of radiating feldspar aggregates. These appear as white spots whithout magnification. Flow Banding @ 116.5m ┤103.4-104.4├ «Spherulitic» ┤107.1-108.1├ «Sperulitic»	60	«W-M Cl,W-M Sil,W-Cal» Secondary quartz has been introduced along cracks. This causes a bleaching effect. In places silicification is moderate to strong. No significant argillic alteration. The groundmass contains calcite-as a pervasive alteration. Calcite stringers up to 5mm noted. These are however sparse.	«Py Tr» as disseminated crystals.	
132.70 TO 146.50	«FLOW BANDED RHYOLITE»	Grey-pink. Fine grained. Finely banded and laminated rhyolitic glass. It is fine grained and moderately siliceous. Spotty devitrification textures suggest a major vitric component. Bedding varies from ~10cm to <1cm. Bedding @ 136.9 @ 145.1 @	33 45 45	«M-Cl,W He,W-Cal» Micro fractures throughout unit contains dark green chlorite and rare calcite. Hematite becomes more intense downhole. It mostly causes reddish staining along lamination planes. New base of interval Hematite <'s become common. These develop stockworks and jigsaw bx's over narrow intervals.	«Py Tr-1%» Mostly occurs in the centre of the chloritic <'s. Rare drusy qtz <'s also contain platy marcosite (Tr).	No sed textures seen. => Air fall tuff.
	┤141-141.3├	«Jigsaw Breccia» Brecciated interval in ash tuff package. Looks like hydrobreccia texture i.e. rip apart textures. Clasts are most angular and slightly rotated from their original orientation.		«W-M He;W-Cl»	Py Tr.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	⌊142-142.6⌋	«Jigsaw Breccia» He veining between frags.				
	⌊143.1-143.35⌋	«He Stwk»				
	⌊145.1-145.5⌋	«Breccia»				
146.50 TO 147.30	«HEMATITIC BRECCIA»	Red/grey. Hydrobrecciated ash tuffs consisting of angular, variably argillized ash tuff clasts (5mm to 60mm) in a matrix composed of hematite and clay. Some of the larger clasts are perviously silicified and have a bleached reaction rims. Bedding @ 147.9m	45	«S-He,W-M Sil,W-Arg» Hematization crosses clast boundaries and preferentially alters some laminae. He also makes up the bulk of the breccia matrix (probably a mixture of clay & He).	«Py Tr»	Clasts fit together. ie hydrothermal not dep bx.
147.30 TO 150.00	«DEVIT BANDED RHYOLITE GLASS»	Green-grey. Flow banded rhyolite showing good perlitic textures as the above unit. grey bands make this unit different from the previous ints. These are more siliceous and tend to contain fine pyrite. Most are <5mm wide. Bedding @ 149.3m	45	«W-Arg,W-Sil» Silicification follows perlitic cracks through the groundmass. In places it to form patches of strong silicification. These rarely exceed a few cm's. ⌊149.9-50⌋ «S-Sil»	«Py Tr»	Perlitic texture indicates that this was a very glassy unit-perhaps a ash.
150.00 TO 155.10	«HEMATITIC BRECCIA»	Maroon-green. Similar texture to the previous hematitic breccia. In this interval the clasts display a distinct perlitic texture. May be clasts of the above glassy flow. The clasts are mostly angular and range in size from 2mm to over 15cm.		«M-S Arg,M-He» Clasts are moderately to intensely argillized. Matrix is stained orange to black by strong hematitic alteration. Narrow, vuggy quartz <'s present in places. These are sparse.	«Py Tr»	Micro faults off set bedding in the ash tuff. These be post lithification.
	⌊151.6-151.8⌋	«Gouge»		Massive green (olive green) clay in fault zone.		
	⌊155.4-155.8⌋	FB rhyolite Bx Green-grey. Fine grained. A dense, clasts supported breccia composed of finely laminated ash tuff material. Fragments are very poorly sorted. Sizes range from <1mm to >5cm. The matrix consists of micro breccia of the same material. This is healed by hematitic material and silica. Breccia textures could by hydrothermal or tectonic in nature.		«M-Sil,W-He» Pervasive silicification of ash tuff clasts and matrix. Vuggy quartz veinlets and in the breccia matrix noted. In places the breccia matrix is cemented by bluish-opaline? silica.	«Py 1%» as disseminations mostly in the siliceous matrix.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	⟨153.2-153.4⟩			«M-Sil» Pervasive silicification of the hematitic breccia matrix. Interval cut by grey quartz veinlet.		
155.10 TO 163.60	«BRECCIA»	Green, pink, grey. Fine to coarse grained. A mixed interval of various types of breccia. The dominant species is a perlite breccia, consisting of green, rounded to subangular clasts in a pale green, aphanitic matrix. This breccia varies from clast to matrix supported. Maximum particle size is up to several tens of centimetres. Clasts appear to be randomly oriented and do not fit adjacent ones. Hematitic breccias make up most of the remainder of the interval. Bedded ash tuff clasts also fairly abundant.		«W-M Sil,W Cl,W-M Arg» Patchy silicification of the breccia matrix noted. This occurs with vuggy quartz <'s. The clasts are weakly chloritized to a green colour. Pink matrix replacement could be Kf or hematite stained silica.	«Py Tr» Very sparse.	
	⟨156.1-156.4⟩	Flow banded glassy rhyolite. Same material as the breccia unit at 154.5m. It is very fine grained, almost parcellaneous in texture with abundant hematite and chlorite heated fractures. Where very intense the fractures form incipient breccia ie not rotated.		«W-He,W-Cl,W-Sil» Pervasive alteration and as fracture fillings.		
	⟨156.9-157.25⟩	FB Rhyolite. Pink hematite stained beds up to a 5cm wide separated by medium green beds with perlitic texture. Bedding @ 157.2m	72	«W-He,W-Cl» ⟨157.25-158.2⟩ «M-S Sil»	«Py Tr» on <'s.	
	⟨162.9-163.4⟩	«Laminated Ash Tuff» Green. Bedding	60	⟨158.3-159.4⟩ «M Sil» Pervasive silicification of the breccia matrix. Glassy, drusy quartz veins noted. ⟨163.4-163.6⟩ «M Sil» Pervasive silicification of breccia matrix.	«Py Tr»	
163.60 TO 182.90	«HEMATITIC BRECCIA-LAHAR»	Red-grey. An interval of intensely brecciated rhyolite. rock is mostly clast supported. Frags are angular, randomly oriented and range in size from ~1mm to almost 75cm. The matrix is strongly hematitic giving the rock a reddish . It consists of fine micro breccia in a hematitic cement. This texture looks milled possibly indicating a tectonic origin. Contact @ 163.5m	10	«W-M Arg,M-He,W-Cl,W-Ca» Clasts are weakly argillized. Chlorite micro veins noted throughout interval. These tend to decrease downhole. Calcite occurs within the clasts as a pervasive alteration or cement. The intensity of calcite is quite variable throughout interval. ⟨169.3-169.6⟩ «M-Sil»	«Py Tr-1%» Mostly as disseminations in argillized clasts.	Lahar??

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	ǀ169.6-169.75ǀ	«Breccia»		ǀ169.6-169.75ǀ «S-Sil»		Stratigraphic contact between He Bx and tuffaceous seds.
182.90 TO 190.60	«FB RHYOLITE»	Grey->maroon. Well banded interval of fine grain to aphanitic rhyolite. Lighter bands are feldspathic (devitrified). Banding varies from mm scale to 4cm. Darker beds are hematitic and glassy. Flow folds and breccia textures noted. Bedding @ 186m (15-20deg) @ 189.8m	 18 45	«M-S Cl,W-Ca,W-He» Sediments are moderately to strongly veined by chlorite stringers. These form a stockwork that increases in intensity downhole. The chlorite stringers have narrow chloritic envelopes. Calcite is wide spread but weak in this interval. It mostly occurs in the matrix of the pale coloured beds and as rare <'s.	«Py Tr»	
	ǀ187.1-187.8ǀ	«Breccia» Crackle breccia in the flow banded rhyolites. Cracks between frags are healed by chlorite and quartz. Clasts not significantly rotated.		«M-S Sil,S-Cl»	«Py 1%» in silicified breccia matrix - most occurs between 187.1m and 187.2m.	
	ǀ188.9-189.1ǀ			«S-I Sil» Silica healed and replaced breccia zone. This interval contains a vein of bladed - drusy quartz.		
				ǀ188.9-189ǀ «Bx Vein»	«Py 1-3%» Cubic crystals and platy marcosite in the vein.	
190.60 TO 195.90	«HEMATITIC BRECCIA»	Pink to green. Similar to the previous breccia. This unit generally grades down into either very coarse grained breccia or brecciated rock.		«M-S He,M-Arg,W-Cl» Clasts are strongly to moderately argillized. Matrix is hematitic and variably silicified in places.		
	ǀ192-192.2ǀ	«Fault»	20	Clay Gouge. ǀ191.7-191.85ǀ «S-Sil» ǀ194.3-194.4ǀ «S-Sil»	 «Py 5%» in quartz stringers.	
		«Breccia Vein»	40	ǀ194.5-194.65ǀ «S-Sil»	«Py 3-5%» Fine grained, brown pyrite in crosscutting quartz breccia vein. Coarser disseminated pyrite occurs as discrete crystals around vein margin.	
	ǀ194.65-194.75ǀ	«Fault»	40			
	ǀ194.2-195.9ǀ	Change in colour of breccia matrix from red above fault to dark grey below.		«M-S Cl,M-Arg» Much less hematitic interval. The breccia matrix is dark grey to black rather than the typical colour		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				seen above 194.2m. Chloritization increases down to bottom of interval.		
195.90 TO 202.70	«DEVIT RHYO »	Green. Fine to aphanitic. Massive - fine to aphanitic rock. Only primary textures seen between 199.8m and 200.1m. Bedding @ 200m Odd looking rounded textures are present throughout unit below 200.1m. These are caused by of bleaching and chloritization outwards from chlorite <'s. (See sketch right).	45	«M-S Cl,W-He,W-Sil» Moderate chloritization gives rock a strong green colour. The chlorite seems to be overprinting and earlier hematite altertation (pink). This pervades the fine grained groundmass of the rock. Quartz <'s occur throughout interval. These cause weak silicification up to 1cm from vein margin.	«Py Tr-1%» in quartz <'s.	
	{197.3-197.4}	«Fault»				
	{201.6-201.9}	«Rubbly Core»				
		END OF HOLE.				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43630	23.20	25.30	2.10	0.1	638	1	21	24	8	86	3	65	18	
43631	25.30	25.90	0.60	0.1	412	1	15	27	9	43	2	45	9	
43632	25.90	27.60	1.70	0.1	566	2	21	21	11	40	2	80	18	
43633	27.60	29.60	2.00	0.1	441	1	31	21	11	40	4	65	18	
43634	29.60	31.80	2.20	0.1	1039	1	34	18	40	98	61	40	25	
43635	31.80	32.60	0.80	6.4	1098	1	18	14	81	69	478	110	19	
43636	32.60	34.60	2.00	2.8	2241	1	23	14	76	26	198	75	25	
43637	34.60	36.00	1.40	2	843	1	26	19	35	29	18	90	17	
43638	36.00	36.50	0.50	1.5	489	1	35	18	24	46	24	60	5	
43639	36.50	38.10	1.60	1.3	68	1	33	22	11	37	1	125	17	
43640	38.10	38.40	0.30	0.7	355	1	36	24	12	46	2	350	4	
43641	38.40	39.30	0.90	0.4	343	2	23	25	13	47	3	160	14	
43642	39.30	39.80	0.50	0.1	610	1	35	20	14	57	11	185	6	
43643	39.80	41.10	1.30	0.5	209	2	33	21	7	44	2	240	14	
43644	69.30	71.30	2.00	0.1	28	1	21	22	5	57	4	75	24	
43645	71.30	74.20	2.90	0.4	45	2	19	20	7	55	9	50	20	
43646	74.20	75.30	1.10	0.3	19	2	57	23	6	74	2	55	18	
43647	75.30	77.30	2.00	0.1	19	1	20	18	4	53	3	35	41	
43648	77.30	80.10	2.80	0.1	97	1	23	17	7	46	8	25	23	
43649	80.10	81.40	1.30	0.6	248	1	19	11	11	33	27	45	12	
43650	81.40	83.90	2.50	0.7	182	1	31	15	7	36	119	30	29	
43651	83.90	85.90	2.00	0.2	122	1	27	18	7	45	56	70	12	
43652	85.90	87.90	2.00	0.5	118	1	27	19	8	42	37	100	24	
43653	91.90	93.40	1.50	0.2	100	1	29	16	6	47	60	70	13	
43654	93.40	94.10	0.70	0.2	20	1	17	21	7	46	3	45	3	
43655	94.10	94.80	0.70	0.3	86	2	23	16	6	42	78	55	5	
43656	154.50	154.80	0.30	0.5	93	1	28	19	9	39	17	70	2	
43657	154.80	155.10	0.30	0.6	193	2	36	22	15	49	24	60	2	
43658	155.10	157.30	2.20	0.4	57	2	35	20	9	46	6	25	25	
43659	157.30	158.20	0.90	0.5	25	2	35	17	7	34	19	115	11	
43660	178.90	180.90	2.00	0.3	43	1	23	19	8	44	3	20	9	
43661	187.80	188.90	1.10	1.3	128	1	26	17	8	33	62	145	10	
43662	188.90	189.30	0.40	0.4	121	1	21	17	6	37	117	45	4	
43663	189.30	190.80	1.50	0.7	83	2	24	16	7	33	22	55	18	
43664	194.30	194.70	0.40	2.5	1152	1	28	18	40	39	138	985	1	
43665	194.70	195.40	0.70	1.7	275	2	21	18	13	35	59	265	15	
43666	195.40	196.00	0.60	2	722	1	19	21	27	29	100	2640	6	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43630	23.20	25.30	2.10	0.1	638	1	21	24	8	86	3	65	18
43631	25.30	25.90	0.60	0.1	412	1	15	27	9	43	2	45	9
43632	25.90	27.60	1.70	0.1	566	2	21	21	11	40	2	80	18
43633	27.60	29.60	2.00	0.1	441	1	31	21	11	40	4	65	18
43634	29.60	31.80	2.20	0.1	1039	1	34	18	40	98	61	40	25
43635	31.80	32.60	0.80	6.4	1098	1	18	14	81	69	478	110	19
43636	32.60	34.60	2.00	2.8	2241	1	23	14	76	26	198	75	25
43637	34.60	36.00	1.40	2	843	1	26	19	35	29	18	90	17
43638	36.00	36.50	0.50	1.5	489	1	35	18	24	46	24	60	5
43639	36.50	38.10	1.60	1.3	68	1	33	22	11	37	1	125	17
43640	38.10	38.40	0.30	0.7	355	1	36	24	12	46	2	350	4
43641	38.40	39.30	0.90	0.4	343	2	23	25	13	47	3	160	14
43642	39.30	39.80	0.50	0.1	610	1	35	20	14	57	11	185	6
43643	39.80	41.10	1.30	0.5	209	2	33	21	7	44	2	240	14
43644	69.30	71.30	2.00	0.1	28	1	21	22	5	57	4	75	24
43645	71.30	74.20	2.90	0.4	45	2	19	20	7	55	9	50	20
43646	74.20	75.30	1.10	0.3	19	2	57	23	6	74	2	55	18
43647	75.30	77.30	2.00	0.1	19	1	20	18	4	53	3	35	41
43648	77.30	80.10	2.80	0.1	97	1	23	17	7	46	8	25	23
43649	80.10	81.40	1.30	0.6	248	1	19	11	11	33	27	45	12
43650	81.40	83.90	2.50	0.7	182	1	31	15	7	36	119	30	29
43651	83.90	85.90	2.00	0.2	122	1	27	18	7	45	56	70	12
43652	85.90	87.90	2.00	0.5	118	1	27	19	8	42	37	100	24
43653	91.90	93.40	1.50	0.2	100	1	29	16	6	47	60	70	13
43654	93.40	94.10	0.70	0.2	20	1	17	21	7	46	3	45	3
43655	94.10	94.80	0.70	0.3	86	2	23	16	6	42	78	55	5
43656	154.50	154.80	0.30	0.5	93	1	28	19	9	39	17	70	2
43657	154.80	155.10	0.30	0.6	193	2	36	22	15	49	24	60	2
43658	155.10	157.30	2.20	0.4	57	2	35	20	9	46	6	25	25
43659	157.30	158.20	0.90	0.5	25	2	35	17	7	34	19	115	11
43660	178.90	180.90	2.00	0.3	43	1	23	19	8	44	3	20	9
43661	187.80	188.90	1.10	1.3	128	1	26	17	8	33	62	145	10
43662	188.90	189.30	0.40	0.4	121	1	21	17	6	37	117	45	4
43663	189.30	190.80	1.50	0.7	83	2	24	16	7	33	22	55	18
43664	194.30	194.70	0.40	2.5	1152	1	28	18	40	39	138	985	1
43665	194.70	195.40	0.70	1.7	275	2	21	18	13	35	59	265	15
43666	195.40	196.00	0.60	2	722	1	19	21	27	29	100	2640	6

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
31.10	33.80	2.70	10.00	370.4	100	37.04	0	0.00	0	
33.80	35.80	2.00	10.00	500.0	50	25.00	1	0.50	0	FAULT DIP 1
35.80	37.00	1.20	20.00	*****	50	41.67	5	4.17	0	
37.00	38.00	1.00	10.00	*****	16	16.00	0	0.00	0	CaCO
38.00	40.00	2.00	40.00	*****	35	17.50	0	0.00	0	SX STR. DIP 1
40.00	41.50	1.50	40.00	*****	20	13.33	2	1.33	0	
41.50	43.00	1.50	20.00	*****	23	15.33	3	2.00	0	
43.00	45.20	2.20	20.00	909.1	42	19.09	3	1.36	0	
45.20	47.20	2.00	10.00	500.0	60	30.00	40	20.00	0	
47.20	49.80	2.60	40.00	*****	100	38.46	0	0.00	0	CaCO
49.80	51.70	1.90	10.00	526.3	50	26.32	5	2.63	0	
51.70	53.70	2.00	10.00	500.0	35	17.50	1	0.50	0	
56.50	58.50	2.00	0.00	0.0	33	16.50	2	1.00	0	
60.50	62.50	2.00	20.00	*****	25	12.50	3	1.50	0	
64.50	66.50	2.00	20.00	*****	31	15.50	1	0.50	0	
68.50	70.50	2.00	30.00	*****	50	25.00	1	0.50	0	
72.50	74.60	2.10	70.00	*****	17	8.10	4	1.90	0	
78.70	80.70	2.00	50.00	*****	19	9.50	1	0.50	0	
82.70	84.70	2.00	100.00	*****	14	7.00	2	1.00	0	
88.80	90.70	1.90	20.00	*****	27	14.21	0	0.00	0	
96.50	98.50	2.00	50.00	*****	21	10.50	0	0.00	0	
101.00	103.00	2.00	30.00	*****	42	21.00	1	0.50	0	
105.00	107.00	2.00	50.00	*****	40	20.00	0	0.00	0	
109.00	111.00	2.00	70.00	*****	16	8.00	0	0.00	0	
115.20	116.20	1.00	50.00	*****	7	7.00	1	1.00	0	
120.00	122.00	2.00	50.00	*****	28	14.00	0	0.00	0	
122.00	124.00	2.00	70.00	*****	19	9.50	0	0.00	0	
124.00	126.00	2.00	0.00	0.0	0	0.00	0	0.00	0	
137.30	139.70	2.40	50.00	*****	33	13.75	1	0.42	0	
139.70	141.80	2.10	60.00	*****	30	14.29	0	0.00	0	
141.80	143.80	2.00	60.00	*****	20	10.00	1	0.50	0	
143.80	145.90	2.10	50.00	*****	35	16.67	0	0.00	0	BRECCIA
148.00	150.10	2.10	0.00	0.0	0	0.00	0	0.00	0	
149.40	151.40	2.00	80.00	*****	16	8.00	1	0.50	0	
151.40	152.00	0.60	10.00	*****	6	10.00	0	0.00	0	CaCO
152.00	154.00	2.00	30.00	*****	40	20.00	2	1.00	0	
154.00	156.00	2.00	70.00	*****	15	7.50	0	0.00	0	
160.00	162.00	2.00	100.00	*****	9	4.50	0	0.00	0	
169.30	171.30	2.00	90.00	*****	14	7.00	2	1.00	0	
171.30	173.30	2.00	110.00	*****	12	6.00	1	0.50	0	
173.30	175.10	1.80	60.00	*****	19	10.56	1	0.56	0	
175.10	177.10	2.00	180.00	*****	7	3.50	1	0.50	0	
179.00	181.00	2.00	120.00	*****	12	6.00	0	0.00	0	

HOLE NUMBER: CL-91-05

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41035.00N
EAST: 9463.00E
ELEV: 1321.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 1321.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 177.10m
START DEPTH: 0.00m
FINAL DEPTH: 177.10m

COLLAR GRID AZIMUTH: 290° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 19, 1991
DATE COMPLETED: August 20, 1991
DATE LOGGED: August 23, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
95.40	-	-47° 0'	ACID	OK		-	-	-	-	-	
177.10	-	-48° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 48.50	«CASING»					2 m alternate sampling in this hole
48.50 TO 51.00	«OXIDIZED FQXT»	Yellow-brown, m.g. Limonite stained oxidized zone of feldspar quartz crystal tuff. Qtz eyes rounded 2-6 mm 10% Feldspar plag laths 1-4 mm 30% in fine-grained matrix.		«M.SIL, S.LIM, M ARG»		
51.00 TO 69.00	«FQXT»	Yellow-grey, m.g. Moderate to strongly argillized FQXT with irregular patches of strong grey silicification. Rock has been strongly leached leaving open vugs at feldspar sites. Leaching was accompanied by strong argillization and then overprinted by strong silicification.		«S-I ARG, M-S SIL» Patchy silicification of previously argillized FQXT.	«Tr py» disseminated in wall rock and replacing phenos.	
	⟨54.7-57.6⟩ «Sil.Zone»	Intense silicification zone of leached vuggy FQXT. Vugs appear to be the result of acid leaching of phenocrysts and crude bedding laminations. 4 cm vugs are lined by quartz and bladed marcasite. Bedding @	45	«I SIL» overprinting Strong argillization.	«1% MC» as bladed aggregates in 20% of vugs.	Strong acid leached and "vuggy" below silicified zone. Feldspars and lapilli are leached to form open vugs or "sponge rock". Vugginess continues down to 95.4 m.
	⟨57.6-58.1⟩ «Fault?»	Yellow grey. Intensely argillized gougy zone, possible fault zone.		«I ARG» gougy.		
69.00 TO 70.60	«FAULT?»	Yellow. Intensely argillized gougy zone, possible fault zone.		«I ARG» gougy.		
70.60 TO 76.00	«FQXT»	Yellow grey. Patchy strong silicification, extensively leached, with remnant islands of strong argillization. Locally exceptionally vuggy.		«S SIL, S ARG» Pervasive silicification after strong argillization.	«Tr MC» 20% of vugs carry bladed marcasite.	
76.00 TO 76.60	«FAULT»	Intensely argillized gougy zone, with an apparent shear fabric @	20	«I ARG»		
76.60 TO 96.80	«FQXT»	Yellow-grey, m.g. Patchy silicification becomes more pervasive downsection. Vugginess more or less constant, although marcasite appears to increase slightly downsection.		«S SIL, S ARG» Strong pervasive silicification but still patchy. Less remnant argillization. «I SIL»	«Tr MC» occurring as bladed aggregates in open quartz lined vugs.	
	⟨95.3-95.7⟩					

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
96.80 TO 98.20	«OXIDIZED FAULT»	Yellow-brown. Zone of strong limonitic staining, due to faulting. Minimal gouge. 5 mm barren quartz vein form lower contact @	45	«S LIM» «M SIL, M ARG»	Oxidized to limonite.	
98.20 TO 116.80	«FQXT»	Pale grey. Significantly less leached, less vuggy FQXT. Feldspars still present although replaced by clay. Quartz phenos getting larger, up to 1 cm, angular, may represent feldspar replacement? Silicification still patchy.		«M SIL, M ARG» Mod. argillization overprinted by moderate sil, minor patches of strong silicification.	«Tr py-MC» in rare vugs.	Less vuggy. Feldspars gone to yellow-green clay, but not leached. Lapilli are apparently silica replaced, but have escaped leaching episode-perhaps this interval is below the water table?
	⎨101.5-102.5⎬ «Oxidized Zone»	Yellow-brown. Clay rich gougy limonitic fault zone		«LIM»	Gone to limonite.	
	⎨107.5-107.9⎬ «Sil Zone»	Grey. Patchy silicification/replacement appears to follow bedding planes @	20	«I SIL»		
	⎨88.5-88.7⎬ «Fault»?	Gougy fault		«I ARG»		(Note: interval seems to be misplaced in log- maybe actually 108.5-108.7??)
116.80 TO 117.40	«OXIDE FAULT»	Yellow-brown. Highly fractured zone, limonitic staining, minimal gouge.		«LIM»		
117.40 TO 135.00	«FQXT»	Pale grey, m.g. Same lithology, less vuggy, less silicified. Fairly homogenous. Moderate argillic alteration.		«M ARG, W SIL» Feldspars gone to pale yellow-green clay, not leached.	Contains intensely silicified zone, nested below...	
	⎨118.0-122.3⎬ «Sil Zone»	Grey. Intensely silicified FQXT. No brecciation, but significant open vugs created by leaching, then lined with drusy clear quartz and coarse pyrite.	45	«I SIL» Intense silica replacement with local drusy quartz in larger vugs (1 cm wide, 3-4 cm long) Bedding parallel	«1% py» as coarse crystal aggregates in drusy quartz vugs.	Vugs appear bedding controlled because most feldspars & lapilli have not been leached.
	⎨123.3-123.7⎬ «OXIDE FAULT»	Limonitic staining, minimal gouge.		«LIM»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
135.00 TO 150.00	«SIL ZONE»	Grey. Wide zone of silicification and veining, not significantly leached, but moderately stockworked and locally brecciated. Veins are grey quartz and white clay, surrounded by patchy grey silicification.		«S-I SIL» Overprinting moderate argillization.	Veins are essentially barren.	Major "zone"
	⌊135.0-138.5⌋ «Limonite Veins»	Grey quartz veins are leached and limonitic.	60			
	⌊141.4-141.8⌋ «Hyd. Bx Vein»	Quartz healed hydrothermal breccia, vugs infilled by white clay.	45	«I SIL, CLAY»	No sulphides	White alunite?
	⌊144.4-144.9⌋ «Qz Veins»	Clay filled vuggy quartz veins.	40	«I SIL, CLAY»	Barren.	White alunite?
	⌊146.9-147.6⌋ «Qz Veins»	Clay filled vuggy quartz veins.	10			
	146-150 Fractured	This interval highly fractured, faulted, minor gouge, broken quartz veins.		«I SIL, CLAY» «GOUGY»	Barren.	White alunite?
150.00 TO 154.30	«FQXT»	Pale grey. Strong but patchy silicification overprints moderate argillic alteration. Interval has been leached, feldspar & lapilli sites are vuggy, but only carry sparse py.		«S SIL, M ARG» Strong but patchy silicification. Clay altered feldspars yellow buff.	«Tr py»	Weak vugs.
154.30 TO 159.70	«SIL ZONE»	Dark grey. Major zone of silicification, veining, and brecciation. Dark grey quartz forms narrow stringers and microbreccia veins, as well as healing open vuggy wall rock breccias. Single episode hydrothermal brecciation. 40% of interval is brecciated. Quartz veins @	60 40	«I SIL» overprints moderate argillic-altered feldspars. Not leached. Vugs are strictly in hydrothermal breccias.	Quartz is apparently barren, only trace pyrite noted replacing phenos in wall rock fragments.	Major "zone" Sulphide poor.
	⌊155.8-156.0⌋ «BRECCIA VEIN»	Vuggy grey quartz.				
159.70 TO 160.10	«FAULT»	Highly fractured, silicified FQXT. 40% gouge.	20	«S SIL, S ARG»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
160.10 TO 177.10	«FQXT»	Back into patchy strong silicification and argillization. Interval has been leached though not as extensively as higher in hole; vugs commonly contain marcasite blades. 50% unleached feldspars are yellow green clay altered.		«S-I SIL, M-S ARG»	«1% py, MC» as bladed aggregates in open vugs.	Back into sulphidic vuggy FQXT.
	⎧165.5- 165.7⎫ «Fault» ⎧169.7- 169.8⎫ «Fault»					
	177.1	EOH				

HOLE NUMBER: CL-91-05 ASSAY SHEET DATE: 25-May-1992

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43667	51.00	53.00	2.00	1.2	1200	1	35	18	27	14	21	200	18	
43668	55.00	57.00	2.00	0.8	1038	1	11	14	24	18	16	65	15	
43669	57.00	59.00	2.00	0.7	512	1	13	16	10	14	48	75	23	
43670	61.00	63.00	2.00	0.9	665	1	10	13	22	43	56	60	30	
43671	65.00	67.00	2.00	0.6	264	1	14	18	7	53	24	45	40	
43672	69.00	71.00	2.00	0.6	280	1	14	22	8	64	20	55	17	
43673	73.00	75.00	2.00	0.5	206	2	13	18	7	49	21	50	16	
43674	80.00	82.00	2.00	0.4	108	2	13	21	6	50	8	25	13	
43675	84.00	86.00	2.00	0.5	171	1	9	17	9	41	6	45	14	
43676	88.00	90.00	2.00	0.4	232	1	12	17	11	59	5	50	16	
43677	92.00	94.00	2.00	0.4	142	1	30	18	6	49	4	45	10	
43678	96.00	98.20	2.20	0.9	175	1	15	22	11	22	20	115	17	
43679	98.20	100.20	2.00	0.8	94	2	16	20	7	28	10	120	8	
43680	104.20	106.20	2.00	0.7	321	1	26	19	13	44	40	35	12	
43681	108.20	110.20	2.00	0.8	253	2	32	23	9	48	68	50	15	
43682	115.00	116.80	1.80	1	377	1	16	17	15	26	57	55	10	
43683	116.80	117.40	0.60	0.5	138	1	10	14	8	27	97	25	15	
43684	118.00	120.00	2.00	0.7	182	1	15	14	9	31	41	40	9	
43685	120.00	122.30	2.30	0.5	114	1	19	12	7	33	40	25	16	
43686	122.30	123.30	1.00	0.9	446	1	15	18	18	45	80	40	7	
43687	123.30	123.70	0.40	0.1	309	1	9	18	21	111	81	140	5	
43688	123.70	125.70	2.00	0.7	170	1	11	15	8	39	29	65	18	
43689	128.00	130.00	2.00	0.5	113	2	12	18	8	35	2	70	16	
43690	133.00	135.00	2.00	0.5	87	1	14	19	8	44	3	35	13	
43791	139.00	118.00	-21.00	3.9	533	1	44	16	51	31	81	270	18	
43692	141.00	143.00	2.00	0.4	90	2	10	22	12	41	1	70	10	
43693	145.00	147.00	2.00	0.4	104	1	10	17	10	44	2	75	20	
43694	147.00	149.00	2.00	0.4	61	1	10	14	7	45	4	45	27	
43695	150.00	152.00	2.00	0.4	55	1	12	17	7	42	1	35	17	
43696	153.30	154.30	1.00	0.6	166	1	19	16	12	41	36	65	13	
43697	154.30	156.30	2.00	0.6	133	1	10	13	9	26	43	60	29	
43698	156.30	158.30	2.00	0.3	159	1	7	12	8	33	49	50	23	
43699	158.30	159.60	1.30	0.2	141	1	8	15	8	38	42	55	20	
43700	159.60	160.00	0.40	0.1	76	1	8	10	5	35	33	35	20	
43701	160.00	162.00	2.00	0.3	79	2	8	14	7	28	44	55	23	
43702	164.00	166.00	2.00	0.5	266	1	8	15	13	25	56	50	14	
43703	168.00	170.00	2.00	0.5	206	1	8	15	12	29	42	45	19	
43704	172.00	174.00	2.00	0.1	130	1	7	14	7	32	23	60	2	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m		

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43667	51.00	53.00	2.00	1.2	1200	1	35	18	27	14	21	200	18
43668	55.00	57.00	2.00	0.8	1038	1	11	14	24	18	16	65	15
43669	57.00	59.00	2.00	0.7	512	1	13	16	10	14	48	75	23
43670	61.00	63.00	2.00	0.9	665	1	10	13	22	43	56	60	30
43671	65.00	67.00	2.00	0.6	264	1	14	18	7	53	24	45	40
43672	69.00	71.00	2.00	0.6	280	1	14	22	8	64	20	55	17
43673	73.00	75.00	2.00	0.5	206	2	13	18	7	49	21	50	16
43674	80.00	82.00	2.00	0.4	108	2	13	21	6	50	8	25	13
43675	84.00	86.00	2.00	0.5	171	1	9	17	9	41	6	45	14
43676	88.00	90.00	2.00	0.4	232	1	12	17	11	59	5	50	16
43677	92.00	94.00	2.00	0.4	142	1	30	18	6	49	4	45	10
43678	96.00	98.20	2.20	0.9	175	1	15	22	11	22	20	115	17
43679	98.20	100.20	2.00	0.8	94	2	16	20	7	28	10	120	8
43680	104.20	106.20	2.00	0.7	321	1	26	19	13	44	40	35	12
43681	108.20	110.20	2.00	0.8	253	2	32	23	9	48	68	50	15
43682	115.00	116.80	1.80	1	377	1	16	17	15	26	57	55	10
43683	116.80	117.40	0.60	0.5	138	1	10	14	8	27	97	25	15
43684	118.00	120.00	2.00	0.7	182	1	15	14	9	31	41	40	9
43685	120.00	122.30	2.30	0.5	114	1	19	12	7	33	40	25	16
43686	122.30	123.30	1.00	0.9	446	1	15	18	18	45	80	40	7
43687	123.30	123.70	0.40	0.1	309	1	9	18	21	111	81	140	5
43688	123.70	125.70	2.00	0.7	170	1	11	15	8	39	29	65	18
43689	128.00	130.00	2.00	0.5	113	2	12	18	8	35	2	70	16
43690	133.00	135.00	2.00	0.5	87	1	14	19	8	44	3	35	13
43791	139.00	118.00	-21.00	3.9	533	1	44	16	51	31	81	270	18
43692	141.00	143.00	2.00	0.4	90	2	10	22	12	41	1	70	10
43693	145.00	147.00	2.00	0.4	104	1	10	17	10	44	2	75	20
43694	147.00	149.00	2.00	0.4	61	1	10	14	7	45	4	45	27
43695	150.00	152.00	2.00	0.4	55	1	12	17	7	42	1	35	17
43696	153.30	154.30	1.00	0.6	166	1	19	16	12	41	36	65	13
43697	154.30	156.30	2.00	0.6	133	1	10	13	9	26	43	60	29
43698	156.30	158.30	2.00	0.3	159	1	7	12	8	33	49	50	23
43699	158.30	159.60	1.30	0.2	141	1	8	15	8	38	42	55	20
43700	159.60	160.00	0.40	0.1	76	1	8	10	5	35	33	35	20
43701	160.00	162.00	2.00	0.3	79	2	8	14	7	28	44	55	23
43702	164.00	166.00	2.00	0.5	266	1	8	15	13	25	56	50	14
43703	168.00	170.00	2.00	0.5	206	1	8	15	12	29	42	45	19
43704	172.00	174.00	2.00	0.1	130	1	7	14	7	32	23	60	2

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
55.40	57.40	2.00	50.00	*****	45	22.50	3	1.50	0	
57.40	59.40	2.00	50.00	*****	46	23.00	3	1.50	0	
59.40	60.60	1.20	60.00	*****	17	14.17	0	0.00	0	
60.60	63.70	3.10	80.00	*****	35	11.29	0	0.00	0	
63.70	64.80	1.10	60.00	*****	6	5.45	0	0.00	0	BX
64.80	66.40	1.60	60.00	*****	28	17.50	0	0.00	0	
66.40	68.40	2.00	40.00	*****	40	20.00	4	2.00	0	
68.40	70.40	2.00	10.00	500.0	47	23.50	4	2.00	0	
70.40	72.40	2.00	60.00	*****	33	16.50	4	2.00	0	
72.40	74.20	1.80	80.00	*****	34	18.89	2	1.11	0	
74.20	76.50	2.30	100.00	*****	21	9.13	3	1.30	0	
76.50	78.50	2.00	150.00	*****	30	15.00	0	0.00	0	
78.50	81.40	2.90	160.00	*****	40	13.79	0	0.00	0	
81.40	83.40	2.00	120.00	*****	20	10.00	0	0.00	0	
83.40	85.40	2.00	120.00	*****	25	12.50	0	0.00	0	
85.40	87.60	2.20	80.00	*****	24	10.91	0	0.00	0	
87.60	89.60	2.00	30.00	*****	31	15.50	0	0.00	0	
89.60	91.60	2.00	10.00	500.0	100	50.00	0	0.00	0	
91.60	93.60	2.00	0.00	0.0	100	50.00	0	0.00	0	
93.60	96.00	2.40	0.00	0.0	100	41.67	0	0.00	0	
96.00	98.00	2.00	40.00	*****	42	21.00	0	0.00	0	
98.00	100.00	2.00	60.00	*****	20	10.00	1	0.50	0	
100.00	102.00	2.00	120.00	*****	14	7.00	0	0.00	0	
102.00	104.40	2.40	120.00	*****	25	10.42	0	0.00	0	
104.40	106.40	2.00	30.00	*****	21	10.50	0	0.00	0	
108.00	110.00	2.00	10.00	500.0	100	50.00	0	0.00	0	
112.00	114.00	2.00	60.00	*****	50	25.00	2	1.00	0	CaCO3
116.00	118.00	2.00	80.00	*****	25	12.50	0	0.00	0	
120.00	122.00	2.00	80.00	*****	31	15.50	0	0.00	0	
124.00	126.00	2.00	130.00	*****	18	9.00	0	0.00	0	
128.20	130.20	2.00	110.00	*****	24	12.00	0	0.00	0	
132.20	134.20	2.00	180.00	*****	11	5.50	0	0.00	0	
136.20	138.20	2.00	175.00	*****	12	6.00	0	0.00	0	
140.20	142.20	2.00	165.00	*****	14	7.00	0	0.00	0	
142.20	144.20	2.00	130.00	*****	12	6.00	5	2.50	0	CaCO3
144.20	146.20	2.00	80.00	*****	34	17.00	2	1.00	0	
146.20	148.20	2.00	90.00	*****	20	10.00	7	3.50	0	
148.20	150.20	2.00	100.00	*****	18	9.00	2	1.00	0	CaCO3
152.50	154.50	2.00	125.00	*****	32	16.00	6	3.00	0	
154.50	156.50	2.00	10.00	500.0	31	15.50	0	0.00	0	
158.50	160.50	2.00	40.00	*****	23	11.50	0	0.00	0	
162.50	164.50	2.00	110.00	*****	42	21.00	2	1.00	0	
166.50	168.50	2.00	40.00	*****	100	50.00	0	0.00	0	
170.00	171.40	1.40	20.00	*****	26	18.57	0	0.00	0	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
171.40	173.40	2.00	20.00	*****	40	20.00	0	0.00	0	
175.40	177.40	2.00	10.00	500.0	50	25.00	0	0.00	0	
179.40	181.40	2.00	0.00	0.0	100	50.00	0	0.00	0	
181.40	183.50	2.10	0.00	0.0	100	47.62	0	0.00	0	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: CL-91-06

IMPERIAL UNITS: METRIC UNITS

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41042.00N
EAST: 9344.00E
ELEV: 1317.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 1317.00

