

LOG NO:	DEC 23 1992	RD.
ACTION:		
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Diamond Drilling Assessment Report  
on the  
Mt. Mahon Property

Fort Steele Mining Division

NTS 82G/4

Lat. 49° 08' N Long. 115° 55' W

Owners:

Chevron Minerals Ltd.  
St. Eugene Mining Corporation Limited

SUB-RECORDER RECEIVED DEC 15 1992 M.R. # ..... \$ ..... VANCOUVER, B.C.
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Operator:  
Minnova Inc. **GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

22,692

Colin Burge  
Minnova Inc.

Vancouver, B.C.  
December, 1992

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## INTRODUCTION

The Mt. Mahon claim group consists of thirteen claims totalling 197 units. The claims comprise the southern half of the Mt. Mahon property located 10 km east of Yahk, B.C.

The property is underlain by Proterozoic-age Aldridge formation sediments and intrusions which host the giant Sullivan Pb-Zn massive sulphide deposit 65 km to the north.

The Sullivan deposit occurs at the contact between the Lower and Middle Aldridge formations and this contact represents the principal target in the belt. The Mt. Mahon property covers some six kilometres of strike of "Sullivan time" and the 1992 drill program explored this stratigraphy.

## Location and Access

The Mt. Mahon property is located on the south and east facing slopes of Mt. Mahon in the Purcell Mountains of southeastern B.C. The claims can be reached by proceeding east from the north end of Yahk, B.C. on the Hawkins Creek (Yahk Meadows) forestry road. At about the 12 km point the Cold Creek access road branches north and provides access along the eastern portion of the Mt. Mahon property. A number of other 4WD old logging roads exist on the property in various states of decay.

## Physiography

The property is situated in the Purcell Mountains and elevations range from 1150 m in the Cold Creek valley to over 1900 metres at the Mt. Mahon summit. Relief is quite gentle over much of the claim block.

The forest cover consists of immature stands of fir and spruce as well as stands of alder. A large recent clearcut exists in the central and eastern portions of the property.

The climate is cool and dry without snow in the upper reaches between June and October.

