

MAR 19940003: CHRISTINA

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19940003

Christina Block Government Assessment Report

Christina Block
NTS ~~73~~ 73 L and M

Takla Star Resources Ltd. and Fairstar Exploration

BY
D. I. SRAEGA, Geologist
EDMONTON, ALBERTA

DECEMBER, 1994

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Christina Block Summary

This assessment report pertains to the Christina Block. The block consists of 33 contiguous metallic and industrial permits in the Interior Plains which includes part of the Methy Portage Plain, Stony Mountain Upland and Moostoos Upland. The block has a net surface area of 304000 hectares or 760,000 acres and is immediately north of the Cold Lake air weapons range. The block lies within Township 73 to 80, Range 1 to 8 west of the 4th meridian.

Peridotitic garnet, chrome diopside and picroilmenite were found in sample concentrates. There are three aeromagnetic total field basement anomalies in the block trending parallel to the Snowbird Tectonic Zone. The aeromagnetic anomalies could potentially mask the magnetic signature of a diatreme

The work to date is inconclusive as to whether there is diamond bearing rock in the block. Limited access, poor sample sites and extensive glacial drift are some of the problems in the block. Minerals which indicate the presence of potential diamond bearing alkaline ultramafic rock are found in the block. Most samples were found to have one or two indicator minerals. The indicator minerals found may represent a regional background.

Introduction

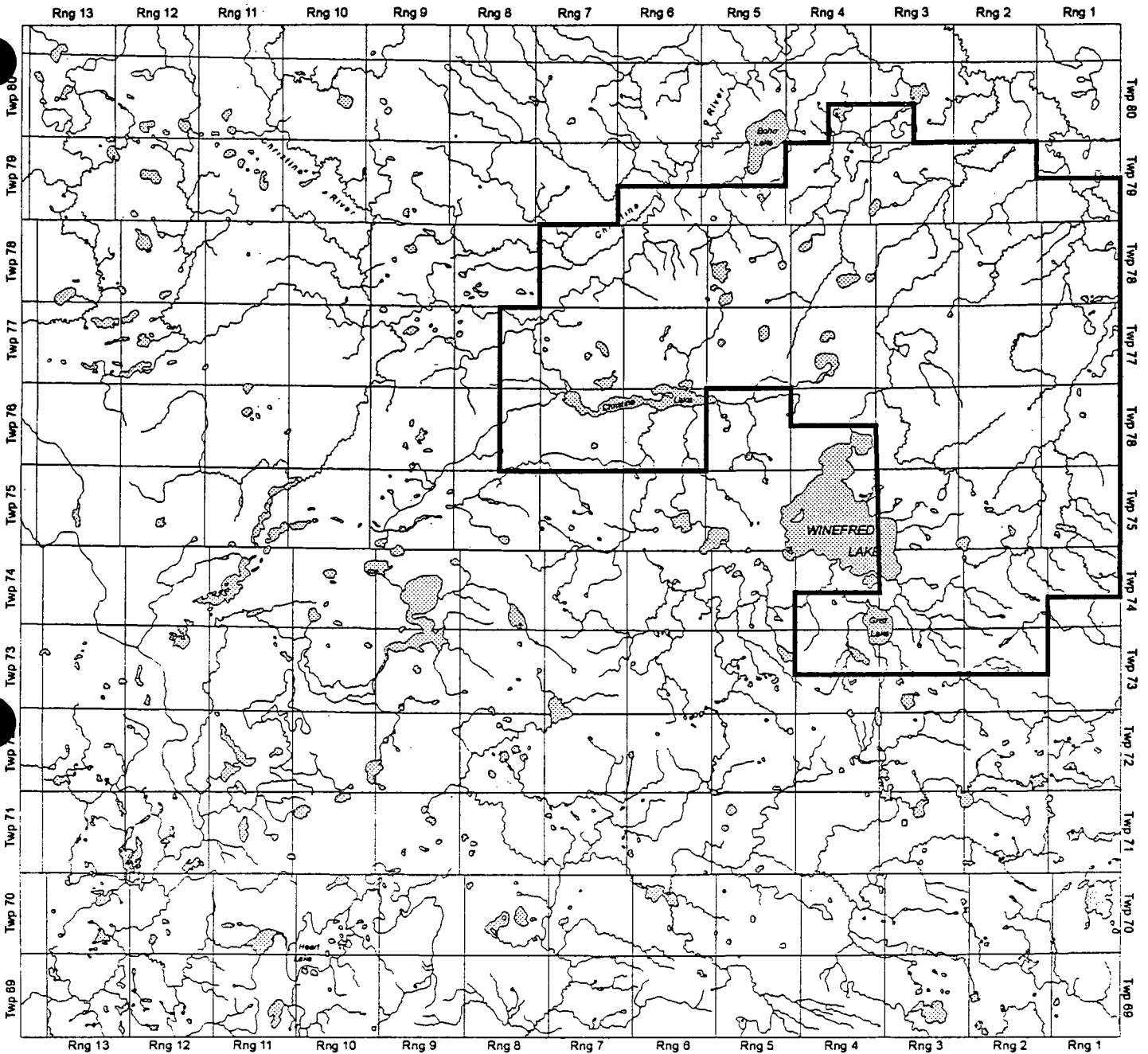
This assessment report details the stream sediment heavy mineral program carried out in the Christina Block in the search for alkaline ultrabasic rock diamond bearing rock. There were 16 samples taken in the summer of 1993 in the Block.

The Christina Block lies on the SW-NE trending Snowbird Tectonic Zone (Ross et al., 1990). The Snowbird Tectonic Zone (STZ) separates the Taltson and the Rimbey terrane. The STZ is the northwestern extension of the Thorsby Magnetic Low. Sheared gneiss and gabbro from the Thorsby low have yielded ages of 2.29 and 2.38 Ga and a pegmatite dated at 1.92 Ga (Ross et al., 1990). The Jack Diatreme is known to contain diamonds (Fipke et al., 1989) and lies on the western edge of the Thorsby terrane. Diamondiferous alkaline ultrabasic rocks are found in association with the STZ at Debawnt Lake in the NWT. A paleozoic basement terrane found in association with diamond bearing alkaline ultrabasic rock along a major crustal shear zone make the Christina Block a potential diamond exploration target

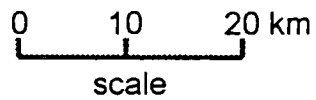
Location

This assessment report pertains to the Christina Block. The block consists of 33 contiguous metallic and industrial permits in the Interior Plains which includes part of the Methy Portage Plain, Stony Mountain Upland and Moostoos Upland. The block has a net surface area of 304000 hectares or 760,000 acres and is immediately north of the Cold Lake air weapons range. The block lies within Township 73 to 80, Range 1 to 8 west of the 4th meridian.

The town of Conklin is accessible by secondary road 881 from highway 67. The Canadian National Railway runs through Conklin on a trunk line to Fort McMurray. The block is heavily wooded and oilfield access roads, cut lines and seismic lines are the only access in the block.