COLLAR DIP: -45° 0'
LENGTH OF THE HOLE: 201.80
START DEPTH: 0.00
FINAL DEPTH: 201.80

COLLAR GRID AZIMUTH: 290° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 20, 1991
DATE COMPLETED: August 22, 1991
DATE LOGGED: August 27, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
102.70	-	-43° 0'	ACID	OK	
194.10	-	-43° 0'	ACID	OK	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 28.00	«CASING»					
28.00 TO 49.00	«FQXT»	Pale grey, m.g. Strongly argillized and leached feldspar quartz lapilli tuff.		«S ARG» «W SIL» Strong argillization. All feldspar gone to green clay. «W CAL» 50% of vugs are filled by calcite, especially in lower 4 m.	«Tr py & chl» replacing some phenos.	Calcite filled vugs.
	⟨39.2-45.0⟩ «Vuggy»	4-6 mm rounded qtz eyes 5-10%. 3-8 mm feldspar crystals 20-30% all gone to green clay, about 50% leached out to form vugs. Other vugs up to 1 cm in size, tabular, may represent feldspar megacrystals? (or rather angular lapilli)				
	⟨41.0-41.4⟩ «Fault»	80% clay gouge.		«I ARG»		
49.00 TO 118.20	«FAULT ZONE-PY STWK»	White-grey. Wide zone of faulting, with strong calcite and pyrite stockworking. Drilling downdip. Paragenesis appears to be pyrite (quartz) stringer mineralization, then faulting, then calcite (pyrite) stringers. Lithology is only locally identifiable, as entire interval is extensively argillized and sheared.		«I-X ARG» Wall rock varies from competent but intensely argillized and fractured rock to imcompetent and extremely argillized gougy rock.	«3-5% py» as qtz py stringers. Also minor py in later calcite stringers.	Abundant calcite. "High grade" pyrite.
	⟨50.9-61.6⟩ «Amygdaloid al Flow»	Pale grey, f.g. Stockworked wall rock "islands" of intensely argillized amygdaloidal intermediate flow. Amygdules filled with qtz up to 1 cmx 7cm in size, flattened into planes @ 35 Sparse feldspar? phenocrysts gone to green clay. Pyrite veins @ 60 75 40		«X ARG»	«3-5% py» in strong stockworking. Pyrite is very fine grained.	
	55.4-58.0	Dark grey. Total clay gouge.		Intense argillic.		
	⟨55.4-62.5⟩ «Gouge»	Dark grey. Total clay gouge.				
	⟨62.5-66.1⟩ «fxt»	Pale grey. Intensely argillized sandy feldspar crystal tuff. Strong pyrite stockwork is locally disrupted by faulting.		«I ARG»	«3-5% py» in strong py stockwork.	
	⟨66.1-68.4⟩ «Gouge»	Total clay gouge.		«X ARG»		
	⟨68.4-78.3⟩ «AMYGDALOI-DAL FLOW?»	Strong pyrite stockwork with abundant late calcite in possible amygdaloidal flow unit (as previous) Sparse feldspar? phenocrysts have gone to bright		«I ARG» «S CAL» Intense argillic alter'n and shearing	«5% py» occurs as irregular f.g. blebs, selvages, "broken" veinlets etc.	Abundant calcite.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		green clay.		makes lithology difficult to identify.		
	┤78.5-89.4					
	«Gouge/stwk»	Grey. Extreme argillic alteration and apparent shear fabric in aligned quartz & calcite "grains" Could be amygdaloidal unit?	30	«X ARG» «M SIL, M CAL»	Dark grey matrix is probably sulphide.	Interval appears sheared (@45 degrees to CA) due to intense argillic altn, only rounded quartz grains survive and are oriented in planes.
	80.4-89.4 GOUGE-STWK	Grey. Disrupted pyritic stockwork/breccia. Abundant rounded quartz vein frags to 3 cm. Lithology obviously amygdaloidal flow unit.		«X ARG, M SIL, M CAL» Calcite & quartz both fill amygdules. Calcite also forms late (post-fault) stringers.	«3% py» as stringers and irregular blebs.	Amygdaloidal flow unit.
	┤82.5-83.4├ «Dyke»	Black. Mafic dyke with calcite microveinlets.		«MCAL»	«Tr diss. py»	
	┤89.4-99.2├ «Breccia»	Amygdaloidal flow breccia 50% gouge.		«S-I ARG, M SIL»		
	┤93.6-96.4├ «Gouge»	Washed out gouge zone. 30% recovery.				Black quartz bx vein @ 105.6m
	┤99.2-102.2├ «PY stwk»	Grey. More competent, amygdaloidal flow unit, strong arg., st. qtz-py stwk. Amygdules <1cm. Shattered black quartz bx vein w/ 2% py @ 105.6-105.8m.		«S-I ARG, M SIL»	«3% py stringers»	Black qtz bx vein @ 105.6m.
	┤102.2-118.2├ «Gouge-stwk»	Pale grey. Extreme argillic alteration of strong qtz-py stockwork. Local minor py-qtz breccia veins are preserved		«X ARG»	1-3% py stringers.	
		@ 108.4-108.6 Dark grey.		«QTZ BRX»	«1-3% py»	
		@ 110.6-110.7 Dark grey AMYG		«QTZ BRX»	«1-3% py»	
		@ 112.3-112.5 Dark grey.		«QTZ BRX»	«1-3% py»	
	104.2-104.6 Amygdaloidal Flow	Crowded 1 cm amygdules filled by grey quartz.		«I ARG»	«Tr py»	
118.20 TO 120.10	«FAULT»	Highly fractured, 50% gouge.		«S-I ARG»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
120.10 TO 126.90	«FQXT»	Pale grey. m.g. Feldspar-quartz crystal tuff. 10% 2-5 mm qtz eyes 30% 1-7 mm feldspar 5% 1 cm rectangular lapilli or feldspar megacrysts Trace biotite.		«M ARG, S SIL» Moderately argillized, all fs gone to clay, but not vuggy. Strongly pervasively silicified.	«Tr py»	Appears welded or crudely bedded @ 10-20 degrees to CA.
126.90 TO 127.00	«FAULT»	5 cm of fault gouge.				
127.00 TO 133.50	«FLOW BANDED RHYOLITE BRECCIA» {132.2-132.7} «Gouge»	Green-black. Strongly argillized f.g. rhyolite tuff breccia. Green clay alteration, black breccia matrix. Highly fractured, 50% gouge. Well developed perlite textures. Fault		«S-I ARG» «X ARG»	«Tr py»	
133.50 TO 142.20	«FQXT»	Same as previous. Pervasively silicified. Minor qtz stringers. Crude bedding @ Minor drusy qtz stringers are barren green qtz.	20	«S SIL, M ARG» Pervasive silicification overprints mod argillic. Feldspars gone to clay.	«1% py» in minor quartz stringers.	
142.20 TO 158.80	«FQXT» {142.2-149.8} «FQXT-Fault»	Same as previous. Slightly leached and vuggy. Highly fractured. 50% gouge in fault fractures @	20	«M ARG, M SIL» «M ARG, S SIL	«Tr py» in qtz-chl stringers. «1% py» in minor qtz stringers and late fractures.	
158.80 TO 158.90	«FAULT»	Gouge		«X ARG»		
158.90 TO 163.70	«HEMATITIC RHYOLITE BX»	Grey red. Strange mix of perlitic textures, alteration balls and FB rhyolite frags in a hematite rich matrix. Some siliceous frags may be aphanitic flow - latite?		«S-I ARG» «M-S SIL» Patchy intense sil. accompanies up to 3% pyrite.	«1-3% py» as stringers, irregular blebs and fracture coatings.	
163.70 TO 169.50	«FAULT» «FB RHYOLITE»	Dark grey-red. Shattered and gougy tuff breccia as above. Preserved frags are strongly silicified sed, ash and flow. Interval is 60% gouge.		«M-X ARG» «S-I SIL» Strongly silicifed frags in gougy matrix.	«Tr py»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
169.50 TO 173.40	«LATITE BRECCIA»	Dark grey-green, aphanitic. Intensely silicified latite breccia. Latite is aphanitic but mottled with hematite. Local sphurulitic textures.		«M HEM» «I SIL» «S CHL» Pervasive silicification and quartz breccia matrix.	«3-5% py» as irregular blebs in qtz breccia matrix, "rip up" selvages and stringers.	Neat looking rock!
173.40 TO 177.80	«FAULT»	Pale grey. Bleached, gougy fault zone in latite breccia unit.		«S-I ARG» Some preserved frags are intensely silicifed. Otherwise 60% clay gouge.	«1% py» as irregular disseminations.	
177.80 TO 190.30	«STWK BRECCIA»	Buff green, aphanitic. Strong qtz-py stockworked and locally brecciated silicifed flow banded latite. Banding @ 70 Latite is highly fractured and quartz healed, locally vuggy. Latite is hematite rich with prominent flow-banding.	70	«X SIL» pervasive silicification of latite, with strong qtz-py stringers and breccias. Quartz is white to black, locally vuggy.	«3-5% py» in qtz stringers and quartz microbreccias.	Flooded with potential. Very impressive
	{178.8-179.1} «Qz Bx»	Vuggy black hydro-breccia			«2% py»	
	{180.0-180.2} «Qz Bx»	Pyrite and clay rich qtz bx.			«5% py»	
190.30 TO 190.90	«TUFF BX-FAULT»	Green. <10 cm fragments of latite in silicifed green clay matrix. 5 cm of clay gouge marks fault.		«S SIL» and fault gouge.		
190.90 TO 201.80	«FQXT»	Pale green, m.g. Moderately silicified and weaked veined feldspar quartz crystal tuff. Highly fractured, locally gougy. Increasing argillic alteration downsection. Bottom 1/2 is 30% gouge.		«M ARG, M-S SIL» Feldspars gone to clay.	«1% py» in black qtz stringers.	
	{199.6-200.4}	«blk qtz sil zone»				
	201.8	«EOH»				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43705	28.50	30.50	2.00	1.1	47	6	24	21	2	48	2	65	12	
43706	32.50	34.50	2.00	1.6	39	1	11	14	4	30	1	45	18	
43707	36.50	38.50	2.00	1	24	2	15	15	1	33	1	40	12	
43708	40.50	42.50	2.00	0.8	27	2	16	20	1	54	1	50	14	
43709	44.50	46.50	2.00	1.1	27	2	14	19	1	30	2	35	20	
43710	48.00	49.00	1.00	0.9	21	1	11	16	1	39	1	40	3	
43711	49.00	51.00	2.00	0.7	109	3	23	14	3	63	12	395	14	
43712	51.00	53.00	2.00	1	49	2	26	15	1	68	4	350	18	
43713	53.00	55.40	2.40	0.8	54	3	20	12	2	65	2	355	12	
43714	55.40	57.00	1.60	0.2	41	2	30	13	11	78	3	375	9	
43715	57.00	58.00	1.00	0.3	155	3	27	11	10	71	2	430	9	
43716	58.00	60.00	2.00	1.2	273	4	30	17	21	61	1	450	10	
43717	60.00	61.60	1.60	0.4	209	3	26	12	15	71	2	415	14	
43718	61.60	62.50	0.90	0.6	80	4	27	12	29	79	1	1160	5	
43719	62.50	64.50	2.00	0.6	50	4	30	15	27	76	1	545	8	
43720	64.50	66.50	2.00	0.6	66	3	21	18	32	65	2	510	13	
43721	66.50	68.50	2.00	0.4	70	5	23	15	31	79	1	675	10	
43722	68.50	70.50	2.00	0.5	56	2	23	13	22	68	1	380	13	
43723	70.50	72.50	2.00	0.4	36	4	28	12	17	85	2	405	10	
43724	72.50	74.50	2.00	0.5	131	3	24	17	17	66	1	310	9	
43725	74.50	76.50	2.00	0.5	63	2	26	16	13	67	2	295	7	
43726	76.50	78.50	2.00	0.4	68	2	22	14	14	64	1	315	9	
43727	78.50	80.40	1.90	0.7	42	5	21	14	15	65	1	200	7	
43728	80.40	82.50	2.10	0.6	80	4	73	13	25	67	2	290	16	
43729	82.50	83.40	0.90	0.8	17	3	41	26	12	46	1	155	7	
43730	83.40	85.40	2.00	0.3	38	4	38	15	33	81	2	665	9	
43731	85.40	87.40	2.00	0.7	32	5	34	11	21	80	2	370	6	
43732	87.40	89.40	2.00	1	54	4	29	15	17	72	2	185	12	
43733	89.40	91.50	2.10	0.7	42	5	24	11	9	72	3	200	9	
43734	91.50	93.60	2.10	0.5	53	4	23	13	23	67	4	300	10	
43735	93.60	96.60	3.00	0.2	96	6	40	21	22	73	2	375	100	
43736	96.60	99.20	2.60	0.3	58	4	28	16	11	65	3	180	13	
43737	99.20	100.80	1.60	0.7	78	4	43	16	13	85	3	385	10	
43738	100.80	102.20	1.40	0.3	51	4	29	12	11	86	7	470	7	
43739	102.20	104.20	2.00	0.3	65	2	171	19	22	83	12	355	11	
43740	104.20	106.20	2.00	0.6	96	2	62	14	15	74	6	205	16	
43741	106.20	108.20	2.00	1	139	3	49	23	16	81	10	235	9	
43742	108.20	110.20	2.00	1.8	129	2	41	23	15	73	40	260	100	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43743	110.20	112.20	2.00	0.9	141	2	24	13	14	76	23	365	100
43744	112.20	114.20	2.00	1.6	118	3	149	27	12	107	47	415	100
43745	114.20	116.20	2.00	2.6	1348	2	23	16	62	61	126	455	8
43746	116.20	118.20	2.00	1.4	369	1	21	14	14	49	118	65	8
43747	118.20	120.10	1.90	1	125	2	18	16	9	41	11	75	100
43748	120.10	122.10	2.00	0.6	23	2	16	18	1	38	15	35	19
43749	124.10	126.10	2.00	0.5	12	2	11	21	1	38	2	55	9
43750	127.00	129.10	2.10	0.7	129	3	23	12	4	30	12	45	19
43751	131.10	133.10	2.00	0.6	72	2	31	21	4	46	9	55	15
43752	135.10	137.10	2.00	0.6	20	2	12	15	1	34	3	45	14
43753	137.10	139.10	2.00	0.6	15	1	14	16	1	31	4	35	16
43754	139.10	141.10	2.00	0.5	24	2	13	16	1	34	2	35	21
43755	141.10	142.20	1.10	0.4	16	1	13	18	1	36	6	45	8
43756	142.20	144.20	2.00	0.4	22	2	11	16	1	35	7	55	50
43757	144.20	146.20	2.00	1.3	26	2	12	25	2	33	2	40	50
43758	146.20	148.20	2.00	0.5	30	1	15	23	3	34	1	15	50
43759	148.20	150.00	1.80	0.3	42	2	17	19	3	36	4	50	50
43760	150.00	152.00	2.00	0.4	37	3	24	18	1	45	5	55	50
43761	152.00	154.00	2.00	0.4	24	2	15	20	1	39	1	45	25
43762	154.00	156.00	2.00	0.5	37	2	14	21	2	35	4	25	15
43763	156.00	158.00	2.00	0.4	15	2	15	21	1	39	3	35	8
43764	158.90	160.90	2.00	0.7	83	4	21	19	7	35	8	890	16
43765	160.90	163.20	2.30	0.5	110	5	18	19	6	52	4	105	21
43766	163.20	166.00	2.80	0.9	154	2	23	14	7	55	56	65	100
43767	166.00	168.00	2.00	1	175	4	14	14	13	36	18	100	20
43768	168.00	169.50	1.50	1.3	334	2	18	17	26	42	57	2100	100
43769	169.50	171.50	2.00	0.7	91	2	81	85	6	71	59	185	28
43770	171.50	173.40	1.90	1	206	2	18	11	13	88	46	430	20
43771	173.40	175.40	2.00	0.6	124	1	25	21	8	43	37	130	40
43772	175.40	177.80	2.40	0.8	100	2	19	10	5	37	16	90	17
43773	177.80	178.80	1.00	0.6	90	2	19	10	5	39	49	60	12
43774	178.80	179.80	1.00	0.9	95	1	12	9	4	32	3	70	10
43775	179.80	180.80	1.00	0.7	137	1	26	11	9	54	60	130	10
43776	180.80	181.80	1.00	0.8	164	2	18	10	10	8	15	210	16
43777	181.80	183.00	1.20	0.6	134	3	8	7	6	7	32	290	9
43778	183.00	184.00	1.00	0.9	191	2	9	9	12	7	7	600	9
43779	184.00	186.00	2.00	1.2	104	2	109	8	7	21	5	110	21
43780	186.00	187.00	1.00	1	60	2	44	5	4	25	14	60	18

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43781	187.00	188.00	1.00	0.4	71	4	16	6	2	21	36	35	12
43782	188.00	189.00	1.00	0.7	96	2	15	4	2	41	3	45	8
43783	189.00	190.00	1.00	0.5	112	3	7	7	1	42	9	70	10
43784	190.00	190.90	0.90	0.7	74	3	20	8	1	78	2	35	12
43785	190.90	193.00	2.10	0.5	26	1	15	13	1	39	1	15	14
43786	193.00	195.00	2.00	0.2	18	2	15	12	1	35	2	35	25
43787	195.00	197.00	2.00	0.3	16	2	12	13	1	36	1	25	11
43788	197.00	199.00	2.00	0.4	42	1	7	15	2	30	3	35	21
43789	199.00	200.40	1.40	0.9	37	3	9	24	4	87	4	40	18
43790	200.40	201.80	1.40	0.3	18	2	15	10	1	26	1	15	30

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43705	28.50	30.50	2.00	1.1	47	6	24	21	2	48	2	65	12
43706	32.50	34.50	2.00	1.6	39	1	11	14	4	30	1	45	18
43707	36.50	38.50	2.00	1	24	2	15	15	1	33	1	40	12
43708	40.50	42.50	2.00	0.8	27	2	16	20	1	54	1	50	14
43709	44.50	46.50	2.00	1.1	27	2	14	19	1	30	2	35	20
43710	48.00	49.00	1.00	0.9	21	1	11	16	1	39	1	40	3
43711	49.00	51.00	2.00	0.7	109	3	23	14	3	63	12	395	14
43712	51.00	53.00	2.00	1	49	2	26	15	1	68	4	350	18
43713	53.00	55.40	2.40	0.8	54	3	20	12	2	65	2	355	12
43714	55.40	57.00	1.60	0.2	41	2	30	13	11	78	3	375	9
43715	57.00	58.00	1.00	0.3	155	3	27	11	10	71	2	430	9
43716	58.00	60.00	2.00	1.2	273	4	30	17	21	61	1	450	10
43717	60.00	61.60	1.60	0.4	209	3	26	12	15	71	2	415	14
43718	61.60	62.50	0.90	0.6	80	4	27	12	29	79	1	1160	5
43719	62.50	64.50	2.00	0.6	50	4	30	15	27	76	1	545	8
43720	64.50	66.50	2.00	0.6	66	3	21	18	32	65	2	510	13
43721	66.50	68.50	2.00	0.4	70	5	23	15	31	79	1	675	10
43722	68.50	70.50	2.00	0.5	56	2	23	13	22	68	1	380	13
43723	70.50	72.50	2.00	0.4	36	4	28	12	17	85	2	405	10
43724	72.50	74.50	2.00	0.5	131	3	24	17	17	66	1	310	9
43725	74.50	76.50	2.00	0.5	63	2	26	16	13	67	2	295	7
43726	76.50	78.50	2.00	0.4	68	2	22	14	14	64	1	315	9
43727	78.50	80.40	1.90	0.7	42	5	21	14	15	65	1	200	7
43728	80.40	82.50	2.10	0.6	80	4	73	13	25	67	2	290	16
43729	82.50	83.40	0.90	0.8	17	3	41	26	12	46	1	155	7
43730	83.40	85.40	2.00	0.3	38	4	38	15	33	81	2	665	9
43731	85.40	87.40	2.00	0.7	32	5	34	11	21	80	2	370	6
43732	87.40	89.40	2.00	1	54	4	29	15	17	72	2	185	12
43733	89.40	91.50	2.10	0.7	42	5	24	11	9	72	3	200	9
43734	91.50	93.60	2.10	0.5	53	4	23	13	23	67	4	300	10
43735	93.60	96.60	3.00	0.2	96	6	40	21	22	73	2	375	100
43736	96.60	99.20	2.60	0.3	58	4	28	16	11	65	3	180	13
43737	99.20	100.80	1.60	0.7	78	4	43	16	13	85	3	385	10
43738	100.80	102.20	1.40	0.3	51	4	29	12	11	86	7	470	7
43739	102.20	104.20	2.00	0.3	65	2	171	19	22	83	12	355	11
43740	104.20	106.20	2.00	0.6	96	2	62	14	15	74	6	205	16
43741	106.20	108.20	2.00	1	139	3	49	23	16	81	10	235	9
43742	108.20	110.20	2.00	1.8	129	2	41	23	15	73	40	260	100
43743	110.20	112.20	2.00	0.9	141	2	24	13	14	76	23	365	100

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43744	112.20	114.20	2.00	1.6	118	3	149	27	12	107	47	415	100
43745	114.20	116.20	2.00	2.6	1348	2	23	16	62	61	126	455	8
43746	116.20	118.20	2.00	1.4	369	1	21	14	14	49	118	65	8
43747	118.20	120.10	1.90	1	125	2	18	16	9	41	11	75	100
43748	120.10	122.10	2.00	0.6	23	2	16	18	1	38	15	35	19
43749	124.10	126.10	2.00	0.5	12	2	11	21	1	38	2	55	9
43750	127.00	129.10	2.10	0.7	129	3	23	12	4	30	12	45	19
43751	131.10	133.10	2.00	0.6	72	2	31	21	4	46	9	55	15
43752	135.10	137.10	2.00	0.6	20	2	12	15	1	34	3	45	14
43753	137.10	139.10	2.00	0.6	15	1	14	16	1	31	4	35	16
43754	139.10	141.10	2.00	0.5	24	2	13	16	1	34	2	35	21
43755	141.10	142.20	1.10	0.4	16	1	13	18	1	36	6	45	8
43756	142.20	144.20	2.00	0.4	22	2	11	16	1	35	7	55	50
43757	144.20	146.20	2.00	1.3	26	2	12	25	2	33	2	40	50
43758	146.20	148.20	2.00	0.5	30	1	15	23	3	34	1	15	50
43759	148.20	150.00	1.80	0.3	42	2	17	19	3	36	4	50	50
43760	150.00	152.00	2.00	0.4	37	3	24	18	1	45	5	55	50
43761	152.00	154.00	2.00	0.4	24	2	15	20	1	39	1	45	25
43762	154.00	156.00	2.00	0.5	37	2	14	21	2	35	4	25	15
43763	156.00	158.00	2.00	0.4	15	2	15	21	1	39	3	35	8
43764	158.90	160.90	2.00	0.7	83	4	21	19	7	35	8	890	16
43765	160.90	163.20	2.30	0.5	110	5	18	19	6	52	4	105	21
43766	163.20	166.00	2.80	0.9	154	2	23	14	7	55	56	65	100
43767	166.00	168.00	2.00	1	175	4	14	14	13	36	18	100	20
43768	168.00	169.50	1.50	1.3	334	2	18	17	26	42	57	2100	100
43769	169.50	171.50	2.00	0.7	91	2	81	85	6	71	59	185	28
43770	171.50	173.40	1.90	1	206	2	18	11	13	88	46	430	20
43771	173.40	175.40	2.00	0.6	124	1	25	21	8	43	37	130	40
43772	175.40	177.80	2.40	0.8	100	2	19	10	5	37	16	90	17
43773	177.80	178.80	1.00	0.6	90	2	19	10	5	39	49	60	12
43774	178.80	179.80	1.00	0.9	95	1	12	9	4	32	3	70	10
43775	179.80	180.80	1.00	0.7	137	1	26	11	9	54	60	130	10
43776	180.80	181.80	1.00	0.8	164	2	18	10	10	8	15	210	16
43777	181.80	183.00	1.20	0.6	134	3	8	7	6	7	32	290	9
43778	183.00	184.00	1.00	0.9	191	2	9	9	12	7	7	600	9
43779	184.00	186.00	2.00	1.2	104	2	109	8	7	21	5	110	21
43780	186.00	187.00	1.00	1	60	2	44	5	4	25	14	60	18
43781	187.00	188.00	1.00	0.4	71	4	16	6	2	21	36	35	12

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43782	188.00	189.00	1.00	0.7	96	2	15	4	2	41	3	45	8
43783	189.00	190.00	1.00	0.5	112	3	7	7	1	42	9	70	10
43784	190.00	190.90	0.90	0.7	74	3	20	8	1	78	2	35	12
43785	190.90	193.00	2.10	0.5	26	1	15	13	1	39	1	15	14
43786	193.00	195.00	2.00	0.2	18	2	15	12	1	35	2	35	25
43787	195.00	197.00	2.00	0.3	16	2	12	13	1	36	1	25	11
43788	197.00	199.00	2.00	0.4	42	1	7	15	2	30	3	35	21
43789	199.00	200.40	1.40	0.9	37	3	9	24	4	87	4	40	18
43790	200.40	201.80	1.40	0.3	18	2	15	10	1	26	1	15	30

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
57.00	59.00	2.00	50.00	*****	30	15.00	0	0.00	0	
61.00	63.00	2.00	50.00	*****	16	8.00	0	0.00	0	
65.00	67.00	2.00	40.00	*****	25	12.50	1	0.50	0	
69.00	71.00	2.00	60.00	*****	15	7.50	1	0.50	0	
73.00	75.00	2.00	120.00	*****	11	5.50	0	0.00	0	
77.00	79.00	2.00	60.00	*****	26	13.00	0	0.00	0	
79.00	81.40	2.40	80.00	*****	37	15.42	0	0.00	0	
81.40	83.40	2.00	90.00	*****	23	11.50	0	0.00	0	
83.40	85.40	2.00	80.00	*****	30	15.00	1	0.50	0	
87.40	89.40	2.00	80.00	*****	34	17.00	0	0.00	0	
87.40	89.40	2.00	0.00	0.0	0	0.00	0	0.00	0	
89.40	91.40	2.00	80.00	*****	24	12.00	3	1.50	0	
91.40	92.90	1.50	40.00	*****	27	18.00	2	1.33	0	
92.90	94.90	2.00	60.00	*****	19	9.50	0	0.00	0	
94.90	96.90	2.00	70.00	*****	13	6.50	0	0.00	0	
96.90	98.90	2.00	70.00	*****	14	7.00	1	0.50	0	
98.90	99.70	0.80	60.00	*****	11	13.75	0	0.00	0	
99.70	101.20	1.50	40.00	*****	13	8.67	0	0.00	0	
101.20	102.00	0.80	11.00	*****	14	17.50	0	0.00	0	
102.00	103.90	1.90	70.00	*****	32	16.84	0	0.00	0	
103.90	104.90	1.00	50.00	*****	12	12.00	0	0.00	0	
104.90	106.90	2.00	50.00	*****	26	13.00	0	0.00	0	
106.90	108.80	1.90	20.00	*****	39	20.53	1	0.53	0	
108.80	110.80	2.00	10.00	500.0	37	18.50	0	0.00	0	
110.80	112.80	2.00	0.00	0.0	100	50.00	0	0.00	0	
112.80	114.80	2.00	20.00	*****	45	22.50	0	0.00	0	
114.80	115.00	0.20	10.00	*****	13	65.00	0	0.00	0	
115.00	117.80	2.80	70.00	*****	32	11.43	0	0.00	0	
117.80	119.80	2.00	40.00	*****	38	19.00	0	0.00	0	
119.80	121.80	2.00	0.00	0.0	75	37.50	0	0.00	0	
121.80	123.70	1.90	10.00	526.3	100	52.63	0	0.00	1	
123.70	125.80	2.10	80.00	*****	10	4.76	2	0.95	0	
125.80	126.00	0.20	0.00	0.0	50	250.00	2	10.00	0	
126.00	127.00	1.00	30.00	*****	2	2.00	0	0.00	0	
127.00	127.50	0.50	20.00	*****	1	2.00	0	0.00	0	
127.50	129.50	2.00	80.00	*****	12	6.00	1	0.50	0	
129.50	130.90	1.40	80.00	*****	12	8.57	0	0.00	0	
130.90	132.00	1.10	80.00	*****	3	2.73	1	0.91	0	
132.00	132.50	0.50	30.00	*****	3	6.00	2	4.00	0	
132.50	134.50	2.00	60.00	*****	25	12.50	1	0.50	0	
134.50	136.50	2.00	80.00	*****	21	10.50	2	1.00	0	
136.50	138.50	2.00	70.00	*****	23	11.50	0	0.00	0	
138.50	140.50	2.00	50.00	*****	32	16.00	0	0.00	0	
140.50	140.90	0.40	20.00	*****	50	125.00	1	2.50	0	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
140.90	142.90	2.00	70.00	*****	40	20.00	1	0.50	0	
142.90	143.90	1.00	60.00	*****	21	21.00	1	1.00	0	
143.90	144.90	1.00	30.00	*****	23	23.00	0	0.00	0	
144.90	146.90	2.00	60.00	*****	37	18.50	0	0.00	0	
146.90	148.90	2.00	60.00	*****	16	8.00	0	0.00	0	
148.90	149.50	0.60	0.00	0.0	11	18.33	1	1.67	0	
149.50	151.30	1.80	70.00	*****	19	10.56	0	0.00	0	BX
151.30	153.30	2.00	90.00	*****	27	13.50	0	0.00	0	BX
153.30	155.30	2.00	40.00	*****	31	15.50	0	0.00	0	BX
155.30	157.30	2.00	50.00	*****	26	13.00	1	0.50	0	
157.30	159.30	2.00	40.00	*****	30	15.00	1	0.50	0	
159.30	160.80	1.50	30.00	*****	50	33.33	2	1.33	0	
160.80	162.80	2.00	50.00	*****	50	25.00	0	0.00	0	BX
162.80	163.80	1.00	50.00	*****	50	50.00	0	0.00	0	CCN
163.80	164.80	1.00	0.00	0.0	35	35.00	1	1.00	0	
164.80	165.70	0.90	40.00	*****	15	16.67	0	0.00	0	
165.70	166.70	1.00	10.00	*****	24	24.00	2	2.00	0	
166.70	168.00	1.30	30.00	*****	16	12.31	0	0.00	0	BX
168.00	169.20	1.20	40.00	*****	10	8.33	0	0.00	0	BX
169.20	170.50	1.30	30.00	*****	18	13.85	1	0.77	0	
170.50	171.50	1.00	20.00	*****	6	6.00	0	0.00	0	
171.50	172.00	0.50	20.00	*****	4	8.00	1	2.00	0	
172.00	172.60	0.60	0.00	0.0	4	6.67	1	1.67	0	
172.60	175.50	2.90	50.00	*****	100	34.48	0	0.00	0	CCN
175.50	178.60	3.10	40.00	*****	100	32.26	0	0.00	0	BX
178.60	181.60	3.00	120.00	*****	37	12.33	0	0.00	0	
181.60	184.60	3.00	140.00	*****	30	10.00	0	0.00	0	CACAO3
184.60	187.60	3.00	150.00	*****	19	6.33	3	1.00	0	
187.60	190.40	2.80	150.00	*****	31	11.07	1	0.36	0	

HOLE NUMBER: CL-91-07

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: CENTRAL ZONE

PLOTTING COORDS GRID:
NORTH: 40925.00N
EAST: 9874.00E
ELEV: 1312.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 183.50m
START DEPTH: 0.00m
FINAL DEPTH: 183.50m

COLLAR GRID AZIMUTH: 270° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 270° 0' 0"

DATE STARTED: August 22, 1991
DATE COMPLETED: August 23, 1991
DATE LOGGED: August 28, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
33.80	-	-51° 0'	ACID	OK	
96.30	-	-54° 0'	ACID	OK	
183.50	-	-56° 0'	ACID	OK	

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 31.10	«CASING»	Overburden				
31.10 TO 35.30	«OXIDATION ZONE»	Yellow-brown. Limonitic stained flow-banded latite?		«M SIL, S LIM»	None.	
35.30 TO 35.80	«FAULT»	Brown. 90% clay gouge				
35.80 TO 40.00	«LATITE»	Grey. Strongly argillically altered flow-banded latite. Feldspars gone to green clay or chlorite. Flow banding @ Strong c.g. calcite stockwork veining is barren of any sulphides.	30	«S ARG» is pervasive «W CHL» alteration of feldspar phenos	None	
40.00 TO 47.20	«FAULT STWK»	Grey. Gougy zone in flow banded latite is moderately stockwork veined by barren calcite. Interval is about 30% gouge.		«S-X ARG» is patchy, fault-controlled. «W CHL» alteration of feldspar phenos.		
47.20 TO 49.80	«FAULT»	70% clay gouge.		«I-X ARG»		
49.80 TO 51.70	«RHYOLITE BRECCIA»	Dark grey. f.g. dark aphanitic unaltered rhyolite? breccia.		«M SIL»		
51.70 TO 74.60	«TUFF BRECCIA»	Pale green. Mixed lapilli to block breccia of locally amygdaloidal feldspar (hornblende) porphyry and perlitic rhyolite. Porphyry fragments dominate except at upper and lower contacts. Weak calcite stringers throughout.		«S-X ARG» Interval is highly fractured and argillized, almost 50% is clay-rich gouge. «M CHL» filling minor amygdules.	None.	
74.60 TO 76.80	«FAULT»	80% clay gouge.		«X ARG»		
76.80 TO 78.70	«RHYOLITE FLOW»	Dark grey aphanitic. Dark siliceous flow-banded rhyolite. Hairline fractures contain hematite w/ trace pyrite, alteration selvages of chlorite.	45 - 60	«S SIL» pervasive. «M CHL» associated with «M HEM» in hairline fractures.	«Tr Py» in hairline fractures.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
78.70 TO 84.80	«HEMATITE BRECCIA»	Red and green. Hematitic breccia of siliceous banded rhyolite frags and strongly argillized amygdaloidal frags. Hematitic matrix is moderately silicified.		«S HEM» of breccia matrix. «S ARG» of non-rhyolite fragments. «M SIL» of hematitic matrix. Minor patchy chloritization. «M CHL»	«Tr Py» in chloritized fragments.	
84.80 TO 93.20	«FAULT»	Grey green. Wide zone of intense fracturing and argillization through above hematitic rhyolite breccia.		«X ARG» 70% clay gouge.	None.	
93.20 TO 99.80	«LAPILLI BRECCIA»	Pale green. Interbedded lapilli breccia and bedded lithic tuffs and wackes. Bedding @	50	«S-I ARG» 40% of interval is clay rich gouge.	None.	
99.80 TO 100.90	«FAULT»	Pale green. 80% clay gouge within above unit @	20			
100.90 TO 116.20	«PERLITE» ┤115.8-116.2├	Pale grey. Aphanitic. Classic perlite with spherulitic and net fracture textures and local brecciation.		«M SIL» Bleached zone of «M ARG» and disseminated pyrite.	«1% py» as euhedral disseminated crystals.	
116.20 TO 141.80	«FLOW/ BRECCIA» ┤132.2-137.3├ «FAULT ZONE» ┤137.3-141.8├	Red and grey, aphanitic. A mixed interval of inter bedded hematitic tuff breccia, flow-banded and massive (non-banded) rhyolite and minor pseudo-perlitic breccias. Upper and lower contacts are most strongly hematitic. Highly fractured zone, minor gouge. «W PY STWK» Weak pyrite stockwork.		«M SIL, M ARG» locally «M HEM» «S SIL»	«1% Py» as irregular blebs and late fracture fill. «1% Py» in late stringers.	
141.80 TO 152.00	«QZ-PY STWK» ┤151.4-152.0├ «JIGSAW BRECCIA»	Pale grey. Weak to moderate pyritic quartz stockwork. Host rock is feldspar porphyry? Strong argillic alteration and disseminated chlorite and pyrite make identification difficult. Intense stockwork to jigsaw breccia. Lower vein contact @ is vuggy drusy pyritic white quartz vein 1 cm in width.	20	«M-S ARG» is pervasive. «W-M SIL» is patchy. «M CHL» is disseminated with blebby pyrite. «S-I SIL»	«1-3% Py» as disseminated crystals and blebs, and in stockwork stringers. «3% Py» in quartz stringers and replacing chloritized wall rock frags.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
152.00 TO 171.30	«RHYOLITE»	Pale green aphanitic, generally massive rhyolite, with minor flow banding and pseudo-perlitic net fracture textures.		«S SIL»	«Tr Py»	
	⎨152.0-155.0⎬ «W PY STWK»	Weak pyrite stockwork.		«S SIL»	«1% Py» in quartz stringers	
	⎨157.9-160.7⎬ «HEMATITIC BRECCIA»	Mildly disrupted and hematized.				
171.30 TO 175.10	«W PY STWK»	Pale green. Strongly bleached zone of argillic alteration and weak pyrite stockwork veining. Sparse stringers are semi-massive pyrite.		«M-S ARG» «M SIL»	«1.3% Py» in quartz stringers.	
175.10 TO 182.70	«AMYGDALOID FLOW»	Green. Amygdaloidal feldspar porphyry, amygdules flattened and filled by chlorite @	50	«M-S ARG» «W CHL»	None.	
182.70 TO 183.50	«RHYOLITE»	Weakly perlitic and flow banded rhyolite. Banding @	45	«S ARG» «W CHL»	None.	
	183.5 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44320	31.10	33.80	2.70	0.1	110	2	20	18	1	94	22	225	100	
44321	33.80	35.80	2.00	0.4	123	2	26	19	1	82	43	545	50	
44322	35.80	37.00	1.20	1	43	1	8	15	1	23	6	165	50	
44323	37.00	38.00	1.00	1.2	50	3	7	23	1	20	3	55	16	
44324	38.00	40.00	2.00	0.6	41	1	18	24	1	38	14	140	35	
44325	40.00	41.50	1.50	0.4	44	1	20	21	1	43	5	145	20	
44326	41.50	43.00	1.50	0.3	43	1	21	22	1	41	2	130	23	
44327	43.00	45.20	2.20	0.4	56	1	19	26	1	39	9	115	42	
44328	45.20	47.20	2.00	0.5	52	2	17	20	1	35	4	125	60	
44329	47.20	49.80	2.60	0.4	46	1	21	25	1	45	2	115	100	
44330	49.80	51.70	1.90	0.5	40	1	19	23	1	44	1	85	50	
44331	51.70	53.70	2.00	0.3	39	1	22	22	1	42	2	105	35	
44332	56.50	58.50	2.00	0.4	27	1	21	17	1	41	1	75	33	
44333	60.50	62.50	2.00	0.3	13	1	14	18	1	35	3	85	25	
44334	64.50	66.50	2.00	0.4	20	1	16	22	1	38	3	85	31	
44335	68.50	70.50	2.00	0.3	16	1	18	22	1	41	1	135	50	
44336	72.50	74.60	2.10	0.5	26	1	24	20	1	41	2	75	17	
44337	78.70	80.70	2.00	0.5	22	2	21	20	1	42	1	65	19	
44338	82.70	84.70	2.00	0.4	17	1	21	24	1	38	2	70	14	
44339	88.80	90.70	1.90	0.4	24	1	28	22	1	45	2	115	27	
44340	96.50	98.50	2.00	0.2	16	1	17	22	3	44	1	40	21	
44341	101.00	103.00	2.00	0.2	46	1	23	21	1	48	5	105	42	
44342	105.00	107.00	2.00	0.3	36	1	24	23	2	49	2	115	40	
44343	109.00	111.00	2.00	0.1	16	1	22	24	1	50	2	90	16	
44344	115.20	116.20	1.00	0.8	331	1	18	17	8	34	40	85	7	
44345	120.00	122.00	2.00	0.2	57	3	21	20	2	43	22	130	28	
44346	122.00	124.00	2.00	0.3	64	1	23	20	5	48	5	125	19	
44347	137.30	139.70	2.40	0.2	72	1	22	18	4	42	17	110	33	
44348	139.70	141.80	2.10	0.6	207	1	14	14	7	35	35	145	30	
44349	141.80	143.80	2.00	0.8	351	1	18	19	12	46	38	205	20	
44350	143.80	145.90	2.10	0.9	372	1	18	2104	14	45	38	340	35	
44351	149.40	151.40	2.00	1.2	221	2	21	19	6	43	41	120	16	
44352	151.40	152.00	0.60	2.5	178	1	20	41	3	39	43	65	6	
44353	152.00	154.00	2.00	1.9	106	2	51	33	1	53	28	55	40	
44354	154.00	156.00	2.00	1.7	109	1	36	32	1	52	36	90	15	
44355	160.00	162.00	2.00	1	46	1	23	21	1	49	11	45	9	
44356	169.30	171.30	2.00	0.7	54	1	23	21	1	47	15	65	14	
44357	171.30	173.30	2.00	1	207	1	29	22	7	48	8	75	12	