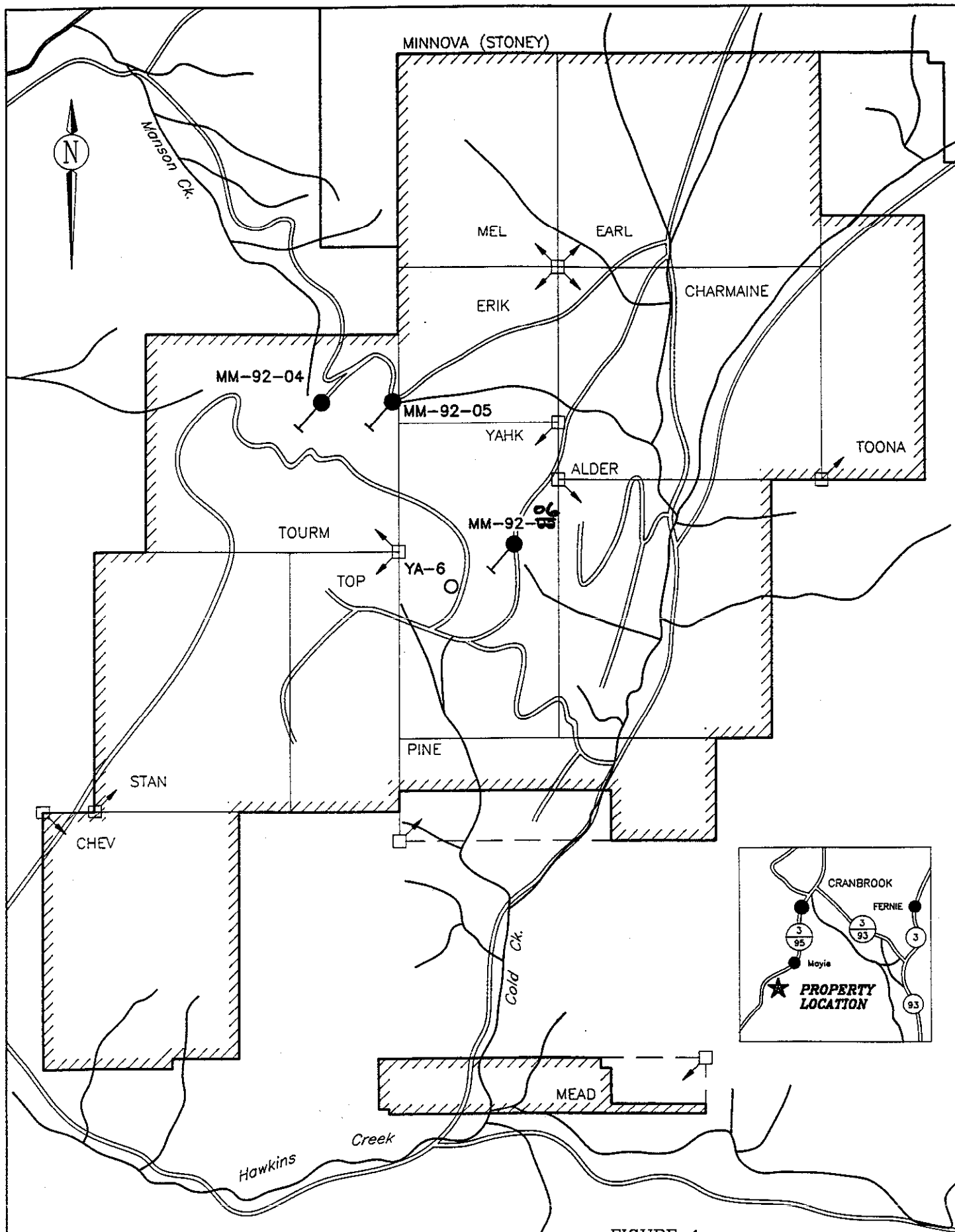


FIGURE 1

MT. MAHON PROPERTY  
1992 DRILLING

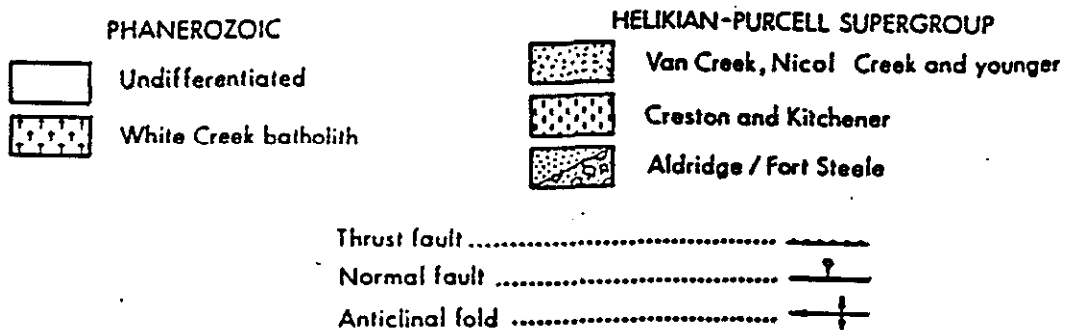
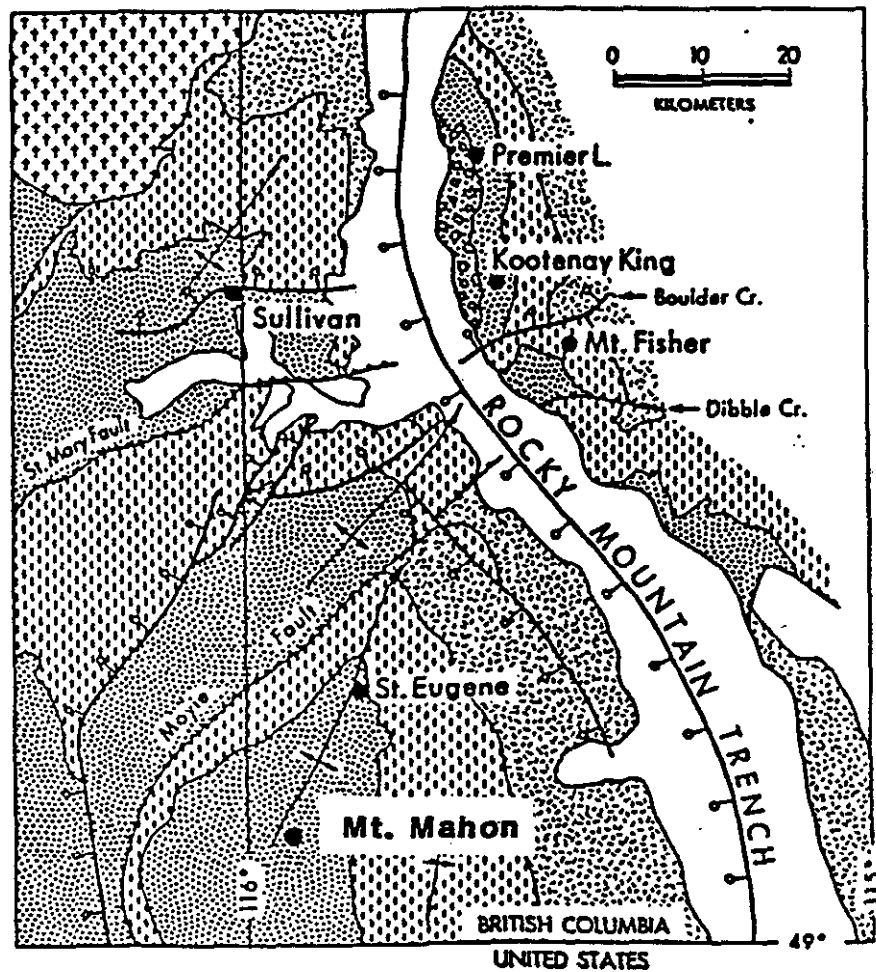
## Property and Ownership

The Mt. Mahon property consists of 13 claims for a total of 197 units. Minnova Inc. has an option to earn an interest in the claims from owners, Falconbridge Limited and St. Eugene Mining Corporation Limited.

The following table lists the current status of the claims.

Table 1. Claim Status

<u>Claim Name</u>	<u>Record No.</u>	<u>Units</u>	<u>Area</u>	<u>Expiry Date</u>
<u>Mt. Mahon North Group</u>				
Erik	210032	9	225 ha	Mar 5/1996
Yahk	209780	18	450 ha	Aug 1/1998
Earl	210033	20	500 ha	Mar 5/1995
Mel	210034	12	300 ha	Mar 5/1995
<u>Mt. Mahon West Group</u>				
Chev	209997	20	500 ha	Sept 23/1995
Stan	209998	20	500 ha	Sept 23/1995
Tourm	209758	20	500 ha	Sept 21/1995
<u>Not Grouped</u>				
Alder	209783	20	500 ha	Sept 7/1996
Pine	209784	12	300 ha	Sept 7/1996
Mead	782	6	150 ha	Oct 9/1993
Top	209799	10	250 ha	June 20/1996
Toona	210030	10	250 ha	Mar 5/1996
Charmaine	210031	20	500 ha	Mar 5/1996



from Hoy 1989

Washington State Information Circular 86

Fig. 2 MT. MAHON LOCATION MAP

## History

The Mt. Mahon property has undergone exploration most recently by Minnova Inc. (1991-1992), Chevron Minerals Ltd. (1983-1985) and Falconbridge Ltd (1978-1983). Fourteen drill holes have been drilled on the property and a number of soil and geophysical surveys have been conducted. The reader is referred to Assessment Report #14,240 for a comprehensive report on surface exploration at Mt. Mahon and A.R. # 22,197 for a detailed report concerning Minnova Inc.'s 1991 drilling.

## 1992 WORK PROGRAM

A total of three holes were drilled to probe Middle Aldridge formation sediments. The holes were collared in the hangingwall of tourmalinite showings exposed on the south flank of Mt. Mahon. The program consisted of 563.6 metres of NQ diamond drilling, 17 whole rock analyses and two geochem assays.

## GEOLOGY

### Regional Geology

The Proterozoic-age Aldridge Formation covers a large part of southeast B.C. and the southwest corner of Alberta. The Aldridge consists of upper greenschist facies sediments and conformable gabbroic sills known as the Moyie intrusions. The package forms three main structural blocks in southern B.C. divided by the northeast trending Cranbrook and Moyie Faults. Each structural block forms a broad open northeast plunging anticline and it is in the anticlinal axis of the northernmost structural block that the Sullivan deposit is situated. The Sullivan deposit is a 160 million ton >10% Pb-Zn, 68 g/t Ag massive sulphide sheet underlain by tourmaline altered fragments and overlain by an albite-chlorite alteration halo.

The Mt. Mahon claims are within the Moyie structural block, the southernmost block. The Sullivan time horizon (Lower - Middle Aldridge contact) is believed to be present on Mt. Mahon and extends, with shallow dips, north across the property.

The only significant producer apart from the Sullivan in the Aldridge Formation is the former St. Eugene Mine. The St. Eugene produced 1 million tons of 14% Pb, 5% Zn and 240 g/t Ag from a steep dipping massive sulphide vein. The St. Eugene is located about 15 km northeast of the Mt. Mahon property.

### Property Geology

The Mt. Mahon claims are underlain by Middle Aldridge formation sediments and Moyie sills and dikes. The bedded rocks form an open NNE shallow plunging anticline. Dips range from 15° to 25° northeast.

The clastic assemblage is made up of predominantly medium bedded quartz-rich greywackes intercalated with thin bedded siltstones and mudstones. The finer material occasionally displays graded bedding, ripple marks and cross bedding. The package probably represents a turbidite sequence of considerable thickness. The intrusive rocks range from diorite to gabbro and are medium to coarse grained.

Exposures on the south flank of the Mt. Mahon summit consist of tourmaline rich argillites. The tourmalinite occurs as a massive, very hard black rock consisting mainly of very fine felted tourmaline needles. Tourmalinite float has been discovered on the Erik claim 2 km north of the Mt. Mahon summit. A thin 1 metre bed of intraformational conglomerate occurs on Mt. Mahon and has been traced several hundred metres north and east of the summit.

The 1992 drill program explores the northeast and downdip component of the tourmaline rich argillites.



Please refer to Assessment Report #14,240 for a detailed description of geology, geochemistry and geophysical surveys conducted on the property.

### DIAMOND DRILLING

MM-92-04 was collared 600 meters northeast of the northern summit of Mt. Mahon. The hole tests stratigraphy intersected in Y-12-81 and an associated geophysical conductor. MM-92-05 was located 500 meters east of MM-92-04 as a follow-up hole.

MM-92-06, located 2 km east of the main summit of Mt. Mahon, follows up encouraging mineralization intersected near surface in YA-6 in 1979.