Christina Block



— Roads ~ Rivers Lakes — Property boundary

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Permit Tabulation

The permit holder of the metallic and industrial mineral permits which comprise the Christina Block is held by Takla Star Resources Ltd. This assessment report is submitted by Takla Star Resources Ltd. and authored by Douglas I. Sraega, G.I.T. The list of permits, which comprise the Christina Block, is given below with amount of money allocated to retain the exploration permit in good standing. The retained lands are to be kept in good standing for 6 with expenditures in excess of \$25 per hectare. At the current time the block is a joint venture between Takla Star Resources Ltd. 75% and Fairstar Exploration 25%. The description of the tracts of lands pertaining to each permit is given in Appendix II. The statement of expenditures is given in appendix III

<u>Permit Number</u>	<u>Amount of Money Allocated to the Permit</u>
9393080334	\$0.0
9393080335	\$0.0
9393080336	\$0.0
9393080337	\$0.0
9393080338	\$0.0
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9393080357	\$0.0
9393080358	\$0.0
9393080359	\$0.0
9393080360	\$0.0
9393080361	\$23,501.73 (credit to 362 permit)
9393080362	+\$0.0 ↓
9393080363	\$0.0
9393080364	\$0.0
9393080365	\$0.0

9393080366

\$0.0

The list of metallic and industrial mineral permit numbers with the locations to be retained by Takla Star Resources.

<u>Permit Number</u>	<u>Description of Lands to be Retained</u>
9393080334	-
9393080335	-
9393080336	-
9393080337	-
9393080338	-
9393080339	-
9393080340	-
9393080341	-
9393080342	-
9393080343	-
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9393080358	-
9393080359	-
9393080360	-
9393080361	4-7-078: 5; 8; 9; 16 N; (lands in 362 permit)
9393080362	- ↓ ↓
9393080363	-
9393080364	-
9393080365	-
9393080366	-

Work Performed

A stream sediment heavy mineral program was conducted in the summer of 1993. The report for the stream sediment heavy mineral report for the program is given in appendix I. The field work for the stream sediment heavy mineral program was carried out by Stewart Fraser B.Sc. and Rob Hardy M.Sc.

Work Performed

Stream Sediment Heavy Mineral Program

Dates

July 1 to 25

Conclusions

Peridotitic garnet, chrome diopside and picroilmenite were found in sample concentrates. There are three aeromagnetic total field basement anomalies in the block trending parallel to the Snowbird Tectonic Zone. The aeromagnetic anomalies could potentially mask the magnetic signature of a diatreme

The work to date is inconclusive as to whether there is diamond bearing rock in the block. Limited access, poor sample sites and extensive glacial drift are some of the problems in the block. Minerals which indicate the presence of potential diamond bearing alkaline ultramafic rock are found in the block. Most samples were found to have one or two indicator minerals. The indicator minerals found may represent a regional background.

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Statement of Qualification

I, Douglas I. Sraega of [REDACTED] Edmonton , Alberta do hereby certify that.

- 1.) I am a graduate of the University of Alberta, Edmonton with a B.Sc. in Science obtained in 1987.
- 2.) I have completed a Special Certificate in Geology from the University of Alberta obtained in 1993.
- 3.) I am the author, except for the statement of expenditures, of this report.

Certified



Data

Dec. 16/94

Appendix I

1993 Christina Block Stream Sediment Survey Report

REPORT ON THE 1993 STREAM SEDIMENT HEAVY
MINERAL GEOCHEMISTRY SURVEY

ON THE

CHRISTINA BLOCK
ALBERTA
NTS 73 L and M

Prepared for

TAKLA STAR RESOURCES LTD.

BY

D.I. SRAEGA, Geologist
EDMONTON ALBERTA

FEBUARY 1994

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figure 1: Total Indicator Minerals

Excutive Summary

General

A stream sediment heavy mineral geochemistry program was conducted in the Edmonton Block during July 1993. The program was performed to test postglacial drainages down ice from three aeromagnetic linears which include the Snowbird Tectonic Zone for potential diamondiferous rock. Seventeen sediment samples were taken near Winefred and Christina Lake and along the trend of the Snowbird Tectonic Zone.

Results

The work to date is inconclusive as to whether there is a potential source rock in the block. Limited access, poor sample sites and extensive glacial drift are some of the problems in the block. The three aeromagnetic anomalies all have indicator minerals found in down ice drainages. Most samples have one or two indicator minerals while samples taken north of Conklin along the Snowbird Tectonic Zone contain higher concentrations of indicator minerals.

No diamond indicator minerals were found. This is possibly due to the low population of indicator minerals or the lack of a diamond bearing source rock in the area.

Recommendations

The results of the stream geochemical heavy mineral sampling program is inconclusive as to whether diatremes exist in the block. A detailed aeromagnetic survey should be conducted to delineate magnetic signatures of potential source rocks.

1 Introduction

This report describes the results of a stream sediment heavy mineral geochemistry program carried out on the Christina Block during July of 1993. The object of the program is to test post-glacial drainages down ice from aeromagnetic anomalies in the block. The program collected 17 samples from the Christina Block and down ice drainages. No previous diamond or heavy mineral work has been conducted in this area.

Lamproites and kimberlites are the primary sources of diamonds. Lamproites are associated with paleobenioff zones and mobile belts on the edge of cratons. Diatreme clusters and fields lie along linears controlled by deep crustal fractures. The Edmonton Block lies over Thorsby terrane (Ross et al., 1991) and it is interpreted as the southern extension of the Snowbird Tectonic Zone (STZ). Diamondiferous lamproites are spatially associated with the STZ at Debawnt Lake in the N.W.T. and recently lamproites have been found near Rankin Inlet in the N.W.T.. The diamondiferous Jack diatreme lies over the Thorsby terrane.

2 Location, Access and Physiography

2.1 Location and Access

The Christina block is immediately north of the Cold Lake Air Weapons Range on the Alberta Saskatchewan border. The block comprises 304 000 hectares and 33 metallic mineral permits. The block encompasses the Ranges 1 to 8 west of the 4th meridian and between township 73 to 80. NTS maps 73L and 73M cover the area.

Conklin is accessible by secondary road 881 from highway 67 to Fort McMurray. A winter road links Conklin with Lac La Biche to the south. The Canadian National Railway runs through Conklin on a trunk line to Fort McMurray. Oil field access roads, cut lines and seismic lines are the only access inside the Christina block.

2.2 Physiography

The Christina block lies within the Interior Plains and includes Methy Portage Plain, Stony Mountain Upland and Moostoos Upland. The area is predominantly flatlands with hilly topography in the south and northwest of the block. The highest elevation of 700m is found in the southeast near the weapons range and the lowest elevation of 400m is found in the north on the Christina River (Ozoray, 1974).

The entire area was covered by the Wisconsin ice sheet which left deposits of glacialfluvial, glaciolacustrine and glacial origin. Sand dunes were formed from exposed glacial outwash. Rivers flow from southwest to northwest. Much of the area is covered by muskeg with many lakes and ponds occupy post glacial lows with unintegrated or undefined drainages. The subcontinental divide between the Arctic and Hudson Bay drainage system crosses the southern corner of the block.

The area is extensively forested with carbonifers with sparse deciduous trees. Open spaces are found only in muskeg and logged areas.

3 Regional Geology

The Snowbird Tectonics Zone is the most prominent basement feature in the block. The zone separates the Taltson 1.9 Ga magmatic arc and the Rimbey magmatic 1.8 Ga magmatic arc. The Taltson magmatic arc is a broad positive aeromagnetic anomaly with regions of negative anomalies corresponding to peraluminous plutonic belts, metasedimentary rocks and shear zones. The 1.8 Ga Rimbey magmatic arc forms the southern boundary and is thought to be syntectonic or posttectonic to the Snowbird Tectonic Zone.