HOLE NUMBER: CL-91-07 ASSAY SHEET DATE: 25-May-1992

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44358	173.30	175.10	1.80	1.1	184	1	18	16	5	43	17	140	19
44359	175.10	177.10	2.00	0.7	30	2	24	20	1	50	1	55	7
44360	179.00	181.00	2.00	0.5	29	2	21	25	1	46	3	75	12

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
44320	31.10	33.80	2.70	0.1	110	2	20	18	1	94	22	225	100
44321	33.80	35.80	2.00	0.4	123	2	26	19	1	82	43	545	50
44322	35.80	37.00	1.20	1	43	1	8	15	1	23	6	165	50
44323	37.00	38.00	1.00	1.2	50	3	7	23	1	20	3	55	16
44324	38.00	40.00	2.00	0.6	41	1	18	24	1	38	14	140	35
44325	40.00	41.50	1.50	0.4	44	1	20	21	1	43	5	145	20
44326	41.50	43.00	1.50	0.3	43	1	21	22	1	41	2	130	23
44327	43.00	45.20	2.20	0.4	56	1	19	26	1	39	9	115	42
44328	45.20	47.20	2.00	0.5	52	2	17	20	1	35	4	125	60
44329	47.20	49.80	2.60	0.4	46	1	21	25	1	45	2	115	100
44330	49.80	51.70	1.90	0.5	40	1	19	23	1	44	1	85	50
44331	51.70	53.70	2.00	0.3	39	1	22	22	1	42	2	105	35
44332	56.50	58.50	2.00	0.4	27	1	21	17	1	41	1	75	33
44333	60.50	62.50	2.00	0.3	13	1	14	18	1	35	3	85	25
44334	64.50	66.50	2.00	0.4	20	1	16	22	1	38	3	85	31
44335	68.50	70.50	2.00	0.3	16	1	18	22	1	41	1	135	50
44336	72.50	74.60	2.10	0.5	26	1	24	20	1	41	2	75	17
44337	78.70	80.70	2.00	0.5	22	2	21	20	1	42	1	65	19
44338	82.70	84.70	2.00	0.4	17	1	21	24	1	38	2	70	14
44339	88.80	90.70	1.90	0.4	24	1	28	22	1	45	2	115	27
44340	96.50	98.50	2.00	0.2	16	1	17	22	3	44	1	40	21
44341	101.00	103.00	2.00	0.2	46	1	23	21	1	48	5	105	42
44342	105.00	107.00	2.00	0.3	36	1	24	23	2	49	2	115	40
44343	109.00	111.00	2.00	0.1	16	1	22	24	1	50	2	90	16
44344	115.20	116.20	1.00	0.8	331	1	18	17	8	34	40	85	7
44345	120.00	122.00	2.00	0.2	57	3	21	20	2	43	22	130	28
44346	122.00	124.00	2.00	0.3	64	1	23	20	5	48	5	125	19
44347	137.30	139.70	2.40	0.2	72	1	22	18	4	42	17	110	33
44348	139.70	141.80	2.10	0.6	207	1	14	14	7	35	35	145	30
44349	141.80	143.80	2.00	0.8	351	1	18	19	12	46	38	205	20
44350	143.80	145.90	2.10	0.9	372	1	18	2104	14	45	38	340	35
44351	149.40	151.40	2.00	1.2	221	2	21	19	6	43	41	120	16
44352	151.40	152.00	0.60	2.5	178	1	20	41	3	39	43	65	6
44353	152.00	154.00	2.00	1.9	106	2	51	33	1	53	28	55	40
44354	154.00	156.00	2.00	1.7	109	1	36	32	1	52	36	90	15
44355	160.00	162.00	2.00	1	46	1	23	21	1	49	11	45	9
44356	169.30	171.30	2.00	0.7	54	1	23	21	1	47	15	65	14
44357	171.30	173.30	2.00	1	207	1	29	22	7	48	8	75	12
44358	173.30	175.10	1.80	1.1	184	1	18	16	5	43	17	140	19

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44359	175.10	177.10	2.00	0.7	30	2	24	20	1	50	1	55	7
44360	179.00	181.00	2.00	0.5	29	2	21	25	1	46	3	75	12

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
27.40	29.40	2.00	40.00	*****	18	9.00	0	0.00	0	
29.40	31.00	1.60	20.00	*****	40	25.00	4	2.50	0	
31.00	32.60	1.60	30.00	*****	50	31.25	1	0.63	0	
32.60	34.90	2.30	37.50	*****	20	8.70	100	43.48	0	
34.90	37.50	2.60	20.00	769.2	100	38.46	0	0.00	0	
37.50	38.00	0.50	0.00	0.0	20	40.00	0	0.00	0	
38.00	39.80	1.80	20.00	*****	17	9.44	0	0.00	0	
39.80	40.10	0.30	0.00	0.0	20	66.67	0	0.00	0	
40.10	41.00	0.90	10.00	*****	24	26.67	0	0.00	0	
41.00	42.90	1.90	70.00	*****	28	14.74	1	0.53	0	
42.90	43.90	1.00	50.00	*****	17	17.00	3	3.00	0	
43.90	45.90	2.00	30.00	*****	100	50.00	0	0.00	4	
45.90	46.90	1.00	10.00	*****	60	60.00	3	3.00	0	
46.90	48.90	2.00	40.00	*****	50	25.00	0	0.00	0	
48.90	49.50	0.60	0.00	0.0	100	166.67	0	0.00	1	
49.50	51.40	1.90	40.00	*****	50	26.32	1	0.53	0	
51.40	53.60	2.20	70.00	*****	40	18.18	0	0.00	0	
53.60	55.60	2.00	40.00	*****	30	15.00	1	0.50	0	
55.60	57.60	2.00	100.00	*****	18	9.00	0	0.00	0	
57.60	58.40	0.80	40.00	*****	8	10.00	0	0.00	0	
58.40	59.30	0.90	40.00	*****	19	21.11	0	0.00	0	
59.30	59.70	0.40	20.00	*****	6	15.00	0	0.00	0	
64.90	66.90	2.00	80.00	*****	18	9.00	0	0.00	0	
66.90	67.80	0.90	40.00	*****	8	8.89	0	0.00	0	
67.80	69.80	2.00	120.00	*****	38	19.00	0	0.00	0	
69.80	70.80	1.00	80.00	*****	11	11.00	2	2.00	0	
70.80	72.80	2.00	30.00	*****	50	25.00	5	2.50	0	
72.80	74.50	1.70	50.00	*****	30	17.65	6	3.53	0	
76.50	78.10	1.60	50.00	*****	21	13.13	5	3.13	0	
78.10	79.30	1.20	30.00	*****	50	41.67	3	2.50	0	
79.30	81.40	2.10	90.00	*****	24	11.43	9	4.29	0	
81.40	83.40	2.00	150.00	*****	21	10.50	3	1.50	0	
83.40	84.70	1.30	90.00	*****	10	7.69	6	4.62	0	
84.70	85.20	0.50	0.00	0.0	20	40.00	2	4.00	0	
85.20	86.10	0.90	25.00	*****	20	22.22	1	1.11	0	
86.10	86.30	0.20	10.00	*****	3	15.00	1	5.00	0	
86.30	88.30	2.00	150.00	*****	18	9.00	3	1.50	0	
88.30	89.70	1.40	70.00	*****	17	12.14	2	1.43	0	
89.70	90.00	0.30	0.00	0.0	4	13.33	1	3.33	0	
90.00	92.00	2.00	90.00	*****	50	25.00	0	0.00	0	
92.00	94.00	2.00	120.00	*****	14	7.00	2	1.00	0	
94.00	94.50	0.50	40.00	*****	5	10.00	1	2.00	0	
94.50	95.10	0.60	30.00	*****	5	8.33	2	3.33	0	
95.10	96.60	1.50	140.00	*****	12	8.00	1	0.67	0	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
96.60	98.40	1.80	180.00	*****	5	2.78	2	1.11	0	
98.40	99.10	0.70	60.00	*****	3	4.29	2	2.86	0	
99.10	100.40	1.30	130.00	*****	3	2.31	0	0.00	0	

HOLE NUMBER: CL-91-08

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID:
NORTH: 41202.00N
EAST: 9683.00E
ELEV: 1310.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 147.80m
START DEPTH: 0.00m
FINAL DEPTH: 147.80m

COLLAR GRID AZIMUTH: 290° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 23, 1991
DATE COMPLETED: August 25, 1991
DATE LOGGED: October 9, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
78.30	-	-43° 0'	ACID	OK		-	-	-	-	-	
147.80	-	-49° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 31.70	«CASING»	Overburden				
31.70 TO 42.60	«PERLITE BRECCIA»	Buff, aphanitic. Highly fractured (faulted) interval of devitrified and strongly argillized perlite to perlite breccia. Upper 2m is dominantly breccia with white silicified matrix.		«S ARG»	None	Perlite "breccia" is basically very dense or advanced "net texture" devitrification, leading to rounded frags in white siliceous matrix.
42.60 TO 59.00	«BALLI-FEROUS PERLITE»	Red & green. Same as above unit, but with big (2-6 cm) red (hematitic) alteration balls.		«S HEM» alteration balls «S CHL» in late fractures and minor jigsaw breccias. «M ARG» is pervasive.		
	⊦46.9-47.1⊣					
	«SIL BX»	Vuggy silicified perlite breccia				
	⊦48.8-50.1⊣					
	«CHL BX»	With minor quartz.		«S CHL, W SIL»	«Tr Py» with chlorite.	
	⊦53.7-54.3⊣					
	«FAULT»	2 cm gouge.	15			
59.00 TO 59.30	«FAULT»	50% gouge				
59.30 TO 63.10	«PERLITE BRECCIA»	Pale green, aphanitic. Similar to previous interval of perlite to perlite breccia, no alteration balls. Weakly silicified net texture matrix.				
63.10 TO 72.10	«BLACK BRECCIA»	Black & green. Depositional breccia with hydrothermal overprint. Fragments of perlite and black banded rhyolite in black f.g. matrix. Cut by sparse white pyritic quartz stringers.		«M-S ARG» is pervasive.	«1% Py» in sparse quartz stringers.	
	⊦65.6-69.1⊣	«W PY STWK-FAULT» Weak pyrite stockwork in strongly argillized (fault) zone.		«S-X ARG» in gougy fault zone.	«1-2% Py» as mm stringers.	
72.10 TO 73.60	«HEM BRECCIA»	Red & green. Strongly hematized matrix in depositional breccia of perlite fragments.		«S HEM» breccia matrix. «W CHL» of fragments.	«Tr Py» in hematitic matrix.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
73.60 TO 85.40	«LATITE BRECCIA»	Dark green and buff, f.g. Classic flow-banded latite breccia frags in a strongly chloritic matrix. Breccia is weakly veined by barren quartz stringers. Py blebs are restricted to chloritic matrix. Flow banded @	70	«M HEM» highlighting flow bands in latite as a "beaded" texture. «S CHL, M SIL» of breccia matrix.	up to «1% Py» in chloritic matrix.	
	⎨83.6- 85.4⎬ «FAULT ZONE»	3 gougy zones, extensive bleaching		«S ARG»		
85.40 TO 86.00	«PERLITE BRECCIA»	Pale green, f.g. narrow interbed of densely net textured perlite breccia.		«M ARG»	None.	
86.00 TO 102.40	«LATITE BRECCIA»	Green & buff. Similarly classic hematitic flow banded latite frags in chloritic breccia matrix. Slightly less brecciated, more localized jigsaw breccias. Flow banded from	5- 45	«S CHL, M SIL» of breccia matrix.	«Tr Py» in chloritic breccia matrix.	
	⎨86.4- 86.7⎬ «SIL BRECCIA»	Chloritic breccia is silicified and veined by vuggy quartz		«I SIL»	«Tr Py» on late chloritic fractures.	
	⎨86.7- 92.0⎬ «FRACTURE ZONE»	Highly fractured, minor gouge.				
	⎨92.0- 92.8⎬ «PY STWK- FAULT»	Weak pyrite stockwork in narrow fault zone of extreme argillic alteration and 50% clay gouge.		«X ARG» extreme argillic alteration and fault gouge.	«1-2% Py» in disrupted stringers.	
	⎨95.3- 96.3⎬ «FAULT ZONE»	50% clay gouge and extreme argillic alteration. Also minor development of <1 cm alteration balls or spherulites in the chloritic matrix. Balls are totally replaced by yellow clay.		«X ARG» overprints remnant «W HEM, W CHL»		
102.40 TO 104.20	«SIL BRECCIA»	Green. Quartz flooded perlite breccia, sub-angular frags argillically altered; lower half of interval is actually black breccia, similarly quartz flooded.		«S SIL, M HEM» of breccia matrix. «M ARG» of perlitic frags.	None.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
104.20 TO 110.10	«PERLITE»	Almost perlite breccia with major net texture.		«M ARG»	None	
110.10 TO 111.20	«W PY STWK»	Weak pyritic stringers in strongly bleached argillic zone of perlite.		«S-I ARG»	«1.3% Py» in stringers and c.g. disseminations.	
111.20 TO 121.60	«TUFF BRECCIA»	Mixed lapilli to block breccia with interbedded tuffaceous layers. Monomictic frags are perlitic. Interval becomes more tuffaceous down section.		«M ARG, W SIL»	None.	
121.60 TO 122.20	«FAULT»	70% clay gouge.				
122.20 TO 125.50	«PERLITE BRECCIA»	Pale green, aphanitic. Advanced net textures give brecciated appearance.		«W-M ARG»	None.	
125.50 TO 125.90	«FAULT»			«M-S ARG»	«Tr Py» on fractures.	
125.90 TO 129.00	«TUFF BRECCIA»	Pale green. Interlayered ash and crystal tuffs with perlitic frags and one large feldspar porphyry block.		«W ARG, M SIL»	None.	
129.00 TO 130.20	«SIL BRECCIA»	Pale green. Quartz flooded and veined tuff breccia of perlitic frags in tuffaceous matrix. 10 cm gouge at upper contact. Quartz is vuggy and drusy.		«S-+/- SIL»	«Tr Marcasite» as mm blades in quartz.	
130.20 TO 137.50	«PERLITE BRECCIA»	Perlite breccia with white siliceous matrix.		«M ARG, W SIL»		
137.50 TO 141.00	«FAULT-STWK ZONE»	Red & green. Gougy fault zone in hematitic tuff breccia. Frags dominantly perlite. Interval is weakly stockworked with pyritic quartz stringers. One 1 cm vein is vuggy and barren white quartz.		«S-I ARG» is pervasive. «S SIL» is patchy. Envelopes quartz veins.	«1% Py» in sparse stringers.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
141.00 TO 147.80	«PERLITE BRECCIA»	Perlite to perlite breccia with weakly silicified matrix. Single quartz stringers @ 143.6 m shows bladed calcite replacement, no sulphides.		«W SIL» «M ARG»	None.	
	{144.4-145.6}	"Felty"-looking interval of chloritization.		«S CHL, M SIL»		
	147.8 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44362	32.60	34.60	2.00	0.2	37	2	18	20	1	49	2	115	100	
44363	40.60	42.60	2.00	0.6	47	2	21	23	4	45	4	105	35	
44364	42.60	44.60	2.00	0.5	20	2	23	24	3	39	2	70	7	
44365	46.10	47.10	1.00	0.5	16	2	24	19	1	42	2	75	7	
44366	47.10	48.80	1.70	0.1	16	3	23	20	1	76	9	75	7	
44367	48.80	50.10	1.30	0.1	2	3	22	24	1	57	2	45	23	
44368	50.10	52.10	2.00	0.5	22	2	21	18	1	47	5	55	28	
44369	61.10	63.10	2.00	0.5	20	2	22	20	1	53	4	110	23	
44370	63.10	65.60	2.50	1	56	2	20	22	4	55	17	220	18	
44371	65.60	67.10	1.50	1	148	2	30	24	11	43	22	1350	100	
44372	67.10	69.10	2.00	0.9	115	1	24	22	12	42	8	1310	21	
44373	69.10	71.10	2.00	0.6	22	1	17	19	2	48	2	160	27	
44374	71.10	72.10	1.00	1	121	1	14	20	8	43	3	250	15	
44375	72.10	73.60	1.50	0.5	23	1	41	24	1	52	1	125	38	
44376	73.60	75.60	2.00	0.1	21	1	23	22	1	58	4	115	15	
44377	75.60	77.60	2.00	0.1	60	1	20	22	2	46	16	55	21	
44378	77.60	79.60	2.00	0.1	33	2	20	23	2	48	2	65	33	
44379	79.60	81.60	2.00	1.1	211	2	23	18	8	40	68	280	15	
44380	81.60	83.60	2.00	1.3	233	1	19	19	8	36	46	1310	26	
44381	83.60	85.40	1.80	0.6	163	2	20	48	4	42	22	110	31	
44382	85.40	86.00	0.60	0.7	48	2	19	26	2	50	6	95	100	
44383	86.00	88.00	2.00	0.8	155	2	25	27	8	41	14	125	100	
44384	90.50	92.00	1.50	0.5	38	2	24	19	4	49	3	130	100	
44385	92.00	92.80	0.80	0.7	231	1	22	21	10	28	8	6250	18	
44386	92.80	94.80	2.00	0.4	30	1	22	20	2	53	2	390	100	
44387	94.80	96.30	1.50	0.1	47	1	30	22	2	54	5	1120	50	
44388	100.40	102.40	2.00	0.5	76	1	17	22	2	44	23	180	25	
44389	102.40	104.20	1.80	0.5	24	2	18	20	1	50	10	140	100	
44390	108.10	110.10	2.00	0.7	24	2	17	21	2	44	2	125	18	
44391	110.10	111.20	1.10	0.6	137	1	20	16	8	21	11	1145	16	
44392	111.20	113.20	2.00	0.4	15	2	17	25	1	47	1	130	10	
44393	113.20	115.20	2.00	0.6	13	2	26	27	2	56	4	135	6	
44394	129.00	130.20	1.20	1.1	69	2	33	17	3	30	25	70	18	
44395	130.20	132.10	1.90	0.6	30	2	22	24	3	49	3	90	21	
44396	137.90	139.50	1.60	1.1	192	2	30	22	12	42	24	100	18	
44397	139.50	141.00	1.50	1	121	2	23	17	5	42	19	150	21	
44398	141.00	143.00	2.00	1	99	2	17	21	10	41	19	115	19	
44399	144.40	145.60	1.20	0.5	17	2	24	22	1	46	4	90		

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m		

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
44362	32.60	34.60	2.00	0.2	37	2	18	20	1	49	2	115	100
44363	40.60	42.60	2.00	0.6	47	2	21	23	4	45	4	105	35
44364	42.60	44.60	2.00	0.5	20	2	23	24	3	39	2	70	7
44365	46.10	47.10	1.00	0.5	16	2	24	19	1	42	2	75	7
44366	47.10	48.80	1.70	0.1	16	3	23	20	1	76	9	75	7
44367	48.80	50.10	1.30	0.1	2	3	22	24	1	57	2	45	23
44368	50.10	52.10	2.00	0.5	22	2	21	18	1	47	5	55	28
44369	61.10	63.10	2.00	0.5	20	2	22	20	1	53	4	110	23
44370	63.10	65.60	2.50	1	56	2	20	22	4	55	17	220	18
44371	65.60	67.10	1.50	1	148	2	30	24	11	43	22	1350	100
44372	67.10	69.10	2.00	0.9	115	1	24	22	12	42	8	1310	21
44373	69.10	71.10	2.00	0.6	22	1	17	19	2	48	2	160	27
44374	71.10	72.10	1.00	1	121	1	14	20	8	43	3	250	15
44375	72.10	73.60	1.50	0.5	23	1	41	24	1	52	1	125	38
44376	73.60	75.60	2.00	0.1	21	1	23	22	1	58	4	115	15
44377	75.60	77.60	2.00	0.1	60	1	20	22	2	46	16	55	21
44378	77.60	79.60	2.00	0.1	33	2	20	23	2	48	2	65	33
44379	79.60	81.60	2.00	1.1	211	2	23	18	8	40	68	280	15
44380	81.60	83.60	2.00	1.3	233	1	19	19	8	36	46	1310	26
44381	83.60	85.40	1.80	0.6	163	2	20	48	4	42	22	110	31
44382	85.40	86.00	0.60	0.7	48	2	19	26	2	50	6	95	100
44383	86.00	88.00	2.00	0.8	155	2	25	27	8	41	14	125	100
44384	90.50	92.00	1.50	0.5	38	2	24	19	4	49	3	130	100
44385	92.00	92.80	0.80	0.7	231	1	22	21	10	28	8	6250	18
44386	92.80	94.80	2.00	0.4	30	1	22	20	2	53	2	390	100
44387	94.80	96.30	1.50	0.1	47	1	30	22	2	54	5	1120	50
44388	100.40	102.40	2.00	0.5	76	1	17	22	2	44	23	180	25
44389	102.40	104.20	1.80	0.5	24	2	18	20	1	50	10	140	100
44390	108.10	110.10	2.00	0.7	24	2	17	21	2	44	2	125	18
44391	110.10	111.20	1.10	0.6	137	1	20	16	8	21	11	1145	16
44392	111.20	113.20	2.00	0.4	15	2	17	25	1	47	1	130	10
44393	113.20	115.20	2.00	0.6	13	2	26	27	2	56	4	135	6
44394	129.00	130.20	1.20	1.1	69	2	33	17	3	30	25	70	18
44395	130.20	132.10	1.90	0.6	30	2	22	24	3	49	3	90	21
44396	137.90	139.50	1.60	1.1	192	2	30	22	12	42	24	100	18
44397	139.50	141.00	1.50	1	121	2	23	17	5	42	19	150	21
44398	141.00	143.00	2.00	1	99	2	17	21	10	41	19	115	19
44399	144.40	145.60	1.20	0.5	17	2	24	22	1	46	4	90	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
29.60	32.60	3.00	0.00	0.0	100	33.33	0	0.00	1	
32.60	35.90	3.30	0.00	0.0	100	30.30	0	0.00	1	
35.90	37.70	1.80	50.00	*****	26	14.44	4	2.22	0	
37.70	39.70	2.00	0.00	0.0	50	25.00	4	2.00	0	
39.70	41.60	1.90	0.00	0.0	100	52.63	0	0.00	4	
41.60	42.40	0.80	0.00	0.0	50	62.50	0	0.00	0	
42.40	44.10	1.70	0.00	0.0	50	29.41	1	0.59	0	
44.10	45.50	1.40	0.00	0.0	100	71.43	0	0.00	0	
45.50	47.50	2.00	90.00	*****	14	7.00	0	0.00	0	
47.50	47.90	0.40	20.00	*****	8	20.00	1	2.50	0	
47.90	49.90	2.00	80.00	*****	14	7.00	1	0.50	0	
49.90	50.80	0.90	50.00	*****	7	7.78	2	2.22	0	
50.80	52.80	2.00	70.00	*****	9	4.50	0	0.00	0	
52.80	54.80	2.00	70.00	*****	16	8.00	1	0.50	0	
54.80	57.00	2.20	10.00	454.5	18	8.18	1	0.45	0	
57.00	58.00	1.00	70.00	*****	12	12.00	5	5.00	0	
58.00	60.00	2.00	70.00	*****	18	9.00	3	1.50	0	
60.00	62.00	2.00	180.00	*****	27	13.50	2	1.00	0	
62.00	65.00	3.00	0.00	0.0	100	33.33	0	0.00	0	
65.00	67.00	2.00	0.00	0.0	100	50.00	0	0.00	0	
67.00	69.00	2.00	0.00	0.0	100	50.00	0	0.00	2	
69.00	71.00	2.00	80.00	*****	25	12.50	2	1.00	0	
71.00	73.00	2.00	0.00	0.0	100	50.00	0	0.00	0	
73.00	74.30	1.30	50.00	*****	8	6.15	1	0.77	0	
74.30	76.30	2.00	20.00	*****	35	17.50	3	1.50	0	
76.30	78.30	2.00	20.00	*****	100	50.00	0	0.00	1	
78.30	79.80	1.50	100.00	*****	18	12.00	0	0.00	0	VN
79.80	81.80	2.00	200.00	*****	6	3.00	0	0.00	0	VN
81.80	83.80	2.00	190.00	*****	10	5.00	0	0.00	0	VN
83.80	85.80	2.00	190.00	*****	10	5.00	0	0.00	0	VN
85.80	86.80	1.00	70.00	*****	8	8.00	0	0.00	0	VN
86.80	87.90	1.10	70.00	*****	8	7.27	0	0.00	0	VN
87.90	90.00	2.10	110.00	*****	18	8.57	2	0.95	0	
90.00	91.60	1.60	120.00	*****	7	4.38	0	0.00	0	VN
91.60	93.60	2.00	160.00	*****	9	4.50	11	5.50	0	
93.60	94.80	1.20	100.00	*****	9	7.50	5	4.17	0	
94.80	96.80	2.00	120.00	*****	16	8.00	0	0.00	0	
96.80	98.80	2.00	50.00	*****	100	50.00	0	0.00	0	
98.80	100.80	2.00	50.00	*****	100	50.00	0	0.00	0	
100.80	102.80	2.00	80.00	*****	30	15.00	0	0.00	0	
102.80	104.80	2.00	80.00	*****	21	10.50	0	0.00	0	
104.80	106.80	2.00	110.00	*****	15	7.50	0	0.00	0	
106.80	108.80	2.00	80.00	*****	15	7.50	0	0.00	0	
108.80	109.90	1.10	50.00	*****	9	8.18	0	0.00	0	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
109.90	111.90	2.00	70.00	*****	50	25.00	0	0.00	0	
111.90	113.90	2.00	70.00	*****	19	9.50	0	0.00	0	
113.90	115.90	2.00	140.00	*****	15	7.50	0	0.00	0	
115.90	117.90	2.00	130.00	*****	20	10.00	0	0.00	0	
117.90	119.90	2.00	40.00	*****	50	25.00	0	0.00	0	
119.90	121.60	1.70	40.00	*****	50	29.41	0	0.00	0	

HOLE NUMBER: CL-91-09

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41285.00N
EAST: 9403.00E
ELEV: 1312.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 184.40m
START DEPTH: 0.00m
FINAL DEPTH: 184.40m

COLLAR GRID AZIMUTH: 290° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 25, 1991
DATE COMPLETED: August 26, 1991
DATE LOGGED: September 2, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: AT CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
63.10	-	-47° 0'	ACID	OK		-	-	-	-	-	
169.10	-	-49° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 33.50	«CASING»					
33.50 TO 39.70	«OXIDE ZONE»	Yellow, m.g. Flow banded feldspar porphyry latite? Strongly argillized, locally gougy.		«S-I ARG» Abundant yellow-red clay on gougy fractures.	«Tr py»	Vivid yellow & red clay.
39.70 TO 46.60	«STWK BX»	Black pyritic quartz stockwork and microbreccia veins. Minor late vuggy white qtz. Wallrock appears to be feldspar, hornblende/biotite porphyry, with phenos replaced by f.g. pyrite.		«I SIL» Black quartz. Mafic phenos replaced by pyrite.	«1-3% py» f.g. in black qtz breccia and stringers, also replacing mafic phenos.	
	{40.3-41.3} «BX VEIN»	Black quartz breccia vein. Late vuggy white quartz			«Tr py»	
46.60 TO 76.50	«PY STWK-FAULT»	Grey. Strongly argillized quartz-pyrite stockwork zone. Highly fractured, 30% is gougy. Patchy pervasive silicification. Quartz is dominantly black, late qtz is white. Yellow clay coats late fractures. Lithology is feldspar porphyry which is locally glomeroporphyritic. In upper half of interval, feldspars are replaced by pyrite; in lower half feldspars have gone to dull yellow-green clay.		«M-I ARG» «W-S SIL» Patchy silicification and strong stockwork veining. 30% of interval is gougy. Upper half of interval fs -> py. Lower half, fs -> clay.	«3-5% py» occurs as f.g. disseminations and blebs in black quartz stringers.	
	{46.6-51.4} «GOUGE»	Pale grey. Highly fractured. 80% gouge with minor preserved frags of intensely silicified and stock-worked wallrock.		«I ARG» Patches of green and yellow clay.	«1-3% py» in broken qtz stringers.	
	{60.6-65.2} «GOUGE.	Grey. Highly fractured. 80% gouge. Minor silicified frags.		«I ARG»	«1-3% py» in broken qtz frags.	
	{63.7-64.8} «FAULT»	90% gouge.	15		Broken qtz-py frags.	
76.50 TO 81.40	«FAULT ZONE»	Pale grey. Intensely argillized fault zone. Generally rotten rock & clay gouge with rotated frags of black qtz and silicifed wallrock to 10 cm Fault fractures @	50	«I ARG» 70% gouge.	«1% py» in disrupted stringers.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
81.40 TO 87.60	«FAULT BX» ┤84.4-84.6├ «GYPSUM?»	Pale grey yellow. As above, but extreme argillization, yellow clay and finer breccia frags.(1-2 cm) Crystals noted in split core.		«X ARG» 90% gouge.	«1% py» in broken quartz fragments.	
87.60 TO 96.00	«FAULT ZONE»	Pale green grey. Abundant clay gouge, larger areas of competent silcified wallrock, which is banded feldspar porphyry. Banding @ Fault shearing @	70 60	«I-X ARG» 70% gouge.	«1% py» disseminated and in disrupted stringers.	
96.00 TO 104.40	«FELDSPAR PORPHYRY» ┤104.8- 102.6├	Pale green, m.g. Latite? - locally flow banded (with hematite). Feldspars gone to green clay or chlorite & pyrite. In lower half feldspars are aligned giving trachytic texture @	 70	«M-S ARG, M-S SIL» «S CHL» replacing feldspar phenos. «I ARG» with chlorite stringers.	«Tr py» replacing feldspar phenos.	
104.40 TO 108.00	«HEMATITE BX» ┤105.2- 105.6├ «FAULT» ┤106.8- 107.5├	Patchy hematitic heterolithic tuff breccia. Strongly arillized. Locally gougy, faulted. 90% clay gouge.		«S-X ARG» «W HEM, W CHL» «X ARG» Total clay replacement.		
108.00 TO 128.20	«TUFF BX» ┤111.6- 111.7├ «FAULT» ┤111.7- 111.9├ ┤113.5- 113.8├ ┤114.2- 114.8├ ┤125.4- 125.7├	Green. Strongly altered, gougy, mixed tuff breccia Angular blocks of ash tuff and perlite, interbeds of reworked crystal wackes and f.g. bedded ash/seds. Perlitic/rhyolitic frags. Beds @ Gouge Qtz veinlet.	60	«S-I ARG» «M CAL» Pervasive bright green clay, locally intense argillic altn. Patchy strong silicification. Pervasive calcite and minor calcite stringers. «I SIL» «I ARG» «I ARG» «I ARG»	Zip	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
128.20 TO 154.50	«PERLITE»	Green, f.g. Perlitic net textures and spherulites in aphanitic flow rock. Weak calcite stringers.		«M SIL, W ARG» «W CAL» stringers. «M CHL»	«Tr py» with chlorite or in late calcite stringers.	
	⌊140.6-144.4⌋					
	«BALLS»	Red-brown hematite alteration balls in perlite! (1-5 cm) Interval is only slightly more silicifed than previous interval.		«M HEM»	«Tr py»	
	⌊144.4-145.3⌋					
	«FAULT»	Gougy.		«I ARG»		
	⌊148.9-149.0⌋					
	«FAULT»	Gouge.	40			
	⌊150.2-150.4⌋					
	«FAULT»	Gouge.	45			
154.50 TO 171.40	«HEMATITE BX»	Red & green. Chaotic gougy faulted breccia of perlite and bedded ash/seds (RHYL) with patches of black or red hematitic matrix. Bedded ash/seds have black alternating bands. Weak calcite stringers throughout.		«M-I ARG» «W-S SIL» «M HEM» 40% of interval is gougy +/- ARG. Minor patches of strong silicification.	«Tr py»	
	⌊157.2-158.8⌋					
	«FAULT»	Gougy.		«I ARG»		
	⌊167.2-167.7⌋					
	«FAULT»	Gougy.		«I ARG»		
171.40 TO 181.40	«ASH TUFFS»	Green & black. Bedded black banded rhyolite. Highly fractured, 30% gouge. Seds show minor perlitic textures and soft sed. deformation.		«M-S ARG» «M-S SIL»	«Tr py» on late fractures.	
181.40 TO 183.50	«FAULT»	Grey green. 80% clay gouge. 20% bedded ash/sed frags.		«I ARG»		
	183.5 M	EOH. LOST HOLE IN FAULT GOUGE.				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m	COMMENTS
43791	33.40	36.00	2.60											
43792	36.00	39.70	3.70	5.2	552	1	18	15	63	9	118	545		
43793	39.70	41.30	1.60	9.6	580	1	23	10	36	10	165	360		
43794	41.30	43.30	2.00	4.6	798	1	18	13	44	10	123	305		
43795	43.30	46.60	3.30	6.2	1506	1	40	14	56	19	140	360		
43796	46.60	50.00	3.40	9.7	1841	1	34	13	71	6	158	435		
43797	50.00	51.40	1.40	5	592	1	15	13	48	6	80	260		
43798	51.40	53.40	2.00	10.2	564	1	32	10	41	15	140	340		
43799	53.40	55.40	2.00	12.8	2220	1	44	13	108	22	217	355		
43800	55.40	57.40	2.00	9.3	1651	1	46	12	81	27	121	500	45	
43801	57.40	59.40	2.00	7.4	1420	1	32	11	67	20	103	420	46	
43802	59.40	60.60	1.20	28	2041	1	44	12	103	27	98	650	17	
43803	60.60	63.70	3.10	8.8	1877	1	42	12	99	51	180	435	35	
43804	63.70	64.80	1.10	12.3	2198	1	23	13	115	73	200	2000	6	
43805	64.80	66.40	1.60	6.3	2415	1	20	15	119	65	144	1250	28	
43806	66.40	68.40	2.00	6	1412	1	21	12	93	43	102	1040	40	
43807	68.40	70.40	2.00	10	1046	1	24	12	79	48	119	1700	47	
43808	70.40	72.40	2.00	12.4	477	1	25	12	74	53	58	1115	33	
43809	72.40	74.20	1.80	4.4	519	1	28	17	71	71	60	1250	34	
43810	74.20	76.50	2.30	2.4	1253	1	25	17	155	76	56	6125	21	
43811	76.50	78.50	2.00	1.6	1030	1	21	14	81	72	127	615	30	
43812	78.50	81.40	2.90	0.5	467	1	20	12	50	65	42	550	40	
43813	81.40	83.40	2.00	1.6	140	1	18	24	21	48	10	160	20	
43814	83.40	85.40	2.00	1.1	96	1	19	20	11	86	2	55	25	
43815	85.40	87.60	2.20	0.8	89	1	19	20	9	73	14	150	24	
43816	87.60	89.60	2.00	0.1	131	1	18	20	8	46	2	270	31	
43817	89.60	91.60	2.00	0.6	462	1	17	13	30	63	3	620	100	
43818	91.60	93.60	2.00	0.4	307	1	20	19	16	55	14	1225	100	
43819	93.60	96.00	2.40	0.4	744	1	18	17	41	55	3	920	100	
43820	96.00	98.00	2.00	0.1	128	1	20	23	9	61	2	495	42	
43821	98.00	100.00	2.00	0.3	366	1	21	19	9	56	5	595	20	
43822	100.00	102.00	2.00	0.3	116	1	26	20	5	44	1	610	14	
43823	102.00	104.40	2.40	0.1	160	1	31	24	5	56	2	485	25	
43824	104.40	106.40	2.00	0.1	178	1	53	23	7	67	1	525	21	
43825	108.00	110.00	2.00	0.6	143	1	23	17	6	31	15	75	100	
43826	112.00	114.00	2.00	0.6	45	1	22	20	1	36	2	45	50	
43827	116.00	118.00	2.00	0.8	25	1	20	21	1	44	1	15	25	
43828	120.00	122.00	2.00	1	18	1	24	16	1	28	2	45	31	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43829	124.00	126.00	2.00	0.5	40	1	18	17	1	35	1	40	18
43830	128.20	130.20	2.00	0.5	24	1	22	21	1	40	2	25	24
43831	132.20	134.20	2.00	0.6	17	1	19	18	1	46	1	30	11
43832	136.20	138.20	2.00	0.5	42	1	17	23	1	52	2	34	12
43833	140.20	142.20	2.00	0.6	35	1	20	20	1	44	1	30	14
43834	142.20	144.20	2.00	2.4	32	1	1	4	1	1	2	55	12
43835	144.20	146.20	2.00	0.7	44	1	16	15	1	39	1	60	34
43836	146.20	148.20	2.00	0.7	34	2	21	22	1	41	2	25	20
43837	148.20	150.20	2.00	0.8	27	1	18	18	2	46	1	35	18
43838	152.50	154.50	2.00	0.6	52	1	14	17	2	40	1	40	32
43839	154.50	156.50	2.00	0.7	75	1	28	22	4	33	3	35	31
43840	158.50	160.50	2.00	0.7	106	1	15	19	4	34	2	25	23
43841	162.50	164.50	2.00	2.5	55	2	1	5	3	1	35	55	42
43842	166.50	168.50	2.00	1.8	435	1	17	16	18	34	50	45	100
43843	170.00	171.40	1.40	0.6	64	1	23	16	2	31	2	15	26
43844	171.40	173.40	2.00	1	147	1	18	19	7	37	7	10	40
43845	175.40	177.40	2.00	0.4	42	1	17	21	2	41	2	15	50
43846	179.40	181.40	2.00	0.4	91	1	14	19	3	39	10	65	100
43847	181.40	183.50	2.10	0.4	85	1	18	18	4	38	12	40	100

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43791	33.40	36.00	2.60										
43792	36.00	39.70	3.70	5.2	552	1	18	15	63	9	118	545	
43793	39.70	41.30	1.60	9.6	580	1	23	10	36	10	165	360	
43794	41.30	43.30	2.00	4.6	798	1	18	13	44	10	123	305	
43795	43.30	46.60	3.30	6.2	1506	1	40	14	56	19	140	360	
43796	46.60	50.00	3.40	9.7	1841	1	34	13	71	6	158	435	
43797	50.00	51.40	1.40	5	592	1	15	13	48	6	80	260	
43798	51.40	53.40	2.00	10.2	564	1	32	10	41	15	140	340	
43799	53.40	55.40	2.00	12.8	2220	1	44	13	108	22	217	355	
43800	55.40	57.40	2.00	9.3	1651	1	46	12	81	27	121	500	45
43801	57.40	59.40	2.00	7.4	1420	1	32	11	67	20	103	420	46
43802	59.40	60.60	1.20	28	2041	1	44	12	103	27	98	650	17
43803	60.60	63.70	3.10	8.8	1877	1	42	12	99	51	180	435	35
43804	63.70	64.80	1.10	12.3	2198	1	23	13	115	73	200	2000	6
43805	64.80	66.40	1.60	6.3	2415	1	20	15	119	65	144	1250	28
43806	66.40	68.40	2.00	6	1412	1	21	12	93	43	102	1040	40
43807	68.40	70.40	2.00	10	1046	1	24	12	79	48	119	1700	47
43808	70.40	72.40	2.00	12.4	477	1	25	12	74	53	58	1115	33
43809	72.40	74.20	1.80	4.4	519	1	28	17	71	71	60	1250	34
43810	74.20	76.50	2.30	2.4	1253	1	25	17	155	76	56	6125	21
43811	76.50	78.50	2.00	1.6	1030	1	21	14	81	72	127	615	30
43812	78.50	81.40	2.90	0.5	467	1	20	12	50	65	42	550	40
43813	81.40	83.40	2.00	1.6	140	1	18	24	21	48	10	160	20
43814	83.40	85.40	2.00	1.1	96	1	19	20	11	86	2	55	25
43815	85.40	87.60	2.20	0.8	89	1	19	20	9	73	14	150	24
43816	87.60	89.60	2.00	0.1	131	1	18	20	8	46	2	270	31
43817	89.60	91.60	2.00	0.6	462	1	17	13	30	63	3	620	100
43818	91.60	93.60	2.00	0.4	307	1	20	19	16	55	14	1225	100
43819	93.60	96.00	2.40	0.4	744	1	18	17	41	55	3	920	100
43820	96.00	98.00	2.00	0.1	128	1	20	23	9	61	2	495	42
43821	98.00	100.00	2.00	0.3	366	1	21	19	9	56	5	595	20
43822	100.00	102.00	2.00	0.3	116	1	26	20	5	44	1	610	14
43823	102.00	104.40	2.40	0.1	160	1	31	24	5	56	2	485	25
43824	104.40	106.40	2.00	0.1	178	1	53	23	7	67	1	525	21
43825	108.00	110.00	2.00	0.6	143	1	23	17	6	31	15	75	100
43826	112.00	114.00	2.00	0.6	45	1	22	20	1	36	2	45	50
43827	116.00	118.00	2.00	0.8	25	1	20	21	1	44	1	15	25
43828	120.00	122.00	2.00	1	18	1	24	16	1	28	2	45	31
43829	124.00	126.00	2.00	0.5	40	1	18	17	1	35	1	40	18

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43830	128.20	130.20	2.00	0.5	24	1	22	21	1	40	2	25	24
43831	132.20	134.20	2.00	0.6	17	1	19	18	1	46	1	30	11
43832	136.20	138.20	2.00	0.5	42	1	17	23	1	52	2	34	12
43833	140.20	142.20	2.00	0.6	35	1	20	20	1	44	1	30	14
43834	142.20	144.20	2.00	2.4	32	1	1	4	1	1	2	55	12
43835	144.20	146.20	2.00	0.7	44	1	16	15	1	39	1	60	34
43836	146.20	148.20	2.00	0.7	34	2	21	22	1	41	2	25	20
43837	148.20	150.20	2.00	0.8	27	1	18	18	2	46	1	35	18
43838	152.50	154.50	2.00	0.6	52	1	14	17	2	40	1	40	32
43839	154.50	156.50	2.00	0.7	75	1	28	22	4	33	3	35	31
43840	158.50	160.50	2.00	0.7	106	1	15	19	4	34	2	25	23
43841	162.50	164.50	2.00	2.5	55	2	1	5	3	1	35	55	42
43842	166.50	168.50	2.00	1.8	435	1	17	16	18	34	50	45	100
43843	170.00	171.40	1.40	0.6	64	1	23	16	2	31	2	15	26
43844	171.40	173.40	2.00	1	147	1	18	19	7	37	7	10	40
43845	175.40	177.40	2.00	0.4	42	1	17	21	2	41	2	15	50
43846	179.40	181.40	2.00	0.4	91	1	14	19	3	39	10	65	100
43847	181.40	183.50	2.10	0.4	85	1	18	18	4	38	12	40	100

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
24.50	26.70	2.20	0.00	0.0	100	45.45	0	0.00	0	
26.70	29.60	2.90	0.00	0.0	100	34.48	0	0.00	0	
29.60	31.60	2.00	0.00	0.0	100	50.00	0	0.00	0	
61.10	63.10	2.00	0.00	0.0	100	50.00	0	0.00	0	
86.50	88.50	2.00	20.00	*****	100	50.00	0	0.00	0	
88.50	93.20	4.70	80.00	*****	50	10.64	0	0.00	0	
93.20	95.20	2.00	60.00	*****	50	25.00	0	0.00	0	
95.20	97.30	2.10	110.00	*****	18	8.57	0	0.00	0	
97.30	98.40	1.10	60.00	*****	7	6.36	0	0.00	0	
98.40	99.00	0.60	30.00	*****	4	6.67	0	0.00	0	
99.00	100.50	1.50	100.00	*****	10	6.67	0	0.00	0	
100.50	102.40	1.90	0.00	0.0	100	52.63	0	0.00	0	
102.40	104.00	1.60	110.00	*****	13	8.12	0	0.00	0	
104.00	107.00	3.00	170.00	*****	23	7.67	0	0.00	0	
107.00	109.80	2.80	200.00	*****	8	2.86	0	0.00	0	
109.80	111.80	2.00	120.00	*****	13	6.50	0	0.00	0	
111.80	113.80	2.00	80.00	*****	18	9.00	0	0.00	0	
113.80	115.80	2.00	70.00	*****	21	10.50	0	0.00	0	
115.80	116.10	0.30	20.00	*****	3	10.00	1	3.33	0	
116.10	118.00	1.90	120.00	*****	12	6.32	0	0.00	0	
118.00	118.70	0.70	40.00	*****	5	7.14	0	0.00	0	
118.70	118.90	0.20	20.00	*****	2	10.00	1	5.00	0	
118.90	121.00	2.10	180.00	*****	11	5.24	0	0.00	0	BX
121.00	123.00	2.00	130.00	*****	15	7.50	3	1.50	0	
123.00	125.30	2.30	100.00	*****	25	10.87	0	0.00	0	
125.30	126.30	1.00	80.00	*****	6	6.00	2	2.00	0	
126.30	127.30	1.00	90.00	*****	7	7.00	5	5.00	0	
127.30	128.30	1.00	100.00	*****	2	2.00	10	10.00	0	VN
128.30	129.30	1.00	90.00	*****	7	7.00	0	0.00	0	VN
129.30	130.30	1.00	70.00	*****	3	3.00	0	0.00	0	VN
130.30	131.30	1.00	120.00	*****	9	9.00	0	0.00	0	VN
131.30	132.30	1.00	90.00	*****	10	10.00	0	0.00	0	VN
132.30	133.70	1.40	60.00	*****	20	14.29	0	0.00	0	VN
133.70	134.30	0.60	30.00	*****	10	16.67	0	0.00	0	VN
134.30	136.30	2.00	170.00	*****	10	5.00	16	8.00	0	
136.30	138.30	2.00	100.00	*****	23	11.50	8	4.00	0	
142.50	144.50	2.00	50.00	*****	32	16.00	0	0.00	0	
144.50	146.50	2.00	140.00	*****	9	4.50	0	0.00	0	
150.80	153.30	2.50	50.00	*****	50	20.00	0	0.00	0	
158.80	160.80	2.00	130.00	*****	14	7.00	0	0.00	0	
160.80	162.80	2.00	120.00	*****	20	10.00	0	0.00	0	

HOLE NUMBER: CL-91-10

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: N.Z.