### Results

All three holes penetrated stratigraphy typical of Middle Aldridge turbidites. The turbidites consists of thin to medium bedded quartzites intercalated with siltstone, argillite and argillaceous wackes. Flame structures, cross bedding, load casts and other sedimentary structures are well preserved and quite common all indicating tops are uphole. The bedding angles measured suggest that the sediment package forms a shallow northeast dipping panel at approximately 15°.

Trace amounts of disseminated and finely laminated pyrrhotite are common throughout the sediment package. MM-92-04 encountered a weak zinc enriched horizon at 35.5 meters followed by a 5 cm massive pyrrhotite horizon at 56 meters. The interval between 54.0 and 60 meters contained numerous biotite rich clasts.

### Lithogeochemistry

Seventeen lithogeochemical and two geochemical samples were taken from the core. All were analyzed at Min-En Labs, North

Vancouver. Litho samples were analyzed for  $\text{SiO}_2$ ,  $\text{TiO}_2$ ,  $\text{CaO}$ ,  $\text{MgO}$ ,  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{MnO}_2$ ,  $\text{Fe}_2\text{O}_3$ , (total iron),  $\text{Al}_2\text{O}_3$ , Sr, Zn, and Ba by ICP analysis of a crushed and digested bead formed by fusion with lithium borate. Ag, Cu, Pb, Zn, B, Sb and As were analyzed by standard ICP techniques using an aqua-regia digestion. F and B-Tot were analyzed by fusion methods with their respective specific ion electrode and ICP finish. Geochem samples were analyzed for Cu, Pb, Zn, Ag, Au by standard ICP techniques.

Lithogeochemical samples were taken routinely approximately every 30 m down the hole. Lithogeochemistry does not show any marked deviation from fresh Middle Aldridge sediment. The sediments are calcium poor and are high in potassium and silica.

#### CONCLUSIONS AND RECOMMENDATIONS

Three holes ranging from 127.10 to 276.15 meters were completed on the Mt. Mahon property. The holes tested specific geological and geophysical targets generated by previous operators. The holes cored Middle Aldridge turbidites and intrusive rocks. No transition or Lower Aldridge stratigraphy was recognized in any of the holes. No base metal accumulations of any consequence were recognized in the drilling, however, elevated Pb-Zn values occur near the top of MM-92-04.

No further work is recommended in the northern part of the claim block.

Appendix I  
Itemized Cost Statement

Mt. Mahon Property  
Itemized Cost Statement

Drilling

Frontier Drilling Ltd., Langley, B.C.	
563.6 m @ \$62.88/m	\$35,441.37
Bearcat Contracting, Fort Steele	5,384.35
C. Burge 10 days @ \$350/day	3,500.00
S. Messing 5 days @ \$150/day	750.00
	<hr/>
	45,075.72

Geochemistry

Whole rock analyses 17 @ \$33.50	569.50
Geochems 2 @ 17.25	34.50
	<hr/>
	604.00

Transportation

4WD truck 10 days @ \$50/day	500.00
Fuel	100.00
	<hr/>
	600.00

Room and Board

Hotel and Meal, Fiddlers, Yahk	
10 days @ \$100	1000.00
	<hr/>
	1000.00

Report Preparation

C. Burge 3 days @ \$350/day	1050.00
Typing, Drafting, Computer	350.00
	<hr/>
	1400.00

Total	<u>\$48,679.72</u>
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Apportionment

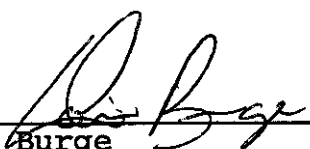
Mt. Mahon North Group 50%:	\$24,339.86
Mt. Mahon West Group 50%:	\$24,339.86

Appendix II  
Statement of Qualifications

Statement of Qualifications

I, Colin Michael Burge hereby certify that:

1. I have worked as an exploration geologist since graduation from the University of Waterloo, Waterloo, Ontario with a BSc. in Earth Sciences (1981).
2. I am currently employed as a Senior Project Geologist for Minnova Inc., 3rd Floor - 311 Water St., Vancouver, B.C. and have been with this company for six years.
3. I personally carried out or supervised the work reported herein.

  
Colin M. Burge

Dec. 11, 1992  
Date

Appendix III

Drill Logs - MM-91-04 to 06





HOLE NUMBER: MM-92-04

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 21.30	CASING					
21.30 TO 160.33	QTZ WACKE & SILTSTONE «QTZ WACKE/SLTST»	<p>Colour: purplish grey to white Grain Size: f.gr. to u.f.gr. Medium .5-1.5 m, massive qtz wacke beds alternating with .1-.3 meter intervals of laminated siltstone, argillaceous mudstones</p> <p>Sharp bedding contacts consistently 80-85 deg.</p> <p>Units composed of qtz and biotite. Occasional flame structures indicate tops uphole</p> <p>Massive units have a banded appearance as siliceous zones come and go</p> <p>Biotite rich, possible clasts?, occur in narrow zones less than .2 m</p> <p>44.5-54.0 -argillaceous mudstone/siltstone alternating bands dominate</p> <p>45.0-59.35 «Clasts» -clast bearing unit, ranging up to 1 cm size - composed of biotite and pyrrhotite. Jelly bean shapes oriented - long axis along bedding. Matrix supported. Clasts concentrate in .2-.5 m bands</p> <p>below 59.35 -argillaceous mudstone/siltstone intervals dominate. Quartzite (more massive material) restricted to occasional .5 meter beds</p> <p>110.2 -10 cm band containing clasts. Clasts are ameoboid shaped well rounded, felsic looking. Clast supported zone</p> <p>110.9-111.1 -disrupted beds in an otherwise monotonous pile of sediment oriented @</p>	85	<p>Occasional .1 meter bands of vague garnets. Garnets are pinkish aggregates probably retrograding</p> <p>Muscovite occurs as occasional &lt;.1 mm crystals</p> <p>38.8 -.2 cm band of biotite and garnet</p> <p>39.5-39.7 -bleached zone containing possible tourmaline crystals</p> <p>-weak sericite just below SMS band .05m</p> <p>110.42-110.48 -intense silica with biotite crystals</p> <p>Garnets restricted to 10-15 cm bands, with individual aggregates 1-2 mm</p>	<p>Tr-1% pyrrhotite, thin laminations of pyrrhotite common in siltstone intervals Massive quartzites contain trace disseminated pyrrhotite. Pyrrhotite laminations often truncated</p> <p>435.5-35.8 «tr sph» -trace sphalerite as disseminations red colour, 2-3% diss. pyrrhotite. Possible horizon, weakly developed</p> <p>44.5-54.0 «3% Po» -3-4% pyrrhotite as disseminations and fine laminations</p> <p>54.0-59.35 -some clasts pyrrhotite bearing</p> <p>456.20-56.25 «SMS» -70% pyrrhotite -trace chalcopryrite</p> <p>below 59.35 -trace pyrrhotite</p> <p>4110.42-110.48 «tr gn?»</p>	<p>Typical, Middle Aldridge deep water turbidite sequence</p> <p>No grading, cross-bedding observed</p> <p>Litho 16676 29.87-32.87</p> <p>Geochem. 35.5-35.8</p> <p>Intraformational Conglomerate(?) as described by Chevron</p> <p>SMS Band highly conductive</p> <p>Litho 16677 62.48-65.48</p> <p>Litho 16678 96.32-99.32</p> <p>Possible horizon (?)</p> <p>Litho 16679 129.85-132.85</p>

HOLE NUMBER: MM-92-04

DRILL HOLE RECORD

LOGGED BY: COLIN BURGE

PAGE: 2

OLE NUMBER: MM-92-04

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Argillaceous mudstone/siltstone laminations and thin beds now occurring over 4-5 meter intervals Massive qtz, wacke intervals 1-2 meter intervals  Garnets appear in both units but better developed and seem to prefer massive wackes  154.0-154.60 -siliceous dike containing euhedral biotites, coarse, cross-cuts sediments		size  150.5-150.65 152.5-152.8 -siliceous bands containing euhedral as seen in MM-91-02, 03 holes		Litho 16680 157.28-160.28
	E.O.H.					