The Snowbird Tectonic Zone extends from Hudson Bay to the Canadian Cordillera and divides the Churchill Province into the Rae and Hearne provinces (Ross et al., 1991). The tectonic zone trends northeast through the northern half of the block. The exposed northeastern portion of the zone, on the craton, is characterized by a zone of anastomosing mylonite with crusted scale augens of granulite grade gneiss. The zone is inferred to bifurcate into two separate strands enclosing the Wabamum High northeast of Edmonton (Ross et al., 1991).

The Phanerozoic sedimentary sequence includes Devonian carbonates, shales and evaporites underlie the block. Solution collapse of the evaporites has caused a thickening of carbonate strata. The pre-Cretaceous surface of Devonian carbonates exhibits extensive karsting. The carbonates are overlain by Cretaceous Mannville Group, Pelican and Joli Fou Formation and La Biche Group. The La Biche Group correlates with the Colorado shales in the Central Alberta Plains.

The La Biche Group subcrops in most of the block and the Pelican and Joli Fou Formations subcrop in the northern margin of the block. The thickness of sedimentary strata decreases northeastward from 1100m near Christina Lake to 600 meters of Cowper Lake in the northeast of the block.

Preglacial channels are known in the Sand River and Wiau Lake area to the south and east of the study area. In the Sand River area to the south well preserved sequence of glacial tills, glaciolacustrine and glaciofluvial deposits exist. The Christina block is known to contain glaciolacustrine, glaciofluvial and till. Glacial outwash deposits have been reworked into dunes and muskeg covers a large part of the area. Drift thickness ranges from 250m at Christina Lake to 120m along the Saskatchewan provincial border (Ozaray, 1972).

4 Exploration Program

4.1 Field Sampling

Field samples were obtained by screening gravel or gravely sands to -12 mesh and washing to remove excess silt and clay. The sample was put on 20 liter plastic buckets for lab consignment. There were 17 samples numbered CB-0 to CB-16s weighing +/- 35 Kg.

The Christina block contains three northwest trending groups of aeromagnetic highs and lows which may contain diatremes. The strategy of the geochemical stream heavy mineral program is to test down ice drainages for indicator minerals. Erosion of a diateme by glaciers results in the dispersion of indicator minerals in a halo which eventually reaches the surface or is incorporated into another ice advance. Subsequent to the glaciation indicator minerals are concentrated in down ice drainages.

The best dispersion trains occur in areas of active ice flow with glacial flutings and drumlins. "Dead ice" areas with multiple tills have poorly developed dispersion trains and any indicator mineral anomaly is significant. Indicator mineral trains rise gently at 2 to 4 % (Craigie, 1993) in the deposited tills from the source rock and show a general decrease in concentration with distance.

4.2 Lab Processing

The laboratory process concentrates indicator minerals by density and magnetic susceptibility. The samples were not processed utilizing alkali fusion or x-ray fluorescence to recover diamond. Diamond would report in the non-magnetic heavy fraction.

Field samples were weighed and run through a wilfley table to produce coarse heavy mineral concentrates. The concentrates were dried under moderate heat then separated with heavy liquid utilizing acetylene tetrabromoethane (TBE) with a density of 2.96 g/cm³. The heavy mineral separates were rinsed with acetone and the TBE recycled. The sample was sieved to + and - 28 mesh fractions. The -28 mesh fraction was cleaned of magnetite with a hand magnet. Magnetic separation was done utilizing a Frantz Isodynamic Magnetic Separator. Current settings of .4 and .6 Amps were used to produce .4 paramagnetic, .6 paramagnetic and non-magnetic heavy mineral separates. Heavy mineral separates were picked at Loring Labs in Calgary and probed at the University of Calgary and University of Alberta.

4.3 Data Analysis

The predominant indicator mineral found was eclogitic garnet with smaller amounts of pyroxene, pyrope, uvarovitic garnet and picro-ilmenite. Electron microprobe analysis were analyzed at Loring Laboratory by computer using the criteria of Stephen and Dawson (1977 and 1975), Fipke et al. (1989) and Gurney (1985) for garnets, pyroxenes and ilmenites.

5 Discussion of Indicator Minerals

Indicator minerals are minerals which indicate to the presence of a lamproite or kimberlite intrusion or the potential for diamond in an intrusion. These minerals are characteristic of phases found in lamproites or kimberlites, the source region in the upper mantle of the rock or found as inclusions in diamonds. Some minerals commonly found in kimberlites and lamproites are also found in alkali basalts, carbonatites, lamprophyres and other rocks. Care should be taken to screen for minerals only of potential economic importance.

Diamond inclusion (DI) mineral chemistries are determined from syngenetic inclusions from diamonds. Diamond inclusion chromites typically have greater than 60 wt. % Cr_2O_3 , Mg# greater than .6 and Al_2O_3 less than 10 wt. %. Eclogitic garnet containing greater than .07 wt. % Na_2O with elevated titanium (McCandless and Gurney, 1989 and Fipke et al., 1989) have been found as diamond inclusions.

Eclogites and peridotites are the two paragenetic sources of minerals from the upper mantle. They are found in xenocrysts and xenoliths in the primary source rocks. Peridotites are the source for peridotitic G1, G2, G7, G9, G10 and G11 garnets (Stephen and Dawson, 1975) and chrome diopside. Eclogitic rocks are formed from failed basaltic melts in the upper mantle or the ultrametamorphism of subducted oceanic crust. Eclogitic garnets are classes G3 and G5 garnets as defined by Stephen and Dawson (1975).

Minerals common to other rocks have compositions similar to minerals from kimberlites and lamproites. Chromium substitution in diopside increases with pressure and calcium depletion is correlative with increasing temperature. Chrome diopside is common to lamprophyres, layered mafic intrusions and other rocks. Subcalcic chrome diopside with greater than 1 wt. % Cr_2O_3 is potentially derived from peridotite xenoliths (Mitchell, 1986). Uvarovitic garnets are often mistakenly classified as G7 (Stephen and Dawson, 1975) garnets. G7 garnets with only greater than 5 wt % MgO and less than 26 wt % CaO are important to diamond exploration. The G7 garnet is interpreted to originate from the subduction and subsequent metamorphism of uvarovite bearing serpentinites (Schulze, 1989). Eclogitic G5 (Dawson and Stephen, 1975) garnet has been found by Fipke (1989) to overlap with regional garnet compositions. Garnets containing less than 29.93 wt % FeO (Fipke et al., 1989) are potentially derived from eclogitic rocks. Picroilmenites are commonly found in carbonatites but are low in chromium. Ilmenites with greater than 9 wt. % MgO and 3 wt. % Cr_2O_3 is significant to diamond exploration.

Kimberlites contain a relatively greater variety and number indicator minerals as compared to lamproites. Because of the diversity of lamproites the only useful indicator minerals are phenocryst and xenocryst chromites and xenocryst eclogitic garnets. Kimberlites contain a wide variety of distinctive phenocryst, macrocryst and xenolith minerals including eclogite garnets.