PLOTTING COORDS GRID: UTM
NORTH: 41280.00N
EAST: 9564.00E
ELEV: 1306.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 154.50m
START DEPTH: 0.00m
FINAL DEPTH: 154.50m

COLLAR GRID AZIMUTH: 290° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 25, 1991
DATE COMPLETED: August 26, 1991
DATE LOGGED: September 5, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: TO 12.8M. 10'LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
83.50	-	-46° 0'	ACID	OK		-	-	-	-	-	
154.50	-	-49° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 12.80	«CASING»					
12.80 TO 25.60	«STOCKWORK BRECCIA» {17.2-18.2} «PERLITIC BRECCIA» {22.2-25.6} «QUARTZ BRECCIA»	Yellow brown. Zone of strong quartz stockworking and breccia. 30% of interval is faulted and gougy.		«M-X ARG, M-1 SIL» Patchy limonitic staining. «I SIL» «I SIL»	«1-3% py» in black quartz stringers and disseminated in silicified wall rock.	
25.60 TO 27.70	«FAULT»	Grey. Highly fractured, minor gouge.		«S SIL» overprints «S ARG»		
27.70 TO 38.70	«MIXED BRECCIA» {30.9-32.6} «GOUGE» {33.7-34.1} «GOUGE»	Yellow-green. Perlitic (hydro?) breccia dominates upper 1/2 of interval. Ash tuff breccia, and amygdaloidal flow in lower 1/2. Generally strongly silicified matrix. 30% of interval is faulted and gougy.		«S ARG» frags «+/- SIL» matrix. Patchy «M CHL, HEM» in breccia matrix.	«Tr py»	
38.70 TO 42.00	«ASH TUFF»	Yellow & black. Bedded black banded ash tuff. Patchy silicification along some bedding planes, accompanied by perlite textures. Bands @	20 30	«M-S ARG» «M-S SIL» patchy.	«Tr py in black bands»	
42.00 TO 45.60	«FAULT»	Grey green. 50% of interval is clay rich gouge, in similar ash tuff breccia. Minor narrow patches of silicification with strong chlorite and pyrite.		«S CHL» «S+/-ARG» Patchy sil.	«1-2% py» as coarse euhedral crystals associated with chlorite.	
45.60 TO 60.20	«TUFF BRECCIA» {53.7-53.8} «FAULT» {54.8-55.5} «PYRITE	Pale green. Mixed breccia of bedded black banded ash tuff frags, perlitic ash tuff, clast-supported hematitic breccia with interbeds of sandy feldspar crystal tuff. Local perlitic textures.		«M-1 ARG» and «S CHL» overprinted by locally intense silicification. Locally gougy. «X ARG» «S ARG» frags	«1% py» associated with chlorite and as replacement nodules @ 46.6m. «15% py» as matrix to 1-2 cm tuff	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	BRECCIA»			«S SIL» matrix	breccia frags.	
	⟨56.6-57.2⟩					
	«SIL ZONE»	Green quartz breccia vein and silicification.		«I SIL, S CHL»	«Tr py»	
60.20 TO 62.40	«QTZ-PY STWK»	Yellow green. Bleached interval of moderate pyrite stockwork. Host rock appears to be brecciated feld spar porphyry.		«M ARG, S SIL» Strong silicification associated with pyrite stringers.	«3-5% py» in quartz stringers.	
62.40 TO 67.60	«SIL ZONE»	Green. Mottled zone of net texture silicification. Host may be feldspar porphyry. Looks amygdaloidal in some places, pseudo-perlitic in others. Sparse discrete quartz veins are vuggy, grey, fine-grained.		«S-I SIL, M ARG»	«Tr py»	
	⟨63.6-63.9⟩					
	«FAULT»	Gouge.				
67.60 TO 83.60	«PERLITE»	Green. Generally strongly silicified and chloritized. Local perlite breccia. Pervasive net texture Sparse later quartz stringers are generally barren		«S SIL, S CHL» Patchy S Argillic, one alteration ball @ 79.7 m.	«Tr py» in sparse quartz stringers.	Single 1 cm alteration ball @ 79.7 m
		Veins @	65 45			
	⟨74.7-77.2⟩					
	«QTZ STWK»	Generally barren qtz stwk zone, with a central vuggy pyrite-rich breccia vein @ 76m.		«S SIL» Moderate stockwork.	«5% py» as selvages in quartz breccia vein @ 76m.	SAMPLE SAWN.
83.60 TO 101.40	«TUFF BX»	Grey green. Mixed breccia of perlitic frags, ash tuff frags, porphyry frags, with patches of hematitic matrix. Moderate vuggy quartz stringers in upper half of interval.		«M-S SIL» patchy «M-S ARG» variable Generally «M CHL» Argillic alteration increases down-section.	«Tr py» on late fractures, associated with chlorite. Quartz stringers are generally barren.	
	⟨83.6-83.9⟩					
	«BX VEIN»	Pyritic grey quartz breccia vein with white clay filled vugs.			«1% py» as irregular blebs in quartz vein.	
	⟨85.8-84.4⟩					
	«FAULT»	Gouge.				
	⟨85.8-86.1⟩					
	«FAULT»	Gouge.				
101.40 TO 114.60	«TUFF BX»	Black & green. Again, mixed breccia of bedded ash tuff frags, feldspar porphyry frags, perlitic textured frags and matrix. Minor patches of black matrix.		Abundant chlorite or green clay through out. «S-I ARG» altered frags. «S-I SIL» breccia matrix.	«Tr py» associated with st. chloritic alteration.	
	⟨104.6-107.6⟩					

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	«SIL BX»	Strong hydrothermal overprint, breccia matrix is intensely silicified, minor vuggy white quartz stringers.		«I SIL»	«Tr py»	
	⎨109.6-110.2⎬					
	«SIL BX»	Same as above.		«I SIL»	«Tr py»	
	⎨111.8-112.6⎬					
	«BLACK BX MATRIX»					Depositional?
	⎨113.4-114.6⎬					
	«BLACK BX MATRIX»					Depositional?
114.60 TO 124.50	«LATITE»	Pale green, f.g. flow banded latite. Hematitic flow lines, strong fracturing gives "hairnet" texture with local jigsaw breccia. Abundant chlorite, pyrite & quartz fill fractures. Bands @	35	«M SIL» pervasive «S CHL, HEM, PY» along fractures, in breccia matrix.	«1-3% py» with chlorite coating fractures.	
	⎨114.6-114.9⎬			«S ARG»		
	⎨115.4-117.3⎬					
	«QTZ STWK»	Strongly silicified banded latite, drusy pyritic qtz stringers. Quartz is not chloritic.		«I SIL» overprints patchy strong argillic.	«3% py» in grey quartz strngers, as coarse blebs and fine disseminations.	
124.50 TO 139.80	«LATITE BX»	Green & red. Similar to previous, but now chlorite and hematite rich. Latite jigsaw brccia. In minor matrix supported intervals, matrix is strongly hematitic, frags are strictly banded latite.		«S CHL» on fractures. «S HEM» in matrix supported breccia «M ARG» patchy «S SIL»	«1% py» disseminated, assoicated with chlorite and hematite.	
	⎨125.8-136.6⎬					
	«QTZ STWK»	Green & red. Moderate quartz stockwork veins cross cut latite breccia. Quartz is white to grey, essentially barren, with large drusy vugs to 5 cm. Veins @ 45 80 Central breccia vein is nested below.		«S SIL» «S CHL, HEM»	«Tr py»	More pyrite occurs in chloritic wall rocks than in quartz veins.
	⎨130.4-131.9⎬					
	«QTZ BX»	Red. Central quartz breccia vein in stockwork zone Grey quartz is barren, with abundant drusy vugs.		«I SIL, I HEM» Interval is intensely silicified and flooded by hematite.	«Tr py»	
	⎨136.9-141.2⎬					
	«FAULT»					
	⎨127.8-					

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	127.9 «FAULT» 131.8- 131.9 «FAULT»		 50			
139.80 TO 154.50	«LATITE»	Flow banded latite with minor jigsaw breccia. Flow bands are hematitic, jigsaw breccia matrix is chloritic +/- quartz. Sparse quartz stringers also carry pyrite "rip up" selvages.	 20	«M CHL, HEM» «M SIL»	«Tr-1% py» associated with chlorite and in sparse quartz stringers.	
	143.3- 143.8 «HEMATITIC BX» 148.8- 148.9 «MICRO STWK» 149.4- 150.2 «JIGSAW BX» 154.5 M	 Vuggy quartz, barren. EOH	 	 «S HEM» «M SIL» «I SIL» «S CHL», «M SIL»		

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43848	12.90	17.10	4.20	7.1	612	1	8	18	30	8	158	2000	34	
43849	17.10	18.20	1.10	1.5	156	1	54	18	15	31	27	145	9	
43850	18.20	20.20	2.00	1.5	352	2	38	16	17	28	40	430	33	
43851	20.20	22.20	2.00	0.9	804	1	27	18	20	22	58	910	30	
43852	22.20	23.40	1.20	0.7	671	1	26	10	13	14	100	610	23	
43853	23.40	25.60	2.20	1.3	545	1	23	11	9	18	39	225	100	
43854	25.60	27.70	2.10	1	140	1	24	17	12	77	16	125	100	
43855	27.70	30.90	3.20	0.5	77	1	21	19	2	62	2	35	70	
43856	32.60	34.60	2.00	0.7	118	1	32	23	8	55	3	145	20	
43857	36.60	38.70	2.10	0.9	249	1	17	16	17	46	2	210	28	
43858	38.70	40.70	2.00	0.7	72	1	22	19	4	50	22	90	23	
43859	43.60	45.60	2.00	0.5	112	1	39	20	8	48	4	230	50	
43860	47.60	49.60	2.00	0.2	31	1	26	26	2	48	1	70	27	
43861	52.80	54.20	1.40	0.4	1764	1	17	19	90	33	2	17000	100	
43862	55.50	57.50	2.00	1	397	1	21	16	17	35	10	810	13	
43863	57.50	60.20	2.70	1.1	252	1	21	13	14	42	4	1715	50	
43864	60.20	62.40	2.20	2.4	620	1	19	12	25	36	18	10625	33	
43865	62.40	64.40	2.00	1.3	164	1	19	19	7	39	20	230	40	
43866	64.40	67.60	3.20	1.4	169	1	15	16	6	42	19	130	36	
43867	67.60	69.60	2.00	1.7	575	1	15	14	24	40	60	95	37	
43868	73.60	75.60	2.00	1.6	145	1	19	30	4	50	5	100	22	
43869	75.60	76.30	0.70	2.7	767	1	17	18	23	36	58	200	7	
43870	76.30	78.30	2.00	1.9	384	1	20	18	13	44	24	155	22	
43871	81.60	83.60	2.00	1.6	417	1	21	18	16	43	26	85	30	
43872	83.60	84.60	1.00	0.5	63	1	17	17	1	33	10	80	20	
43873	84.60	86.60	2.00	0.8	119	1	26	17	6	38	7	105	50	
43874	86.60	88.60	2.00	0.6	338	1	27	21	14	39	44	115	50	
43875	88.60	90.60	2.00	0.5	278	1	23	19	15	39	2	100	36	
43876	90.60	92.60	2.00	0.3	53	1	21	21	2	45	1	35	100	
43877	94.60	96.60	2.00	0.5	53	1	25	16	1	41	2	65	28	
43878	99.40	101.40	2.00	0.5	79	1	23	16	3	44	1	60	13	
43879	101.40	103.40	2.00	0.6	60	2	68	150	2	296	28	25	24	
43880	103.40	104.60	1.20	0.3	40	2	36	49	2	80	16	40	16	
43881	104.60	106.10	1.50	0.1	61	1	34	30	1	52	9	45	50	
43882	106.10	107.60	1.50	0.3	36	2	37	36	1	52	2	40	8	
43883	107.60	109.40	1.80	0.3	44	1	24	25	1	53	6	25	8	
43884	109.40	110.20	0.80	0.5	74	1	28	21	2	43	8	30	5	
43885	110.20	111.80	1.60	0.6	123	1	21	18	3	39	1	180	15	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43886	111.80	112.60	0.80	1.2	258	1	20	21	10	24	47	185	5
43887	112.60	114.60	2.00	0.8	68	1	28	15	2	44	19	35	13
43888	114.60	115.40	0.80	0.6	132	1	24	23	6	40	60	55	7
43889	115.40	117.30	1.90	0.7	178	1	19	17	5	36	31	70	30
43890	117.30	119.30	2.00	0.4	81	1	20	34	3	50	26	50	16
43891	119.30	121.30	2.00	0.4	195	1	23	18	6	33	37	125	11
43892	121.30	123.30	2.00	0.4	196	1	20	20	6	31	62	85	14
43893	123.30	124.50	1.20	0.5	171	1	13	18	4	28	119	80	12
43894	124.50	125.80	1.30	0.6	95	1	24	16	2	37	54	75	31
43895	125.80	127.80	2.00	0.3	42	1	33	18	1	39	4	35	8
43896	127.80	129.10	1.30	0.4	105	1	21	18	2	33	16	45	6
43897	129.10	131.10	2.00	0.3	27	1	30	14	1	31	2	25	8
43898	131.90	132.90	1.00	0.6	135	1	16	14	1	23	59	60	15
43899	132.90	134.60	1.70	0.3	49	1	23	19	1	42	2	45	19
43900	134.60	136.60	2.00	0.5	95	1	18	14	2	34	41	50	12
43948	136.60	137.50	0.90	1	126	1	15	17	3	36	20	50	7
43949	137.50	139.80	2.30	0.3	28	2	18	23	1	50	2	10	76
43950	142.30	143.30	1.00	0.7	281	2	18	18	4	31	23	325	8
43951	143.30	143.80	0.50	0.8	120	1	25	19	2	39	47	140	1
43952	143.80	144.80	1.00	0.5	69	2	16	16	1	38	18	30	10
43953	147.40	148.40	1.00	0.4	101	1	18	17	2	36	36	65	17
43954	148.40	150.20	1.80	0.5	113	2	21	15	2	43	42	35	23
43955	150.20	151.20	1.00	0.6	46	2	15	17	1	34	2	40	12

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43848	12.90	17.10	4.20	7.1	612	1	8	18	30	8	158	2000	34
43849	17.10	18.20	1.10	1.5	156	1	54	18	15	31	27	145	9
43850	18.20	20.20	2.00	1.5	352	2	38	16	17	28	40	430	33
43851	20.20	22.20	2.00	0.9	804	1	27	18	20	22	58	910	30
43852	22.20	23.40	1.20	0.7	671	1	26	10	13	14	100	610	23
43853	23.40	25.60	2.20	1.3	545	1	23	11	9	18	39	225	100
43854	25.60	27.70	2.10	1	140	1	24	17	12	77	16	125	100
43855	27.70	30.90	3.20	0.5	77	1	21	19	2	62	2	35	70
43856	32.60	34.60	2.00	0.7	118	1	32	23	8	55	3	145	20
43857	36.60	38.70	2.10	0.9	249	1	17	16	17	46	2	210	28
43858	38.70	40.70	2.00	0.7	72	1	22	19	4	50	22	90	23
43859	43.60	45.60	2.00	0.5	112	1	39	20	8	48	4	230	50
43860	47.60	49.60	2.00	0.2	31	1	26	26	2	48	1	70	27
43861	52.80	54.20	1.40	0.4	1764	1	17	19	90	33	2	17000	100
43862	55.50	57.50	2.00	1	397	1	21	16	17	35	10	810	13
43863	57.50	60.20	2.70	1.1	252	1	21	13	14	42	4	1715	50
43864	60.20	62.40	2.20	2.4	620	1	19	12	25	36	18	10625	33
43865	62.40	64.40	2.00	1.3	164	1	19	19	7	39	20	230	40
43866	64.40	67.60	3.20	1.4	169	1	15	16	6	42	19	130	36
43867	67.60	69.60	2.00	1.7	575	1	15	14	24	40	60	95	37
43868	73.60	75.60	2.00	1.6	145	1	19	30	4	50	5	100	22
43869	75.60	76.30	0.70	2.7	767	1	17	18	23	36	58	200	7
43870	76.30	78.30	2.00	1.9	384	1	20	18	13	44	24	155	22
43871	81.60	83.60	2.00	1.6	417	1	21	18	16	43	26	85	30
43872	83.60	84.60	1.00	0.5	63	1	17	17	1	33	10	80	20
43873	84.60	86.60	2.00	0.8	119	1	26	17	6	38	7	105	50
43874	86.60	88.60	2.00	0.6	338	1	27	21	14	39	44	115	50
43875	88.60	90.60	2.00	0.5	278	1	23	19	15	39	2	100	36
43876	90.60	92.60	2.00	0.3	53	1	21	21	2	45	1	35	100
43877	94.60	96.60	2.00	0.5	53	1	25	16	1	41	2	65	28
43878	99.40	101.40	2.00	0.5	79	1	23	16	3	44	1	60	13
43879	101.40	103.40	2.00	0.6	60	2	68	150	2	296	28	25	24
43880	103.40	104.60	1.20	0.3	40	2	36	49	2	80	16	40	16
43881	104.60	106.10	1.50	0.1	61	1	34	30	1	52	9	45	50
43882	106.10	107.60	1.50	0.3	36	2	37	36	1	52	2	40	8
43883	107.60	109.40	1.80	0.3	44	1	24	25	1	53	6	25	8
43884	109.40	110.20	0.80	0.5	74	1	28	21	2	43	8	30	5
43885	110.20	111.80	1.60	0.6	123	1	21	18	3	39	1	180	15
43886	111.80	112.60	0.80	1.2	258	1	20	21	10	24	47	185	5

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43887	112.60	114.60	2.00	0.8	68	1	28	15	2	44	19	35	13
43888	114.60	115.40	0.80	0.6	132	1	24	23	6	40	60	55	7
43889	115.40	117.30	1.90	0.7	178	1	19	17	5	36	31	70	30
43890	117.30	119.30	2.00	0.4	81	1	20	34	3	50	26	50	16
43891	119.30	121.30	2.00	0.4	195	1	23	18	6	33	37	125	11
43892	121.30	123.30	2.00	0.4	196	1	20	20	6	31	62	85	14
43893	123.30	124.50	1.20	0.5	171	1	13	18	4	28	119	80	12
43894	124.50	125.80	1.30	0.6	95	1	24	16	2	37	54	75	31
43895	125.80	127.80	2.00	0.3	42	1	33	18	1	39	4	35	8
43896	127.80	129.10	1.30	0.4	105	1	21	18	2	33	16	45	6
43897	129.10	131.10	2.00	0.3	27	1	30	14	1	31	2	25	8
43898	131.90	132.90	1.00	0.6	135	1	16	14	1	23	59	60	15
43899	132.90	134.60	1.70	0.3	49	1	23	19	1	42	2	45	19
43900	134.60	136.60	2.00	0.5	95	1	18	14	2	34	41	50	12
43948	136.60	137.50	0.90	1	126	1	15	17	3	36	20	50	7
43949	137.50	139.80	2.30	0.3	28	2	18	23	1	50	2	10	76
43950	142.30	143.30	1.00	0.7	281	2	18	18	4	31	23	325	8
43951	143.30	143.80	0.50	0.8	120	1	25	19	2	39	47	140	1
43952	143.80	144.80	1.00	0.5	69	2	16	16	1	38	18	30	10
43953	147.40	148.40	1.00	0.4	101	1	18	17	2	36	36	65	17
43954	148.40	150.20	1.80	0.5	113	2	21	15	2	43	42	35	23
43955	150.20	151.20	1.00	0.6	46	2	15	17	1	34	2	40	12

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
27.40	29.40	2.00	60.00	*****	20	10.00	1	0.50	0	
29.40	31.50	2.10	20.00	952.4	24	11.43	1	0.48	0	
31.50	33.40	1.90	0.00	0.0	30	15.79	1	0.53	0	
33.40	36.90	3.50	30.00	857.1	24	6.86	1	0.29	0	
36.90	37.50	0.60	10.00	*****	7	11.67	2	3.33	0	
37.50	39.20	1.70	90.00	*****	27	15.88	1	0.59	0	
39.20	40.30	1.10	110.00	*****	9	8.18	5	4.55	0	
40.30	42.40	2.10	170.00	*****	19	9.05	2	0.95	0	
42.40	44.00	1.60	30.00	*****	29	18.12	0	0.00	0	
44.00	45.40	1.40	30.00	*****	30	21.43	0	0.00	0	
45.40	47.40	2.00	80.00	*****	50	25.00	0	0.00	0	
47.40	49.30	1.90	100.00	*****	30	15.79	0	0.00	0	
49.30	51.30	2.00	70.00	*****	22	11.00	0	0.00	0	
51.30	53.30	2.00	130.00	*****	15	7.50	0	0.00	0	
53.30	55.30	2.00	90.00	*****	13	6.50	0	0.00	0	
55.30	56.50	1.20	30.00	*****	15	12.50	0	0.00	0	
56.50	58.40	1.90	110.00	*****	21	11.05	0	0.00	0	
60.30	63.10	2.80	140.00	*****	27	9.64	0	0.00	0	
63.80	65.80	2.00	30.00	*****	60	30.00	0	0.00	0	

HOLE NUMBER: CL-91-11

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41350.00N
EAST: 9591.00E
ELEV: 1305.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 194.10m
START DEPTH: 0.00m
FINAL DEPTH: 194.10m

COLLAR GRID AZIMUTH: 290° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 27, 1991
DATE COMPLETED: August 28, 1991
DATE LOGGED: September 5, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
90.80	-	-48° 0'	ACID			-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 27.40	«CASING/ OVERBURDEN»					
27.40 TO 27.50	«OVERBURDEN »	Boulders and cobbles of mixed rock types.				
27.50 TO 31.00	«APHANITIC FELSIC FLOW» ┤28.8-29.3├	Olive green grey, aphanitic. Very fine-grained to aphanitic rock. Distinctive perlitic fracture suggests a devitrified flow of some sort. No fragmental or bedding textures seen. Dark green (chloritic) spots may be relict phenocrysts - after PF? Flow banding noted.		«W ARG, W SIL» The groundmass scratches easily suggesting some argillization. Hairline qz stringers are abundant. These are vuggy in places. At least 2 stages present. Pale yellow clay fills fractures.	«Tr py-mc» Mainly as platy areas on fracture surfaces.	
31.00 TO 34.90	«PERLITE»	Pale grey, f.g. A well developed interval of perlite, appears brecciated in places.		«M SIL, W ARG» At least two generations of quartz injection. Early stage consists of silicification of the matrix; possibly some hydrothermal brecciation on a microscopic scale. This quartz has a distinct blue hue. Later grey drusy veins cut the earlier silica. These form subparallel sets that have 90 degree branches.	«Tr-1% py» Bladed forms- mostly in the later quartz stringers.	
34.90 TO 40.10	«FAULT» ┤35.5-35.7├ ┤36.2-36.5├ «GOUGE» ┤37.9-39.8├ «FAULT BX»	A complicated zone of gougy and healed breccia intervals. The fault contains blocks of less disrupted material. These reach 50 cm in width. Hb-bi porphyry and flow banded or bedded material noted. Breccia sections are partly healed by grey qz. The clasts, however, appear to be strongly argillized. Clast of Bi-Hb porphyry @ 35.5 m. Mafic phenos are pervasively chloritized. Matrix supported fault breccia composed of highly argillized subrounded clasts. Many show alteration rinds - bleaching.		«M-S ARG, M SIL» «I ARG» Interval of dark green chlorite alteration with finely disseminated py. «I ARG» «I ARG, M CL, W HE» Intensely argillized wallrock fragments in a weakly silicified matrix. The matrix is medium green colour due to either green	«Tr py» «1% py - diss.»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				clay or pervasive chlorite alteration.		
40.10 TO 43.90	«FELDSPAR PORPHYRY»	Grey-green, f.g. A nondescript unit with an unusual mottled texture. With a hand lens -tabular feldspar phenocrysts (to 5mm) are visible suggesting it is probably a porphyry (flow or dyke). The interval is brecciated over narrow widths and strongly altered.		«M SIL, M-S ARG, W CL?» Patchy silicification occurs throughout interval. Mostly as a pervasive replacement of the groundmass, but also as crosscutting breccia veins. Black qz stringers occur throughout.	«Tr py» as fine disseminations.	
	⟨41.0-42.9⟩			«M SIL» Black qz stringers & irregular groundmass replacements form a loose stockwork zone. Stringers <5mm. A crosscutting silica healed breccia is noted at 41.4 m. this feature has a true width of about 3 cm.	«1% py» as disseminations and as bladed forms in the matrix. Irregular masses of pyrite are concentrated in the black silicified areas.	
	⟨42.9-43.9⟩ «SILICIFIED BX»	Silica replaced (fault?) breccia consisting of angular to subangular clasts of wallrock up to 50 mm across. Breccia textures range from pull-apart or jigsaw to randomly oriented fault breccia Mostly clast supported. Matrix is glassy grey qz. Clasts altered to bright green in places. Looks like green clay.		«S-I SIL, M ARG» Pervasive silicification of the breccia matrix. Vuggy cavities developed in the quartz. Clasts variably silicified, some are strongly argillized to green clay.	«3% py» as disseminations in clasts and matrix. Marcasite also noted.	Little evidence for more than 2 events.
43.90 TO 46.90	«SILICIFIED TUFF BX»	Green, c.g. A mixed breccia consisting of feldspar porphyry and Bi-Hb porphyry clasts. the matrix is variably silicified - healed by glassy grey qz. Clasts are bright green and often spotted after mafic phenos. Green colour caused by green clay/ chlorite?		«M SIL, W-M CL, M ARG» Silica healed breccia. Matrix is vuggy quartz. Clasts green after chlorite or green clay. At least 2 phases of vuggy quartz stringers cut matrix and clasts. Yellow green alteration of clasts in some places.	«MC 1% - bladed» Disseminated bladed marcasite crystals in matrix and in clasts. Diss. py cubes also noted.	
	⟨46.6-46.7⟩ «RUBBLY FAULT»					
46.90 TO 50.70	«BLACK BANDED ASH TUFF» (Flow banded rhyolite)	Green-grey, f.g. A faulted and contorted interval of well bedded ash tuff. Beds on a 10-30 cm scale, highlighted by fine black laminae. The matrix of the ash tuff is variably silicified by irregular networks and patches of fine grained blue-grey quartz. Veinlets (to 5mm) of vivid green chlorite with py cut the interval. Perlitic textures present lower in section.		«M CL, M SIL» Strong green colour due to pervasive chlorite (or green clay). Thicker pale coloured beds are pervasively silicified.	«1% py» as disseminated cubes to 0.5 mm	
	⟨49.3-49.6⟩ «FAULT»					

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
50.70 TO 51.40	«FAULT BX»	Grey green. Argillized breccia composed of rounded poorly sorted wallrock clasts, some with well-developed alteration rinds or halos. Clast supported. Matrix is hematitic and variably healed with grey aphanitic silica. Weak pervasive chlorite gives rock a green colour. Clasts range from 2mm to 20 cm.		«W-M SIL, W CL, W ARG» Clasts are argillized - some have well developed alteration rims. Matrix is fine grained and hematitic. It is variably replaced by grey silica.	«Tr py»	
51.40 TO 53.60	«PERLITE» ⟨53.4-53.6⟩ «FAULT»	Pale grey green. A typical interval of web textured perlite. This interval is weakly argillized and chloritized.		«W CL, W ARG»	Limonite coatings of some fracture surfaces.	
53.60 TO 59.30	«VITRIC TUFF»	Pale grey. Distinctive unit composed of highly vesicular (filled) pumice material. In places, vesicles have been flattened into fiamme-like streaks. Many of these are chloritized. Vesicles constitue up to 25% of the rock. The aphanitic groundmass is strongly argillized and has local patches of grey silicification.		«M-S ARG, W SIL» Pervasive argillic alteration. Patchy silicification of the groundmass. Weak hair thin qz microveins widespread. These contain patches of py that appear to overgrow wallrock.	«Tr py» as sparse disseminations, patches in veins and clots. Patches of bladed marcasite also noted «1% mc» These also have a rosette-like habit.	
	⟨57.9-58.2⟩ «BX VEIN»	Dark grey. Crosscutting breccia vein consisting of beige coloured rounded wallrock clasts (3-40 mm) in a dark grey, highly siliceous matrix. Breccia margins grade from true breccia out into incipient breccia. Fragment supported.		«S ARG, M-S SIL» Strong argillic alteration of the clasts. Pervasive but uneven silicifcation of the matrix.	«5% py» Finely disseminated pyrite throughout matrix.	
		Upper contact @ 57.9 m	30			
	⟨57.6-57.7⟩ «BX VEIN»	Narrow but sharply defined breccia vein composed of 50-60% highly argillized wallrock frags in a silicified matrix. Upper contact @ 57.6 m	40			
59.30 TO 64.90	«PERLITE» & FLOW BANDED RHYL	Green-grey, f.g. Similar to the interval higher up the hole. This unit is fairly massive near the top grading down into the black banded vitric ash tuff The banded parts also have well developed perlitic fractures.		«W ARG» Weak pervasive argillic alteration throughout interval. Silicifcation absent. The top 30 cm is bleached to a yellow-beige colour.	«Tr py, < 1% mc» Py occurs as sparse disseminated cubes throughout the groundmass. Narrow, branching qz veinlets full of bladed or platy marcasite occur lower in the interval e.g. @ 62.9 m.	
		Bedding @ 60.1 m	40			
		@ 61.5 m	22			
		@ 62.5 m	08			
		@ 63.1 m	15			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
64.90 TO 67.70	«BALLI-FEROUS PERLITE»	Grey. A continuation of the above perlite unit with some dramatic textural changes. This unit is full of balls! These are rounded sometimes hematitic concretions that have grown over the perlitic texture. In places the perlitic fractures parallel the margins of the balls. this indicates that they may be growing on spherulites. Ball sizes vary from 0.5 cm to about 3.5 cm. Textures also vary from isolated round balls to crowded varieties where the ball rims touch each other. Some balls are filled or cored by coarse py and qz.		«W ARG» Sparse yellow veinlets and weak pervasive alteration. Perlitic cracks and ball rims highlighted by thin rims of quartz.	«Tr py» Patches noted in the cores of alteration balls.	
⟨64.9-65.5⟩	«VESICULAR FLOW TOP?»	Grey-green. A spongy textured interval composed of what appears to be balliferous perlite. This zone is typified by about 25% unfilled vesicles. These may indicate a flow top.		«W SIL, W ARG» Some blue qz fillings noted.	«5-10% py» Partial filling of vesicles and disseminations in groundmass.	
67.70 TO 70.80	«FB RHYOLITE VITRIC TUFF»	Green to pale brown. A mixed interval consisting of well bedded tuffs. the beds vary from 2 cm to over 50 cm. They are compositionally variable. They range from vitric ashes to crystal ashes. Streaky textures in the vitric tuffs may indiciate some welding. Finer grained dark-green beds show perlitic cracks and in some places balls are developed e.g. 69.2-69.6 m. These appear to replace certain beds preferentially (i.e. compositional/textural control)		«W ARG, W CB, W CL» Weak pervasive argillic alteration of groundmass. Ball alteration prefentially replaces some of the thinner tuff beds. This may be a form of hematization. White sports up to 2 mm appear to be rimmed or zoned carbonate porphyroblasts. These tend to occur in the more vitric tuffs. Py-cl veinlets noted.	«2-3% py» occurs mainly as fine dusting of the groundmass. Crystal aggregates of coarser py occur in places. These can reach over 1 cm in diameter. Py-cl microveins also present.	
70.80 TO 74.40	«BANDED LATITE»	Green, f.g. to aphanitic. A homogenous unit of well banded latite. Similar to the material seen in previous holes. This unit is fine grained, almost aphanitic and aphyric. Bands are highlighted by hematite veinlets. Upper contact @ 70.8 m	50	«W CL, W HE» Py-cl veinlets are fairly sparse. Chlorite gives rock a greenish colour. Hematite veinlets (earthy) follow flow bands. A 1 cm vuggy qz stringer noted @ 74.2 m	«1% py» mostly in Cl veinlets.	
74.40 TO 79.30	«BALLI-FEROUS PERLITE»	Dark green. Similar again to the unit higher in the hole. The balls are much larger (to 40 mm) and less packed. They seem to be constrained by a crude layering in the rock.		«W SIL, W CL, VW ARG» Alteration seems to be increasing in this interval. Silicification of the perlitic cracks and narrow banded vuggy veins are present. Bleaching to a yellow colour over short sections indicates patchy argillic alteration. «M SIL»	«Tr py»	Narrow banded veins concentrated between
⟨78.1-79.3⟩						