HOLE NUMBER: MM-92-04

DRILL HOLE RECORD

LOGGED BY: COLIN BURGE

PAGE: 3

HOLE NUMBER: MH-92-04

## ASSAY SHEET

DATE: 14-October-1992

OLE NUMBER: MM-92-04				ASSAY SHEET																	COMMENTS
Sample	From (m)	To (m)	Length (m)	ASSAYS					GEOCHEMICAL										F ppm		
				Cu %	Pb %	Zn %	Ag gpt	Au gpt	Ag ppm	As ppm	Ba ppm	Cd ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	B ppm		BaT ppm	
.0126	35.50	35.80	0.30						.5			.1	85	208		250	2		331	Tr Sph. bedding l1el MPo band	
.0127	56.20	56.25	0.05						2.0			.1	327	531		398	1		489		

HOLE NUMBER: MM-92-04

## GEOCHEM. SHEET

DATE: 14-October-1992

Sample	From (m)	To (m)	Length (m)	Al2O3 %	Ba %	CaO %	Fe2O3 %	K2O %	MgO %	MnO2 %	Na2O %	P2O5 %	SiO2 %	TiO2 %	S %	TOT %	Ag ppm	As ppm	Ba ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	LOI %	B ppm	F ppm
16676	29.87	32.87	3.00	16.71	0.075	0.86	4.6	4.6	1.21	0.07	1.43	0.03	66.21	0.59	0.14	98.92	0.2	1	200	27	6	1	78	78	2.50	133	540
16677	62.48	65.48	3.00	14.92	0.08	1.52	4.15	3.93	1.08	0.08	1.39	0.02	69.11	0.55	0.11	98.94	0.3	1	319	20	9	1	84	84	2.10	100	480
16678	96.32	99.32	3.00	18.02	0.09	0.88	5.18	5.03	1.28	0.09	1.23	0.05	63.95	0.66	0.05	99.36	0.2	1	266	29	2	1	69	69	2.90	136	620
16679	129.85	132.85	3.00	12.71	0.06	1.81	4.29	2.94	1.06	0.1	1.94	0.08	72.13	0.51	0.16	99.03	0.3	1	342	41	5	1	61	61	1.40	74	390
16680	157.28	160.28	3.00	15.34	0.08	0.72	3.33	4.08	0.84	0.06	1.18	0.05	71.41	0.58	0.08	99.06	0.5	12	234	19	6	1	37	37	1.40	84	600

HOLE NUMBER: MM-92-04

GEOCHEM. SHEET

PAGE: 1

**METRIC UNITS: X**

COLLAR DIP: -75° 0' 0"  
LENGTH OF THE HOLE: 127.10m  
START DEPTH: 0.00m  
FINAL DEPTH: 127.10m

COLLAR ASTRONOMIC AZIMUTH: 250° 0' 0"

CONTRACTOR: FRONTIER  
CASING: 25.6 M  
CORE STORAGE: FIDDLER'S RESTAURANT

**DIRECTIONAL DATA:**

[illegible]

HOLE NUMBER: MM-92-05

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 25.60	«CASING»					
25.60 TO 126.13	QTZ WACKE INTERBED WITH ARG. SILTSTONES «WACKE SLTS T»	<p>Colour: grey to black Grain Size: f.gr. to u.f.gr. Massive, homogeneous qtz wacke beds commonly 1-2 meters thick interbedded with thin bedded to laminated argillaceous mudstones and siltstones. bedding planes are often mildly disrupted reflecting turbid conditions</p> <p>30.8-30.85 «FLT» -broken ground, possible fault oriented at</p> <p>33.7-34.1 -planar bedded zone</p> <p>Rare concretions up to 2 cm long axis parallel to bedding</p> <p>85.0 -bedding @</p> <p>90.0 -well developed flame structure indicating tops uphole</p> <p>111.7-115.2 -massive qtz wacke</p> <p>below 115.2 -siltstone/mudstone, thin beds and laminations beddings range from 70-80 deg.</p>	<p>85</p> <p>50</p> <p>88</p>	<p>Bands of pinkish aggregates - probably retrograding garnets bands usually 10-20 cm, occasionally highly siliceous</p> <p>76.0-81.0 -very faint green mineral, very fine grain appears as hairline fracture vein selvages</p> <p>85.45 87.00 -well developed siliceous bands .05 cm wide and containing biotite and garnet</p>	<p>Trace - 1% pyrrhotite, weakly disseminated, rare fracture control</p> <p>56.39-57.0 -1-25 pyrrhotite in fractures-hairline weakly magnetic</p> <p>115.9-116.0 «2% po» -disseminated pyrrhotite, bedding controlled</p>	<p>34.0 «Marker?» -period of extreme quiescence</p> <p>litho 16681 38.71-41.76 litho 16682 65.5-68.5</p> <p>93.4-96.4 litho 16683</p> <p>121.01-124.01 litho 16684</p>

HOLE NUMBER: MM-92-05

DRILL HOLE RECORD

LOGGED BY: C. M. BURGE

PAGE: 2

HOLE NUMBER: MM-92-05

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
126.13 TO 127.10	GABBRO «GAB»	Colour: dark green Grain Size: f.gr. -massive, homogeneous, equigranular -feldspar, hornblende, some quartz		-nil	-trace pyrrhotite	-fine grained, gabbro margin -weakly magnetic

HOLE NUMBER: MM-92-05

DRILL HOLE RECORD

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PAGE: 3

HOLE NUMBER: MM-92-05

## GEOCHEM. SHEET

DATE: 14-October-1992

Sample	From (m)	To (m)	Length (m)	Al2O3 %	Ba %	CaO %	Fe2O3 %	K2O %	MgO %	MnO2 %	Na2O %	P2O5 %	SiO2 %	TiO2 %	S %	TOT %	Ag ppm	As ppm	Ba ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	LOI %	B ppm	F ppm
6681	38.70	41.70	3.00	16.55	0.075	1.28	5.42	4.47	1.31	0.07	1.55	0.06	65.13	0.61	0.08	98.94	0.1	1	314	22	1	1	43	3	2.40	106	590
6682	65.50	68.50	3.00	13.9	0.07	1.63	4.51	2.78	1.11	0.07	2.6	0.06	70.08	0.54	0.03	98.96	0.1	1	275	19	1	1	35	2	1.60	58	460
6683	93.40	96.40	3.00	14.78	0.075	2.13	4.04	3.81	1	0.08	2.18	0.05	68.04	0.56	0.03	99.34	0.7	1	286	13	4	1	32	3	2.60	77	490
6684	121.01	124.01	3.00	11.41	0.025	3.47	3.24	1.6	0.75	0.16	2.57	0.03	74.02	0.41	0.01	99	0.4	1	237	9	1	1	27	5	1.30	42	330