6 Table: Indicator Mineral Results

<u>Sample</u>	<u>Location</u>	<u>Indicator Mineral</u>
CB-0	Sand River	G3, two G5's, one G11 and one picroilmenite
CB-1	Southeast of Winefred Lake	one G3 and one G11
CB-2	West of Winefred Lake	one G5
CB-3	South of Winefred Lake	one G5
CB-4	Southwest of Winefred Lake	one G5
CB-5	South of Winefred Lake	one G5 and one G10 *
CB-6	Christina River	one G5
CB-7	May River	one G3 and one G5
CB-8	Jackfish River trib.	one G3
CB-9	Jackfish River	one G3, one G5, one G9 and one G11
CB-10	Birch Creek	no indicator minerals
CB-11	east of Christina Lake	one G3
CB-12	Monday Creek	one G3 and one G5
CB-13	south of Christina Lake	one G5
CB-14	Pony Creek	two G5's and one G9
CB-15	Waddell Creek	two G3's and one G5
CB-16	Christina River	one G1, one G5 and one G11

* G10 garnet classifies as G9 by Stephen and Dawson (1975) and G10 by Gurney (1985)

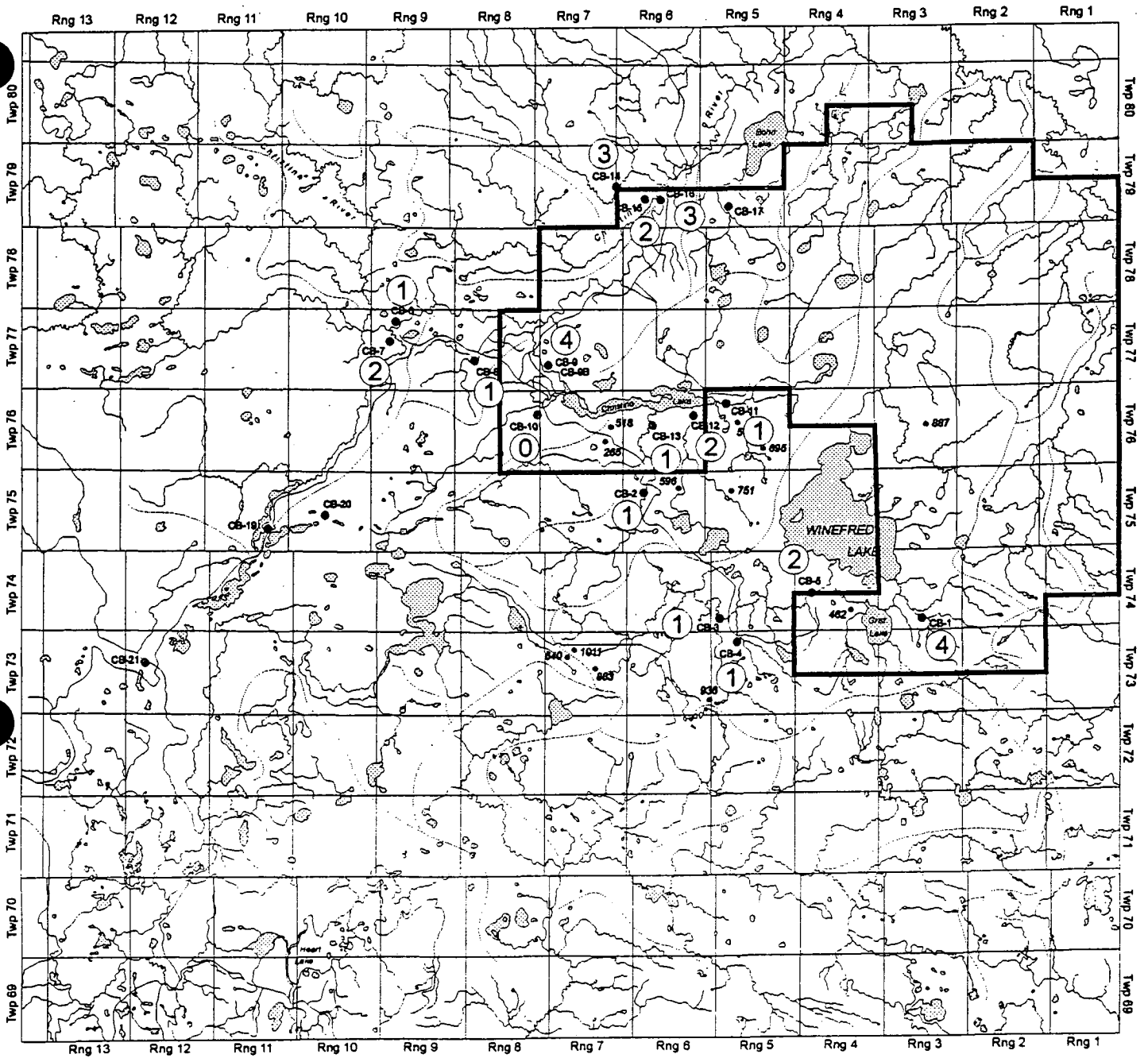





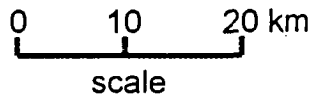


figure 1: Total Indicator Minerals

-  Rivers
-  Lakes
-  Roads
-  Property boundary
-  Sample locations

2 Total Indicator Minerals



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7 Discussion

7.1 Discussion of Microprobe Results

Electron microprobe garnet analysis was classified at Loring Labs according to Stephen and Dawson (1975) classification scheme. Garnets often classified as G5 containing greater than 29.93 wt. % FeO were not included in the final results. This criteria removed the majority of G5 garnets from the final results. Sample CB-6 contained an eclogitic garnet with elevated sodium with less than 29.93 wt % FeO.

All uvarovitic garnets classified at Loring Labs as G7 garnets contained less than 5 wt. % MgO and were probably derived from crustal sources (Schulze, 1989).

A large number of peridotitic garnets were found in the block. Peridotitic garnets classified by Stephen and Dawson (1975) as G1, G2, G9 and G11 are potentially derived from mantle xenoliths or macrocryst phases in the kimberlite or lamproite source rocks (Mitchell, 1986). Peridotitic G9 garnets are commonly found in garnet lherzolite xenoliths. Sample CB-5 contained one G10 as classified by Gurney (1985) which also classifies as a G9 garnet by Dawson and Stephen (1975) criteria. This garnet lies near the 85% confidence line of Gurney (1985) and plots in the garnet lherzolite field as defined by Sobolev (1977).

Chrome diopsides with greater than 1 wt. % Cr₂O₃ were not found. Diopside (CP-2) and low chrome diopside (CP-4) (Stephan and Dawson, 1977) were the only pyroxenes found. The diopsides are not depleted in calcium indicating a calcsilicate or other crustal source. The low chrome diopsides probed contain elevated CaO indicating a low temperature source.

Three ilmenites were probed by WDS and only one from CB-0 was a micro-ilmenite with elevated chromium. The ilmenite plots within the accepted composition of megacryst ilmenites from kimberlites but similar compositions are found in carbonatites (Mitchell, 1986).

No minerals with chemistries similar to diamond inclusions were found. This fact may be an artifact of the small number of indicator minerals found or the lack of a potentially diamondiferous source rock in the block. Peridotitic and eclogitic garnet and ilmenite suggest the potential source rock is a kimberlite.

7.2 Potential Sources of Indicator Minerals

A map illustrating the distribution of sample locations and indicator minerals is given in figure 1.

Peridotitic G1, G9 and G11 garnets and eclogitic G3 and G5 garnets were found down ice from the three aeromagnetic anomalies. Sample CB-0 from the Sand

River, south of the air weapons range, contained four indicator garnets and a picroilmenite and indicates to a potential source to the north. Chrome diopsides with greater than 1 wt. % Cr_2O_3 indicative of a peridotitic source were not found.