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
79.30 TO 86.00	«BALLI-FEROUS FLOW BANDED RHYOLITE»	Green-grey. Black banded, perlitic rhyolite showing well developed spheroidal textures. The spheroids are defined by strong web textures of the fractures. These suggest that the original tuff was highly vitric. Dark bands are fairly widely spaced and in places show convoluted layering or soft sediment deformation features.		«W ARG» Patchy bleaching of the web texture.	«Tr py»	
		Banding @ 82.3 m	60			
	┤84.7-85.0├ ┤85.1-85.2├			Bleached halo in hangingwall of breccia		
	«SILICIFIED BX»	Narrow breccia interval healed by grey glassy qz. Clasts of perlite are poorly sorted, angular and rotated. Some are completely replaced by qz.		«I SIL»		
86.00 TO 96.60	«TUFF BX»	Bright green. A highly variable unit composed of tuff clasts in a fine-grained clay altered matrix. Clasts are mostly angular and randomly oriented. Sizes range up to 5 cm. Mostly matrix supported but locally clast supported. These intervals may be beds.		«W-M SIL, S ARG» Pervasive bright green clay alteration of the breccia matrix. Clasts are clay altered to a yellow-green colour. Patchy silicification of the matrix noted. These areas appear as grey patches.	«Tr-1% py»	
	┤89.4-89.7├ «SILICIFIED ZONE»	Flooded zone with narrow cockscomb qz veins. Veins are partly banded and vuggy. Botryoidal textures noted in the cavities.			«Tr-1% py»	
	┤94.4-94.5├ «BLADED QZ VEIN»	Vein made up of qz (+CB) blades arranged in a random fashion to create open cavities.				
	┤94.4-95.0├	Replacement of breccia matrix.		«M SIL»		
96.60 TO 100.25	«SILICIFIED RHYOLITE BX»	Grey. Similar to the above interval but with bedding or cross cutting breccia veins (i.e. hydrothermal breccias). Jigsaw breccias with moderately healed (silicified) matrices are abundant throughout. Clasts consist of vitric crystal tuff material. These are subangular and generally sorted. Average size is about 25 mm.		«W-M SIL, W ARG» Pervasive yellowish clay alteration of clasts and matrix. Pervasive silicification of matrix within and immediately adjacent to jigsaw breccia.	«Tr py»	
		Bedding @ 98.3 m	30			
	┤97.8-98.1├ «JIGSAW BX»		30			
	┤98.5-99.0├ «JIGSAW BX»			«S SIL»		
	┤99.6-99.8├ «JIGSAW BX»		25	«M SIL»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
100.25 TO 107.60	«VITRIC TUFF»	Grey, f.g. A well-sorted feldspar crystal ash with abundant green fiamme. These are clearly squished vesicles and glass shards. Many exhibit typical cuni-linear forms. Slight alignment of shards indicates layering. Possibly a welded unit.	22	«VW ARG» Very slightly argillized. More an overall bleaching.	«Tr mc» in acid leach cavities near base of interval.	
	⎨100.25-102.7⎬ «PERLITE»	Perlitic textures at top of vitric ash unit. May be a separate more glassy tuff bed. Bedding @ 104.6 m	35			
	⎨108.6-108.8⎬	Narrow beds of perlite 5-20 cm thick occur sporadically throughout interval. Slight acid leaching to give cavities - lined with drusy quartz in places.			Bladed mc noted in some cavities.	
107.60 TO 115.10	«PERLITE»	Dark grey. Classic perlite. this interval could have been a glassy volcanic flow. Well defined curved fracture surfaces define a web texture. The rock is aphanitic and siliceous. Probably aphanitic in composition.				
	⎨113.9-114.3⎬ «BALLI-FEROUS PERLITE»	A bedded sequence of perlitic ash tuffs exhibiting irregular shaped balls along certain bedding planes. These are densely packed to the point of coalescing into bubble like masses. Balls range from 5 mm to 15 mm. Bedding @ 113.9 m	45	«M CL» Chloritization of the groundmass		
115.10 TO 127.30	«PERLITE»	Medium grey, aphanitic. More of the same rock. This interval contains a fairly wide zone of balls		«M CL, W CA» Chlorite alteration increases down interval. The matrix also contains increasing amounts of calcite as perlite fracture fillings and as disseminations in the groundmass The rock is fairly soft compared to the previous interval.		
	⎨115.1-119.2⎬ «BALLI-FEROUS PERLITE»	Balls scattered throughout this section. Most are completely round, but a few are composites or amoeboid aggregates. Average size is about 1.5 mm. There is a general increase in size down interval.		«M CA, M CL»		
	⎨117.3-117.5⎬ ⎨117.5-	Pervasive replacement of groundmass by grey quartz		«W-M SIL»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	127.3⊦			«M-S CA, M CL»		
127.30 TO 142.30	«TUFF BX»	Green, c.g. A depsotional breccia unit composed of angular crystal tuff and rhyolite clasts. The unit appears to be crudely bedded. This is based on size variations and clast populations. Overall, it is matrix supported with clasts up to 45 mm.		«M CL, W CA, W SIL» Clasts and matrix contain pervasive chlorite and calcite as microveins and as matrix. Local patches of silicification noted in breccia matrix. Patches of brown hematite also occur in matrix.	«Tr-3% py» Variable pyrite content gradually increasing downhole. Most occurs as disseminated cubes in matrix. Crystal aggregates of py up to 5 mm across also noted. These are quite sparse.	
	⊦140.1-140.4⊦	Bleaching of frags.		«M SIL»		
142.30 TO 148.90	«TUFF BX»	Grey to green. A coarser grained block breccia consisting of boulder size fragments of flow banded rholite, rhyolitic material and crystal tuff. Between large clasts, which range up to 60 mm, smaller poorly sorted breccia frags form a matrix. These are mostly fragment supported. No bedding is visible. Contact @ 148.9 m	40	«M-S ARG, W-M CL, M CA» Clay alteration distinguishes this interval from the previous one. Large segments of the interval are bleached to a yellow-grey by the clay altn. These sections contain local qz-py stockworks made up to microveinlets. Calcite veinlets up to 1 cm noted throughout interval.		
	⊦144.7-145.0⊦ «QZ STWK»				«5% py» in microveins in argillic altered breccia host.	
	⊦145.4-145.6⊦	A narrrow zone of strong pervasive chlorite altn.		«S CL»	«15-20% py» as disseminations.	
	⊦147.3-147.9⊦			«S CL, M CA»	«5-10% py»	
148.90 TO 157.30	«VITRIC RHYOLITE TUFFS/FB RHYOLITE»	Pale grey, f.g. A well laminated section of moderate to highly siliceous felsic ash tuffs. Perlitic textures occur throughout suggesting a high original glass component. Fine lamination noted on a mm to cm scale. In places these are contorted by soft sediment deformation. Laminations @	40	«W CA» Not very altered. Possibly slightly argillized. A loose stockwork of calcite microveins is present throughout. These do not exceed 1 cm in width.	«Tr py»	
	⊦153.4-157.3⊦	Siliceous section. Probably primary - not introduced.				
157.30 TO 161.70	«FLOW BANDED RHYOLITE» or FB RHYL!	Green-pink, f.g. Devitrified flow banded rhyolite. Pink and greenalteration make this unit distinct. Bedding is on a 1 to 50 cm scale. One large bed of siliceous-rhyolite tuff is noted from 159.4 to 159.9 m. Bedding @ 159.2 m	40	«W-M CA, W CL, M KF?» Banded pale green and pink alteration. Green caused by weak chlorite. Pink could be feldspar. This however does not stain with cobaltinitite.	«1-2% py»	
	⊦157.9-158.0⊦	Pyrite-calcite vein.			«80% py vein»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	⌊159.4-159.9⌋ «RHYOLITE ASH TUFF»	Fairly massive, siliceous tuff bed. Crude banding visible. Distinguished by fine spots of py. These are about 0.5 mm wide and make up about 1% of rock			«1% py spots»	
	⌊160.4-160.7⌋ «QZ STWK»	Hydrobrecciated and healed interval. Grey qz veins form stockwork over short interval. One has a fairly large (4 cm) vuggy cavity @ 160.6 m. Clasts are of silicifed ash tuff.		«I SIL» Veins have patches of yellow clay as selvages.		
161.70 TO 184.10	«HEMATITIC RHYOLITE BX»	Green-brown, c.g. A coarse grained interval of block tuff breccia. Contains fragments up to 60 cm of black & white striped FB rhyolite, perlitic vitric ash tuff and crystal tuff. Matrix is also of fine grained breccia cemented by hematite. Clasts are angular and poorly sorted. Alteration is also patchy - probably controlled by clast chemistry. dominantly propylitic.		«W-M CA, M CL» Chlorite occurs as intense alteration of clasts and groundmass over 1-2 m sectins. These have abundant calcite stringers which form a loose stockwork.	«1-3% py» as disseminations primarily in the most chloritic zones.	
	⌊178.9-183.0⌋			«S CA»		
	⌊180.4-180.7⌋			«S CL»		
	⌊183.0-184.1⌋			«S CL»		
184.10 TO 194.20	«BLACK BANDED RHYOLITE»	White, f.g. Flow banded rhyolite with distinctive 5-10 mm black bands. These are spaced at 1 to 10 cm intervals. Near top of the interval, the rock is weakly chloritic with 10-15 cm interbeds of medium to dark brown crystal tuffs. At around 188.3 m the ashes become white and qz rich. They remain this way to EOH. Beds @ 188.7 m	20 0	«W CL»	«3% py- STWK» Pyrite stringers occur throughout the interval. These are mostly narrow - up to 1 mm. Pods of py also noted near bottom of hole. These may be irregular veins. Most of these reach 1 cm across.	
	⌊184.1-188.7⌋			«W CL»		
	194.2 M	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43901	27.40	29.40	2.00	0.1	35	2	21	17	1	68	2	65	18	
43902	29.40	31.00	1.60	0.3	32	1	38	17	1	56	6	45	40	
43903	31.00	32.60	1.60	0.3	35	1	22	16	1	49	2	55	50	
43904	32.60	34.90	2.30	0.3	27	1	21	16	1	51	2	30	20	
43905	34.90	37.50	2.60	0.1	25	1	20	18	1	73	1	35	100	
43906	37.50	38.00	0.50	0.1	31	1	26	29	1	65	2	90	20	
43907	38.00	39.80	1.80	0.1	36	1	19	20	1	55	1	60	17	
43908	39.80	40.10	0.30	0.4	122	1	92	21	3	75	2	130	20	
43909	40.10	41.00	0.90	0.5	87	2	34	22	4	57	2	60	24	
43910	41.00	42.90	1.90	0.9	106	2	26	14	5	45	8	80	28	
43911	42.90	43.90	1.00	1.6	455	2	20	12	18	25	69	155	17	
43912	43.90	45.90	2.00	1.2	166	1	27	12	6	34	58	170	100	
43913	45.90	46.90	1.00	1.2	347	1	17	12	13	35	55	20	60	
43914	46.90	48.90	2.00	0.7	105	1	23	19	8	46	9	75	50	
43915	48.90	49.50	0.60	0.7	105	1	18	15	6	38	4	70	100	
43916	49.50	51.40	1.90	0.4	54	1	22	16	3	42	2	40	50	
43917	51.40	53.60	2.20	0.6	47	1	21	19	2	43	3	25	40	
43918	53.60	55.60	2.00	0.8	112	1	17	17	6	42	2	40	30	
43919	55.60	57.60	2.00	0.8	102	1	19	18	4	47	7	45	18	
43920	57.60	58.40	0.80	0.5	94	1	16	17	3	31	2	50	8	
43921	58.40	59.30	0.90	0.3	72	1	20	17	2	51	1	65	19	
43922	59.30	59.70	0.40	0.1	18	1	22	19	1	84	2	35	6	
43923	64.90	66.90	2.00	0.1	147	1	21	21	1	43	8	45	18	
43924	66.90	67.80	0.90	0.3	47	1	24	20	1	52	1	40	8	
43925	67.80	69.80	2.00	0.1	85	2	23	19	1	51	3	15	38	
43926	69.80	70.80	1.00	0.4	101	1	19	20	1	39	56	45	11	
43927	70.80	72.80	2.00	0.7	155	1	20	18	5	45	37	55	50	
43928	72.80	74.50	1.70	0.5	47	1	21	20	3	44	5	40	30	
43929	76.50	78.10	1.60	0.9	113	1	19	15	7	41	4	20	21	
43930	78.10	79.30	1.20	0.6	54	1	22	12	3	42	1	10	50	
43931	79.30	81.40	2.10	1	250	1	19	15	12	41	62	15	24	
43932	81.40	83.40	2.00	0.9	168	1	22	18	9	43	10	40	21	
43933	83.40	84.70	1.30	0.9	154	1	19	13	6	40	6	30	10	
43934	84.70	85.20	0.50	1.8	691	1	18	17	27	33	171	60	20	
43935	85.20	86.10	0.90	0.8	94	2	18	18	4	38	7	40	20	
43936	86.10	86.30	0.20	0.6	35	2	13	16	1	33	6	50	3	
43937	86.30	88.30	2.00	0.7	50	2	18	18	3	35	1	30	18	
43938	88.30	89.70	1.40	0.9	55	2	23	17	3	44	2	40	17	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
43939	89.70	90.00	0.30	0.2	71	3	11	16	1	35	2	75	4
43940	90.00	92.00	2.00	0.4	50	2	19	15	1	34	4	60	50
43941	92.00	94.00	2.00	0.4	44	2	26	20	4	47	1	55	14
43942	94.00	94.50	0.50	0.3	47	2	24	13	1	35	3	35	5
43943	94.50	95.10	0.60	0.4	44	3	18	16	2	31	3	65	5
43944	95.10	96.60	1.50	0.2	38	2	14	18	1	41	1	45	12
43945	96.60	98.40	1.80	0.4	35	2	24	20	1	42	6	25	5
43946	98.40	99.10	0.70	0.5	25	2	14	17	1	36	2	45	3
43947	99.10	100.40	1.30	0.4	22	3	18	21	1	40	9	40	3

Sample	From (m)	To (m)	Length (m)										
43901	27.40	29.40	2.00	0.1	35	2	21	17	1	68	2	65	18
43902	29.40	31.00	1.60	0.3	32	1	38	17	1	56	6	45	40
43903	31.00	32.60	1.60	0.3	35	1	22	16	1	49	2	55	50
43904	32.60	34.90	2.30	0.3	27	1	21	16	1	51	2	30	20
43905	34.90	37.50	2.60	0.1	25	1	20	18	1	73	1	35	100
43906	37.50	38.00	0.50	0.1	31	1	26	29	1	65	2	90	20
43907	38.00	39.80	1.80	0.1	36	1	19	20	1	55	1	60	17
43908	39.80	40.10	0.30	0.4	122	1	92	21	3	75	2	130	20
43909	40.10	41.00	0.90	0.5	87	2	34	22	4	57	2	60	24
43910	41.00	42.90	1.90	0.9	106	2	26	14	5	45	8	80	28
43911	42.90	43.90	1.00	1.6	455	2	20	12	18	25	69	155	17
43912	43.90	45.90	2.00	1.2	166	1	27	12	6	34	58	170	100
43913	45.90	46.90	1.00	1.2	347	1	17	12	13	35	55	20	60
43914	46.90	48.90	2.00	0.7	105	1	23	19	8	46	9	75	50
43915	48.90	49.50	0.60	0.7	105	1	18	15	6	38	4	70	100
43916	49.50	51.40	1.90	0.4	54	1	22	16	3	42	2	40	50
43917	51.40	53.60	2.20	0.6	47	1	21	19	2	43	3	25	40
43918	53.60	55.60	2.00	0.8	112	1	17	17	6	42	2	40	30
43919	55.60	57.60	2.00	0.8	102	1	19	18	4	47	7	45	18
43920	57.60	58.40	0.80	0.5	94	1	16	17	3	31	2	50	8
43921	58.40	59.30	0.90	0.3	72	1	20	17	2	51	1	65	19
43922	59.30	59.70	0.40	0.1	18	1	22	19	1	84	2	35	6
43923	64.90	66.90	2.00	0.1	147	1	21	21	1	43	8	45	18
43924	66.90	67.80	0.90	0.3	47	1	24	20	1	52	1	40	8
43925	67.80	69.80	2.00	0.1	85	2	23	19	1	51	3	15	38
43926	69.80	70.80	1.00	0.4	101	1	19	20	1	39	56	45	11
43927	70.80	72.80	2.00	0.7	155	1	20	18	5	45	37	55	50
43928	72.80	74.50	1.70	0.5	47	1	21	20	3	44	5	40	30
43929	76.50	78.10	1.60	0.9	113	1	19	15	7	41	4	20	21
43930	78.10	79.30	1.20	0.6	54	1	22	12	3	42	1	10	50
43931	79.30	81.40	2.10	1	250	1	19	15	12	41	62	15	24
43932	81.40	83.40	2.00	0.9	168	1	22	18	9	43	10	40	21
43933	83.40	84.70	1.30	0.9	154	1	19	13	6	40	6	30	10
43934	84.70	85.20	0.50	1.8	691	1	18	17	27	33	171	60	20
43935	85.20	86.10	0.90	0.8	94	2	18	18	4	38	7	40	20
43936	86.10	86.30	0.20	0.6	35	2	13	16	1	33	6	50	3
43937	86.30	88.30	2.00	0.7	50	2	18	18	3	35	1	30	18
43938	88.30	89.70	1.40	0.9	55	2	23	17	3	44	2	40	17
43939	89.70	90.00	0.30	0.2	71	3	11	16	1	35	2	75	4

Sample	From (m)	To (m)	Length (m)										
43940	90.00	92.00	2.00	0.4	50	2	19	15	1	34	4	60	50
43941	92.00	94.00	2.00	0.4	44	2	26	20	4	47	1	55	14
43942	94.00	94.50	0.50	0.3	47	2	24	13	1	35	3	35	5
43943	94.50	95.10	0.60	0.4	44	3	18	16	2	31	3	65	5
43944	95.10	96.60	1.50	0.2	38	2	14	18	1	41	1	45	12
43945	96.60	98.40	1.80	0.4	35	2	24	20	1	42	6	25	5
43946	98.40	99.10	0.70	0.5	25	2	14	17	1	36	2	45	3
43947	99.10	100.40	1.30	0.4	22	3	18	21	1	40	9	40	3

HOLE NUMBER: CL-91-12

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: NORTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 41366.00N
EAST: 9436.00E
ELEV: 1300.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 197.20m
START DEPTH: 0.00m
FINAL DEPTH: 197.20m

COLLAR GRID AZIMUTH: 290° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 290° 0' 0"

DATE STARTED: August 28, 1991
DATE COMPLETED: August 30, 1991
DATE LOGGED: September 7, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
35.70	-	-55° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO TO 81.40	«LAPILLI TUFF»	Olive green, c.g. A thick unit composed predominantly of angular rhyolite lapilli in a fine grain tuffaceous matrix. Clasts are randomly oriented with no apparent layering or bedding. Sizes vary from 0.5 to 50 mm. Clast types include sericitized Qz-feldspar phyric rhyolite, perlite, and amygdaloidal andesite. Rare clasts of pyritized material noted. These occur @ 61.6 and 70.4 m.		«I-X ARG, S SER» Pervasive clay-sericite alteration. Matrix is pervasively altered to an olive green clay, possibly celadonite. Lapilli are altered to a white clay and/or sericite. Sericite noted due to its silky sheen.	Only seen in scattered pyritized clasts These are pre-depositional as the clast boundaries cut the pyritization boundaries. Dark grey veinlets near top of the hole are py-clay.	
81.40 TO 99.70	«BEDDED CRYSTAL TUFFS»	Grey green. A thickly bedded sequence of feldspar, feldspar-biotite and crystal lithic tuffs. Beds range from 10 to 120 cm in apparent thickness. Grading noted in some sections. These fine upwards (e.g. 84.6-85.5m). Narrow intervals of lithic tuff and lapilli tuff also present. Some crystal tuff beds contain up to 35% mafic minerals. Their habit suggests biotite and Hb. Bedding @ 90.6 m	40	«I ARG, S SER» As above. Complete clay replacement of clasts and matrix. Primary textures however are not destroyed. Calcite is present as irregular, discontinuous stringers and as fine grained cement to the matrx.	«Tr py» Pyritic-siliceous clasts noted in the lithic sections. Traces of disseminated py also noted throughout.	
	┤82.7-83.0├ «FAULT GOUGE» ┤83.3-83.6├ «FAULT» ┤90.1-90.3├	Narrow stringers qz with bleached envelopes form a narrow stockwork zone.		«W SIL»	«5% py» as finely disseminated crystals throughout sil. matrix.	
99.70 TO 106.80	«MINERAL'ZD FAULT ZONE»	Yellow-green. A complex zone of intensely clay-altered fault breccia. Where present the host rock appears to be the crystal tuffs described above. Several sub-intervals defined by alteration and faulting textures are present.		«I ARG, W SIL» Intense argillic alteration of the fault zone to a massive gougy interval with remnant angular clasts.	«3-5% py» Most pyrite occurs as fine-grained clasts in the fault gouge. In places, however, pyrite forms the matrix to fault breccia and stockwork zones within the fault. This could be a significant hydrothermal conduit.	
	┤99.7- 101.2├ «MASSIVE YELLOW CLAY» ┤102.2- 102.7├			Almost complete replacement by clay. The zone is putty-like and easily squashed.	«1% py» disseminated.	
	«PYRITIZED FAULT BX» ┤103.9-	Intensely clay altered fault breccia. Zone consist mostly of dense yellow-grey clay with angular, more competent clasts of less altered wall rock. Some frags are moderately silicified. Pyritic Qz vein clasts abundant low in the interval. These reach 3 cm in length.			«5-10% py» as irregular patches - perhaps replacing clasts or interstitial to relict clasts	XRD sample

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	104.8⊦ «PYRITIC HEALED FAULT BX»	A zone of hydrofractured and brecciated fault material healed and stockworked by fine-grained pyrite. Host rock is mostly flow banded rhyolite or latite. Clasts of fault breccia noted - multi-phase. Lower contact @	40		«20-30% py» As a breccia matrix and as broken veinlets.	Mineralization syn-faulting.
	⊦104.8-106.8⊦ «CLAY STWK»	A zone of yellow-grey clay veinlets. These form an irregular stockwork.				
106.80 TO 112.60	«RHYOLITE DYKE»	White, m.g. A feldspar-qz phyric rhyolite. Could be intrusive (i.e. dyke) or could be a welded ash flow. No flattening or banding textures noted, therefore most likely a feeder dyke. From top to bottom of the interval, the degree of argillic alteration diminishes from strong to weak.		«W ARG» Argillic alteration decreases in intensity from top to bottom. Mostly as alteration of groundmass feldspar.	«py + MC-3%» as a weak stockwork. Vein lets are randomly oriented and range up to 3 mm. One larger breccia vein up to 3 cm wide is present at 108.7 m. This contains fine marcasite blades.	Core badly broken at 110.7 m.
112.60 TO 115.60	«FELDSPAR CRYSTAL TUFF»	Pale green. A fairly faulted interval of feldspar crystal ash tuff. Lapilli size clasts of perlitic rhyolite noted. The largest is about 5 cm in diam. Fault contact @ 115.6 m	25	«M-S ARG, W SIL» Pervasive clay and/or green sericite alteration of the matrix. Plagioclase crystal forms well preserved. Lapilli are not as altered. Irregular veinlets of white or grey qz form a very sparse stockwork. Rare pyrite veinlets also occur.	«Tr-1% py» as microveins.	
115.60 TO 117.80	«FAULT BX»	Grey. Gougy and highly brecciated fault zone containing perhaps 90% rock fragments of various types. The dominant type is vein material. This consists of rounded highly pyritic siliceous material - perhaps vein. Rhyolite and clasts of intense clay material - the feldspar crystal tuff also seen. Lower contact	25	«I ARG» Intense pervasive argillic alteration. Clasts of vein and silici-fied material also noted.	«3-5% py» as patches, vein fragments and as disseminations through the fault matrix.	
117.80 TO 123.70	«FELDSPAR PORPHYRY» ⊦120.6-120.8⊦	Green, f.g. Feldspar phyric rock with crude flow banding-like textures. Euhedral plagioclase phenos up to 5 mm in size comprise 15-2-% of the rock. Groundmass is aphanitic and pervasively altered. The interval is variably broken, some sections are almost gougy, possibly due to proximity to the fault.		«M-S ARG, W CL» Pervasive clay alter-ation of the phenos and the clasts. The phenos are yellow-brown to green in colour, while the groundmass is an olive green to pink. Narrow veinlets with chlorite envelopes quite abundant. No calcite seen however. Yellow clay veins noted below 123.0 m.	«1% py» Narrow pyrite stringers are widespread throughout interval. Pyrite veinlets increase in frequency to bottom of interval.	Dyke or flow? Intermediate?

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	«FAULT»					
123.70 TO 127.00	«LATITE»	Beige, f.g. Flow banded latite interval. As with the previous intervals, this unit is intensely broken by faulting. Narrow zones of gouge noted throughout.		«W-M ARG, W SIL» Argillic alteration decreases dramatically in this interval Rock is increasingly silicifed to lower contact.	Abundant to strong py veining parallel to and perpindicular to flow banding. Coarser veins contain bladed marcasite crystals. «5% py, 1-3% mc»	
	⟨123.7-126.1⟩				«py STWK 15%» Dusty py-mc veins follow flow banding in the latite.	
	⟨125.0-125.3⟩					
	«FAULT»	Rubble and gougy fault breccia. Mostly argillized and milled wallrock fragments up to 1 cm. Weak pyritization of matrix.	20			
	⟨126.1-126.6⟩			«S-I ARG» Gougy and strongly argillized zone. Breccia textures with siliceous clasts - possibly vein material.		
	⟨126.6-126.62⟩	2 cm chlorite vein on contact.	40			
127.00 TO 127.50	«SILICIFIED FAULT BX»	Same texture as the fault gouge in the previous interval but completely healed by glassy grey qz. The most abundant clast type is the flow banded latite. Lower contact @	40	«I SIL» Fault breccia completely healed by grey glassy silica. The frags are more or less silicified also. Most, however, can still be scratched with a knife.	«5% py + mc» Most sulphide occurs in the qz matrix as fine grained to dusty masses. This gives the breccia a dark grey to black colour in places.	
127.50 TO 140.90	«PY STWK» «FELDSPAR PORPHYRY CRYSTAL TUFF»	Yellow grey, f.g. A thick interval of feldspar crystal tuff orpophyry - difficult to tell which. Plagioclase phenocrysts comprise about 10-20% of the unit. These are mostly euhedral and range from 3 to 8mm across. Most are altered to a pale yellow clay. In silicified portions, weak banding is present. This is highlighted by alignment of pheno crysts and flow textures in the matrix. Pale grey to pink tabular phenocrysts may be relict biotites or Hb. A few rounded qz phenos also noted. Banding @ 131.7 m	45	«W-S SIL, W-M ARG» Pervasive argillic alteration is dominant over silicification. Feldspar phenos are preferentially altered to a yellow clay. the matrix is also weakly to moderately clay altered. Silicification is patchy (see below) Diffuse zones of grey - pervasive silicification gradually become more abundant and stronger downhole. Narrow silicification envelopes up to 2 mm wide occur around some stringers.	«5-20% py» Well developed stockwork of py and py-qz veinlets. Marcasite also fairly abundant in the veins. Vein densities vary but average about 13 per metre.	
	⟨129.7-129.8⟩ «VEIN BX»					
	⟨130.8-			«I SIL»		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	130.9-132.2-132.5-136.6-140.9 «FAULT»	Approaching another fault zone. The rock is more fractured and gougy.		«I SIL» «M-S SIL» «M-S ARG»		
140.90 TO 145.20	«SILICIFIED BX»	Grey. Highly silicifed breccia zone - with heterolithic fragment population. Clasts are highly angular and poorly sorted. Clasts range from <0.5 cm to >15 cm. Most are completely randomly oriented. Clast types noted include feldspar porphyry, lapilli tuff and fine grained lithic ash tuff. The breccia is in part matrix supported and in part fragment supported. Unit may be a depositional or healed fault breccia.		«S-I SIL» Pervasive replacement of breccia matrix by grey glassy quartz. Matrix has some open spaces filled by yellow clay. These comprise <5% of zone Clasts are argillized and variably silicified. Some have bleached alteration haloes. Pyrite clasts also noted. These may be from pre-existing stockwork.	«2-5% py» Mostly as rounded "clasts" of vein material. Fine disseminated pyrite also noted in the darker silica matrix. Pyrite replacement of clasts noted. Py crystal aggregates form cores to feldspar porphyry clasts.	
145.20 TO 160.90	«FELDSPAR CRYSTAL TUFF» (VITRIC TUFF) 160.4-160.9	Yellow grey, f.g. A thick unit of feldspar crystal tuff. The rock consists of about 20% euhedral feldspar phenocrysts in a clay altered aphanitic matrix. Some intervals in the unit show a strong flattening texture suggestive of welding. Best example occurs at 151.3-152.0 m. With hand lens distinct shards are visible. Banding @ 157.0 m	20	«M-S ARG, W SIL» Phenos and groundmass are completely argillized and perhaps sericitized. Phenos altered to a yellow green clay. Areas of pervasive silicification show up a medium grey zone in which the feldspars are white (e.g. 156.0 m) «W-M SIL»	«3-5% py STWK» Pyrite stockwork developed throughout unit. Qz-py occur every 10-15 cm. These reach 3 mm in width and have essentially random orientations.	
160.90 TO 165.60	«SILICIFIED BX» (HYDROTHERMAL) 163.8-164.1 «SANDY BX» 164.2-164.4	Grey. A spectacular breccia zone consisting of angular and rotated clasts of wallrock in a completely silicified matrix. The clasts are unsorted with max. dimensions of about 80 mm. Some textures look like milling - as the clasts are ground down to a very small size. A sorted and unsilicifed section within the silicifed unit.		«I SIL» Strong pervasive silicification Possible silica healing of a hydrothermal conduit. The breccia is cut by a 5 cm porcellanous qz vein @ 164.5 m. Bright green clay patches and altered clasts scattered through zone. Weakly consolidated or cemented.	«5-10% py» as clasts of fine grained pyrite and as rims around larger clasts In places the rims have become detached to form pseudo-clasts. «15% py» as clasts in the breccia.	XRD sample @ 166.3 m. Green clay.
165.60 TO 169.00	«FAULT BX»	Grey. Structurally brecciated interval. This zone contains more rounded clasts of various volcanic wall rocks and also clasts of silicifed breccia. this suggests a late structure. Unlike the above breccia, this one is totally clast supported.		«W-S SIL, W ARG»	«3-5% py» Mainly as clasts within the breccia. Some veinlike streaks also noted.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	┤165.5-166.1├ «QZ-PY STWK»	Max. fragment size is 40 mm. Yellow. Bleached and strongly silicifed feldspar porphyry. Irregular stockwork of qz-py veins throughout section.		«S SIL, M ARG»	«3% py» as vein fillings.	
	┤166.1-166.2├ «FAULT GOUGE» ┤166.7-167.1├	Contains fragments of grey qz veins and abundant bright green clay. Lower contact @ 165.6 m	25	«S ARG, S CL» Strong green colour caused either by chlorite or green clay Section has a gougy habit.		
169.00 TO 171.20	«SILICIFIED BX»	Yellow grey. Similar to the previous fault breccia but variably silicifed. Clast supported - poorly sorted. Max. fragment size is about 15 cm. Clast types include feldspar pophyry & qz-py vein. Less silicifed sections are distinctly gougy. These are mostly composed of white to grey clay.		«M-S SIL, M ARG» Silicification decreasing downhole.	«3% py» as clasts and ribbony patches in breccia.	
171.20 TO 172.10	«CRYSTAL ASH TUFFS»	Pale green, m.g. thinly bedded crystal ash tuffs composed mainly of white feldspar crystals. Beds are defined by grain size. Most are about 3-5 cm thick. Small lapilli occur in thicker beds. These reach 3 cm in diameter.		«W ARG» Pale green alteration of ground mass could be sericitization.	«1% py» as disseminated euhedral crystals in matrix and as narrow veinlets. Bladed forms noted. These could be marcasite.	
172.10 TO 172.60	«FLOW BANDED RHYOLITE»	Pale green. A large block or bed of perlite banded rhyolite. Black vitreous bands up to 1 cm wide typify this unit.		«M ARG» Pervasive argillic alteration. Pale green colour may also be due to sericite.	«11-3% py» as veinlets.	
172.60 TO 190.20	«RHYOLITE BX»	Purple & green, c.g. A chaotic monomictic breccia composed of flow banded rhyolite clasts from mm to over a metre in size. The clasts are angular and sit in a fine grained breccia matrix which is pervasively hematized. The rhyolite clasts are strongly flow banded and exhibit perlitic textures suggesting that they were once glassy.		«W ARG, M HE» Weak argillic alt/seric of the devitrified rhyolite clasts. Matrix healed with hematite.	«1% py» Pyritization of small clasts. Py also occurs as cubes in hematitic matrix and in micro fractues.	
190.20 TO 197.20	«FELDSPAR BIOTITE PORPHYRY»	Green, m.g. A homogenous porphyritic intrusion consisting of euhedral plagioclase phenocrysts in a medium grained matrix of qz-PF and biotite. The top 2 to 3 metres are flow banded. This is highlighted by more qz rich layers and alignment of biotite phenos.		«W CL» Weak chloritization of the mafics.		Intrusion!! -c.g CL-91-05

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	197.2 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43994	57.00	59.00	2.00	0.3	61	1	33	23	12	69	2	1885	30	
43995	61.00	63.00	2.00	0.9	96	2	16	21	10	29	10	140	16	
43996	65.00	67.00	2.00	0.6	109	1	14	15	8	34	1	85	26	
43997	69.00	71.00	2.00	0.6	60	1	16	20	5	27	6	55	15	
43998	73.00	75.00	2.00	0.6	41	1	15	16	1	24	2	35	11	
43999	77.00	79.00	2.00	0.7	65	1	18	18	4	29	4	55	26	
44000	79.00	81.40	2.40	0.6	47	2	18	18	4	36	3	70	32	
44001	81.40	83.40	2.00	0.7	164	2	28	22	23	59	2	540	25	
44002	83.40	85.40	2.00	0.6	150	2	23	20	17	62	1	550	30	
44003	87.40	89.40	2.00	0.2	66	1	24	22	7	63	2	335	34	
44004	89.40	91.40	2.00	0.9	635	1	21	19	21	49	11	485	24	
44005	91.40	92.90	1.50	0.4	81	2	24	21	6	63	2	440	27	
44006	92.90	94.90	2.00	0.6	131	1	12	18	7	41	5	335	19	
44007	94.90	96.90	2.00	0.8	241	1	24	20	14	56	1	175	13	
44008	96.90	98.90	2.00	0.5	154	1	20	20	14	58	1	160	14	
44009	98.90	99.70	0.80	0.4	36	2	23	25	6	53	2	175	11	
44010	99.70	101.20	1.50	0.3	55	2	24	22	8	61	1	245	13	
44011	101.20	102.00	0.80	0.6	166	1	32	23	12	65	1	345	14	
44012	102.00	103.90	1.90	1.4	231	1	19	14	12	37	2	425	37	
44013	103.90	104.90	1.00	4.9	489	1	19	16	26	38	6	695	12	
44014	104.90	106.90	2.00	1.1	168	1	11	20	17	56	2	325	26	
44015	106.90	108.80	1.90	1.7	245	1	11	14	18	41	4	625	39	
44016	108.80	110.80	2.00	0.8	199	1	11	14	9	31	5	390	37	
44017	110.80	112.80	2.00	0.6	245	1	12	16	13	33	2	545	100	
44018	112.80	114.80	2.00	1	278	1	8	17	13	45	1	175	45	
44019	114.80	115.00	0.20	1.1	108	1	16	16	8	63	1	220	13	
44020	115.00	117.80	2.80	1.9	769	1	17	14	31	33	35	250	32	
44021	117.80	119.80	2.00	0.6	105	1	14	16	4	50	6	115	38	
44022	119.80	121.80	2.00	0.3	109	2	14	20	4	51	2	120	75	
44023	121.80	123.70	1.90	0.3	118	1	14	19	4	44	4	85	100	
44024	123.70	125.80	2.10	1.1	582	1	13	13	21	67	21	125	10	
44025	125.80	126.00	0.20	0.9	313	1	16	11	11	65	18	105	50	
44026	126.00	127.00	1.00	1.3	531	2	14	13	26	45	32	150	2	
44027	127.00	127.50	0.50	3.2	1804	1	11	8	75	27	100	125	1	
44028	127.50	129.50	2.00	4.7	1298	1	16	13	60	36	85	430	12	
44029	129.50	130.90	1.40	4.1	1729	1	12	15	74	44	116	755	12	
44030	130.90	132.00	1.10	3.8	1006	1	13	11	42	35	81	965	3	
44031	132.00	132.50	0.50	2.5	799	2	11	14	35	39	59	1100	3	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44032	132.50	134.50	2.00	1.6	546	1	15	17	26	42	23	700	25
44033	134.50	136.50	2.00	0.9	226	2	17	15	11	27	14	350	21
44034	136.50	138.50	2.00	1.7	253	1	9	10	11	22	24	430	23
44035	138.50	140.50	2.00	1.9	599	1	14	13	23	34	42	445	32
44036	140.50	140.90	0.40	1.7	385	1	10	14	17	23	21	1220	50
44037	140.90	142.90	2.00	1.3	708	2	9	10	25	24	68	405	40
44038	142.90	143.90	1.00	1.4	1076	4	9	11	38	35	83	350	21
44039	143.90	144.90	1.00	1.5	337	2	15	13	11	36	25	240	23
44040	144.90	146.90	2.00	1.5	525	3	15	14	20	35	49	275	37
44041	146.90	148.90	2.00	2	498	1	16	16	20	35	56	390	16
44042	148.90	149.50	0.60	1.6	183	2	20	14	9	23	11	560	11
44043	149.50	151.30	1.80	1.8	158	1	16	14	6	20	17	280	19
44044	151.30	153.30	2.00	1.8	458	1	18	16	26	36	58	315	27
44045	153.30	155.30	2.00	0.9	118	3	14	13	4	32	13	350	31
44046	155.30	157.30	2.00	2.3	182	1	17	13	11	44	46	235	26
44047	157.30	159.30	2.00	3.6	244	1	16	15	10	31	25	300	30
44048	159.30	160.80	1.50	3.4	302	1	17	13	14	30	31	220	50
44049	160.80	162.80	2.00	4.3	380	1	10	12	16	28	28	235	50
44050	162.80	163.80	1.00	3.4	264	1	5	10	10	16	20	615	50
44051	163.80	164.80	1.00	4.7	1348	1	18	8	78	23	81	5400	35
44052	164.80	165.70	0.90	4.5	1626	1	22	8	101	21	57	6900	15
44053	165.70	166.70	1.00	4.6	1119	1	25	14	75	34	80	5300	24
44054	166.70	168.00	1.30	3	964	1	11	22	40	49	82	1640	16
44055	168.00	169.20	1.20	1.8	513	1	6	16	17	43	61	1050	10
44056	169.20	170.50	1.30	1.8	1489	1	13	15	59	46	84	1410	18
44057	170.50	171.50	1.00	0.5	324	1	5	11	8	28	20	190	10
44058	171.50	172.00	0.50	0.5	179	1	11	14	7	22	7	65	6
44059	172.00	172.60	0.60	0.7	239	1	22	22	22	49	23	175	4
44101	172.60	175.50	2.90	0.4	244	1	15	17	21	44	17	90	100
44102	175.50	178.60	3.10	0.5	130	1	19	23	10	46	11	75	100
44103	178.60	181.60	3.00	0.5	30	1	24	23	1	41	3	25	32
44104	181.60	184.60	3.00	0.2	16	1	32	21	1	36	2	35	30
44105	184.60	187.60	3.00	0.5	13	2	29	18	1	25	2	60	19
44106	187.60	190.40	2.80	0.4	92	1	26	17	6	29	8	185	31

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
43994	57.00	59.00	2.00	0.3	61	1	33	23	12	69	2	1885	30
43995	61.00	63.00	2.00	0.9	96	2	16	21	10	29	10	140	16
43996	65.00	67.00	2.00	0.6	109	1	14	15	8	34	1	85	26
43997	69.00	71.00	2.00	0.6	60	1	16	20	5	27	6	55	15
43998	73.00	75.00	2.00	0.6	41	1	15	16	1	24	2	35	11
43999	77.00	79.00	2.00	0.7	65	1	18	18	4	29	4	55	26
44000	79.00	81.40	2.40	0.6	47	2	18	18	4	36	3	70	32
44001	81.40	83.40	2.00	0.7	164	2	28	22	23	59	2	540	25
44002	83.40	85.40	2.00	0.6	150	2	23	20	17	62	1	550	30
44003	87.40	89.40	2.00	0.2	66	1	24	22	7	63	2	335	34
44004	89.40	91.40	2.00	0.9	635	1	21	19	21	49	11	485	24
44005	91.40	92.90	1.50	0.4	81	2	24	21	6	63	2	440	27
44006	92.90	94.90	2.00	0.6	131	1	12	18	7	41	5	335	19
44007	94.90	96.90	2.00	0.8	241	1	24	20	14	56	1	175	13
44008	96.90	98.90	2.00	0.5	154	1	20	20	14	58	1	160	14
44009	98.90	99.70	0.80	0.4	36	2	23	25	6	53	2	175	11
44010	99.70	101.20	1.50	0.3	55	2	24	22	8	61	1	245	13
44011	101.20	102.00	0.80	0.6	166	1	32	23	12	65	1	345	14
44012	102.00	103.90	1.90	1.4	231	1	19	14	12	37	2	425	37
44013	103.90	104.90	1.00	4.9	489	1	19	16	26	38	6	695	12
44014	104.90	106.90	2.00	1.1	168	1	11	20	17	56	2	325	26
44015	106.90	108.80	1.90	1.7	245	1	11	14	18	41	4	625	39
44016	108.80	110.80	2.00	0.8	199	1	11	14	9	31	5	390	37
44017	110.80	112.80	2.00	0.6	245	1	12	16	13	33	2	545	100
44018	112.80	114.80	2.00	1	278	1	8	17	13	45	1	175	45
44019	114.80	115.00	0.20	1.1	108	1	16	16	8	63	1	220	13
44020	115.00	117.80	2.80	1.9	769	1	17	14	31	33	35	250	32
44021	117.80	119.80	2.00	0.6	105	1	14	16	4	50	6	115	38
44022	119.80	121.80	2.00	0.3	109	2	14	20	4	51	2	120	75
44023	121.80	123.70	1.90	0.3	118	1	14	19	4	44	4	85	100
44024	123.70	125.80	2.10	1.1	582	1	13	13	21	67	21	125	10
44025	125.80	126.00	0.20	0.9	313	1	16	11	11	65	18	105	50
44026	126.00	127.00	1.00	1.3	531	2	14	13	26	45	32	150	2
44027	127.00	127.50	0.50	3.2	1804	1	11	8	75	27	100	125	1
44028	127.50	129.50	2.00	4.7	1298	1	16	13	60	36	85	430	12
44029	129.50	130.90	1.40	4.1	1729	1	12	15	74	44	116	755	12
44030	130.90	132.00	1.10	3.8	1006	1	13	11	42	35	81	965	3
44031	132.00	132.50	0.50	2.5	799	2	11	14	35	39	59	1100	3
44032	132.50	134.50	2.00	1.6	546	1	15	17	26	42	23	700	25