HOLE NUMBER: MM-92-05

GEOCHEM. SHEET

PAGE: 1





HOLE NUMBER: MM-92-06

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 16.46	«CASING»					
16.46 TO 276.15	«WACKE/SLTS T» QTZ WACKE, ARG MUDST & SILTSTONE «WACKE/SLTS T»	<p>Colour: grey to black Grain Size: f.gr. to u.f.gr. Massive, thick bedded intervals of qtz wacke .3-.5 meter thick interbedded with thin bedded to laminated argillaceous mudstone and siltstone</p> <p>-rock composed mainly of varying amounts of silica and biotite -occasional planar bedded zones oriented @ -rare argillite clasts and concretions</p> <p>19.4 -graphite on foliation planes</p> <p>21.0-25 -very minor qtz veinlet occurrences</p> <p>{25.91} «FLT» -2-3 cm gouge</p> <p>28.2-28.5 -qtz vein up to 3 cm thick, normal to c.a., -trace pyrrhotite</p> <p>39.55 -minor &lt;1 cm gouge, possible, bedding plane fault</p> <p>{42.15} «FLT» -fault, 2-3 cm gouge</p> <p>44.35 -fault, minor gouge</p> <p>53.05-53.15 -faults and graphitic gouge</p> <p>58.70 -minor qtz veining, parallel to c.a., tr-15 po</p>	80	Garnet occurs as pink, 1-2 mm aggregates over .1 meter intervals. Not well developed	<p>Trace pyrrhotite disseminated</p> <p>21.0-25.0 -minor qtz vnlt, carry trace po</p> <p>27.8 -pyrrhotite and qtz lens, trace cp -2 cm thick on one side of core but is not continuous through core</p> <p>{55.67-55.70} «10% Po» -pyrrhotite rich band</p>	<p>20.11-23.11 litho 16685</p> <p>50.6-53.6 litho 16686</p> <p>Possible horizon?</p>

HOLE NUMBER: MM-92-06

DRILL HOLE RECORD

LOGGED BY: C.M. BURGE

PAGE: 2

HOLE NUMBER: MM-92-06

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		71.93 -clast (felsic)			72.0-73.6 -1% Po as minor laminations and disseminations	
		76.3 -two angular feldspar porphyritic clasts (volcanic?)			{72.5} «Po/1 cm» -Po band	74.98-77.98 -litho 16687
				80.4-80.6 -moderate sericite		
		below 92.4 -frequency and thickness of argillaceous mudstone/ siltstone increases		below 92.4 -garnet more abundant	114.3-114.6 -tr po	{84.12} «1.22 core loss» -mismatch
		below 117.5 -rare elliptical grey clasts, and argillite clasts		115.45-115.85 -silicified zone, very faint green colour	-pyrrhotite common on cleavage planes	105.4-108.4 litho 16688
		{123.7-126.4} «qtz vn» -coarsely crystalline a	20		123.7-126.4 -qtz vn, trace gn or aspy	
		127.0 -bedding a	85		128.05 -pyrrhotite lamination	
		128.2 -minor synsedimentary faulting		141.0-143.0 -bleached zone - weak silicification		litho 16689 135.0-139.0
		155.0 a	85		153.8 -tr sph, minor bedding parallel vnl	155.0 -planar bedded zone, possible marker
		156.45 -2 cm qtz bed, recrystallized chert? -carries biotite, tr po				
		162.5 -flame structures, tops uphole				
		176.0-176.1 -qtz vein, normal to c.a.			176.0-176.1 -qtz vein, 1-2% pyrrhotite	163.4-166.4 litho 16690
		201.46 -2 cm carbonate band carrying angular mudstone				169.9-199.9

HOLE NUMBER: MM-92-06

DRILL HOLE RECORD

LOGGED BY: C.M. BURGE

PAGE: 3

HOLE NUMBER: MM-92-06

MINNOVA INC.  
DRILL HOLE RECORD

DATE: 1-September-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		fragments. Possible fault? Locally bedding changes 201.5-203.0  206.4 -possible fault, broken ground  213.0 -bedding @  238.0-239.57 -planar, bedded zone	55     85	-siliceous bands carrying coarse biotite and garnets - usually .1 meters wide (individual beds originally containing higher Mg and Ca)		litho 16691  224.4-227.4 litho 16692  {238.0-239.57} «Marker?»  245.7-248.7 litho 16693  273.10-276.10 -litho 16694
	E.O.H.				{258.0} «qtz py vnit» -quartz-pyrite vein, 2 cm wide oriented at 45 deg.	

HOLE NUMBER: MM-92-06

DRILL HOLE RECORD

LOGGED BY: C.M. BURGE

PAGE: 4

HOLE NUMBER: MM-92-06

## GEOCHEM. SHEET

DATE: 14-October-1992

Sample	From (m)	To (m)	Length (m)	Al2O3 %	Ba %	CaO %	Fe2O3 %	K2O %	MgO %	MnO2 %	Na2O %	P2O5 %	SiO2 %	TiO2 %	S %	TOT %	Ag ppm	As ppm	Ba ppm	Cu ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	LOI %	B ppm	F ppm
6685	20.11	23.11	3.00	15.41	0.13	0.66	4.44	4.09	0.99	0.05	1.86	0.06	68.83	0.6	0.02	99.02	0.6	1	359	30	5	1	39	7	1.90	87	450
6686	50.60	53.60	3.00	15.02	0.11	0.91	5	3.97	1.05	0.08	1.99	0.07	68.91	0.56	0.06	99.17	0.6	1	352	13	2	1	67	6	1.50	71	400
6687	74.98	77.98	3.00	14.76	0.085	0.43	4.79	3.89	1.14	0.08	1.93	0.07	70.51	0.58	0.16	99.07	0.8	6	348	22	26	1	84	4	.80	62	470
6688	105.40	108.40	3.00	15.46	0.1	1.11	4.55	4.33	1.13	0.09	1.82	0.06	67.8	0.61	0.27	98.97	0.4	1	312	19	20	1	102	3	1.90	78	450
6689	135.00	139.00	4.00	16.66	0.075	2.66	4.06	4.06	1.12	0.16	1.99	0.07	66.19	0.65	0.25	99.1	0.5	460	256	16	9	1	90	16	1.40	81	530
6690	163.40	166.40	3.00	13.6	0.075	2.07	4.08	3.96	0.88	0.11	1.01	0.05	70.32	0.55	0.65	99.11	0.3	3	174	21	29	1	89	2	2.40	65	330
6691	196.90	199.90	3.00	15.55	0.095	0.78	3.84	4.84	1.05	0.09	0.79	0.07	69.79	0.65	0.46	98.96	0.3	15	173	19	19	1	97	1	2.20	90	530
6692	224.40	227.40	3.00	7.25	0.035	0.52	2.43	2.36	0.37	0.06	0.2	0.02	82.92	0.35	2.3	98.82	1.1	1	96	24	49	1	207	3	2.30	67	1340
6693	245.70	248.70	3.00	13.43	0.055	1.7	3.56	3.82	0.84	0.09	0.77	0.06	69.63	0.44	4.5	98.9	1.1	1	212	21	95	1	135	1	4.50	50	700
6694	273.10	276.10	3.00	12.63	0.05	2.04	3.15	2.78	0.74	0.09	1.45	0.05	74.01	0.46	1.9	99.36	0.7	1	293	16	59	1	162	6	1.90	18	720

HOLE NUMBER: MM-92-06

GEOCHEM. SHEET

PAGE: 1

Appendix IV  
Geochemical Analytical Procedures



ANALYTICAL PROCEDURE REPORT FOR ASSESSMENT WORK:

-----  
PROCEDURE FOR TRACE ELEMENT ICP  
-----

Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cu,  
Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb,  
Sr, Th, U, V, Zn, Ga, Sn, W, Cr

Samples are processed by Min-En Laboratories, at 705 West 15th Street, North Vancouver, employing the following procedures.