7.3 Diamond Potential

No minerals with chemistries similar to diamond inclusions were found. This fact may be an artifact of the small number of indicator minerals found or the lack of a potentially diamondiferous source rock in the block. The suite of indicator minerals suggest the potential source rock is a kimberlite.

8 Conclusion

The work to date is inconclusive as to whether there is a potential source rock in the block. Limited access, poor sample sites and extensive glacial drift are some of the problems in the block. The three aeromagnetic anomalies all have indicator minerals found in down ice drainages. Most samples have one or two indicator minerals while samples taken north of Conklin along the Snowbird Tectonic Zone contain higher concentrations of indicator minerals.

No diamond indicator minerals were found. This could be due the low population of indicator minerals or the lack of a diamond bearing source rock in the block.

9 Recommendations

The results of the stream geochemical heavy mineral sampling program is inconclusive as to whether diatremes exist in the block. A detailed aeromagnetic survey should be conducted to delineate magnetic signatures of potential source rocks.

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11 CERTIFICATE OF QUALIFICATION

I, Douglas I Sraega of [REDACTED] Edmonton, Alberta do hereby certify that:

1. I am a graduate of the University of Alberta, Edmonton with a B.Sc. in Science obtained in 1987.
2. I have a Special Certificate in Geology from the University of Alberta obtained in 1993.
3. I have not, nor do I expect to receive any interest directly or indirectly in the property or in the securities of Takla Star Resources Ltd.

Dated in Edmonton, Alberta, this 4th day of February, 1991

Certified

Date

12.1 Appendix
Electron microprobe Results



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LORING LABORATORIES LTD.

Tel: (403) 274-2777
Fax: (403) 275-0541

To: TAKLA STAR RESOURCES
From: LORING LABORATORIES LTD.
Date: November 9, 1993
Subject: Sample Results
File: 36009

1. Introduction

Enclosed are the results of the processing of samples CB - 0 to CB - 16.

The data sheets enclosed represent the adjusted microprobe data as received from the technician. On the tables and charts attached to this report, the oxides are presented in weight percent of the composition of the mineral and -- indicates that the oxide was not analyzed in the mineral (see Microprobe Data table)

The minerals selected have been identified using the EDS. The minerals believed to contain oxides useful in indicators minerals were analyzed by electron microprobe.

Care must be taken in interpreting this data. Although some of these minerals may be found in kimberlite or lamproite, they may also be present in other rocks.

Following are a few notes on the mineral grains picked from your samples.

2. Garnet

The garnets have been categorized according to Dawson and Stephens' (1975) classification. Of the 81 grains selected for probing, 1 ranks as a G1, 8 rank as G3, 63 rank as G5, 2 as G7, 3 as G9, and 4 as G11 (see Garnet Classification tables).

Four garnets plot in the Eclogitic Field from Fipke, two from CB-16 and two from CB-9.

(1989) (see Eclogite Garnet Indicators chart).

On Gurney's (1985) classification of calcic garnets, the G9 in CB-5 falls in the G10 area of the graph. The remaining G9's g11's and the G1 plot in the G9 region of his graph (see Pyrope Garnet chart).

Almandine and grossular garnet with low quantities of chrome, magnesium or titanium was identified in 33 other grains selected from these samples. These grains were not probed.

3. Pyroxene

The 25 pyroxenes that were probed have been graded according to Stephen and Dawson's (1977) classification on the accompanying table. Fifteen rank as CP-2 (diopside) and 10 as CP-4 (low-chrome diopside). (see Pyroxene Classification table).

Thirty-nine other grains were identified as pyroxenes but were not probed due to low chrome content. Five other grains thought to have been pyroxenes are identified as amphiboles since the total of oxides is less than 100% because they contains about 2% moisture.

Several pyroxenes plot in or near the chrome pyroxene indicator mineral region (Fipke, 1989) (see Clinopyroxene chart).

4. Ilmenite

Ilmenite was identified in 36 grains from these samples. Three of these were probed. (see Ilmenite chart, Fipke, 1989)

5. Other Minerals

Three grains of corundum, three grains of xenotime (YPO₄), two grains of zircon, five grains of spinel, one grain of apatite, two grains of epidote, two grains of monazite, one grain of rutile and two grains of a ferro aluminium silicate were identified. These had been selected because they look very similar to garnet.

6. References

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Stephens W.E. and J.B. Dawson

1977: Statistical Comparison Between Pyroxenes from Kimberlites and their Associated Xenoliths. Journal of Geology, vol. 85, p. 433-449.