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44033	134.50	136.50	2.00	0.9	226	2	17	15	11	27	14	350	21
44034	136.50	138.50	2.00	1.7	253	1	9	10	11	22	24	430	23
44035	138.50	140.50	2.00	1.9	599	1	14	13	23	34	42	445	32
44036	140.50	140.90	0.40	1.7	385	1	10	14	17	23	21	1220	50
44037	140.90	142.90	2.00	1.3	708	2	9	10	25	24	68	405	40
44038	142.90	143.90	1.00	1.4	1076	4	9	11	38	35	83	350	21
44039	143.90	144.90	1.00	1.5	337	2	15	13	11	36	25	240	23
44040	144.90	146.90	2.00	1.5	525	3	15	14	20	35	49	275	37
44041	146.90	148.90	2.00	2	498	1	16	16	20	35	56	390	16
44042	148.90	149.50	0.60	1.6	183	2	20	14	9	23	11	560	11
44043	149.50	151.30	1.80	1.8	158	1	16	14	6	20	17	280	19
44044	151.30	153.30	2.00	1.8	458	1	18	16	26	36	58	315	27
44045	153.30	155.30	2.00	0.9	118	3	14	13	4	32	13	350	31
44046	155.30	157.30	2.00	2.3	182	1	17	13	11	44	46	235	26
44047	157.30	159.30	2.00	3.6	244	1	16	15	10	31	25	300	30
44048	159.30	160.80	1.50	3.4	302	1	17	13	14	30	31	220	50
44049	160.80	162.80	2.00	4.3	380	1	10	12	16	28	28	235	50
44050	162.80	163.80	1.00	3.4	264	1	5	10	10	16	20	615	50
44051	163.80	164.80	1.00	4.7	1348	1	18	8	78	23	81	5400	35
44052	164.80	165.70	0.90	4.5	1626	1	22	8	101	21	57	6900	15
44053	165.70	166.70	1.00	4.6	1119	1	25	14	75	34	80	5300	24
44054	166.70	168.00	1.30	3	964	1	11	22	40	49	82	1640	16
44055	168.00	169.20	1.20	1.8	513	1	6	16	17	43	61	1050	10
44056	169.20	170.50	1.30	1.8	1489	1	13	15	59	46	84	1410	18
44057	170.50	171.50	1.00	0.5	324	1	5	11	8	28	20	190	10
44058	171.50	172.00	0.50	0.5	179	1	11	14	7	22	7	65	6
44059	172.00	172.60	0.60	0.7	239	1	22	22	22	49	23	175	4
44101	172.60	175.50	2.90	0.4	244	1	15	17	21	44	17	90	100
44102	175.50	178.60	3.10	0.5	130	1	19	23	10	46	11	75	100
44103	178.60	181.60	3.00	0.5	30	1	24	23	1	41	3	25	32
44104	181.60	184.60	3.00	0.2	16	1	32	21	1	36	2	35	30
44105	184.60	187.60	3.00	0.5	13	2	29	18	1	25	2	60	19
44106	187.60	190.40	2.80	0.4	92	1	26	17	6	29	8	185	31

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
18.30	20.40	2.10	0.00	0.0	50	23.81	0	0.00	0	
20.40	22.80	2.40	0.00	0.0	100	41.67	0	0.00	0	
22.80	24.50	1.70	50.00	*****	30	17.65	1	0.59	0	
24.50	26.50	2.00	90.00	*****	11	5.50	1	0.50	0	
26.50	28.50	2.00	140.00	*****	15	7.50	0	0.00	0	
28.50	31.20	2.70	220.00	*****	18	6.67	0	0.00	0	
31.20	35.00	3.80	90.00	*****	17	4.47	2	0.53	0	
35.00	36.60	1.60	30.00	*****	50	31.25	0	0.00	0	
36.60	38.40	1.80	60.00	*****	50	27.78	0	0.00	0	
38.40	39.90	1.50	50.00	*****	30	20.00	2	1.33	0	
39.90	41.40	1.50	30.00	*****	50	33.33	0	0.00	0	
41.40	42.50	1.10	10.00	909.1	17	15.45	0	0.00	0	
42.50	43.80	1.30	20.00	*****	30	23.08	1	0.77	0	
43.80	46.00	2.20	30.00	*****	19	8.64	0	0.00	0	
47.50	49.50	2.00	90.00	*****	25	12.50	0	0.00	0	
51.00	53.00	2.00	120.00	*****	18	9.00	0	0.00	0	
53.00	54.80	1.80	140.00	*****	16	8.89	0	0.00	0	
54.80	56.80	2.00	160.00	*****	12	6.00	0	0.00	0	
60.00	62.20	2.20	140.00	*****	14	6.36	0	0.00	0	

HOLE NUMBER: CL-91-13

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 39182.00N
EAST: 9932.00E
ELEV: 1290.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 151.50m
START DEPTH: 0.00m
FINAL DEPTH: 151.50m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 315° 0' 0"

DATE STARTED: August 30, 1991
DATE COMPLETED: August 31, 1991
DATE LOGGED: September 17, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
105.80	-	-46° 0'	ACID	OK		-	-	-	-	-	
151.50	-	-47° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.10	«CASING»	Overburden				
3.10 TO 5.20	«QUARTZ BX»	Black & white. Intense stockwork-breccia of pyritic black to grey quartz. Quartz near chalcedonic. Lithology appears to be amygdaloidal quartz eye porphyry.		«I SIL» of wallrock frags.	«3-5% py» v.f.g. in black quartz breccia matrix.	Hole collared in qtz breccia.
5.20 TO 12.80	«FAULT STWK»	Black & grey. Intensely argillized and fractured pyritic stockwork zone. Microveins and breccias of black quartz carry v.f.g. pyrite.		«S-I SIL, I-X ARG» Wall rock is variably silicifed, overprinting st. argillization where feldspar? phenos have gone to green clay.	«3-5% py» v.f.g. pyrite occurs in qtz microveins and breccias.	
12.80 TO 14.70	«FAULT»	Grey green. 90% clay gouge.		«X ARG»		
14.70 TO 69.70	«TUFF BX»	Black & green. Heterolithic tuff breccia. Lapilli to block size frags of flow banded rhyolite and feldspar-biotite-hornblende porphyry (about 60/40 for rhyolite). Entire interval has weak stockwork of barren calcite stringers. Some of the less altered rhyolite frags show weak spherulitic textures. Black banding is rare.		«S-I ARG» Generally strong argillization with 20% intense patches. «M-S HEM» about 50% of interval has red to black hematitic matrix.	«Tr py» is almost negligible.	NOTE: DRILLERS SCREWED UP FOOTAGE BLOCK 77' WAS SUBSTITUTED FOR 67' MEANING SUBSEQUENT FOOTAGES ARE 10' TOO HIGH AND HOLE IS ACTUALLY 148.4 M LONG NOT 151.5M.
	⟨14.0-14.6⟩					
	«FAULT»					
	⟨36.0-36.5⟩					
	«FAULT»		45			
	⟨39.1-40.6⟩					
	«FAULT»		10			
	⟨41.5-62.5⟩	General area of hematite rich breccia matrix.				
	⟨44.9-47.6⟩					
	«FAULT»		10			
	⟨56.6-58.6⟩					
	«FAULT»		45			
	⟨64.2-66.6⟩					
	FAULT		05			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
69.70 TO 72.00	«FAULT»	90% clay gouge @	45	«I-X ARG»		
72.00 TO 77.50	«FELDSPAR PORPHYRY»	Green, c.g. Feldspar-quartz porphyry flow with local chloritic specks. Specks are irregular, variably flattened, probably amygdules. Feldspar phenos 10-20% generally 3-5 mm, up to 1 cm. Quartz eyes, glassy, 5%, 3-5 mm. Uppermost 2 metres are veined and replaced by grungy pale green quartz @ Flow banding @	40 60	«M PROPYLITIC» Green specks suggest chlorite, feldspar phenos variably replaced by calcite or green clay. «M CHL, M CAL»	None?	
77.50 TO 85.30	«PORPHYRY BX»	Green. Lapilli to cobble size breccia of feldspar quartz porphyry unit. Chlorite filled amygdules are dense in some fragments, almost absent in others. Vary rare calcite microstringers.		«M PROPYLITIC» «M-S CHL, W CAL, W HEM» More abundant chloritic fragments and amygdules; feldspar phenos replaced by calcite; breccia matrix and rare frags are weakly hematitic.	None?	
85.30 TO 85.50	«FAULT»	Gouge.	40			
85.50 TO 98.80	«FELDSPAR PORPHYRY»	Pale green, c.g. Homogenous interval of feldspar (hornblende) porphyry. Quartz eyes now absent. Feldspar phenos 3-6 mm, 15-20%, fuzzy outlines. Weak calcite replacement. Hornblende (biotite?) needles 2-4 mm long - replaced by epidote or pale brown clay (?). Vague flow banding @	30	«W PROPYLITIC, W SIL» Only partial replacement of feldspars by calcite.	None	
98.80 TO 99.10	«FAULT»	Gouge	45			
99.10 TO 128.80	«FELDSPAR PORPHYRY BX» [110.6-113.6]	Red & green. Wide interval of interlayered porphyry flows and depositional breccias. Flows are commonly banded like rhyolite, but highlighted by chlorite and/or hematite. Breccias are commonly hematite rich, and locally weakly silicifed and bleached. Minor calcite stringers. Banding @	45 70	«PROPYLITIC» Feldspars variably replaced by calcite. «M CHL, M HEM» «S HEM» Breccia matrix.	None.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	┤119.0-121.0├			«W SIL» Bleached matrix.		
128.80 TO 131.30	«FELDSPAR PORPHYRY»	Pale green, c.g. Homogenous flow vaguely banded @	80	«W PROPYLITIC»	None.	
131.30 TO 134.90	«FS-HB-BI PORPHYRY»	Dark green, m.g. Strongly chloritized interval of homogenous feldspar (hornblende? biotite?) porphyry. Phenos are sub 4 mm, appear corroded, irregular. Upper contact is gradational, lower one is an unconformity.		«S PROPYLITIC, S CHL» All phenocrysts are replaced by chlorite.	None.	
134.90 TO 148.40	«FELDSPAR PORPHYRY BX»	Red & green. Similar to previous breccia interval, interlayered hematite breccia and banded flows with prominent feldspar phenos and lesser chloritized mafics. Minor calcite stringers. Banding @	40 80	«M PROPYLITIC» «M CHL, M HEM» Feldspars variably replaced by calcite, mafics replaced by hematite.	«Tr py»	
	148.4 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44276	3.10	5.20	2.10	4.3	289	1	28	9	18	16	59	3120	40	
44277	5.20	8.30	3.10	3.6	1037	1	37	16	36	37	113	1145	100	
44278	8.30	12.80	4.50	3.3	482	1	24	12	25	33	51	1300	100	
44279	12.80	14.80	2.00	0.1	29	2	32	25	2	137	1	215	60	
44280	17.50	19.80	2.30	0.3	19	1	29	20	1	47	2	85	20	
44281	22.50	24.50	2.00											
44282	26.50	28.50	2.00	0.1	27	1	24	20	1	42	2	95	23	
44283	30.50	32.50	2.00	0.4	19	1	25	18	1	44	1	80	17	
44284	34.50	36.00	1.50	0.4	11	1	19	18	1	36	4	155	13	
44285	36.00	36.50	0.50	0.4	38	2	27	26	1	42	2	65	15	
44286	36.50	38.50	2.00	0.5	25	2	25	24	1	48	49	55	21	
44287	41.50	43.50	2.00	0.4	27	1	28	20	1	38	3	65	40	
44288	45.50	47.60	2.10	0.2	19	1	25	18	1	37	1	60	50	
44289	50.60	52.60	2.00	0.2	16	2	26	19	1	38	3	55	23	
44290	54.60	56.60	2.00	0.4	19	2	23	21	1	40	5	50	20	
44291	56.60	58.60	2.00	0.3	16	1	27	17	1	38	2	110	22	
44292	58.60	60.60	2.00	0.4	12	2	25	19	1	34	4	100	17	
44293	62.20	64.20	2.00	0.1	41	2	27	19	1	50	3	90	31	
44294	64.20	65.00	0.80	0.4	70	1	23	21	4	42	6	160	23	
44295	65.00	66.60	1.60	0.3	67	1	29	18	1	36	9	145	21	
44296	68.60	69.70	1.10	0.5	22	1	24	21	1	39	2	205	12	
44297	69.70	72.00	2.30	0.3	39	1	28	17	2	41	1	155	50	
44298	72.00	74.00	2.00	0.3	14	2	24	20	1	42	1	75	70	
44299	83.30	85.50	2.20											
44314	85.50	87.50	2.00	0.5	15	1	17	18	1	35	1	90	13	
44315	90.50	92.50	2.00	0.2	10	1	17	20	1	36	2	60	11	
44316	99.10	101.10	2.00	0.3	17	2	21	18	1	44	2	65	10	
44317	103.10	105.10	2.00	0.4	11	1	24	17	1	34	4	65	10	
44318	110.60	112.60	2.00	0.5	13	2	25	15	1	33	1	70	7	
44319	119.00	121.00	2.00	0.4	17	1	23	17	1	41	1	45	8	

Sample	From (m)	To (m)	Length (m)										
44276	3.10	5.20	2.10	4.3	289	1	28	9	18	16	59	3120	40
44277	5.20	8.30	3.10	3.6	1037	1	37	16	36	37	113	1145	100
44278	8.30	12.80	4.50	3.3	482	1	24	12	25	33	51	1300	100
44279	12.80	14.80	2.00	0.1	29	2	32	25	2	137	1	215	60
44280	17.50	19.80	2.30	0.3	19	1	29	20	1	47	2	85	20
44281	22.50	24.50	2.00										
44282	26.50	28.50	2.00	0.1	27	1	24	20	1	42	2	95	23
44283	30.50	32.50	2.00	0.4	19	1	25	18	1	44	1	80	17
44284	34.50	36.00	1.50	0.4	11	1	19	18	1	36	4	155	13
44285	36.00	36.50	0.50	0.4	38	2	27	26	1	42	2	65	15
44286	36.50	38.50	2.00	0.5	25	2	25	24	1	48	49	55	21
44287	41.50	43.50	2.00	0.4	27	1	28	20	1	38	3	65	40
44288	45.50	47.60	2.10	0.2	19	1	25	18	1	37	1	60	50
44289	50.60	52.60	2.00	0.2	16	2	26	19	1	38	3	55	23
44290	54.60	56.60	2.00	0.4	19	2	23	21	1	40	5	50	20
44291	56.60	58.60	2.00	0.3	16	1	27	17	1	38	2	110	22
44292	58.60	60.60	2.00	0.4	12	2	25	19	1	34	4	100	17
44293	62.20	64.20	2.00	0.1	41	2	27	19	1	50	3	90	31
44294	64.20	65.00	0.80	0.4	70	1	23	21	4	42	6	160	23
44295	65.00	66.60	1.60	0.3	67	1	29	18	1	36	9	145	21
44296	68.60	69.70	1.10	0.5	22	1	24	21	1	39	2	205	12
44297	69.70	72.00	2.30	0.3	39	1	28	17	2	41	1	155	50
44298	72.00	74.00	2.00	0.3	14	2	24	20	1	42	1	75	70
44299	83.30	85.50	2.20										
44314	85.50	87.50	2.00	0.5	15	1	17	18	1	35	1	90	13
44315	90.50	92.50	2.00	0.2	10	1	17	20	1	36	2	60	11
44316	99.10	101.10	2.00	0.3	17	2	21	18	1	44	2	65	10
44317	103.10	105.10	2.00	0.4	11	1	24	17	1	34	4	65	10
44318	110.60	112.60	2.00	0.5	13	2	25	15	1	33	1	70	7
44319	119.00	121.00	2.00	0.4	17	1	23	17	1	41	1	45	8

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 39487.00N
EAST: 9805.00E
ELEV: 1311.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 124.10m
START DEPTH: 0.00m
FINAL DEPTH: 124.10m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 125° 0' 0"

DATE STARTED: August 31, 1991
DATE COMPLETED: September 1, 1991
DATE LOGGED: September 11, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
91.40	-	-47° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 34.80	«CASING»	Overburden				
34.80 TO 49.20	«QTZ-CAL-PY STWK»	Grey-green. Moderate to strong stockwork of early pyritic quartz and late barren calcite (50/50). Lithology is weakly vesicular feldspar porphyry, flow. Amygdules are qz lined, calcite filled. Flatten to planes @ Veins @	 45 60 40	«M-S ARG» «S-I SIL» «M CHL» Chlorite or green clay replaces feldspar phenocrysts. Argillic alteration is pervasive, silicification is patchy.	«1-3% py» in quartz stringers.	Weakly amygdaloidal flow unit with abundant feldspar phenos.
	┤38.4-39.1├ «SIL FAULT»	Blue. Partially quartz healed fault breccia, with strong blue quartz stockwork breccia. Minor gouge.		«I ARG, I SIL» Intensely argillized wallrock frags.	«1% py» in quartz stringers.	Blue opaline quartz.
	┤39.6-40.7├ «STWK BX»	Grey. Strong pyritic quartz stockwork to breccia. f.g. pyrite occurs as selvages in early quartz rimming wallrock frags. Minor blue quartz is later Calcite is latest.		«S ARG, S SIL» Strongly argillized wallrock, with some remnant chlorite or green clay altered feldspar phenos.	«1-2% py» in early grey quartz.	
	┤44.0-44.5├ «FAULT»	Gouge		«X ARG»		
	┤47.4-47.6├ «FAULT»	Gouge		«X ARG»		
49.20 TO 52.00	«JIGSAW BX»	Pale green. Interesting quartz jigsaw breccia. Veining is flow banding (or beddding) parallel at roughly 1 cm spacings, with veins also cutting perpindicularly between planes. Veins all less than 5 mm wide @	 25 30	«M ARG, M SIL» Alteration is pervasive and homogenous, host rock is weakly chloritized, feldspars gone to green clay.	«Tr py» in hairline quartz stringers.	
52.00 TO 53.20	«FAULT»	80% clay gouge with abundant broken pyritic quartz vein fragments.		«X ARG»		
53.20 TO 55.70	«QTZ STWK»	Weak quartz, calcite poor stockwork. Hairline fractures filled by qz-chlorite-pyrite. Veins @ Lithology is different, non-vesicular feldspar porphyritic, siliceous. Hematite highlights vague flow banding. A mottled spherulitic texture also seems to follow possible flow planes. Interpreted as a f.g. feldspar porphyry sill or dyke (bounded by gouge zones above and below).	50	«W ARG, S SIL» «W CHL, HEM»	«Tr py» in chloritic stringers.	Feldspar porphyry dyke bounded by gouge zones above and below.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
55.70 TO 60.50	«FAULT STWK»	Intensely argillized and sheared fault zone of amygdaloidal intermediate flow fragments and pyritic quartz vein fragments. Amygdules mm to cm size lined by chlorite, filled by quartz and/or calcite.		«X ARG» 80% clay gouge.	«1% py» in disrupted quartz stringers.	
60.50 TO 73.00	«ARG ZONE»	Green, f.g. Wide zone of intense argillization, with minor gougy zones and weakly developed pyrite stockwork. Remnant hematitic flow bands(?) and flattened chloritic amygdules give attitudes of	50	«I-X ARG» is pervasive «M SIL» is patchy «M CHL» lining amygdules.	«Tr py» in "hair net" fractures.	One 2 cm amygdule is filled by banded quartz in its lower half and c.g. calcite in the upper half, giving horizontal @ 45 degrees to core axis.
	⎨65.6-65.9⎬ «GOUGE»			«X ARG»		
	⎨67.5-67.8⎬ «QTZ VEIN»	10 cm banded qtz vein.		«I SIL»		
	⎨69.2-69.6⎬ «GOUGE»			«X ARG»		
	⎨69.7-73.0⎬ «AMYG FLOW»	Less altered, more competent interval of amygdaloidal flow unit. Several 1 cm blue quartz filled amygdules, flattened @ Moderate pyritic quartz stockwork.	40	«M-S ARG»	«1% py» in qtz stringers.	
73.00 TO 79.20	«FAULT STWK»	Grey. Similar to previous intervals but more intense argillic alteration and weak to moderately developed pyritic quartz stockwork.		«I-X ARG»	«1-2% py» in disrupted quartz stringers	
79.20 TO 82.80	«STWK BX»	Grey. Intensely argillized, gougy zone of strong pyritic quartz stockwork and breccia veining. Minor late calcite. Pyrite is carried by early quartz rimming intensely argillized amygdaloidal feldspar porphyry. Interval is highly disrupted but veins appear to trend @	20	«I-X ARG» of amygdaloidal feldspar porphyry host rock.	«1-3% py» in early grey quartz rimming wallrock fragments.	Centre of mineralized "zone"/
82.80 TO 85.30	«TUFF BX»	Pale green. Intensely argillized breccia, transitional from mainly amygdaloidal frags in top half to feldspar porphyry frags in lower half.		«I-X ARG, SER?» Intensity of alteration suggests that breccia is probably fault related.		Possible sericitic alteration.
85.30 TO 90.60	«FELDSPAR PORPHYRY BX»	Green, m.g. Monomictic hematitic matrix block breccia of m.g. feldspar porphyry flow. Sparse (10%) feldspar phenos gone to white clay. Vague flow banding @	40	«S ARG» Possible sericite. «M HEM» matrix, also locally silicified	«Tr py» on late fractures.	
		Minor gougy fractures. Contact @	50 30			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
90.60 TO 124.10	«LAPILLI BX»	Pale green & red. Pale green bleached locally hematitic crowded lapilli breccia of nondescript green ash tuff? frags. Some frags show bedding or flow banding. Sparse calcite stringers are barren.		«M-S ARG» Pale green bleaching «M CHL»	«Tr py» disseminated.	
	┤102.5-107.3├			«S HEM» matrix.		
	┤111.3-118.0├			«M HEM» matrix.		
	124.1	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44235	34.80	37.00	2.20	0.5	194	1	26	24	2	62	17	385	19	
44236	37.00	38.40	1.40	0.3	95	1	28	21	1	58	4	445	12	
44237	38.40	39.10	0.70	0.7	47	1	17	20	1	41	3	1015	13	
44238	39.10	39.60	0.50	0.5	20	1	20	21	1	55	1	550	10	
44239	39.60	40.70	1.10	0.4	27	1	18	20	1	45	6	1280	14	
44240	40.70	42.70	2.00	0.6	20	1	8	21	1	38	2	470	12	
44241	42.70	44.70	2.00	0.5	28	1	8	19	1	42	1	330	22	
44242	44.70	46.70	2.00	0.7	30	3	19	28	2	58	5	310	19	
44243	46.70	47.80	1.10	0.5	35	2	22	22	1	51	2	490	13	
44244	47.80	49.20	1.40	0.4	18	2	20	21	1	57	1	330	8	
44245	49.20	50.60	1.40	0.7	30	2	18	21	1	54	3	475	30	
44246	50.60	52.00	1.40	0.7	27	2	19	23	1	50	2	410	14	
44247	52.00	53.20	1.20	0.6	65	1	16	20	2	45	4	675	15	
44248	53.20	55.70	2.50	0.3	28	2	40	22	1	60	2	450	100	
44249	55.70	57.70	2.00	0.4	85	1	27	19	4	58	2	560	35	
44250	57.70	59.10	1.40	0.7	239	1	26	26	18	69	14	550	17	
44251	59.10	60.50	1.40	0.4	185	2	25	23	13	72	2	440	16	
44252	60.50	62.50	2.00	0.3	54	2	23	22	3	65	6	360	27	
44253	62.50	64.50	2.00	0.2	80	1	21	23	3	59	10	560	29	
44254	64.50	66.50	2.00	0.5	109	2	20	24	5	52	13	500	50	
44255	66.50	67.50	1.00	0.3	78	2	27	23	6	73	5	610	16	
44256	67.50	67.80	0.30	0.7	226	1	13	12	14	19	8	500	4	
44257	67.80	69.20	1.40	0.8	170	1	25	22	17	63	3	530	15	
44258	69.20	71.20	2.00	0.5	132	2	28	19	10	60	2	380	28	
44259	71.20	73.00	1.80	0.5	84	2	25	23	10	62	4	305	20	
44260	73.00	75.00	2.00	0.3	104	2	34	25	18	69	3	400	29	
44261	75.00	77.00	2.00	0.7	187	1	17	22	6	61	11	610	24	
44262	77.00	79.20	2.20	0.7	248	1	18	20	16	68	15	535	27	
44263	79.20	81.40	2.20	1.6	361	1	16	16	22	54	53	435	17	
44264	81.40	82.80	1.40	1.6	325	1	22	19	24	51	62	645	10	
44265	82.80	83.30	0.50	0.9	211	2	22	24	12	72	16	380	12	
44266	83.30	85.30	2.00	0.6	34	2	16	20	1	43	4	70	16	
44267	85.30	87.70	2.40	0.3	40	1	13	22	1	44	2	125	36	
44268	90.60	92.60	2.00	0.9	30	3	29	22	1	35	1	70	14	
44269	100.50	102.50	2.00	0.8	13	3	26	21	1	25	3	120	7	
44270	104.50	107.50	3.00	0.4	9	2	27	19	1	18	2	60	17	
44271	107.50	109.30	1.80	0.5	13	1	38	14	1	15	2	75	23	

Sample	From (m)	To (m)	Length (m)										
44235	34.80	37.00	2.20	0.5	194	1	26	24	2	62	17	385	19
44236	37.00	38.40	1.40	0.3	95	1	28	21	1	58	4	445	12
44237	38.40	39.10	0.70	0.7	47	1	17	20	1	41	3	1015	13
44238	39.10	39.60	0.50	0.5	20	1	20	21	1	55	1	550	10
44239	39.60	40.70	1.10	0.4	27	1	18	20	1	45	6	1280	14
44240	40.70	42.70	2.00	0.6	20	1	8	21	1	38	2	470	12
44241	42.70	44.70	2.00	0.5	28	1	8	19	1	42	1	330	22
44242	44.70	46.70	2.00	0.7	30	3	19	28	2	58	5	310	19
44243	46.70	47.80	1.10	0.5	35	2	22	22	1	51	2	490	13
44244	47.80	49.20	1.40	0.4	18	2	20	21	1	57	1	330	8
44245	49.20	50.60	1.40	0.7	30	2	18	21	1	54	3	475	30
44246	50.60	52.00	1.40	0.7	27	2	19	23	1	50	2	410	14
44247	52.00	53.20	1.20	0.6	65	1	16	20	2	45	4	675	15
44248	53.20	55.70	2.50	0.3	28	2	40	22	1	60	2	450	100
44249	55.70	57.70	2.00	0.4	85	1	27	19	4	58	2	560	35
44250	57.70	59.10	1.40	0.7	239	1	26	26	18	69	14	550	17
44251	59.10	60.50	1.40	0.4	185	2	25	23	13	72	2	440	16
44252	60.50	62.50	2.00	0.3	54	2	23	22	3	65	6	360	27
44253	62.50	64.50	2.00	0.2	80	1	21	23	3	59	10	560	29
44254	64.50	66.50	2.00	0.5	109	2	20	24	5	52	13	500	50
44255	66.50	67.50	1.00	0.3	78	2	27	23	6	73	5	610	16
44256	67.50	67.80	0.30	0.7	226	1	13	12	14	19	8	500	4
44257	67.80	69.20	1.40	0.8	170	1	25	22	17	63	3	530	15
44258	69.20	71.20	2.00	0.5	132	2	28	19	10	60	2	380	28
44259	71.20	73.00	1.80	0.5	84	2	25	23	10	62	4	305	20
44260	73.00	75.00	2.00	0.3	104	2	34	25	18	69	3	400	29
44261	75.00	77.00	2.00	0.7	187	1	17	22	6	61	11	610	24
44262	77.00	79.20	2.20	0.7	248	1	18	20	16	68	15	535	27
44263	79.20	81.40	2.20	1.6	361	1	16	16	22	54	53	435	17
44264	81.40	82.80	1.40	1.6	325	1	22	19	24	51	62	645	10
44265	82.80	83.30	0.50	0.9	211	2	22	24	12	72	16	380	12
44266	83.30	85.30	2.00	0.6	34	2	16	20	1	43	4	70	16
44267	85.30	87.70	2.40	0.3	40	1	13	22	1	44	2	125	36
44268	90.60	92.60	2.00	0.9	30	3	29	22	1	35	1	70	14
44269	100.50	102.50	2.00	0.8	13	3	26	21	1	25	3	120	7
44270	104.50	107.50	3.00	0.4	9	2	27	19	1	18	2	60	17
44271	107.50	109.30	1.80	0.5	13	1	38	14	1	15	2	75	23

HOLE NUMBER: CL-91-15

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID:
NORTH: 39487.00N
EAST: 9805.00E
ELEV: 1315.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -70° 0' 0"
LENGTH OF THE HOLE: 160.00m
START DEPTH: 0.00m
FINAL DEPTH: 160.00m

COLLAR GRID AZIMUTH: ° ' "
COLLAR ASTRONOMIC AZIMUTH: 125° 0' 0"

DATE STARTED: September 1, 1991
DATE COMPLETED: September 2, 1991
DATE LOGGED: September 12, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE: BELOW 61.9-SUBTRACT 3.048M, 10' BLOCK OUT BY 1 RUN

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
121.90	-	-71° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 30.00	«CASING/ OVERBURDEN»					
30.00 TO 78.30	«AMYGDA-LOIDAL INT. FLOW»	M. green, f.g. A monotonous sequence of thick intermediate flows characterized by abundant qz and sometimes calcite filled amygdules. These show a variety of morphologies, from pipe to rounded, spherical forms. The groundmass is fine grained to aphanitic. Phenocrysts of euhedral plagioclase and possibly hornblende occur sporadically. The mafic minerals are replaced by chlorite Most of this interval has been disrupted by diffuse fault zones which have caused crushing of the rock. This becomes gougy in places. No significant differences in lithology noted across these structures, therefore they are probably minor.		«M-S ARG+SER, W CL» The entire interval is altered to a very soft green texture. This is interpreted to be argillic alteration, however, there could be a significant sericite and chlorite component. Weak calcite is also noted in places.	«Tr-3% py» Very sparse throughout most of the interval. Locally pyrite stockworks are developed. These only occur over narrow widths (5-25 cm).	
┤30.0-35.7├ «CRUSH ZONE -FAULT»		Pulverized zone of the amygdaloidal flow. This could be partially a near surface feature or a fault zone. No distinct planes seen. Clasts of qz after filled amygdules and fragments of qz-py stringers noted.			«1% py» Mostly in clasts of qz vein material. 1-5 cm patches of crushed py stringers also noted.	
┤35.9-36.25├ «QZ-PY STRINGER ZONE»		Less disrupted zone of qz-py stockwork. Qz stringers contain varying amounts of calcite. Fine py also.		«S ARG, M CL, M CA»	«5% py» mainly in qz-calcite stringers. Also as envelopes around microfractures	
┤40.8-47.9├ «PY STWK»		Py veinlets present throughout the interval. Density reaches over 3-/m. Py veinlets associated with qz-calcite veins. Sometimes pyrite forms envelopes around them.		«S-I ARG» Bright green chlorite blebs also noted.	«5% py» Fine grained py stockwork.	
┤44.1-45.4├ «DISRUPTED ZONE-FAULT BX»						
┤45.4-57.4├ «PY STWK»		The stockwork is disrupted by wide crushed and gougy breccia zones. these are post-mineral faults		«I ARG» Groundmass altered to very soft green clay. Probably a clay-chlorite mixture.	«5% py»	
┤60.0-61.0├ «FAULT ZONE»						
┤62.7-74.2├						

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	«FAULT ZONE» ⌊74.2-78.3⌋	Crushed and brecciated core - unhealed.				
	«AMYGDAL-OIDAL FLOW»	Green. Relatively intact interval of amygdaloidal andesite. Fewer amygdules present. Most are chlorite filled and up to 4 mm in diameter. Euhedral plagioclase phenos also finer grained than higher in the hole. These reach 3 mm in length.		«I ARG» Pervasive clay alteration. Pods of fine grained calciite abundant lower in interval. These may be vein frags or irregular amygdules.	«Tr py» as disseminated, microscopic crystals in groundmass and as 1 mm envelopes around sparse qz stringers.	
	⌊75.45-75.6⌋ «SIL BX/ STWK»	A brecciated and healed section of the host rock. Irregular qz-py stringers have invaded breccia zone. Clasts are angular and range from 1 mm to 4 cm across. Clast supported texture.		«W-M SIL, I ARG»	«3% py» in vein margins and as rims on angular clasts of wallrock.	
78.30 TO 88.00	«SILICIFED BX»	Dark grey. A zone of intense silica flooding of a wallrock breccia. The unit is made up of angular clasts of amygdaloidal flow material which have been rebroken by later stockworking. At least 3 generations of brecciation and veining are noted. Initial brecciation may have been fault related. This is shattered and stockworked by numerous qz-py stringers and clasts of the original breccia were silicified. Late crosscutting vuggy qz veinlets, barren of pyrite, form the latest event. Vein-like breccias cut the zone. There are at least two generations noted. Lower contact @ Lower contact of zone is knife sharp suggesting possible late fault movement.	50	«X SIL» Pervasive silicification of clasts, healing of crosscutting breccia and qz stockworking. Multistage silicification, at least three generations noted - possibly more. Late white quartz veins are drusy.	«3-10% py» Mostly as stockworking of qz-py veinlets, but also as finely disseminated - dusty pyrite in the siliceous breccia matrix. Replacement of wallrock clasts by fine pyrite noted at 185.7 m. More pyrite rims and invades andesite clasts.	
88.00 TO 88.50	«RHYOLITE»	A moderately silicifed interval of perlitic rhyolite. This zone exhibits incipient hydrothermal brecciation and strong qz stockworking. Parallel qz-py veins may be replacing original flow banding. Lower contact @ 88.5	40	«M SIL, M-S ARG» Pervasive argillic alteration with patchy silicification and qz stockworking. Green tints could be due to weak chloritization. Qz microveins have 1-2 mm silicified envelopes.	«3% py» Mostly as patches and crystal aggregates up to 1 cm across. Py does not seem to be the same event as the qz stockwork - perhaps earlier?	
88.50 TO 91.60	«SILICIFIED HETERO-LITHIC BX» ⌊90.0-91.2⌋	Green & grey, m.- c.g. A fairly well sorted, possibly depositional breccia containing angular fragments of several types. Glassy and perlitic rhyolite are the dominant type. Others include argillized andesite and bedded ash tuff. Clasts range in size from about 1 mm to over 5 cm. Most however average about 1-2 cm.		«M-S SIL, W ARG» The interval is variably silicified. Where most intense the breccia matrix has been healed and pervaded by qz. In these areas, vuggy cavities are abundant. «S SIL»	«Tr-1% py» Less abundant than previous interval. Most occurs in narrow breccia veins (1-2 cm) near upper contact.	Lapilli breccia?