After drying the samples at 95 C, soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized on a ring mill pulverizer.

0.50 gram of the sample is digested for 2 hours with an aqua regia mixture. After cooling samples are diluted to standard volume.

The solutions are analyzed by computer operated Jarrall Ash 9000 ICAP or Jobin Yvon 70 Type II Inductively Coupled Plasma Spectrometers.



**ANALYTICAL PROCEDURE FOR ASSESSMENT WORK**

**WHOLE ROCK ANALYSIS**

Samples are processed by Min-En Laboratories at 705 West 15th Street, North Vancouver, employing the following procedures.

After drying the samples at 95 C, soil and stream sediment samples are screened to -80 mesh for analysis. Rock samples are crushed by a jaw crusher and pulverized to 90% -120 mesh.

A 0.200 gram subsample is fused using lithium metaborate, dissolved and diluted to standard volume.

The solutions are analyzed by computer operated Jarrall Ash 9000 ICAP or Jobin Yvon Type II Inductively Coupled Plasma Spectrometers.





**ANALYTICAL PROCEDURE FOR ASSESSMENT WORK**  
-----

**Boron Geochem**  
-----

Samples are processed by Min-En Laboratories at 705 West 15th Street, North Vancouver, employing the following procedures:

After drying the samples at 95 degrees celsius, soil and stream sediment samples are screened to -80 mesh for analysis. Rock samples are crushed by a jaw crusher and then pulverized to 90% -120 mesh.

A 0.500 gram sub-sample is fused using KOH, leached overnight and then dissolved using HCL. The solution is diluted to volume and mixed.

The solutions are analyzed by computer operated Jarell Ash 9000 ICAP or Jobin Yvon Type II Inductively Coupled Plasma Spectrometers. The results are compared to certified natural standards.



**ANALYTICAL PROCEDURE FOR ASSESSMENT WORK**  
-----

**Fluorine Geochem**  
-----

Samples are processed by Min-En Laboratories at 705 West 15th Street, North Vancouver, employing the following procedures:

After drying the samples at 95 degrees celsius, soil and stream sediment samples are screened to -80 mesh for analysis. Rock samples are crushed by a jaw crusher and then pulverized to 90% -120 mesh.

A 0.200 gram sub-sample is fused using NaOH, leached overnight with water and then dissolved using H<sub>2</sub>SO<sub>4</sub>. A buffer is added and the sample is adjusted to pH 7.0 using NaOH.

The solutions are analyzed using specific ion electrodes and compared to known certified natural standards.



ANALYTICAL PRECEDURE REPORT FOR ASSESSMENT WORK:

-----  
PROCEDURE FOR WET GOLD GEOCHEMICAL ANALYSIS  
-----

Samples are processed by Min-En Laboratories, at 705 West 15th Street, North Vancouver, employing the following procedures.

After drying the samples at 95 C, soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized on a ring mill pulverizer.

5.00 grams of sample is weighed into porcelain crucibles and cindered @ 800 C for 3 hours. Samples are then transferred to beakers and digested using aqua regia, diluted to volume and mixed.

Further oxidation and treatment of 75% of the above solution is then extracted for gold by Methyl Iso-butyl Ketone.

The MIBK solutions are analyzed on an atomic absorption spectrometer using a suitable standard set.



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

To: MINNOVA INC.

3RD FLOOR, 311 WATER ST.  
VANCOUVER, BC  
V6B 1B8

A9221189

Comments: ATTN: COLIN BURGE

SEP 17 1992

## CERTIFICATE

A9221189

MINNOVA INC.

Project: 674  
Lab #: NONE

Samples submitted to our lab in Vancouver, BC.  
This report was printed on 15-SEP-92.

## SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	6	Geochem ring to approx 150 mesh
234	6	Splitting charge
238	6	Nitric-aqua-regia digestion

## ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2	6	Cu ppm: HNO3-aqua regia digest	AAS	1	10000
4	6	Pb ppm: HNO3-aqua regia digest	AAS-BKGD CORR	1	10000
5	6	Zn ppm: HNO3-aqua regia digest	AAS	1	10000
6	6	Ag ppm: HNO3-aqua regia digest	AAS-BKGD CORR	0.2	100.0

Appendix V  
Geochemical Results

COMP: MINNOVA INC.  
PROJ: CRANBROOK 674  
ATTN: COLIN BURGE

**MIN-EN LABS — WHOLE ROCK ANALYSIS**  
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2  
(604)980-5814 OR (604)988-4524

FILE NO: 2V-0822-RX2  
DATE: 92/10/01  
\* CORE \* (ACT:F26)

SAMPLE NUMBER	AL2O3 %	BA %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SIO2 %	SR %	TIO2 %	LOI %	S %
16676	16.71	.075	.86	4.60	4.60	1.21	.07	1.43	.03	66.21	.005	.59	2.50	.14
16677	14.92	.080	1.52	4.15	3.93	1.08	.08	1.39	.02	69.11	.005	.55	2.10	.11
16678	18.02	.090	.88	5.18	5.03	1.28	.09	1.23	.05	63.95	.005	.66	2.90	.05
16679	12.71	.060	1.81	4.29	2.94	1.06	.10	1.94	.08	72.13	.005	.51	1.40	.16
16680	15.34	.080	.72	3.33	4.08	.84	.06	1.18	.05	71.41	.005	.58	1.40	.08

FILE NO: 2V-0845-RL1  
DATE: 92/08/27  
\* ROCK \* (ACT:F26)

SAMPLE NUMBER	AL2O3 %	BA %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SI02 %	SR %	TIO2 %	LOI %	S %
16681	16.55	.075	1.28	5.42	4.47	1.31	.07	1.55	.06	65.13	.005	.61	2.40	.08
16682	13.90	.070	1.63	4.51	2.78	1.11	.07	2.60	.06	70.08	.010	.54	1.60	.03
16683	14.78	.075	2.13	4.04	3.81	1.00	.08	2.18	.05	68.04	.005	.56	2.60	.03
16684	11.41	.025	3.47	3.24	1.60	.75	.16	2.57	.03	74.02	.005	.41	1.30	.01
16685	15.41	.130	.66	4.44	4.09	.99	.05	1.86	.06	68.83	.005	.60	1.90	.02
16686	15.02	.110	.91	5.00	3.97	1.05	.08	1.99	.07	68.91	.005	.56	1.50	.06
16687	14.76	.085	.43	4.79	3.89	1.14	.08	1.93	.07	70.51	.005	.58	.80	.16
16688	15.46	.100	1.11	4.55	4.33	1.13	.09	1.82	.06	67.80	.005	.61	1.90	.27
16689	16.66	.075	2.66	4.06	4.06	1.12	.16	1.99	.07	66.19	.005	.65	1.40	.25
16690	13.60	.075	2.07	4.08	3.96	.88	.11	1.01	.05	70.32	.005	.55	2.40	.65
16691	15.55	.095	.78	3.84	4.84	1.05	.09	.79	.07	69.79	.005	.65	1.40	.46

FILE NO: 2V-1080-RL1  
DATE: 92/10/09  
\* ROCK \* (ACT:F26)

[illegible]

COMP: MINNOVA INC.  
PROJ: CRANBROOK 674  
ATTN: COLIN BURGE

**MIN-EN LABS — ICP REPORT**  
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2  
(604)980-5814 OR (604)988-4524

FILE NO: 2V-0822-RP2  
DATE: 92/10/01  
\* CORE \* (ACT:F31)