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File #36009

Client: Takla Star

Microprobe Data

Sample#	Location			Data in wt %													Total	Mineral
	P#	C#	R#	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	V2O5	ZnO	Nb2O5		
CB-0	40	B	1	38.76	0.06	22.09	0.02	28.20	-	9.99	0.93	0.00	-	-	-	-	10.92	Garnet
CB-0	40	E	1	41.14	0.12	21.40	3.21	11.99	-	18.07	4.61	0.00	-	-	-	-	22.68	Garnet
B-0	40	F	1	41.19	0.76	16.94	8.06	6.99	-	20.16	6.30	0.02	-	-	-	-	26.46	Garnet
B-0	40	I	1	38.93	0.02	22.24	0.03	26.54	-	9.82	1.11	0.00	-	-	-	-	10.96	Garnet
CB-0	40	J	1	36.86	0.00	20.89	0.02	38.51	-	2.81	1.06	0.00	-	-	-	-	3.87	Garnet
CB-0	40	B	2	36.66	0.15	5.91	18.46	4.57	-	0.07	31.69	0.00	-	-	-	-	31.79	Garnet
B-0	40	J	2	0.00	49.26	0.15	1.00	39.17	-	8.80	0.01	0.00	-	-	-	-	8.81	Ilmenite
CB-1	40	A	4	39.77	0.08	22.74	0.03	25.50	-	12.38	0.84	0.00	-	-	-	-	13.22	Garnet
CB-1	40	B	4	39.69	0.03	22.35	0.02	26.02	-	11.41	1.36	0.00	-	-	-	-	12.77	Garnet
B-1	40	H	4	37.42	0.27	10.48	12.03	4.84	-	0.16	31.01	0.00	-	-	-	-	31.17	Garnet
CB-1	40	D	5	38.91	0.08	21.99	0.06	21.79	-	5.51	8.60	0.00	-	-	-	-	17.11	Garnet
CB-1	40	E	5	37.58	0.00	21.37	0.00	33.37	-	5.01	1.85	0.00	-	-	-	-	6.86	Garnet
B-1	40	F	5	37.75	0.00	21.17	0.01	35.50	-	4.29	0.90	0.00	-	-	-	-	5.19	Garnet
B-1	40	J	5	38.36	0.31	14.58	6.70	5.79	-	0.20	31.17	0.00	-	-	-	-	31.37	Garnet
CB-2	40	A	7	37.82	0.00	21.42	0.00	33.74	-	6.07	1.07	0.00	-	-	-	-	7.14	Garnet
	40	D	7	37.53	0.00	21.37	0.01	37.59	-	3.80	1.02	0.00	-	-	-	-	4.82	Garnet
	40	E	7	38.30	0.20	21.11	0.02	26.12	-	5.61	6.95	0.00	-	-	-	-	12.56	Garnet
CB-2	40	I	7	38.88	0.03	22.05	0.04	30.37	-	8.67	0.80	0.00	-	-	-	-	9.47	Garnet
CB-2	40	J	7	36.21	0.01	21.43	0.02	30.51	-	6.17	1.12	0.00	-	-	-	-	7.29	Garnet
B-2	40	B	8	38.32	0.02	21.58	0.01	32.46	-	6.23	2.78	0.00	-	-	-	-	9.01	Garnet
CB-3	40	D	10	38.91	0.01	22.19	0.01	30.96	-	8.81	0.79	0.00	-	-	-	-	9.60	Garnet
CB-3	40	E	10	39.24	0.25	22.05	0.03	28.95	-	9.66	1.22	0.00	-	-	-	-	10.88	Garnet
B-3	43	B	1	37.88	0.00	22.85	0.00	31.54	0.39	7.54	1.03	0.00	-	-	-	-	101.23	Garnet
B-3	43	D	1	37.04	0.03	22.01	0.13	32.92	1.97	4.19	2.43	0.06	-	-	-	-	100.78	Garnet
CB-3	43	E	1	53.61	0.10	0.78	0.06	7.63	0.16	14.11	22.53	0.63	0.00	-	-	-	99.91	Pyroxene
B-3	43	F	1	53.21	0.03	1.45	0.05	7.28	0.17	14.46	22.68	0.64	0.00	-	-	-	99.97	Pyroxene
B-3	43	G	1	53.97	0.07	0.65	0.07	5.69	0.11	15.68	22.00	1.36	0.00	-	-	-	99.62	Pyroxene
CB-3	43	J	1	54.13	0.05	1.65	0.23	4.65	0.09	16.29	21.23	0.75	0.00	-	-	-	99.68	Pyroxene
CB-4	43	A	3	37.47	0.03	22.16	0.00	36.76	0.28	4.58	0.47	0.03	-	-	-	-	101.78	Garnet
B-4	43	B	3	37.31	0.07	22.07	0.00	36.39	1.51	3.29	0.87	0.00	-	-	-	-	101.51	Garnet
CB-4	43	C	3	37.56	0.00	22.31	0.07	35.43	0.53	4.43	1.18	0.04	-	-	-	-	101.55	Garnet
CB-4	43	F	3	0.00	0.03	68.18	0.04	5.04	0.06	24.15	-	-	-	-	0.02	0.02	98.54	Spinel
B-4	43	G	3	38.13	0.03	22.56	0.01	29.14	0.76	8.58	1.72	0.00	-	-	-	-	100.93	Garnet
CB-4	43	H	3	37.66	0.03	22.29	0.09	33.91	0.61	5.54	1.15	0.04	-	-	-	-	101.32	Garnet
CB-4	43	I	3	37.41	0.07	21.38	0.00	30.71	2.74	1.87	7.26	0.04	-	-	-	-	101.48	Garnet
B-4	43	J	3	37.51	0.02	22.08	0.12	34.71	1.36	4.90	0.72	0.05	-	-	-	-	101.47	Garnet
B-4	43	A	4	38.24	0.01	22.45	0.05	32.16	1.24	6.31	1.09	0.04	-	-	-	-	101.39	Garnet
CB-4	43	B	4	54.25	0.01	0.71	0.12	7.74	0.34	13.99	22.98	0.57	0.00	-	-	-	100.71	Pyroxene
CB-4	43	D	4	54.21	0.07	0.76	0.07	7.57	0.16	14.37	22.86	0.72	0.00	-	-	-	100.91	Pyroxene
CB-4	43	E	4	54.09	0.04	1.98	0.09	6.45	0.22	14.58	22.94	0.60	0.00	-	-	-	100.99	Pyroxene
	43	F	4	52.59	0.10	2.39	0.51	5.69	0.15	14.37	17.93	2.07	0.00	-	-	-	95.80	Pyroxene
	43	A	5	37.13	0.03	21.28	0.02	33.32	1.46	1.38	6.47	0.00	-	-	-	-	101.07	Garnet
CB-5	43	B	5	42.35	0.03	21.81	3.94	7.87	0.39	20.79	3.88	0.11	-	-	-	-	101.27	Garnet
CB-5	43	C	5	37.38	0.03	22.29	0.03	36.07	0.58	4.39	1.19	0.05	-	-	-	-	102.01	Garnet