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	┤91.5-91.6├			«S SIL»		
91.60 TO 94.80	«PLAGIO-CLASE-BI PORPHYRY»	Grey, f.g. A fine to aphanitic intermediate flow or dyke containing about 15-20% , 0.5-1.0 cm plagioclase phenos. Lath shaped biotites and rare rounded qz crystals also noted. No flow banding or bedding features seen, suggesting an intrusive. The host is moderately to strongly siliceous. This may in part be a primary feature.		«M-S SIL, W CL» «QZ STWK» The interval is stockworked by two generations of qz stringers. Early ones have well developed chlorite (+py) envelopes up to 10 mm wide. These cut and are cut by grey to white quart veinlets. The youngest veins have large vuggy cavities with euhedral nailhead spar calcite crystals.	«Tr py» Mostly with chlorite in vein envelopes, but also as sparse disseminations in the porphyry groundmass.	
94.80 TO 109.10	«FLOW BANDED RHYOLITE/ RHYOLITE BX»	Grey-green, f.g.-a. A complex unit composed of flow banded glassy and perlitic rhyolite and rhyolite breccia. Intervals of breccia are strongly aligned and flattened suggesting welding. A pink coloured matrix to breccia intervals may be caused by K-feldspar crystals. This unit is most likely a semi-plastic/brittle glassy rhyolite flow. Orbicular or spherulitic textures result from devitrification.		«W SIL, W ARG» Not very altered. Fine qz stringers with 1 mm silica envelopes occur through interval.	«Tr py» in late veinlets.	Glassy-Obsidian flow.
109.10 TO 109.90	«FAULT BX/ GOUGE»	Green grey. Rubby clay healed fault breccia. The rock is crushed into densely packed fragments held together by a yellow-green clay matrix. The top third is dominated by rhyolite fragments. These give way to intensely argillized tuff near bottom.		«S ARG» Calcite clasts - vein material also noted.	«Tr py»	
109.90 TO 121.00	«RHYOLITE» ┤109.9-114.6├	Flow banded rhyolite with no glassy remnants. Intense argillic alteration near top of the interval may have destroyed these textures. Pale green blebs may be relict feldspar phenos.		«M SER, W CL» Intense yellow green alteration looks like sericite on fracture surfaces. Patchy chlorite also noted. Chlorite envelopes present around widespread qz stringers. «I SER» Degree of sericitization decreases down hole.		
121.00 TO 121.60	«PYRO-CLASTIC BX»	A narrow interval of heterolithic lapilli breccia. Possibly an inter flow unit. Made up mostly of sericitic rhyolite clasts but with pinkish and dark grey clasts mixed in. These may also be rhyolite. Clasts are poorly sorted and angular. Size ranges from 2 mm - 3.5 cm. Fragment supported		«S SER, W CL» Strong sericite alteration of matrix, also patches of chlorite noted.	«Tr-15 py» as patches replacing some clasts.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
121.60 TO 125.20	«RHYOLITE» {122.3-123.1} «GROUND AND BROKEN CORE»	Yellow-grey, f.-m.g. A moderately sericitized, fine to medium grained equigranular rhyolite. The rock consists of densely packed qz crystals about 1 mm across in a groundmass of sericitized feldspars. Despite being sericitized the rock is very hard. This reflects the amount of free qz present (30-40%). Weak flow banding textures noted @ 123.9 m.		«M SER, W CL» Moderately sericitized with patchy chloritization. Chlorite also occurs along microfractures.	«Tr py» as disseminated cubic crystals.	
125.20 TO 125.40	«FAULT»	Lower contact @ 125.4 m	20			
125.40 TO 129.00	«FLOW BANDED LATITE/ DACITE»	Pink-green, a.-f.g. Very fine grained, almost glassy flow banded unit. Banding is highlighted by parallel chlorite stringers. Bleaching around these gives the rock a striped and/or mottled aspect. In places the rock is stained pink or brown. This appears to be caused by hematite; pink may also be primary KF.		«W CL, W SER»	«Tr py» Py microveins noted in places. These have chlorite envelopes.	
129.00 TO 132.00	«PLAGIO-CLASE - BI PORPHYRY»	Green-grey. Sill or dyke of clean looking feldspar biotite porphyry. PF phenos are euhedral and comprise about 15-25% of the rock. Biotites are smaller (2-5 mm) and make up about 5%. All phenos are randomly oriented.		«W CL, W-M SER» Mafics are chloritized and the fine groundmass is pervasively sericitized.		
132.00 TO 160.50	«FLOW BANDED LATITE» {132.0-132.1} «BRECCIA» {138.8-138.9} «BLACK PYRITIC QZ	Grey. Similar to the previous latite unit. This section consists of one or perhaps several thick flows. There is very little textural variation. The only significant textural changes are from porphyritic (FX) to aphyric. Pinkish colouration in places is attributed to hematitic staining. Silicified interflow breccia?		«M SER, W CL» Moderate pervasive sericitization. «M-S SIL»	«Tr py»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	VEIN» ┤149.0-149.2├			«I SIL» Patch of intense grey silicification. Adjacent wall rocks are strongly sericitized and locally hydrobrecciated.		
	┤149.2-153.1├	Hydrobrecciation and qz stockworking on a small scale.		«S SER, W SIL» Patchy silificiation over 2-10 cm lengths.	«Tr py» as rounded patches and aggregates.	
	┤153.1-154.5├ «HEMATIZED FLOW BX»	Dark brown. A very dense unit composed of flow banded latite fragments in a similar matrix. Could be a flow top or autobreccia unit. Dark colour due to pervasive dark hematite and chlorite		«S HE, M CL» Pervasive chloritization and hematization of breccia interval.	«Tr py»	
	160.0 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44107	29.60	32.60	3.00	0.3	72	2	44	28	3	70	2	545	100	
44108	32.60	35.90	3.30	0.5	34	2	26	21	5	61	1	530	100	
44109	35.90	37.70	1.80	0.5	22	2	25	22	3	53	4	335	26	
44110	37.70	39.70	2.00	0.3	23	2	25	21	7	57	2	405	50	
44111	39.70	41.60	1.90	0.4	25	3	22	21	3	60	3	360	100	
44112	41.60	42.40	0.80	0.5	37	1	23	22	1	52	2	845	50	
44113	42.40	44.10	1.70	0.4	52	2	25	20	1	60	9	595	50	
44114	44.10	45.50	1.40	0.1	37	1	22	21	1	61	5	755	100	
44115	45.50	47.50	2.00	0.1	83	1	26	20	6	59	2	700	14	
44116	47.50	47.90	0.40	0.1	69	1	31	18	5	65	7	765	8	
44117	47.90	49.90	2.00	0.3	75	2	30	21	11	67	3	595	14	
44118	49.90	50.80	0.90	0.4	45	2	23	20	9	60	3	410	7	
44119	50.80	52.80	2.00	0.5	54	2	23	21	10	71	2	340	9	
44120	52.80	54.80	2.00	0.9	164	1	24	21	12	58	16	485	16	
44121	54.80	57.00	2.20	0.9	241	2	29	20	15	61	48	3650	18	
44122	57.00	58.00	1.00	0.6	162	1	23	23	8	59	13	3450	12	
44123	58.00	60.00	2.00	0.6	204	2	27	22	9	71	29	2095	18	
44124	60.00	62.00	2.00	0.4	275	2	26	20	16	67	35	725	27	
44125	62.00	65.00	3.00	0.5	121	2	36	25	13	66	4	895	100	
44126	65.00	67.00	2.00	0.7	137	1	35	23	7	57	8	635	100	
44127	67.00	69.00	2.00	0.5	90	2	23	25	4	67	3	405	100	
44128	69.00	71.00	2.00	0.5	161	1	23	25	8	70	51	475	25	
44129	71.00	73.00	2.00	1.2	239	1	41	19	19	69	57	455	100	
44130	73.00	74.30	1.30	1.3	294	2	49	20	15	72	64	510	8	
44131	74.30	76.30	2.00	0.2	68	2	37	22	7	68	1	420	35	
44132	76.30	78.30	2.00	0.8	138	2	23	23	11	72	6	495	100	
44133	78.30	79.80	1.50	1.9	241	1	14	25	17	56	67	615	18	
44134	79.80	81.80	2.00	2.9	322	1	13	17	26	39	59	545	6	
44135	81.80	83.80	2.00	2.2	359	1	13	18	24	45	62	305	10	
44136	83.80	85.80	2.00	2.5	322	1	12	19	23	40	56	290	10	
44137	85.80	86.80	1.00	2.8	341	1	14	16	25	43	72	380	8	
44138	86.80	87.90	1.10	2	321	1	15	19	26	36	59	555	8	
44139	87.90	90.00	2.10	0.4	120	1	18	17	8	48	23	250	18	
44140	90.00	91.60	1.60	0.6	32	1	19	14	1	31	4	115	7	
44141	91.60	93.60	2.00	0.7	25	1	10	14	1	26	8	100	9	
44142	93.60	94.80	1.20	0.5	23	1	21	14	1	31	2	65	9	
44143	94.80	96.80	2.00	0.2	46	1	17	19	1	40	1	130	16	
44144	96.80	98.80	2.00	0.3	73	1	26	23	1	50	9	185	100	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44145	98.80	100.80	2.00	0.2	88	1	24	23	2	42	6	160	100
44146	100.80	102.80	2.00	0.2	86	1	23	20	1	45	57	165	30
44147	102.80	104.80	2.00	0.3	47	1	30	22	1	42	3	220	21
44148	104.80	106.80	2.00	0.5	26	1	24	22	1	35	2	155	15
44149	106.80	108.80	2.00	0.3	30	1	26	21	1	47	6	125	15
44150	108.80	109.90	1.10	0.5	32	1	26	22	1	34	4	100	9
44226	109.90	111.90	2.00	0.8	40	1	45	19	1	6	5	110	50
44227	111.90	113.90	2.00	0.7	12	1	40	19	1	14	3	60	19
44228	113.90	115.90	2.00	0.7	21	1	43	18	1	26	2	80	15
44229	115.90	117.90	2.00	0.8	20	1	49	18	1	23	2	85	20
44230	117.90	119.90	2.00	0.6	18	1	49	17	1	22	1	50	50
44231	119.90	121.60	1.70	0.5	32	1	57	20	1	31	5	110	50

Sample	From (m)	To (m)	Length (m)										
44107	29.60	32.60	3.00	0.3	72	2	44	28	3	70	2	545	100
44108	32.60	35.90	3.30	0.5	34	2	26	21	5	61	1	530	100
44109	35.90	37.70	1.80	0.5	22	2	25	22	3	53	4	335	26
44110	37.70	39.70	2.00	0.3	23	2	25	21	7	57	2	405	50
44111	39.70	41.60	1.90	0.4	25	3	22	21	3	60	3	360	100
44112	41.60	42.40	0.80	0.5	37	1	23	22	1	52	2	845	50
44113	42.40	44.10	1.70	0.4	52	2	25	20	1	60	9	595	50
44114	44.10	45.50	1.40	0.1	37	1	22	21	1	61	5	755	100
44115	45.50	47.50	2.00	0.1	83	1	26	20	6	59	2	700	14
44116	47.50	47.90	0.40	0.1	69	1	31	18	5	65	7	765	8
44117	47.90	49.90	2.00	0.3	75	2	30	21	11	67	3	595	14
44118	49.90	50.80	0.90	0.4	45	2	23	20	9	60	3	410	7
44119	50.80	52.80	2.00	0.5	54	2	23	21	10	71	2	340	9
44120	52.80	54.80	2.00	0.9	164	1	24	21	12	58	16	485	16
44121	54.80	57.00	2.20	0.9	241	2	29	20	15	61	48	3650	18
44122	57.00	58.00	1.00	0.6	162	1	23	23	8	59	13	3450	12
44123	58.00	60.00	2.00	0.6	204	2	27	22	9	71	29	2095	18
44124	60.00	62.00	2.00	0.4	275	2	26	20	16	67	35	725	27
44125	62.00	65.00	3.00	0.5	121	2	36	25	13	66	4	895	100
44126	65.00	67.00	2.00	0.7	137	1	35	23	7	57	8	635	100
44127	67.00	69.00	2.00	0.5	90	2	23	25	4	67	3	405	100
44128	69.00	71.00	2.00	0.5	161	1	23	25	8	70	51	475	25
44129	71.00	73.00	2.00	1.2	239	1	41	19	19	69	57	455	100
44130	73.00	74.30	1.30	1.3	294	2	49	20	15	72	64	510	8
44131	74.30	76.30	2.00	0.2	68	2	37	22	7	68	1	420	35
44132	76.30	78.30	2.00	0.8	138	2	23	23	11	72	6	495	100
44133	78.30	79.80	1.50	1.9	241	1	14	25	17	56	67	615	18
44134	79.80	81.80	2.00	2.9	322	1	13	17	26	39	59	545	6
44135	81.80	83.80	2.00	2.2	359	1	13	18	24	45	62	305	10
44136	83.80	85.80	2.00	2.5	322	1	12	19	23	40	56	290	10
44137	85.80	86.80	1.00	2.8	341	1	14	16	25	43	72	380	8
44138	86.80	87.90	1.10	2	321	1	15	19	26	36	59	555	8
44139	87.90	90.00	2.10	0.4	120	1	18	17	8	48	23	250	18
44140	90.00	91.60	1.60	0.6	32	1	19	14	1	31	4	115	7
44141	91.60	93.60	2.00	0.7	25	1	10	14	1	26	8	100	9
44142	93.60	94.80	1.20	0.5	23	1	21	14	1	31	2	65	9
44143	94.80	96.80	2.00	0.2	46	1	17	19	1	40	1	130	16
44144	96.80	98.80	2.00	0.3	73	1	26	23	1	50	9	185	100
44145	98.80	100.80	2.00	0.2	88	1	24	23	2	42	6	160	100

Sample	From (m)	To (m)	Length (m)										
44146	100.80	102.80	2.00	0.2	86	1	23	20	1	45	57	165	30
44147	102.80	104.80	2.00	0.3	47	1	30	22	1	42	3	220	21
44148	104.80	106.80	2.00	0.5	26	1	24	22	1	35	2	155	15
44149	106.80	108.80	2.00	0.3	30	1	26	21	1	47	6	125	15
44150	108.80	109.90	1.10	0.5	32	1	26	22	1	34	4	100	9
44226	109.90	111.90	2.00	0.8	40	1	45	19	1	6	5	110	50
44227	111.90	113.90	2.00	0.7	12	1	40	19	1	14	3	60	19
44228	113.90	115.90	2.00	0.7	21	1	43	18	1	26	2	80	15
44229	115.90	117.90	2.00	0.8	20	1	49	18	1	23	2	85	20
44230	117.90	119.90	2.00	0.6	18	1	49	17	1	22	1	50	50
44231	119.90	121.60	1.70	0.5	32	1	57	20	1	31	5	110	50

HOLE NUMBER: CL-91-16

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 39520.00N
EAST: 9760.00E
ELEV: 1316.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 162.80m
START DEPTH: 0.00m
FINAL DEPTH: 162.80m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 125° 0' 0"

DATE STARTED: September 2, 1991
DATE COMPLETED: September 3, 1991
DATE LOGGED: September 10, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NZ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: TO 18.3M. 10' LEFT IN HOL
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
76.20	-	-55° 0'	ACID	OK	
162.80	-	-57° 0'	ACID	OK	

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 18.30	«CASING»					
18.30 TO 56.50	«TUFF BX»	Green. Essentially monomictic lithic lapilli to block breccia of green clay altered fragments of f.g. (<1mm) feldspar porphyry with rare (~10%) amygdaloidal block sized fragments. Amygdules to 1 cm filled by calcite. Breccia matrix is f.g. soft unsilicified lithic rich but crystal poor and paler green. Maybe a lahar?		«S-I ARG» 40% of interval is gougy, especially in lower half.	«Tr py» Irregular patches in matrix.	Breccia matrix is muddy, may represent a lahar.
	⟨26.7-29.6⟩ «BLACK BX» ⟨32.6-33.6⟩ «GOUGE» ⟨35.8-38.7⟩ «GOUGE» ⟨44.8-45.5⟩ «GOUGE» ⟨50.5-51.7⟩ «GOUGE	Black matrix.				
56.50 TO 64.10	«BLACK BX»	Black & green. Black matrix tuff breccia. Same lithology for fragments, but matrix now more crystal rich. Black colour increases downsection.		«S-I ARG»	«Tr py» Irregular patches in matrix.	
64.10 TO 71.00	«LAHAR»	Brown-grey. f.g. Really grungy strange looking tuff breccia. Rock is totally replaced by clay, is fingernail soft, dull grey-brown, crumbly. Maybe muddy matrix lahar. One amygdaloidal flow frag.		«I ARG»	«Tr py»	Muddy lahar?
71.00 TO 74.40	«LAHAR»	Black. Similarly altered soft, crumbly black muddy matrix with barely recognizable clay altered fragments. 5% 1-2 mm white specks in muddy matrix might be clay altered feldspar crystals or zeolite ?		«I-X ARG» Total clay replacement.		Muddy lahar?
74.40 TO 86.50	«FAULT LAPILLI BX»	Grey-green. Gougy zone of faulted intensely argillized tuff breccia. Abundant angular frags of quartz vein & green f.g. porphyry frags (similar) to above) and rare amygdaloidal frags.		«I-X ARG» of matrix and wallrock frags. 70% of interval is fault gouge.		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
86.50 TO 104.00	«STWK FAULT ZONE»	Grey. Moderate quartz and calcite pyritic stockwork in intensely argillized fault zone, within the amygdaloidal flow unit. Single preserved "island" of amygdaloidal flow shows welding into a plane @	30	«I-X ARG» 50% of interval is extremely argillic and gougy.	«1-3% py» in disrupted qtz stringers.	
┤98.4-99.0├	«QTZ BX»	Black & white. Pyritic quartz stockwork breccia. Intensely argillized amyg. flow fragments to 5 cm. 10 cm quartz breccia vein.		«I SIL»	«5% py» in quartz breccia matrix.	
104.00 TO 118.00	«STWK FAULT ZONE»	Grey-green. Similar to previous interval but weaker stockwork, less pyrite, slightly less intensely altered and more competent. Abundant quartz and calcite filled amygdules maybe 10% grey quartz vein frags.		«I ARG» 30% of interval is gougy. «M CHL» in rare preserved amyg. flow fragments.	«1-2% py» in disrupted qtz stringers.	
┤104.0-107.0├	«AMYGDALOIDAL FLOW»	Green. Chlorite lined anygdules flattened into planes @	20	«M CHL, M HEM»		
┤107.2-107.5├	«FAULT»	Quartz vein frags, amygdules and silicified wall rock frags in gougy extremely argillized zones.		«X ARG» Abundant clay gouge.		
┤109.9-111.4├	«FAULT»	S.A.A.				
┤114.5-115.4├	«FAULT»	S.A.A.				
┤115.8-116.1├	«SIL ZONE»	Pyrite quartz flooded amugdaloidal flow.		«I SIL»	«5% py» in grey quartz matrix.	
118.00 TO 125.30	«QTZ STWK»	Grey-green. Weakly pyritic moderate quartz stockwork zone with local jigsaw breccia. More silicified and competent than previous interval.		«M-S ARG» «M-S SIL» M CHL, M HEM» Moderate remnant chlorite lining amygdules and hematite stringers.	«1% py» in grey quartz stringers.	
┤118.7-119.0├	«SIL FAULT»					
┤123.6-124.9├	«FAULT»	80% clay gouge with silicified pyritic frags.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
125.30 TO 134.30	«QTZ STWK-BX»	Dark grey. Moderately pyritic multiphase quartz stockwork breccia. Interval is 70% quartz. Host is intensely silicified amygdaloidal flow unit. PARAGENESIS IS: early white bull quartz; pyritic grey to chalcedonic quartz; late drusy white qtz.		«+/- SIL» Minor remnant chlorite lining small (mm) amygdules.	«1-3% py» in grey quartz stringers and breccia matrix and in rare drusy cavities as euhedral crystals. f.g. pyrite also occurs on late fractures.	
	⎨133.7-134.2⎬ «BX VEIN/FAULT»	Black quartz breccia vein @ may represent completely silicifed fault breccia.	35	«I SIL»		
134.30 TO 142.50	«RHYOLITE BX»	Black & green. A black matrix pyroclastic breccia of f.g. green rhyolite (?) fragments. Frags lapilli to block size have weak perlitic textures & rare black flow bands. Matrix becomes hematitic in lower metre of interval. Flow bands @	40	«M ARG» Minor gougy patches.	«Tr py» irregularly disseminated.	RHYOLITE BRECCIA.
142.50 TO 162.80	«FELDSPAR PORPHYRY»	Green, m.g. A flow banded feldspar porphyry flow with sparse quartz eyes, vague flow bands and local concentrations of flattened 1-2 mm amygdules are highlighted by chlorite. Lower 1/2 of interval is leached and vuggy, very similar to FQXT in ddh #5, but chloritized.		«M ARG, M CHL» in upper 1/2 of interval «M CHL, S SIL» in lower 1/2. Feldspars gone to white clay in upper half of interval, leached out in lower half.	«Tr py» in very sparse calcite stringers.	
		Flow banding @ 149.5 m @ 159.4 m	45 20			
		Banded flows are interstratified with minor silicifed breccias - possibly autoclastic flow breccias?				
	⎨160.0-160.5⎬ «PY-CAL STRINGERS»	Minor pyritic calcite stringers.			«1% py»	
	⎨150.8-153.3⎬ «TUFF BX»	Black & green. Typical tuff breccia of feldspar porphyry frags in black to hematitic matrix, with trace pyrite.		«S SIL, S HEM»	«Tr py» in hematitic matrix.	
	⎨160.5-162.4⎬ «SIL BX»	Green. A siliceous breccia of feldspar porphyry Looks pyroclastic, with possible hydrothermal overprint. A single open vug (2 cm) is lined with f.g. pyrite.		«S SIL» No quartz.	«Tr py»	
	162.8 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44060	24.50	26.70	2.20	0.2	67	2	26	24	8	77	2	2100	100	
44061	26.70	29.60	2.90	0.3	337	1	22	28	52	61	18	13875	100	
44062	29.60	31.60	2.00	0.1	214	3	24	23	21	65	10	2220	100	
44063	61.10	63.10	2.00	0.2	127	3	27	30	20	88	19	1720	100	
44064	86.50	88.50	2.00	0.2	41	2	27	28	3	84	6	2560	100	
44065	88.50	93.20	4.70	0.5	124	2	28	23	6	68	11	940	50	
44066	93.20	95.20	2.00	1.4	334	1	26	21	3	47	30	2510	50	
44067	95.20	97.30	2.10	1.6	330	1	22	20	14	54	49	785	18	
44068	97.30	98.40	1.10	0.6	202	1	31	20	15	65	16	725	7	
44069	98.40	99.00	0.60	2.5	445	1	21	12	27	35	167	665	4	
44070	99.00	100.50	1.50	2	341	1	37	19	24	52	53	850	10	
44071	100.50	102.40	1.90	0.4	74	2	23	22	12	66	4	545	100	
44072	102.40	104.00	1.60	0.5	77	1	23	22	8	57	2	425	13	
44073	104.00	107.00	3.00	0.7	116	2	23	21	12	59	18	280	23	
44074	107.00	109.80	2.80	0.5	80	1	22	22	10	63	2	455	8	
44075	109.80	111.80	2.00	0.4	76	1	23	23	14	59	5	580	13	
44076	111.80	113.80	2.00	0.8	188	2	28	22	14	67	22	475	18	
44077	113.80	115.80	2.00	1.2	271	1	26	22	26	68	26	630	21	
44078	115.80	116.10	0.30	2.5	482	1	24	20	34	51	106	880	3	
44079	116.10	118.00	1.90	0.6	148	1	23	24	12	61	23	370	12	
44080	118.00	118.70	0.70	0.7	180	2	32	23	10	70	19	420	5	
44081	118.70	118.90	0.20	3.5	460	1	17	15	23	23	128	1085	2	
44082	118.90	121.00	2.10	0.7	164	1	17	15	13	54	24	735	11	
44083	121.00	123.00	2.00	0.5	109	2	26	22	13	71	7	345	15	
44084	123.00	125.30	2.30	1.2	324	2	19	20	18	64	46	590	25	
44085	125.30	126.30	1.00	1.6	227	1	15	22	12	57	39	655	6	
44086	126.30	127.30	1.00	2	297	1	10	20	13	47	57	640	7	
44087	127.30	128.30	1.00	1.8	257	1	9	16	10	46	54	305	2	
44088	128.30	129.30	1.00	1.7	372	1	12	11	18	38	18	410	7	
44089	129.30	130.30	1.00	1.6	224	1	10	13	11	36	52	300	3	
44090	130.30	131.30	1.00	1.2	134	1	6	10	5	29	37	230	9	
44091	131.30	132.30	1.00	1.4	179	1	12	11	8	32	55	485	10	
44092	132.30	133.70	1.40	1.2	225	1	11	14	24	43	73	915	20	
44093	133.70	134.30	0.60	1.2	108	1	5	15	15	16	41	495	10	
44094	134.30	136.30	2.00	0.4	119	1	16	12	3	35	28	125	10	
44095	136.30	138.30	2.00	0.2	90	1	23	18	7	39	22	55	23	
44096	142.50	144.50	2.00	0.1	58	2	18	17	6	40	2	45	32	
44097	144.50	146.50	2.00	0.5	37	2	21	18	1	40	4	40	9	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44099	148.50	150.50	2.00	0.2	94	1	16	21	15	39	3	310	14
44098	150.80	153.30	2.50	0.1	234	1	16	19	67	39	1	130	50
44099	158.80	160.80	2.00										
44100	160.80	162.80	2.00	0.3	88	1	22	16	10	33	2	180	20

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	Fl #/m
44060	24.50	26.70	2.20	0.2	67	2	26	24	8	77	2	2100	100
44061	26.70	29.60	2.90	0.3	337	1	22	28	52	61	18	13875	100
44062	29.60	31.60	2.00	0.1	214	3	24	23	21	65	10	2220	100
44063	61.10	63.10	2.00	0.2	127	3	27	30	20	88	19	1720	100
44064	86.50	88.50	2.00	0.2	41	2	27	28	3	84	6	2560	100
44065	88.50	93.20	4.70	0.5	124	2	28	23	6	68	11	940	50
44066	93.20	95.20	2.00	1.4	334	1	26	21	3	47	30	2510	50
44067	95.20	97.30	2.10	1.6	330	1	22	20	14	54	49	785	18
44068	97.30	98.40	1.10	0.6	202	1	31	20	15	65	16	725	7
44069	98.40	99.00	0.60	2.5	445	1	21	12	27	35	167	665	4
44070	99.00	100.50	1.50	2	341	1	37	19	24	52	53	850	10
44071	100.50	102.40	1.90	0.4	74	2	23	22	12	66	4	545	100
44072	102.40	104.00	1.60	0.5	77	1	23	22	8	57	2	425	13
44073	104.00	107.00	3.00	0.7	116	2	23	21	12	59	18	280	23
44074	107.00	109.80	2.80	0.5	80	1	22	22	10	63	2	455	8
44075	109.80	111.80	2.00	0.4	76	1	23	23	14	59	5	580	13
44076	111.80	113.80	2.00	0.8	188	2	28	22	14	67	22	475	18
44077	113.80	115.80	2.00	1.2	271	1	26	22	26	68	26	630	21
44078	115.80	116.10	0.30	2.5	482	1	24	20	34	51	106	880	3
44079	116.10	118.00	1.90	0.6	148	1	23	24	12	61	23	370	12
44080	118.00	118.70	0.70	0.7	180	2	32	23	10	70	19	420	5
44081	118.70	118.90	0.20	3.5	460	1	17	15	23	23	128	1085	2
44082	118.90	121.00	2.10	0.7	164	1	17	15	13	54	24	735	11
44083	121.00	123.00	2.00	0.5	109	2	26	22	13	71	7	345	15
44084	123.00	125.30	2.30	1.2	324	2	19	20	18	64	46	590	25
44085	125.30	126.30	1.00	1.6	227	1	15	22	12	57	39	655	6
44086	126.30	127.30	1.00	2	297	1	10	20	13	47	57	640	7
44087	127.30	128.30	1.00	1.8	257	1	9	16	10	46	54	305	2
44088	128.30	129.30	1.00	1.7	372	1	12	11	18	38	18	410	7
44089	129.30	130.30	1.00	1.6	224	1	10	13	11	36	52	300	3
44090	130.30	131.30	1.00	1.2	134	1	6	10	5	29	37	230	9
44091	131.30	132.30	1.00	1.4	179	1	12	11	8	32	55	485	10
44092	132.30	133.70	1.40	1.2	225	1	11	14	24	43	73	915	20
44093	133.70	134.30	0.60	1.2	108	1	5	15	15	16	41	495	10
44094	134.30	136.30	2.00	0.4	119	1	16	12	3	35	28	125	10
44095	136.30	138.30	2.00	0.2	90	1	23	18	7	39	22	55	23
44096	142.50	144.50	2.00	0.1	58	2	18	17	6	40	2	45	32
44097	144.50	146.50	2.00	0.5	37	2	21	18	1	40	4	40	9
44099	148.50	150.50	2.00	0.2	94	1	16	21	15	39	3	310	14

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44098	150.80	153.30	2.50	0.1	234	1	16	19	67	39	1	130	50
44099	158.80	160.80	2.00										
44100	160.80	162.80	2.00	0.3	88	1	22	16	10	33	2	180	20

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
65.60	67.60	2.00	0.00	0.0	100	50.00	0	0.00	0	
67.60	69.60	2.00	0.00	0.0	100	50.00	0	0.00	0	
69.60	71.60	2.00	0.00	0.0	100	50.00	5	2.50	0	
71.60	73.80	2.20	0.00	0.0	100	45.45	4	1.82	0	
73.80	75.10	1.30	0.00	0.0	100	76.92	0	0.00	0	
75.10	76.60	1.50	0.00	0.0	100	66.67	1	0.67	0	
76.60	78.00	1.40	30.00	*****	50	35.71	0	0.00	0	
78.00	80.00	2.00	40.00	*****	100	50.00	4	2.00	0	
80.00	81.60	1.60	120.00	*****	10	6.25	0	0.00	0	
81.60	82.60	1.00	95.00	*****	8	8.00	0	0.00	0	VN
82.60	83.60	1.00	100.00	*****	3	3.00	0	0.00	0	VN
83.60	84.60	1.00	100.00	*****	4	4.00	0	0.00	0	VN
84.60	85.60	1.00	90.00	*****	6	6.00	0	0.00	0	VN
85.60	87.20	1.60	120.00	*****	11	6.88	0	0.00	0	VN
87.20	89.20	2.00	120.00	*****	21	10.50	1	0.50	0	CALC.
89.20	91.20	2.00	80.00	*****	33	16.50	0	0.00	0	

HOLE NUMBER: CL-91-17

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 39555.00N
EAST: 9832.00E
ELEV: 1323.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 67.00m
START DEPTH: 0.00m
FINAL DEPTH: 67.00m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 120° 0' 0"

DATE STARTED: September 3, 1991
DATE COMPLETED: September 4, 1991
DATE LOGGED: September 9, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: TO 27.4M,10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
67.05	-	-44° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 27.40	«CASING»	Overburden.				
27.40 TO 42.20	«AMYGDAL-OIDAL FLOW»	Grey-green, f.g. Amygdule rich intermediate flow. Quartz fill is dominant but calcite also present. Amygdules up to 1 cm, commonly flattened @ approx. to core axis. Dark green clay or chlorite is common in smaller (2-5 mm) amygdules. Interval is locally gougy, faulted, generally poor recovery.	50	«M-S ARG» plus pervasive «M CHL» and «W HEM» in late hairline fractures. Patchy silicification.	No pyrite?	
	⟨27.4-28.5⟩ «OXIDE ZONE»	Abundant hematite in late hairline fractures.				
	⟨28.5-36.9⟩ «WEAK STWK»	Sparse qtz stringers.				
	⟨33.4-33.6⟩ «FAULT»	Gouge.				
	⟨35.8-36.7⟩ «FAULT»	Gouge.				
	⟨36.5-37.9⟩ «STWK BX»	Quartz-pyrite stockwork/breccia vein, white bull quartz is cut by black chalcedonic pyritic quartz. Highly fractured, poor recovery.	45	«I SIL»	«2% py» as fine selvages within grey quartz.	
	⟨39.2-40.3⟩ «BX VEIN»	Black & white. Pyritic quartz breccia vein and intense wallrock silicification. Corresponds with high density and size of amygdules (all filled by quartz). Irregular PARAGENESIS: silicification and amygdule filling by grey f.g. quartz; brecciation and cementing by pyritic grey chalcedony; infilling of open spaces by vuggy crystalline white quartz.	30	«+/- SIL»	«3-5% py» in grey quartz rimming breccia fragments.	
	⟨41.0-41.3⟩ «BX VEIN»	S.A.A.		«+/- SIL»	«3% py»	
42.20 TO 42.40	«FAULT»	Gouge.				
42.40 TO 45.40	«TUFF BX»	Black & green. Depositional breccia of black banded rhyolitic flow (previously bedded ash tuff) highly fractured, oxidized, hematitic, locally gougy.		«M SIL, W ARG, M CHL»	«Tr py» associated with chlorite.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
45.40 TO 47.40	«PERLITE»	Green. Classic perlitic texture overprinting black and/or hematitic flow banded rhyolite.		«M SIL, M CHL» Propylitic?	«Tr py»	
47.40 TO 54.50	«TUFF BX» ⟨53.5-54.3⟩ «FAULT» ⟨54.2-54.3⟩ «FAULT»	Green & black. Propyllitically? altered tuff/block breccia, of flow banded rhyolite frags. Abundant black breccia matrix, local hematite, dominantly clast supported. Gouge.		«M SIL, M CHL, W HEM»	«Tr py»	
54.50 TO 55.30	«FAULT»	60% clay gouge, single preserved 1 cm pyritic quartz vein.		«I ARG»	«3% py» in disrupted stringers.	
55.30 TO 60.30	«FLOW BANDED RHYOLITE» ⟨55.3-56.5⟩	Red & green. (Previously banded ash tuffs). Perlitic and flow banded rhyolite flow.		«S HEM, S SIL» Strong hematitic flow banding. «I HEM»	«Tr py» on late fractures.	
60.30 TO 67.00	«TUFF BX» ⟨60.3-63.1⟩ «HEMATITE RICH» ⟨60.9-61.2⟩ «FAULT» ⟨63.8-67.0⟩ «FAULT ZONE» 67.0 M	Red & green. Hematitic breccia of flow banded and perlitic fragments. Uppermost 2 metres is very strongly hematized. Lower half of interval is highly fractured, gougy. Gouge. EOH		«S-I ARG, M HEM»	«1% py» in gougy breccias in lower half of interval.	

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43956	27.40	29.40	2.00	0.3	87	1	33	24	2	64	17	235	20	
43957	29.40	31.50	2.10	1.2	261	1	57	23	4	69	42	460	24	
43958	31.50	33.40	1.90	0.5	118	1	21	24	3	64	13	575	30	
43959	33.40	36.90	3.50	0.9	244	1	24	22	10	70	26	960	24	
43960	36.90	37.50	0.60	3.4	530	1	17	15	43	35	297	1400	7	
43961	37.50	39.20	1.70	1.2	282	1	23	21	9	73	27	490	27	
43962	39.20	40.30	1.10	4	595	1	20	14	44	54	310	1090	9	
43963	40.30	42.40	2.10	2.2	433	1	22	24	19	63	65	640	19	
43964	42.40	44.00	1.60	0.7	33	1	23	22	1	46	10	60	29	
43965	44.00	45.40	1.40	0.2	24	1	19	21	1	71	7	50	30	
43966	45.40	47.40	2.00	0.2	28	1	23	24	1	85	8	65	50	
43967	47.40	49.30	1.90	0.3	29	1	21	24	1	90	3	45	30	
43968	49.30	51.30	2.00	0.4	22	1	22	23	1	76	1	40	22	
43969	51.30	53.30	2.00	0.6	27	1	21	24	1	46	1	45	15	
43970	53.30	55.30	2.00	0.8	174	1	19	19	8	48	39	25	13	
43971	55.30	56.50	1.20	0.5	157	1	29	20	1	46	21	55	15	
43972	56.50	58.40	1.90	0.4	75	7	30	20	1	41	16	115	21	
43973	60.30	63.10	2.80	0.4	88	1	16	22	3	45	7	45	27	
43974	63.80	65.80	2.00	0.3	148	1	33	22	24	56	6	70	60	

Sample	From (m)	To (m)	Length (m)										
43956	27.40	29.40	2.00	0.3	87	1	33	24	2	64	17	235	20
43957	29.40	31.50	2.10	1.2	261	1	57	23	4	69	42	460	24
43958	31.50	33.40	1.90	0.5	118	1	21	24	3	64	13	575	30
43959	33.40	36.90	3.50	0.9	244	1	24	22	10	70	26	960	24
43960	36.90	37.50	0.60	3.4	530	1	17	15	43	35	297	1400	7
43961	37.50	39.20	1.70	1.2	282	1	23	21	9	73	27	490	27
43962	39.20	40.30	1.10	4	595	1	20	14	44	54	310	1090	9
43963	40.30	42.40	2.10	2.2	433	1	22	24	19	63	65	640	19
43964	42.40	44.00	1.60	0.7	33	1	23	22	1	46	10	60	29
43965	44.00	45.40	1.40	0.2	24	1	19	21	1	71	7	50	30
43966	45.40	47.40	2.00	0.2	28	1	23	24	1	85	8	65	50
43967	47.40	49.30	1.90	0.3	29	1	21	24	1	90	3	45	30
43968	49.30	51.30	2.00	0.4	22	1	22	23	1	76	1	40	22
43969	51.30	53.30	2.00	0.6	27	1	21	24	1	46	1	45	15
43970	53.30	55.30	2.00	0.8	174	1	19	19	8	48	39	25	13
43971	55.30	56.50	1.20	0.5	157	1	29	20	1	46	21	55	15
43972	56.50	58.40	1.90	0.4	75	7	30	20	1	41	16	115	21
43973	60.30	63.10	2.80	0.4	88	1	16	22	3	45	7	45	27
43974	63.80	65.80	2.00	0.3	148	1	33	22	24	56	6	70	60

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 39555.00N
EAST: 9833.00E
ELEV: 1323.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0N
EAST: 0+ 0E
ELEV: 0.00

COLLAR DIP: -70° 0' 0"
LENGTH OF THE HOLE: 63.10m
START DEPTH: 0.00m
FINAL DEPTH: 63.10m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 120° 0' 0"

DATE STARTED: September 4, 1991
DATE COMPLETED: September 5, 1991
DATE LOGGED: September 9, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: TO 18.3',10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
61.00	-	-72° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 18.30	«CASING»	Overburden				
18.30 TO 24.50	«TUFF BX» ⎨22.8-24.5⎬ «FAULT»	Green & grey. Strongly argillized crystal ash tuff breccia. Green clay altered angular frags in a dark weakly silicifed matrix. Highly fractured and gougy. 80% clay gouge with quartz vein and wallrock frags Grey.		«S-I ARG»	«1-2% py» in disrupted quartz stringers	Similar to interval 50-60 m in hole # 19. No oxide zone.
24.50 TO 31.20	«AMYGDAL-OIDAL FLOW»	Intermediate amygdaloidal flow. Amygdules mainly <1 cm lined with chlorite filled by quartz and late calcite. Rare irregular vugs up to 8 cm across, commonly filled with c.g. calcite. Amygdules flattened into planes @	40	«S-I ARG» plus minor patchy silicification. «M CHL» and green clay lining and/or filling small (<1 cm) amygdules.		One large irregular vug is lined by a brown translucent mineral that looks like a seaweed frond. Maybe biotite?
31.20 TO 36.60	«FAULT ZONE» ⎨35.0-35.7⎬ «GOUGE»	Grey. Gougy zone of intense argillic alteration and broke pyritic qtz veins.		«I-X ARG» «W CHL»	«1-3% py» in broken quartz veins.	
36.60 TO 38.40	«QTZ-PY STWK»	Green. Strong quartz-pyrite stockwork in weakly amygdaloidal intermediate flow. Minor late calcite		«M ARG, M SIL» «W CHL, HEM»	«5% py» in quartz stringers.	Very low density of amygdules.
38.40 TO 41.40	«QTZ-PY STWK»	Grey green. Quartz stockwork/breccia. Strongly argillized amygdaloidal flow fragments. Amygdules lined with chlorite, filled by quartz. Single pyritic banded qtz vein, 3 cm @ 39.7 m @	60	«S-I ARG» of wallrock fragments. «I SIL» breccia matrix.	«2% py» irregularly distributed as blebs in qtz stringers and filling amygdules.	High density of small (<1 cm) amygdules
41.40 TO 43.50	«BX VEIN»	Quartz breccia vein and flooded wall rock. Interval is highly fractured and locally gougy.		«I SIL» in quartz breccia matrix and filling amygdules. «+/- ARG» minor unsilicified wallrock.	«3% py» as irregular blebs and disrupted stringers.	Very high density of amygdules.
43.50 TO 43.80	«FAULT»	Gougy contact between amygdaloidal flow/quartz breccia and underlying banded rhyolite.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
43.80 TO 47.50	«BANDED RHYOLITE»	Black & green, aphanitic. Green argillically altered rhyolite, with black flow banding (previously black banded ash tuffs). Weak perlitic textures throughout. Highly fractured at upper contact. Flow banding	30	«M ARG, W SIL» both pervasive.	«Tr py» in disseminated patches.	
47.50 TO 51.00	«BANDED RHYOLITE»	Red & green. Spherulitic flow banded rhyolite. Strongly hematized bands and 2-4 mm spherulites. Rare perlitic textures. Local incipient ball formation of hematitic patches. Flow banding @	15	«S CHL, S HEM» «S SIL»	«1% py» c.g. disseminated pyrite.	
51.00 TO 54.80	«BANDED RHYOLITE»	Black, aphanitic. Black, hematitic chloritic flow banded rhyolite. Very sparse calcite stringers. Very siliceous and competent. Banding varies	40 20	«S SIL, S HEM, S CHL»	None.	
54.80 TO 62.30	«HEMATITIC BX»	Red & green. Strongly argillically altered band rhyolite frags in hematite rich f.g. matrix. Minor percentage of frags are dark green clay or chlorite altered. Matrix supported.		«S ARG» frags. «M SIL, S HEM» matrix.	«Tr py» disseminated throughout.	
62.30 TO 63.10	«RHYOLITE»	Black, f.g. dark weakly flow banded rhyolite.		«S SIL»	Tr py.	
	63.1 m	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
43975	18.30	20.40	2.10	0.1	153	2	22	27	24	70	17	1950	50	
43976	20.40	22.80	2.40	0.1	111	1	23	24	8	67	3	1465	100	
43977	22.80	24.50	1.70	0.2	167	1	24	23	8	62	43	960	30	
43978	24.50	26.50	2.00	0.7	234	3	30	26	8	78	20	390	11	
43979	26.50	28.50	2.00	0.3	152	1	26	20	7	64	17	590	15	
43980	28.50	31.20	2.70	0.3	196	3	20	18	7	73	11	545	18	
43981	31.20	35.00	3.80	1.5	304	1	25	21	9	67	57	710	17	
43982	35.00	36.60	1.60	1.8	351	2	26	22	24	64	43	665	50	
43983	36.60	38.40	1.80	2.4	601	1	42	23	50	72	60	1130	50	
43984	38.40	39.90	1.50	3.3	520	1	20	19	22	71	78	900	30	
43985	39.90	41.40	1.50	1.7	416	1	27	22	17	66	42	470	50	
43986	41.40	42.50	1.10	3.9	678	1	23	14	35	65	110	640	17	
43987	42.50	43.80	1.30	4.6	680	1	22	14	44	51	122	720	30	
43988	43.80	46.00	2.20	0.6	27	1	24	22	1	44	1	65	19	
43989	47.50	49.50	2.00	0.5	24	2	25	18	1	46	11	35	25	
43990	51.00	53.00	2.00	0.4	14	1	32	18	1	49	1	35	16	
43991	53.00	54.80	1.80	0.5	14	1	26	17	1	41	1	25	18	
43992	54.80	56.80	2.00	0.9	26	1	25	17	1	29	7	25	12	
43993	60.00	62.20	2.20	0.2	211	1	26	18	25	51	10	195	14	