SAMPLE NUMBER	AG PPM	AS PPM	BA PPM	CU PPM	PB PPM	SB PPM	ZN PPM	AU-FIRE PPB
16676	.2	1	200	27	6	1	78	1
16677	.3	1	319	20	9	1	84	2
16678	.2	1	266	29	2	1	69	3
16679	.3	1	342	41	5	1	61	3
16680	.5	12	234	19	6	1	37	5







SPECIALISTS IN MINERAL ENVIRONMENTS  
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

**VANCOUVER OFFICE:**

705 WEST 15TH STREET  
NORTH VANCOUVER, B.C. CANADA V7M 1T2  
TELEPHONE (604) 980-5814 OR (604) 988-4524  
FAX (604) 980-9821

**SMITHERS LAB.:**

3176 TATLOW ROAD  
SMITHERS, B.C. CANADA V0J 2N0  
TELEPHONE (604) 847-3004  
FAX (604) 847-3005

**Geochemical Analysis Certificate**

**2V-0822-RG2**

Company: **MINNOVA INC.**  
Project: **CRANBROOK 674**  
Attn: **COLIN BURGE**

Date: **AUG-27-92**

Copy 1. MINNOVA INC., VANCOUVER, B.C.

We hereby certify the following Geochemical Analysis of 5 CORE samples  
submitted AUG-17-92 by C. BURGE.

Sample Number	B PPM	F PPM
16676	133	540
16677	100	480
16678	136	620
16679	74	390
16680	84	600

Certified by \_\_\_\_\_

MIN-EN LABORATORIES

Min Proc P.C. Sat Th:

CHE  
OC



**MINNOVA INC.**  
**MINERAL ENVIRONMENTS**  
**LABORATORIES**  
(DIVISION OF ASSAYERS CORP.)

SPECIALISTS IN MINERAL ENVIRONMENTS  
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

**VANCOUVER OFFICE:**

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**SMITHERS LAB.:**

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SMITHERS, B.C. CANADA V0J 2N0  
TELEPHONE (604) 847-3004  
FAX (604) 847-3005

RECEIVED  
SEP 2 1992

**Geochemical Analysis Certificate**

2V-0845-RG1

Company: **MINNOVA INC.**  
Project: **CRANBROOK 674**  
Attn: **COLIN BURGE**

Date: **AUG-27-92**

Copy 1. MINNOVA INC., VANCOUVER, B.C.

We hereby certify the following Geochemical Analysis of 18 ROCK samples  
submitted AUG-20-92 by C. BURGE.

Sample Number	B PPM	F PPM
16681	106	590
16682	58	460
16683	77	490
16684	42	330
16685	87	450
16686	71	400
16687	62	470
16688	78	450
16689	81	530
16690	65	330
16691	90	530



**MINNOVA INC.**  
**MINERAL ENVIRONMENTS**  
**LABORATORIES**  
(DIVISION OF ASSAYERS CORP.)

SPECIALISTS IN MINERAL ENVIRONMENTS  
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

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**SMITHERS LAB.:**

3176 TATLOW ROAD  
SMITHERS, B.C. CANADA V0J 2N0  
TELEPHONE (604) 847-3004  
FAX (604) 847-3005

**Geochemical Analysis Certificate**

2V-1080-RG1

Company: **MINNOVA INC.**  
Project: **CRANBROOK/674**  
Attn: **COLIN BURGE**

Date: **OCT-09-92**

Copy 1. MINNOVA INC., VANCOUVER, B.C.

We hereby certify the following Geochemical Analysis of 3 ROCK samples  
submitted SEP-29-92 by C. BURGE.

Sample Number	B PPM	F PPM
16692	67	1340
16693	50	700
16694	18	720



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

To: MINNOVA INC.

3RD FLOOR, 311 WATER ST.  
VANCOUVER, BC  
V6B 1B8

Project: 674  
Comments: ATTN: COLIN BURGE

SEP 17 1992

Page Number: 1  
Total: 1  
Certificate Date: 15-SEP-92  
Invoice No.: 19221189  
P.O. Number: NONE  
Account: BBX