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Microprobe Data

CB-

Sample#	Location			Data in wt %													Total	Mineral
	P#	C#	R#	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	V2O5	ZnO	Nb2O5		
CB-5	43	D	5	36.72	0.06	22.86	0.05	27.95	0.97	8.61	2.73	0.00	-	-	-	-	101.95	Garnet
CB-5	43	E	5	39.26	0.03	23.26	0.05	28.81	0.31	8.92	2.24	0.03	-	-	-	-	102.91	Garnet
CB-5	43	F	5	37.16	0.02	21.68	0.01	36.46	1.80	2.96	1.11	0.06	-	-	-	-	101.26	Garnet
CB-5	43	I	5	54.53	0.00	0.85	0.16	5.32	0.11	16.19	23.45	0.60	0.00	-	-	-	101.21	Pyroxene
CB-5	43	J	5	54.16	0.04	1.39	0.07	7.66	0.29	15.33	21.46	0.75	0.00	-	-	-	101.15	Pyroxene
CB-5	43	B	6	53.35	0.07	1.29	0.05	8.77	0.31	13.75	22.49	0.50	0.00	-	-	-	100.58	Pyroxene
CB-5	43	A	7	37.14	0.02	22.03	0.00	36.41	0.83	4.17	0.77	0.02	-	-	-	-	101.39	Garnet
CB-6	43	D	7	38.14	0.00	22.99	0.01	29.77	1.23	7.60	1.99	0.07	-	-	-	-	101.50	Garnet
CB-7	43	A	8	37.63	0.00	22.37	0.07	34.71	1.06	5.08	0.92	0.05	-	-	-	-	101.89	Garnet
CB-7	43	B	8	34.47	0.02	22.04	0.06	35.78	1.45	4.22	0.89	0.00	-	-	-	-	98.93	Garnet
CB-7	43	C	8	0.02	0.08	90.41	5.94	0.55	0.00	0.06	-	-	-	-	0.00	0.00	97.06	Corundum
CB-7	43	D	8	38.2	0.03	22.42	0.03	30.33	1.27	6.24	2.83	0.01	-	-	-	-	101.36	Garnet
CB-7	43	F	8	38.01	0.05	22.58	0.07	32.68	0.78	6.23	0.94	0.01	-	-	-	-	101.33	Garnet
CB-7	43	G	8	36.87	0.00	21.56	0.03	36.54	1.49	1.89	3.01	0.07	-	-	-	-	101.46	Garnet
CB-7	43	J	8	0.10	0.00	38.86	0.00	3.40	0.25	0.32	-	-	-	-	35.63	0.02	78.58	Gahnite?
CB-7	43	C	9	0.00	54.58	0.00	0.13	44.98	0.26	1.72	-	-	-	-	0.13	0.08	101.84	Ilmenite
CB-7	43	A	10	38.27	0.02	22.70	0.01	30.59	0.51	7.54	1.21	0.01	-	-	-	-	100.86	Garnet
CB-9	43	B	10	37.6	0.03	21.29	0.00	32.80	0.41	3.13	5.94	0.01	-	-	-	-	101.21	Garnet
CB-9	43	C	10	41.94	0.50	18.28	7.75	5.93	0.25	20.58	5.68	0.13	-	-	-	-	101.02	Garnet
CB-9	43	D	10	42.27	0.22	22.63	2.41	7.81	0.37	20.20	4.44	0.09	-	-	-	-	100.44	Garnet
CB-9	43	E	10	36.23	0.08	21.91	0.02	28.03	0.54	5.29	6.92	0.02	-	-	-	-	101.04	Garnet
CB-9	43	F	10	38.07	0.01	22.63	0.00	30.42	3.13	5.39	2.39	0.02	-	-	-	-	102.06	Garnet
CB-9	43	G	10	37.77	0.07	21.42	0.00	33.01	0.67	2.10	7.05	0.05	-	-	-	-	102.14	Garnet
CB-9	43	H	10	38.56	0.36	22.80	0.02	29.37	0.64	8.82	1.08	0.00	-	-	-	-	101.55	Garnet
CB-9	43	J	10	0.04	0.03	61.32	0.01	9.46	1.08	18.32	-	-	-	-	1.72	0.01	91.99	Spinel
CB-9	47	B	1	54.75	0.03	0.54	0.07	5.26	0.28	15.75	23.56	0.70	0.01	-	-	-	100.56	Pyroxene
CB-9	47	D	1	0.12	0.00	68.37	0.23	5.10	0.28	25.05	-	-	-	-	0.15	0.00	99.28	Spinel
CB-9	47	E	1	0.07	52.83	0.12	0.02	48.54	0.69	0.11	-	-	-	-	0.11	0.22	102.71	Ilmenite
CB-8	47	A	2	37.24	0.12	21.46	0.00	31.37	4.92	4.11	0.95	0.05	-	-	-	-	100.25	Garnet
CB-8	47	C	2	36.66	0.03	21.31	0.00	39.01	0.60	3.04	0.80	0.05	-	-	-	-	101.50	Garnet
CB-8	47	D	2	36.94	0.01	21.31	0.00	34.43	2.85	3.80	1.51	0.00	-	-	-	-	100.85	Garnet
CB-8	47	E	2	37.41	0.05	22.13	0.03	34.92	0.89	5.08	1.40	0.00	-	-	-	-	101.91	Garnet
CB-8	47	F	2	38.08	0.01	22.35	0.01	31.95	0.48	5.53	1.50	0.00	-	-	-	-	101.01	Garnet
CB-8	47	H	2	37.55	0.03	21.92	0.05	32.79	0.44	6.35	1.24	0.05	-	-	-	-	100.86	Garnet
CB-8	47	I	2	40.60	0.16	23.08	0.06	15.93	0.28	14.71	5.05	0.03	-	-	-	-	100.88	Garnet
CB-8	47	A	3	36.97	0.00	21.69	0.04	34.67	1.70	3.06	2.83	0.00	-	-	-	-	100.46	Garnet
CB-8	47	B	3	36.93	0.02	21.44	0.00	36.31	0.83	4.14	1.19	0.02	-	-	-	-	100.88	Garnet
CB-8	47	C	3	38.95	0.02	21.10	0.01	30.97	2.59	2.07	6.74	0.00	-	-	-	-	100.45	Garnet
CB-8	47	D	3	53.26	0.27	2.70	0.56	6.13	0.13	15.52	21.60	0.51	0.00	-	-	-	100.68	Pyroxene
CB-8	47	F	3	0.01	0.00	41.55	0.00	4.81	0.57	0.13	-	-	-	-	37.43	-	84.50	Gahnite?
CB-8	47	A	4	37.07	0.02	21.20	0.00	32.13	2.01	4.13	3.70	0.08	-	-	-	-	100.34	Garnet
CB-8	47	C	4	39.69	0.07	22.85	0.02	22.54	0.44	12.59	1.62	0.00	-	-	-	-	99.32	Garnet
CB-11	47	E	4	53.60	0.05	1.47	0.39	8.51	0.25	14.18	21.41	0.80	0.00	-	-	-	100.66	Pyroxene
CB-10	47	G	5	53.49	0.03	1.80	0.17	8.51	0.14	14.14	22.15	0.58	0.00	-	-	-	101.02	Pyroxene

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File #36005

Client: Takla Star

Microprobe Data

CB- Sample#	Location			Data in wt %													Total	Mineral
	P#	C#	R#	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	V2O5	ZnO	Nb2O5		
CB-12	47	A	6	37.87	0.13	21.64	0.05	23.12	0.51	5.92	10.34	0.00	-	-	-	-	99.58	Garnet
CB-12	47	B	6	37.86	0.08	22.23	0.00	29.19	0.86	8.79	1.15	0.03	-	-	-	-	100.19	Garnet
CB-12	47	C	6	54.96	0.06	3.65	0.28	5.09	0.11	21.71	12.02	0.52	0.19	-	-	-	98.59	Amphibole
CB-12	47	F	6	51.13	0.17	7.60	0.85	3.62	0.06	21.04	12.46	1.31	0.49	-	-	-	98.73	Amphibole
CB-12	47	G	6	54.38	0.01	1.53	0.16	8.30	0.00	14.77	20.43	1.23	0.00	-	-	-	100.81	Pyroxene
CB-12	47	H	6	53.57	0.22	3.01	0.32	6.20	0.07	15.13	23.04	0.48	0.00	-	-	-	102.05	Pyroxene
CB-12	47	I	6	53.48	0.18	4.10	0.29	7.23	0.17	14.90	20.85	1.18	0.00	-	-	-	102.36	Pyroxene
CB-12	47	A	7	42.85	0.97	12.12	0.04	20.36	0.57	8.71	11.21	1.11	0.91	-	-	-	96.85	Amphibole
CB-13	47	A	8	36.63	0.02	21.18	0.01	38.98	0.42	2.69	1.03	0.01	-	-	-	-	100.95	Garnet
CB-13	47	B	8	37.24	0.04	21.63	0.01	31.98	0.59	6.69	1.40	0.02	-	-	-	-	99.90	Garnet
CB-13	47	C	8	38.06	0.01	21.78	0.00	28.03	1.11	8.15	3.03	0.03	-	-	-	-	100.20	Garnet
CB-13	47	E	8	37.27	0.06	21.46	0.06	36.09	0.54	5.15	0.76	0.00	-	-	-	-	101.40	Garnet
CB-13	47	F	8	37.13	0.04	21.44	0.03	31.32	0.65	8.25	2.47	0.00	-	-	-	-	99.33	Garnet
CB-14	47	A	10	41.74	0.39	21.43	3.20	7.51	0.31	20.24	5.01	0.04	-	-	-	-	99.87	Garnet
CB-14	47	D	10	37.22	0.04	21.20	0.21	33.31	0.13	5.08	3.40	0.01	-	-	-	-	100.60	Garnet
CB-14	47	F	10	54.75	0.05	1.10	0.15	6.24	0.22	15.07	23.08	0.61	0.00	-	-	-	101.27	Pyroxene
CB-14	47	H	10	55.15	0.14	0.73	0.00	6.74	0.27	15.03	23.27	0.59	0.00	-	-	-	101.92	Pyroxene
CB-14	47	I	10	57.20	0.03	2.19	0.27	5.01	0.19	22.25	11.84	0.42	0.16	-	-	-	99.56	Amphibole
CB-15	48	B	1	39.48	0.10	22.89	0.10	25.33	0.97	11.13	1.88	0.01	-	-	-	-	101.87	Garnet
CB-15	48	C	1	39.06	0.15	22.27	0.03	23.30	0.58	7.53	8.17	0.04	-	-	-	-	101.13	Garnet
CB-15	48	D	1	39.11	0.06	22.36	0.00	21.41	0.66	5.31	12.42	0.01	-	-	-	-	101.34	Garnet
CB-15	48	F	1	52.40	0.36	7.34	0.87	2.85	0.09	15.44	19.78	1.73	0.00	-	-	-	100.88	Pyroxene
CB-15	48	J	1	53.86	0.07	1.87	0.03	6.54	0.15	15.35	22.46	0.65	0.00	-	-	-	101.03	Pyroxene
CB-15	48	A	2	54.14	0.00	0.61	0.21	7.16	0.75	14.16	23.33	0.46	0.00	-	-	-	100.82	Pyroxene
CB-16	48	A	3	42.03	0.73	21.41	2.24	8.84	0.26	20.31	4.52	0.11	-	-	-	-	100.75	Garnet
CB-16	48	B	3	37.64	0.08	21.62	0.15	28.62	1.71	3.90	6.90	0.03	-	-	-	-	100.36	Garnet
CB-16	48	C	3	38.25	0.04	22.65	0.04	31.13	0.32	7.77	0.96	0.00	-	-	-	-	101.16	Garnet
CB-16	48	D	3	42.15	0.84	17.68	7.08	6.30	0.32	21.06	5.58	0.07	-	-	-	-	101.06	Garnet
CB-16	48	F	3	37.87	0.04	22.02	0.03	30.73	0.98	3.46	5.59	0.02	-	-	-	-	101.74	Garnet
CB-16	48	A	4	54.24	0.05	1.05	0.10	8.09	0.25	15.70	21.16	0.48	0.00	-	-	-	101.10	Pyroxene
CB-16	48	C	4	53.97	0.11	1.83	0.16	7.46	0.02	14.29	20.39	2.17	0.00	-	-	-	100.40	Pyroxene
CB-16	48	G	4	0.10	92.25	0.32	0.09	3.56	0.04	0.06	-	-	-	-	0.00	3.92	100.64	Rutile