Sample	From (m)	To (m)	Length (m)										
43975	18.30	20.40	2.10	0.1	153	2	22	27	24	70	17	1950	50
43976	20.40	22.80	2.40	0.1	111	1	23	24	8	67	3	1465	100
43977	22.80	24.50	1.70	0.2	167	1	24	23	8	62	43	960	30
43978	24.50	26.50	2.00	0.7	234	3	30	26	8	78	20	390	11
43979	26.50	28.50	2.00	0.3	152	1	26	20	7	64	17	590	15
43980	28.50	31.20	2.70	0.3	196	3	20	18	7	73	11	545	18
43981	31.20	35.00	3.80	1.5	304	1	25	21	9	67	57	710	17
43982	35.00	36.60	1.60	1.8	351	2	26	22	24	64	43	665	50
43983	36.60	38.40	1.80	2.4	601	1	42	23	50	72	60	1130	50
43984	38.40	39.90	1.50	3.3	520	1	20	19	22	71	78	900	30
43985	39.90	41.40	1.50	1.7	416	1	27	22	17	66	42	470	50
43986	41.40	42.50	1.10	3.9	678	1	23	14	35	65	110	640	17
43987	42.50	43.80	1.30	4.6	680	1	22	14	44	51	122	720	30
43988	43.80	46.00	2.20	0.6	27	1	24	22	1	44	1	65	19
43989	47.50	49.50	2.00	0.5	24	2	25	18	1	46	11	35	25
43990	51.00	53.00	2.00	0.4	14	1	32	18	1	49	1	35	16
43991	53.00	54.80	1.80	0.5	14	1	26	17	1	41	1	25	18
43992	54.80	56.80	2.00	0.9	26	1	25	17	1	29	7	25	12
43993	60.00	62.20	2.20	0.2	211	1	26	18	25	51	10	195	14

HOLE NUMBER: CL-91-19

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: CLISBAKO
PROJECT NUMBER: 667
CLAIM NUMBER:
LOCATION: SOUTH ZONE

PLOTTING COORDS GRID: UTM
NORTH: 39577.00N
EAST: 9782.00E
ELEV: 1323.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 92.50m
START DEPTH: 0.00m
FINAL DEPTH: 92.50m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 120° 0' 0"

DATE STARTED: September 5, 1991
DATE COMPLETED: September 5, 1991
DATE LOGGED: September 11, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: YES

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING LTD.
CASING: 10' LEFT IN HOLE
CORE STORAGE: CAMP

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
40.30	-	-54° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 0.00 TO 18.30	«OVERBURDEN /CASING»					
18.30 TO 35.40	«LAHAR BRECCIA	Green. Chaotic, unsorted andesite clasts in an un consolidated, tuffaceous matrix. No bedding or sorting-typical of a lahar. Most clasts consist of chloritized andesite and feldspar porphyry. Abundant vesicular and amygdaloidal fragments also present. Crush zones within unit resemble faults but may also be caused by drilling unconsolidated muds. Fragment sizes range from <1 cm to over 5 cm Interval mostly matrix supported but can be clast supported over various intervals. Clasts make up 50-60%.		«S.CL,M.CA» Pervasive chloritization of the clasts. Narrrow intervals of strong hematite colouration. These could be large clasts of oxidized material rather than alteration.	«PyTr» Almost absent.	
35.40 TO 68.20	«MUDDY LAHAR»	Grey-brown. F-C. An unconsolidated lithic breccia unit with a muddy matrix. The matrix material is composed of a mudstone. The lithic clasts are finer grained than the previous interval and entirely matrix supported from top to bottom. Clasts comprise about 30%. Similar clast types to last in terval. There are: amygdaloidal andesite, feldspar porphyry and tuff.		No significant alteration. Some clasts are bleached, others are chloritic.	«PyTr»	
	⟨42.2-44.8⟩	Black. A highly siliceous and graphitic interval. Textures noted include crude banding or bedding, detrital or clastic textures. High graphite content may imply organic material i.e. vegetation caught in mudflow.		Very siliceous - may not be caused by alteration.		
		LOWER CONTACT	45			
	⟨65.6-68.2⟩ «Disrupted Fault Zone»	Grey. Core becomes crushed and broken down to bottom of interval. Sections of gouge noted from 66.1 to 66.5 m.		«W-SIL» Irregular vein-like patches of silicification noted. These tend to be about 3 cm wide and occur at 0.5 to 1.5 metre intervals. Slight bleaching of rock		
68.20 TO 78.00	«LAHAR»	Same interval but becoming very crushed and disrupted by faulting. The muddy matrix is reduced to powdery clay.		«M-ARG;W-SIL»	«Tr-3%» in Qz veinlets.	
	⟨72.2-73.8⟩ «GOUGE»			Qz (& Py) stockworking increasing in intensity downhole. Bleaching of	Amount increases down interval.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				crushed clay matrix - weak to mod. argillic alteration.		
	ǀ73.8-75.0ǀ «QUARTZ STOCKWORK»			ǀ73.8-75.0ǀ«M-S ARG»;W-MOD SIL»	«Py 3%» in veinlets and vein fragments.	
78.00 TO 81.70	«AMYGDALOIDAL ANDESITE FLOW»	Pale green. Distinctive amygdaloidal unit. Amygdules are large in this section- up to 1.5 cm wide They are also sparser than other intersections of this unit seen around the south zone. The groundmass is slightly porphyritic with altered plagioclase and mafic pheno's. The latter are most likely biotites or hornblendes. LOWER CONTACT «Gougy Fault Zone»	30	«W-M ARG;W-CL» Weak Qz-Py microstockwork present in lower half of section. Calcite is also widespread as microfracture fillings and in amugdules with Qz. The entire groundmass and the mafic pheno's are chloritized giving the rock an overall green colour.	«Py Tr-1%»	
81.70 TO 85.60	«SILICIFIED ZONE»	Grey. A 15 cm gougy fault contact separates the massive silicification from the overlying unit. The zone is a typical silicified hydrothermal breccia containing angular fragments of silicified wallrock in an intensely healed silica matrix. Three stages are noted. An early stockwork of Qz veinlets is silicified and brecciated by a second event. This is cut by later vuggy Qz veins.		«X-SIL»	«3-5%» Pyrite is the dusty fine-grained variety. It occurs mostly in the matrix but some pyrite also noted in the Qz stockwork.	
	ǀ81.7-81.9ǀ «FAULT GOUGE»					
	ǀ81.9-82.8ǀ «SILICIFIED BRECCIA»			«I-X SIL» Complete replacement of wall rock by silica.		
	ǀ82.8-85.2ǀ «SILICIFIED QZ STOCKWORK»	Not so much a breccia as a strongly developed stockwork in feldspar phyric (amyg?) andesite wallrock. Stockworking intense enough in places to form an incipient breccia or jigsaw breccia zone.				
	ǀ85.2-85.6ǀ			«M-SIL; S-ARG»		
85.60 TO 92.00	«HEMATITIC RHYOLITE BRECCIA»	Typical footwall rocks consisting of angular to subangular clasts of flow banded rhyolite and green perlite in a strongly hematitic matrix. Clasts range from <1cm to almost a metre.		«M-S-ARG; S-HE» Rhyolitic clasts are moderately argillized and/or sericitized. Perlite clasts seem to be less altered-perhaps due to low permeability to fluids.	Py-Tr.	
	ǀ85.6-87.0ǀ			«M-S SIL; S-ARG; W-CL» Bleached and silicifed rhyolite breccia. Fault breccia superimposed from 86.6-86.8m.		
	ǀ87.8-88.6ǀ	Possibly a large breccia clast.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	«PERLITE»					
	90.8-92.0	Clast?		«W-ARG; W-M CL» Weak chlorite stringers		
	92.0	EOH				

Sample	From (m)	To (m)	Length (m)	ESTIMA Ag ppm	GEOCHEMICAL As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m	COMMENTS
44232	65.60	67.60	2.00	0.1	67	1	23	26	6	59	4	3060	100	
44233	67.60	69.60	2.00	0.1	96	1	27	28	6	72	3	1170	100	
44234	69.60	71.60	2.00	0.6	206	1	18	23	16	56	49	1250	100	
44301	71.60	73.80	2.20	1.1	258	3	25	25	24	62	55	830	100	
44302	73.80	75.10	1.30	1	95	2	20	23	8	58	21	530	13	
44303	75.10	76.60	1.50	0.8	110	4	22	27	10	73	37	510	11	
44304	76.60	78.00	1.40	0.7	204	3	21	26	15	79	36	800	100	
44305	78.00	80.00	2.00	1.6	366	2	18	26	16	71	58	495	10	
44306	80.00	81.60	1.60	0.7	236	2	17	25	9	73	39	360	100	
44307	81.60	82.60	1.00	1.9	272	1	10	14	10	37	67	325	50	
44308	82.60	83.60	1.00	1	91	1	4	11	1	24	24	120	10	
44309	83.60	84.60	1.00	1.1	177	1	5	11	1	31	35	145	7	
44310	84.60	85.60	1.00	0.8	164	1	5	14	1	30	56	110	100	
44311	85.60	87.20	1.60	1	142	1	10	16	2	33	25	75	10	
44312	87.20	89.20	2.00	0.6	31	1	22	22	1	44	1	70	8	
44313	89.20	91.20	2.00	0.5	46	1	23	24	2	50	2	60	8	

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Bi ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Hg ppb	FI #/m
44232	65.60	67.60	2.00	0.1	67	1	23	26	6	59	4	3060	100
44233	67.60	69.60	2.00	0.1	96	1	27	28	6	72	3	1170	100
44234	69.60	71.60	2.00	0.6	206	1	18	23	16	56	49	1250	100
44301	71.60	73.80	2.20	1.1	258	3	25	25	24	62	55	830	100
44302	73.80	75.10	1.30	1	95	2	20	23	8	58	21	530	13
44303	75.10	76.60	1.50	0.8	110	4	22	27	10	73	37	510	11
44304	76.60	78.00	1.40	0.7	204	3	21	26	15	79	36	800	100
44305	78.00	80.00	2.00	1.6	366	2	18	26	16	71	58	495	10
44306	80.00	81.60	1.60	0.7	236	2	17	25	9	73	39	360	100
44307	81.60	82.60	1.00	1.9	272	1	10	14	10	37	67	325	50
44308	82.60	83.60	1.00	1	91	1	4	11	1	24	24	120	10
44309	83.60	84.60	1.00	1.1	177	1	5	11	1	31	35	145	7
44310	84.60	85.60	1.00	0.8	164	1	5	14	1	30	56	110	100
44311	85.60	87.20	1.60	1	142	1	10	16	2	33	25	75	10
44312	87.20	89.20	2.00	0.6	31	1	22	22	1	44	1	70	8
44313	89.20	91.20	2.00	0.5	46	1	23	24	2	50	2	60	8

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
12.90	17.10	4.20	30.00	714.3	34	8.10	4	0.95	0	Massive, bull vn
17.10	18.20	1.10	50.00	*****	9	8.18	0	0.00	0	BX
18.20	20.20	2.00	120.00	*****	33	16.50	4	2.00	0	
20.20	22.20	2.00	20.00	*****	30	15.00	0	0.00	0	BX
22.20	23.40	1.20	40.00	*****	23	19.17	0	0.00	0	BX
23.40	25.60	2.20	10.00	454.5	100	45.45	0	0.00	0	MASSIVE VN
25.60	27.70	2.10	0.00	0.0	100	47.62	0	0.00	0	
27.70	30.90	3.20	30.00	937.5	70	21.88	0	0.00	0	
32.60	34.60	2.00	80.00	*****	20	10.00	0	0.00	0	
36.60	38.70	2.10	90.00	*****	28	13.33	0	0.00	0	
38.70	40.70	2.00	130.00	*****	23	11.50	0	0.00	0	
43.60	45.60	2.00	30.00	*****	50	25.00	0	0.00	0	
47.60	49.60	2.00	100.00	*****	27	13.50	0	0.00	0	
52.80	54.20	1.40	70.00	*****	100	71.43	0	0.00	0	
55.20	57.50	2.30	80.00	*****	13	5.65	1	0.43	0	
57.50	60.20	2.70	70.00	*****	50	18.52	0	0.00	0	
60.20	62.40	2.20	100.00	*****	33	15.00	1	0.45	0	
62.40	64.40	2.00	60.00	*****	40	20.00	1	0.50	0	
64.40	67.60	3.20	160.00	*****	36	11.25	5	1.56	0	
67.60	69.60	2.00	70.00	*****	37	18.50	3	1.50	0	
73.60	75.60	2.00	110.00	*****	22	11.00	15	7.50	0	
75.60	76.30	0.70	60.00	*****	7	10.00	11	15.71	0	
76.30	78.30	2.00	90.00	*****	22	11.00	5	2.50	0	
81.60	83.60	2.00	70.00	*****	30	15.00	2	1.00	0	
83.60	84.60	1.00	40.00	*****	20	20.00	6	6.00	0	
84.60	86.60	2.00	60.00	*****	50	25.00	9	4.50	0	
86.60	88.60	2.00	70.00	*****	50	25.00	6	3.00	0	
88.60	90.60	2.00	90.00	*****	36	18.00	0	0.00	0	
90.60	92.60	2.00	10.00	500.0	100	50.00	0	0.00	0	
94.60	96.60	2.00	110.00	*****	28	14.00	0	0.00	0	
99.40	101.40	2.00	150.00	*****	13	6.50	0	0.00	0	
101.40	103.40	2.00	100.00	*****	24	12.00	0	0.00	0	
103.40	104.60	1.20	30.00	*****	16	13.33	0	0.00	0	
104.60	106.10	1.50	60.00	*****	50	33.33	0	0.00	0	
106.10	107.60	1.50	110.00	*****	8	5.33	2	1.33	0	
107.60	109.40	1.80	180.00	*****	8	4.44	1	0.56	0	
109.40	110.20	0.80	40.00	*****	5	6.25	2	2.50	0	
110.20	111.80	1.60	110.00	*****	15	9.37	2	1.25	0	
111.80	112.60	0.80	60.00	*****	5	6.25	1	1.25	0	
112.60	114.60	2.00	140.00	*****	13	6.50	1	0.50	0	
114.60	115.40	0.80	60.00	*****	7	8.75	1	1.25	0	
115.40	117.30	1.90	70.00	*****	30	15.79	2	1.05	0	
117.30	119.30	2.00	120.00	*****	16	8.00	0	0.00	0	
119.30	121.30	2.00	180.00	*****	11	5.50	0	0.00	0	

From (m)	To (m)	Length (L)	Sum Of Length S>= 0.00cm	RQD S/LX100	Number Of Fracturs	Fracturs Per Metres	Number Of Veins	Veins Per Metres	Angle	Comments
121.30	123.30	2.00	170.00	*****	14	7.00	0	0.00	0	
123.30	124.50	1.20	170.00	*****	12	10.00	0	0.00	0	
124.50	125.80	1.30	50.00	*****	31	23.85	1	0.77	0	
125.80	127.80	2.00	170.00	*****	8	4.00	2	1.00	0	
127.80	129.10	1.30	120.00	*****	6	4.62	5	3.85	0	
129.10	131.10	2.00	150.00	*****	8	4.00	12	6.00	0	
131.90	132.90	1.00	70.00	*****	15	15.00	3	3.00	0	
132.90	134.60	1.70	60.00	*****	19	11.18	2	1.18	0	
134.60	136.60	2.00	150.00	*****	12	6.00	2	1.00	0	
136.60	137.50	0.90	60.00	*****	7	7.78	0	0.00	0	
137.50	139.80	2.30	90.00	*****	76	33.04	0	0.00	0	
142.30	143.30	1.00	50.00	*****	8	8.00	0	0.00	0	
143.30	143.80	0.50	50.00	*****	1	2.00	0	0.00	0	
143.80	144.80	1.00	50.00	*****	10	10.00	0	0.00	0	
147.40	148.40	1.00	20.00	*****	17	17.00	2	2.00	0	
148.40	150.20	1.80	120.00	*****	23	12.78	0	0.00	0	
150.20	151.20	1.00	60.00	*****	12	12.00	0	0.00	0	

APPENDIX III
STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, David Heberlein of 12221 Makinson Street, Maple Ridge, B.C. certify that:

1. I graduated from the University of Southampton, England with a B.Sc (Honours) Degree in Geology in 1980.

2. I graduated from the University of British Columbia with an M.Sc Degree in Geology in 1985.

3. I have practised my profession continuously since my graduation.

4. I am a Fellow of the Geological Association of Canada (F5050).

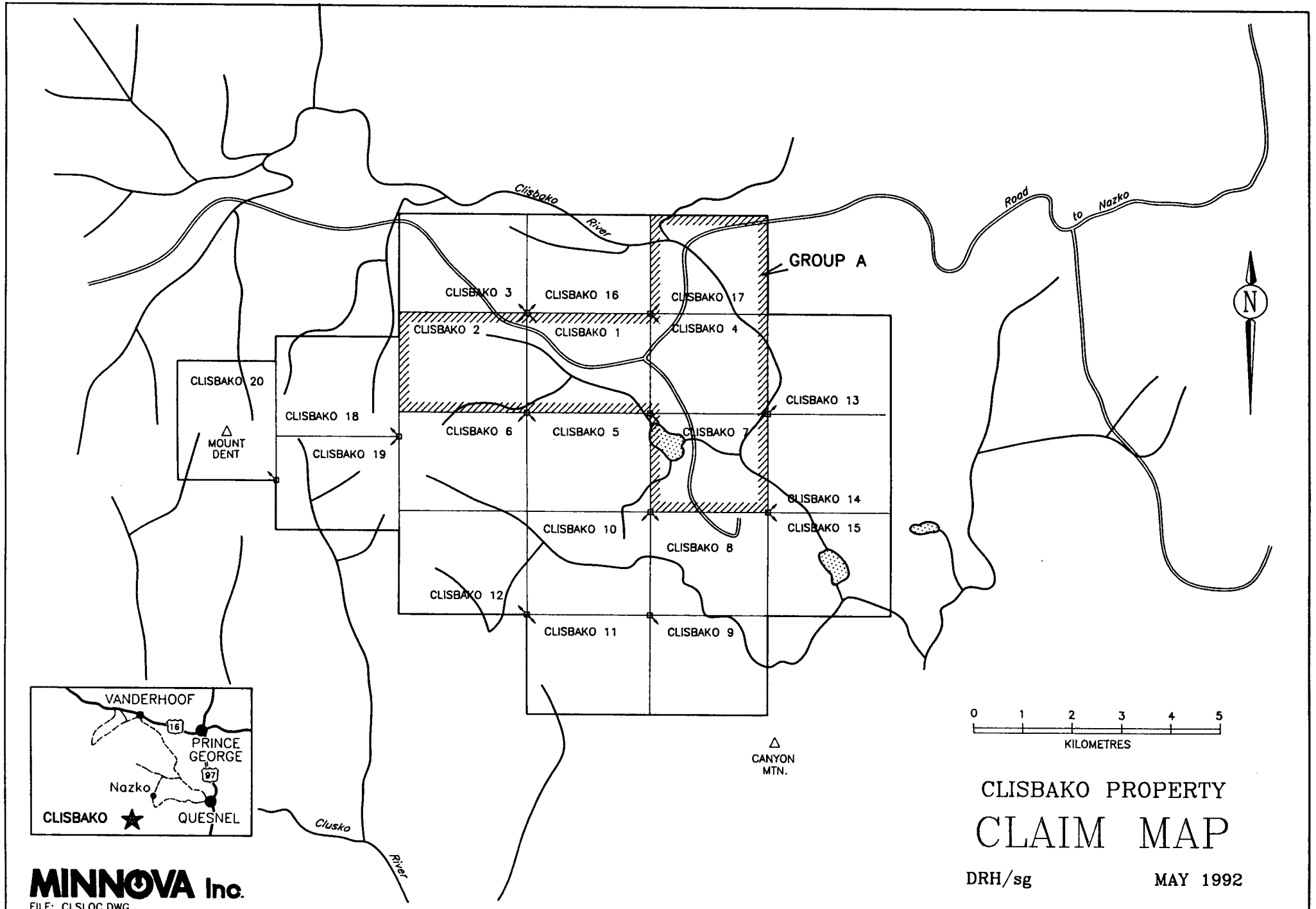
5. I am currently employed by Minnova Inc. as a Senior Project Geologist.

6. Work described in this report was carried out under my direct supervision.

Date: May 27, 1992

Signature: 

APPENDIX IV
CLAIM GROUPINGS



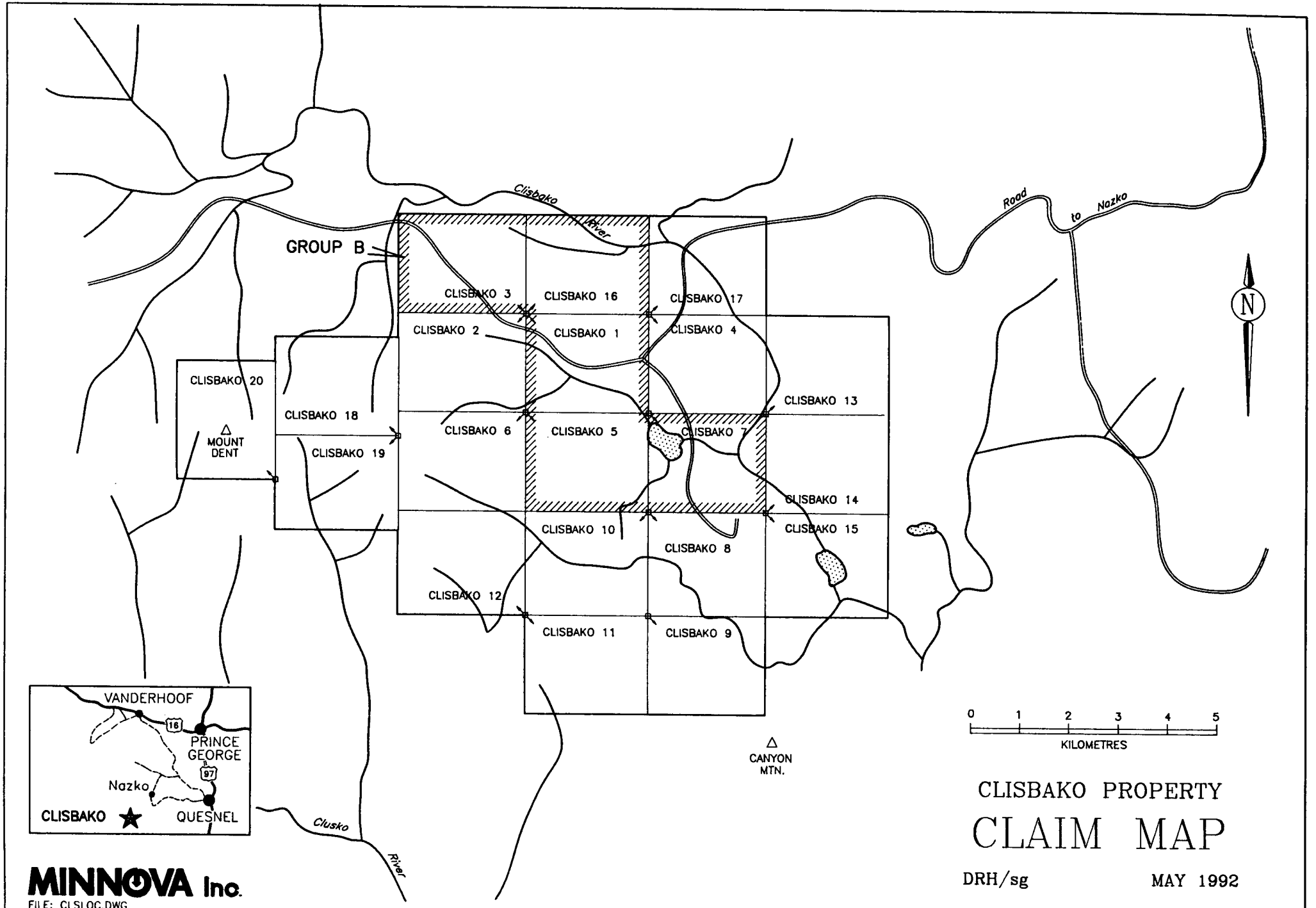
CLISBAKO PROPERTY

CLAIM MAP

DRH/sg MAY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG



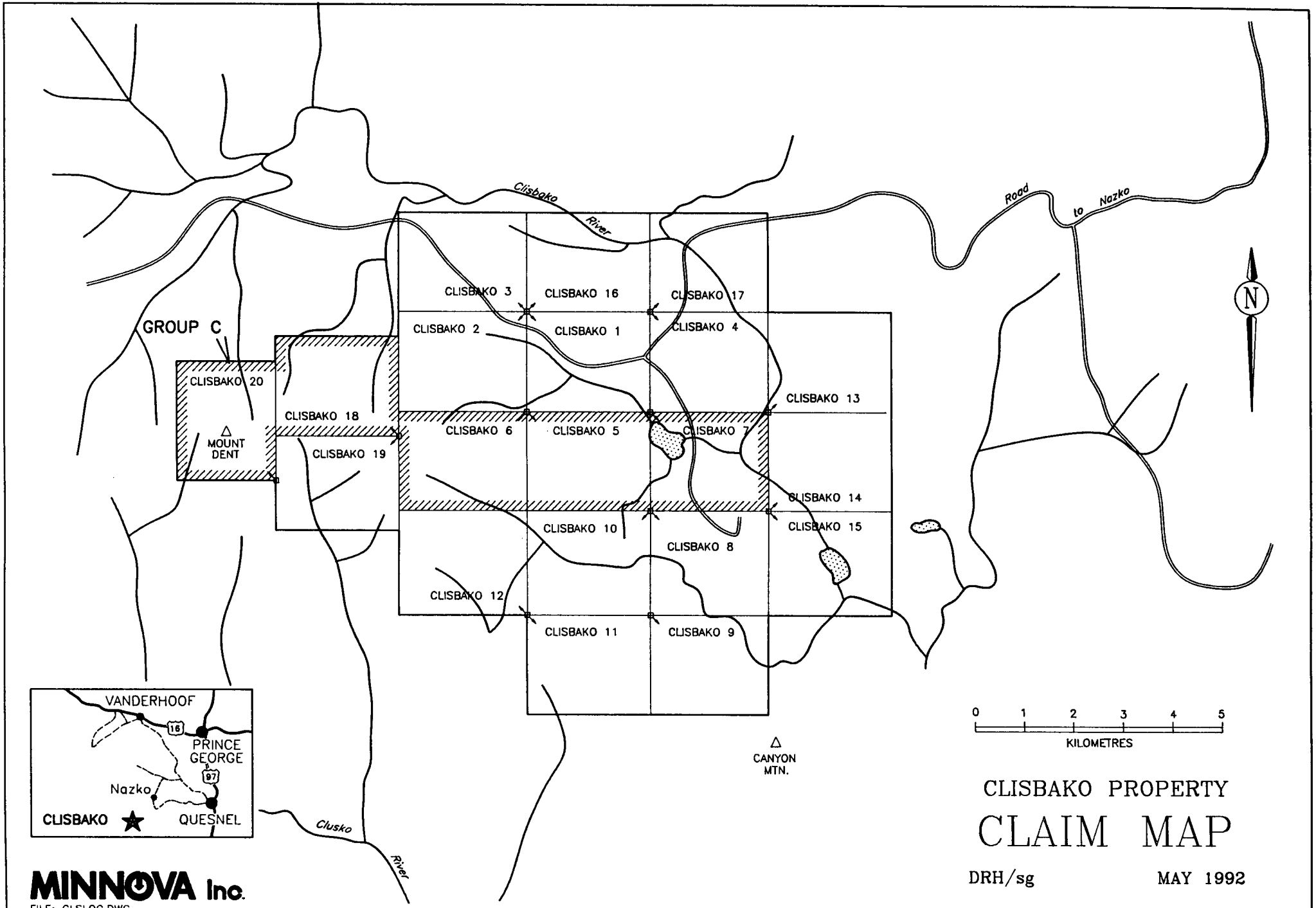
CLISBAKO PROPERTY

CLAIM MAP

DRH/sg MAY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG



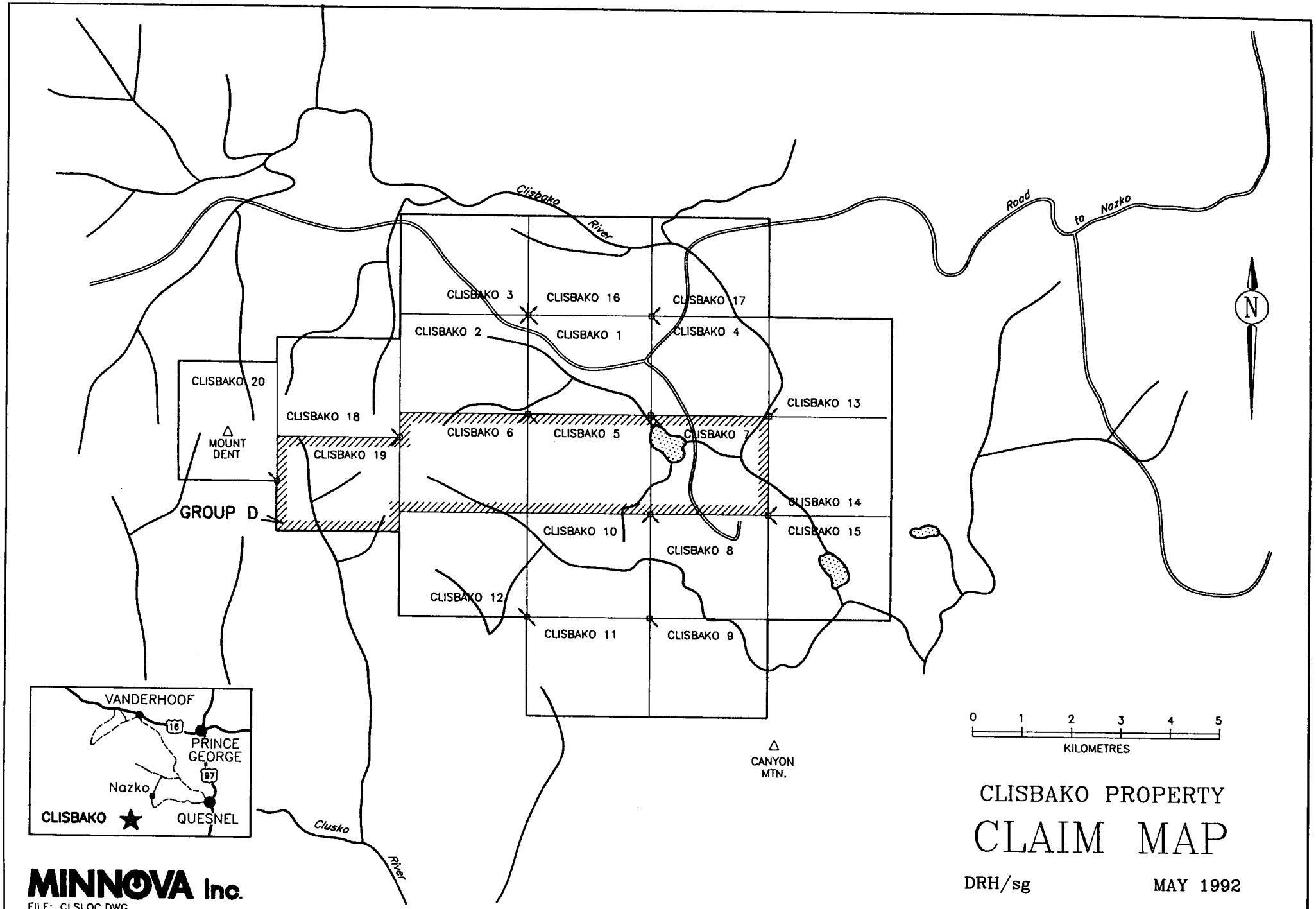
CLISBAKO PROPERTY

CLAIM MAP

DRH/sg MAY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG



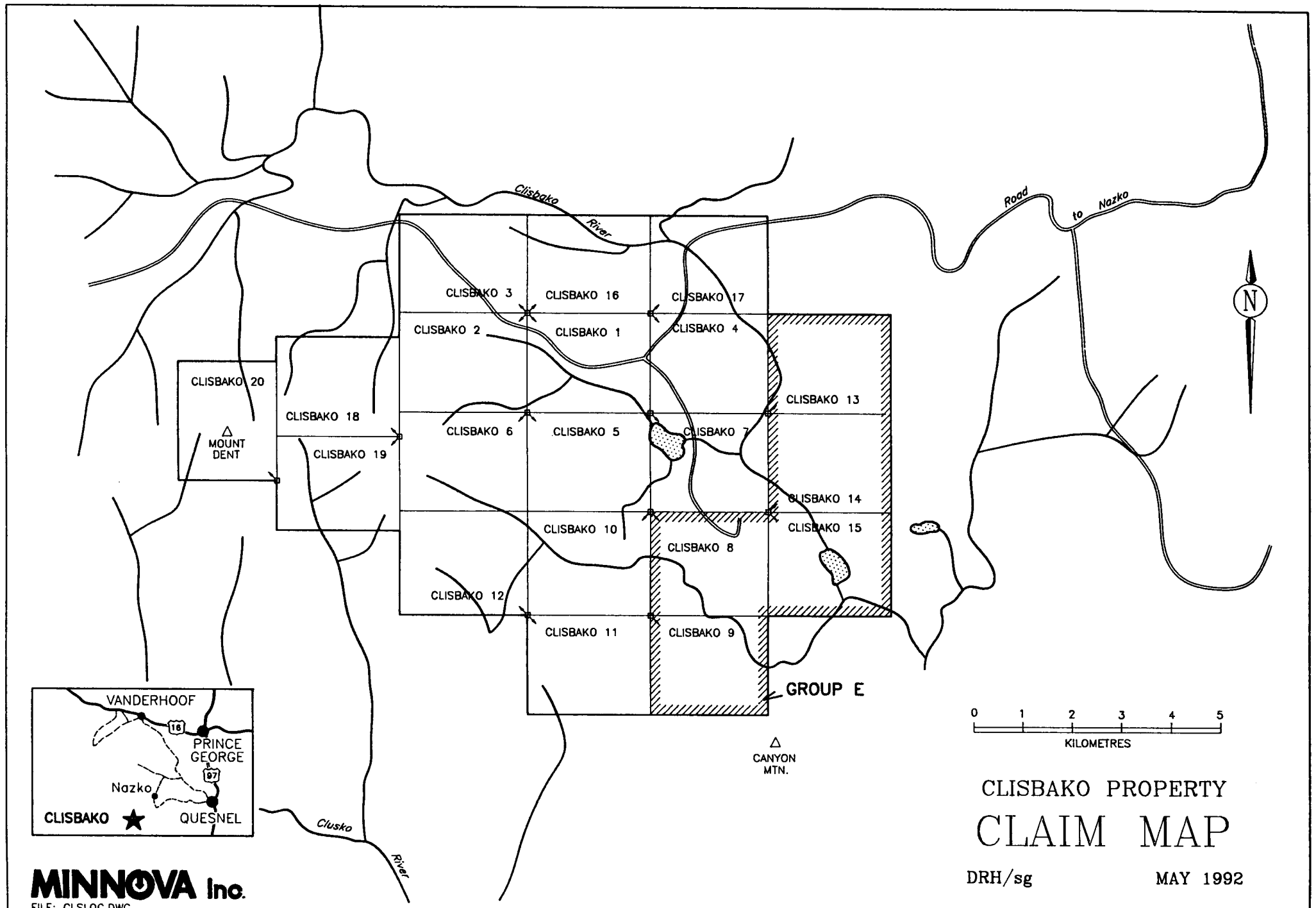
CLISBAKO PROPERTY

CLAIM MAP

DRH/sg MAY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG



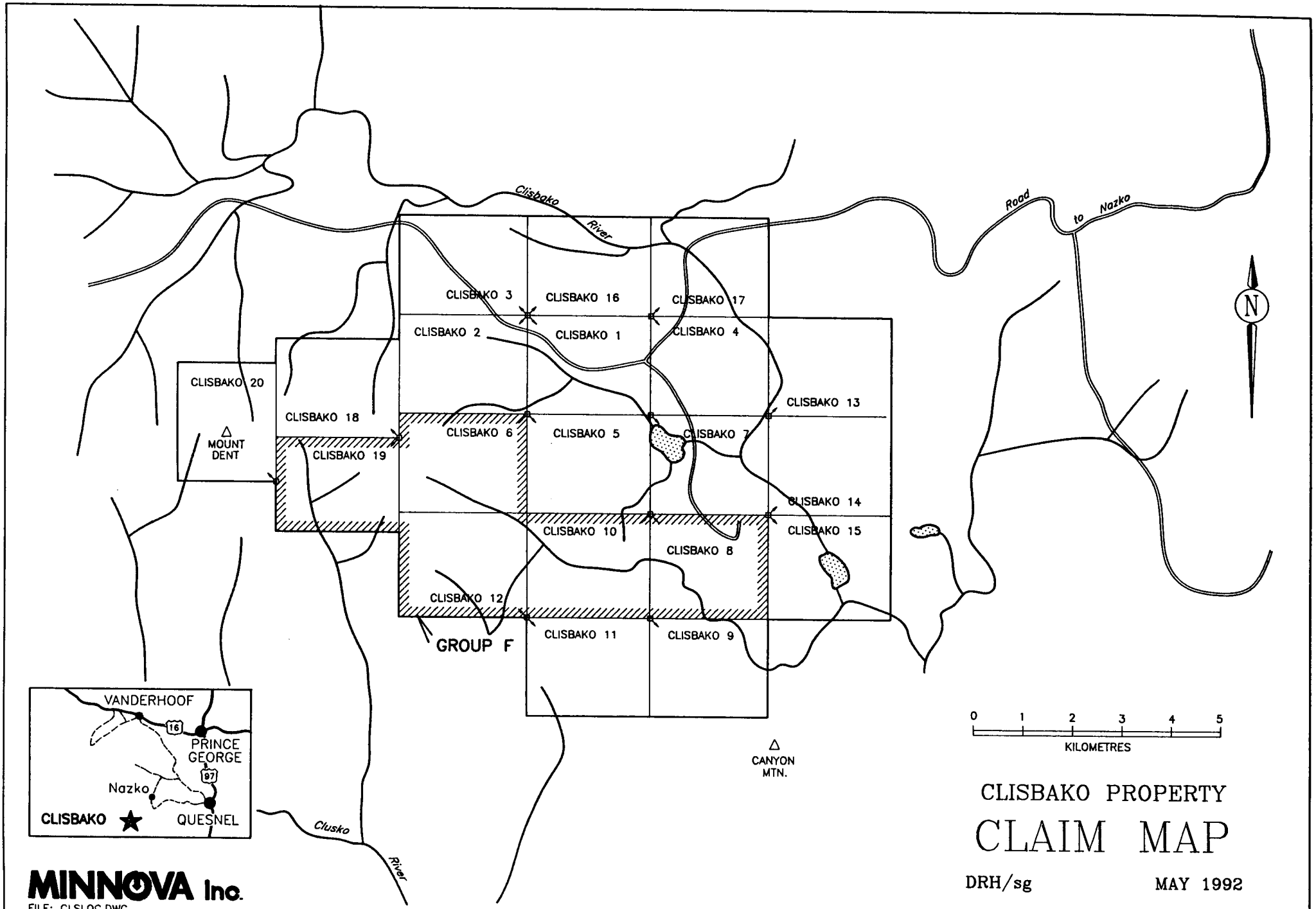
CLISBAKO PROPERTY

CLAIM MAP

DRH/sg MAY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG



CLISBAKO PROPERTY

CLAIM MAP

DRH/sg MAY 1992

MINNOVA Inc.

FILE: CLSLOC.DWG

SHEET INDEX

1
2

SHEET 2

CLISBAKO 1
CLISBAKO 4
CLISBAKO 5
CLISBAKO 7
CLISBAKO 13
CLISBAKO 10
CLISBAKO 8
CLISBAKO 14
CLISBAKO 15
CLISBAKO 11
CLISBAKO 9

CAMP
CORE RACKS

CL-91-12
CL-91-11
CL-91-09
CL-91-10
CL-91-08
CL-91-01
CL-91-02
CL-91-03
TR-91-07
CL-91-06
CL-91-05
CL-91-07
TR-91-05
TR-91-06
TR-91-04

TR-91-09
TR-91-08
TR-91-11
TR-91-10
TR-91-17
CL-91-17
CL-91-16
CL-91-19
CL-91-16
CL-91-14
CL-91-15
TR-91-16
TR-91-14
TR-91-15
CL-91-13

GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,339

===== 1991 TRAILS

● 1991 DRILL HOLE LOCATION

⊢⊣ 1991 TRENCH LOCATION

CLISBAKO PROJECT

DRILL HOLE LOCATION MAP

SCALE 1:5000

0 50 100 200 300 400 500

CONTOUR INTERVAL 5 m.

FIGURE 2

EAGLE MAPPING SERVICES LTD. (91-16)