## CERTIFICATE OF ANALYSIS

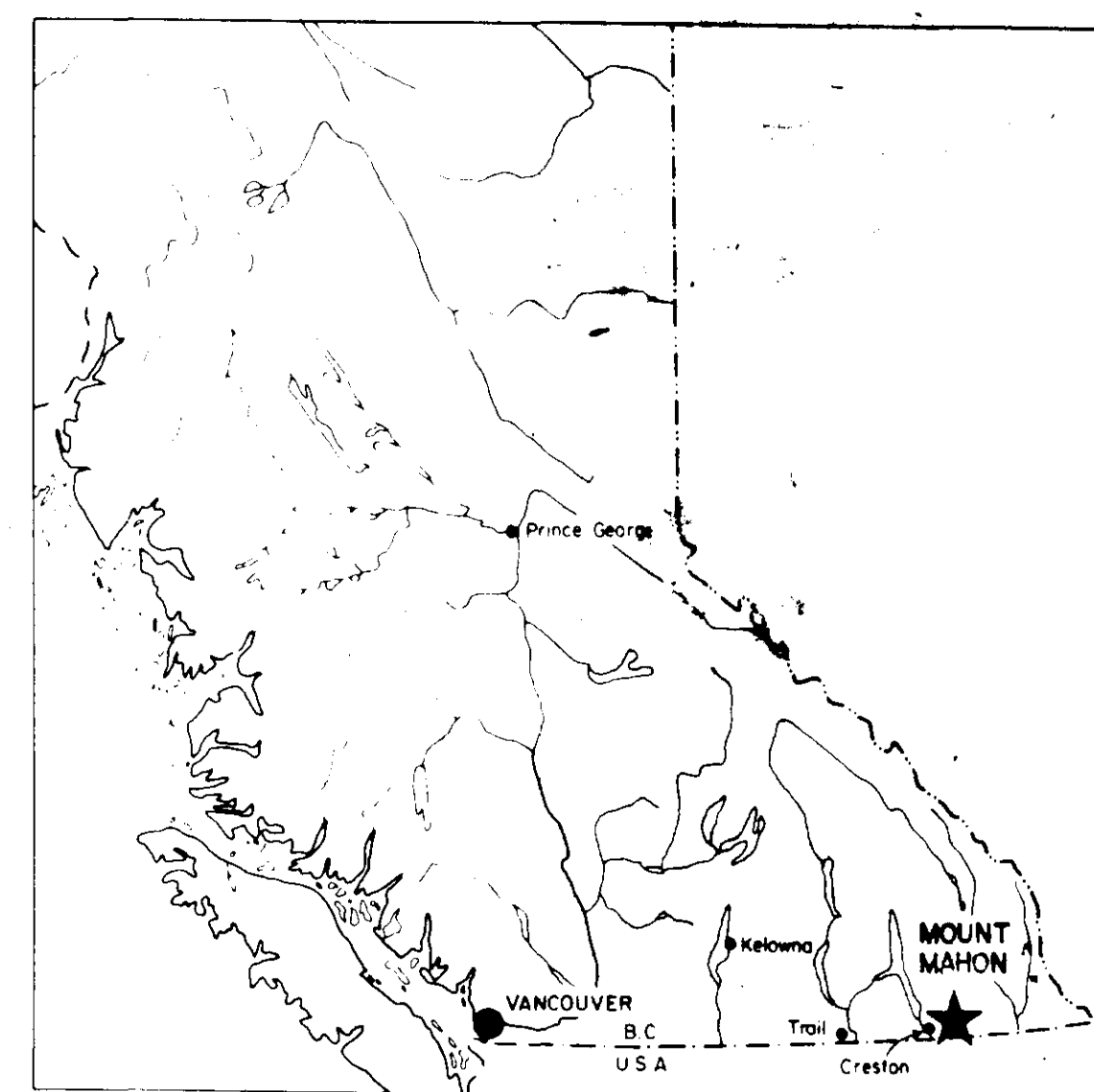
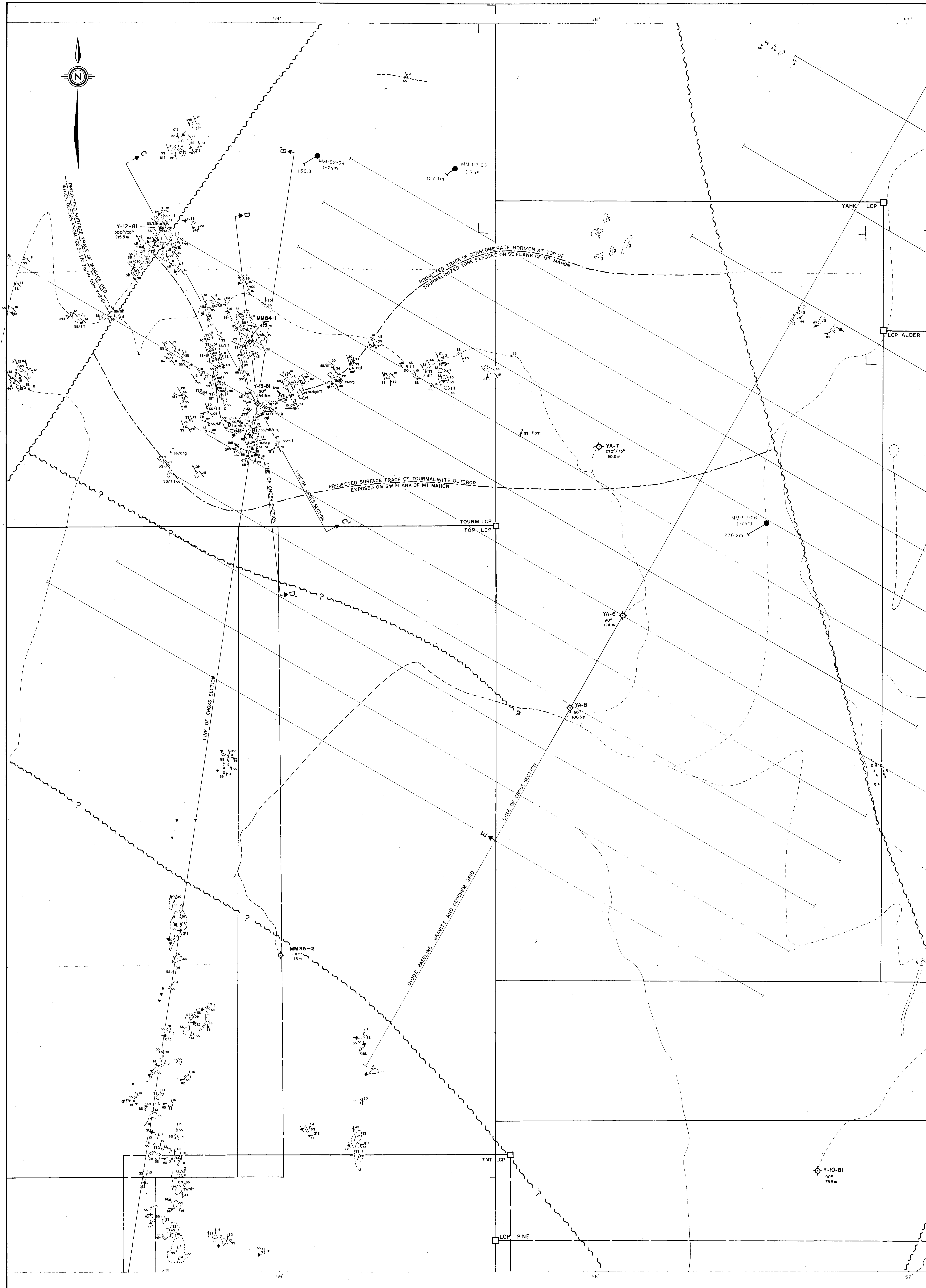
A9221189

SAMPLE	PREP CODE	Cu ppm	Pb ppm	Zn ppm	Ag ppm Aqua R						
40126	205 234	85	208	250	0.5						

CERTIFICATION:

*Hank Bichler*

[illegible]



# LEGEND

## GABBRO AND DIORITE

dark grey to green-grey, medium to coarse grained

## ALDRIDGE FORMATION

### SANDSTONE

light grey weathering, light to medium grey, fine to very fine grained, occasionally argillaceous. Beds generally 10 to 70 cm thick; sedimentary structures include graded bedding, also load casts, flame structures, and rare flute casts at base. Intervals of 1 to 10 cm thick laminated siltstone and/or dark grey argillite at top (AE, AB and ABE turbidites?). Occasional thin-bedded, cross-bedded, very fine grained sandstone alternating with 10 cm thick beds of dark grey argillite and/or tourmalinized argillite.

### SILTSTONE

rusty weathering, light to medium grey, finely laminated; also dark grey to rusty weathering, laminated; couplets of medium grey siltstone and dark grey carbonaceous and/or argillaceous siltstone.

### ARGILLITE

medium to dark grey. Typically as thin beds or laminae within argillite/siltstone couplets, or as relatively thin horizons at the top of graded sandstone beds. Commonly tourmalinized in the vicinity of Mt. Mahon. Porphyroblasts of biotite and/or feldspar often present.

### CONGLOMERATE

typically consists of angular to subangular flint fragments (up to 10 cm long) of dark grey argillite, tourmalinized argillite, and/or laminated siltstone/argillite within a fine to very fine grained sandstone matrix; conglomerate is intraformational.

### TOURMALINITE

black weathering, dark grey to black tourmalinized rock. Most commonly occurs as 2 cm thick layers of aphanitic chert rock, comprised of 40 to 60 % very fine, feld tourmaline crystals, which replaces argillite at the top of graded sandstone beds, or in thinly bedded sandstone/tourmalinized argillite couplets. Similar tourmalinite occurs as fragments within intraformational conglomerates. Less commonly it occurs in thicker sandstone beds as very fine feld tourmaline between sand-sized quartz grains.

### TOURMALINITE, float

pyrrhotite, disseminated, 2 %

Bedding (inclined, horizontal)

Cleavage or Schistosity (inclined)

Joints (inclined, vertical)

Quartz Vein (parallel to joint set)

Quartz Vein (inclined, vertical)

Current Direction (from cross bedding)

Current Trend (from ripple marks)

Current Trend (from sole marks)

Outcrop

Fault

Diamond Drill Hole (inclination, total depth)

Grid Line

Road

Topographic Contour (100 foot contour interval)

Stream

Line of Cross Section

Claim Boundary and legal Corner Post

1992 DRILL HOLE LOCATION

## GEOLOGICAL BRANCH ASSESSMENT REPORT

22,692

MINNOVA INC.

MOUNT MAHON  
GEOLOGY  
(CENTRAL SHEET)

FIGURE No 3		PROJECT No	
DATE DEC. 1992	REVISIONS	SCALE 1:5000	FILE No
NTS No 82G/4W	GEOLOGY BY CHEVRON 1993		
COMPILED BY			