Loring Laboratories Limited

629 Beaverdam Road N.E.,

Calgary Alberta T2K 4W7

Tel: 274-2777 Fax: 275-0541

File #36009

Client: TAKLA STAR

Garnet Classification (after Dawson and Stephens, 1975)

Location				Data in wt %						Garnets Classification												
Sample #	P#	C#	R#	TiO2	Cr2O3	FeO	MgO	CaO	Na2O	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	
CB - 15	48	D	1	0.06	0.00	21.41	5.31	12.42	0.01	..	..	3	..	..	..	..	..	..	..	..	..	..
CB - 16	48	A	3	0.73	2.24	8.64	20.31	4.82	0.11	1	..	..	..	..	..	..	..	..	..	..	..	..
CB - 16	48	B	3	0.08	0.15	28.62	3.60	6.90	0.03	..	..	..	..	5	..	..	..	..	..	..	..	..
CB - 16	48	C	3	0.04	0.04	31.13	7.77	0.96	0.00	..	..	..	..	5	..	..	..	..	..	..	..	..
CB - 16	48	D	3	0.84	7.06	6.30	21.08	5.58	0.07	..	..	..	..	..	..	..	..	..	..	..	11	..
CB - 16	48	F	3	0.04	0.03	30.73	3.46	6.59	0.02	..	..	..	..	5	..	..	..	..	..	..	..	..
Total Garnets									51	1	0	6	0	63	0	2	0	3	0	4	0	
									G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12		

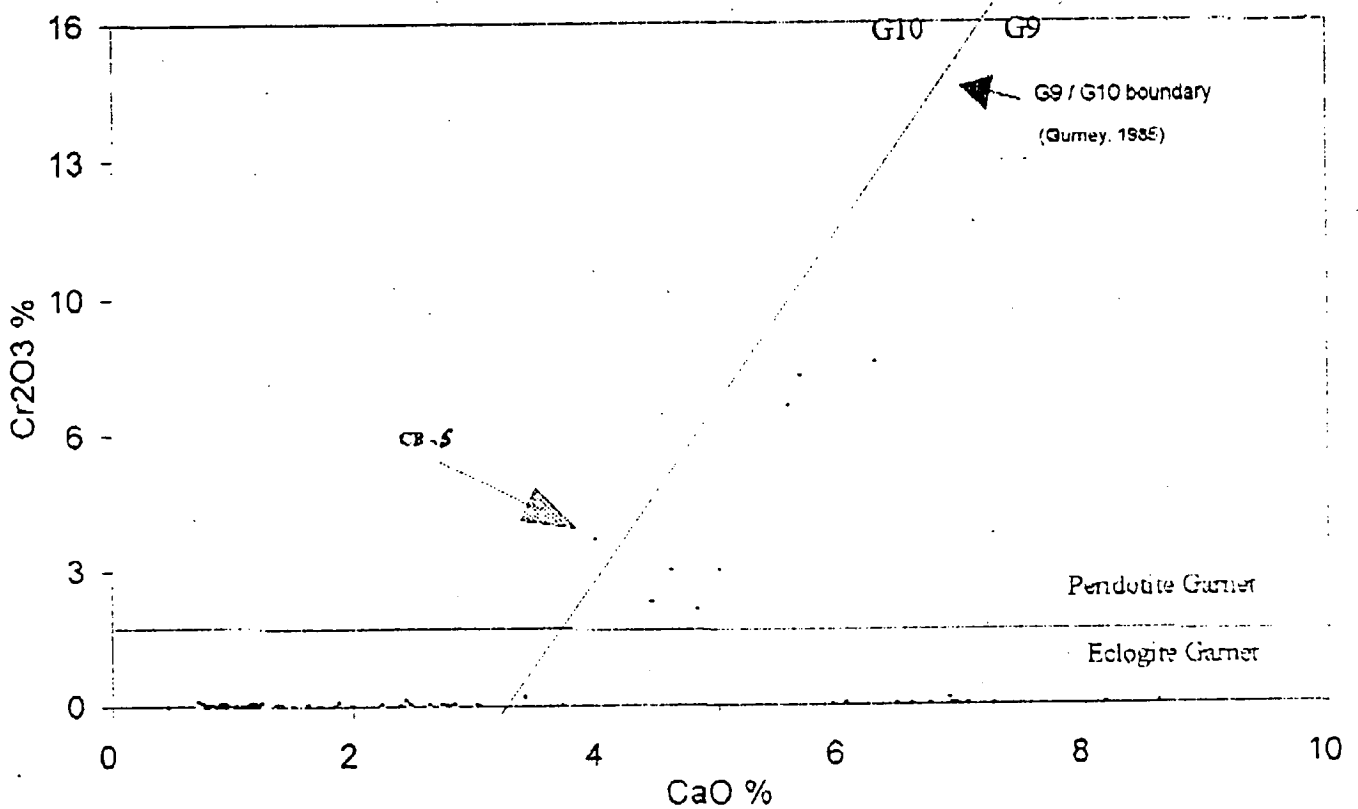
Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

File #36006

Client: TAKLA STAR

Pyrope Garnet Indicators



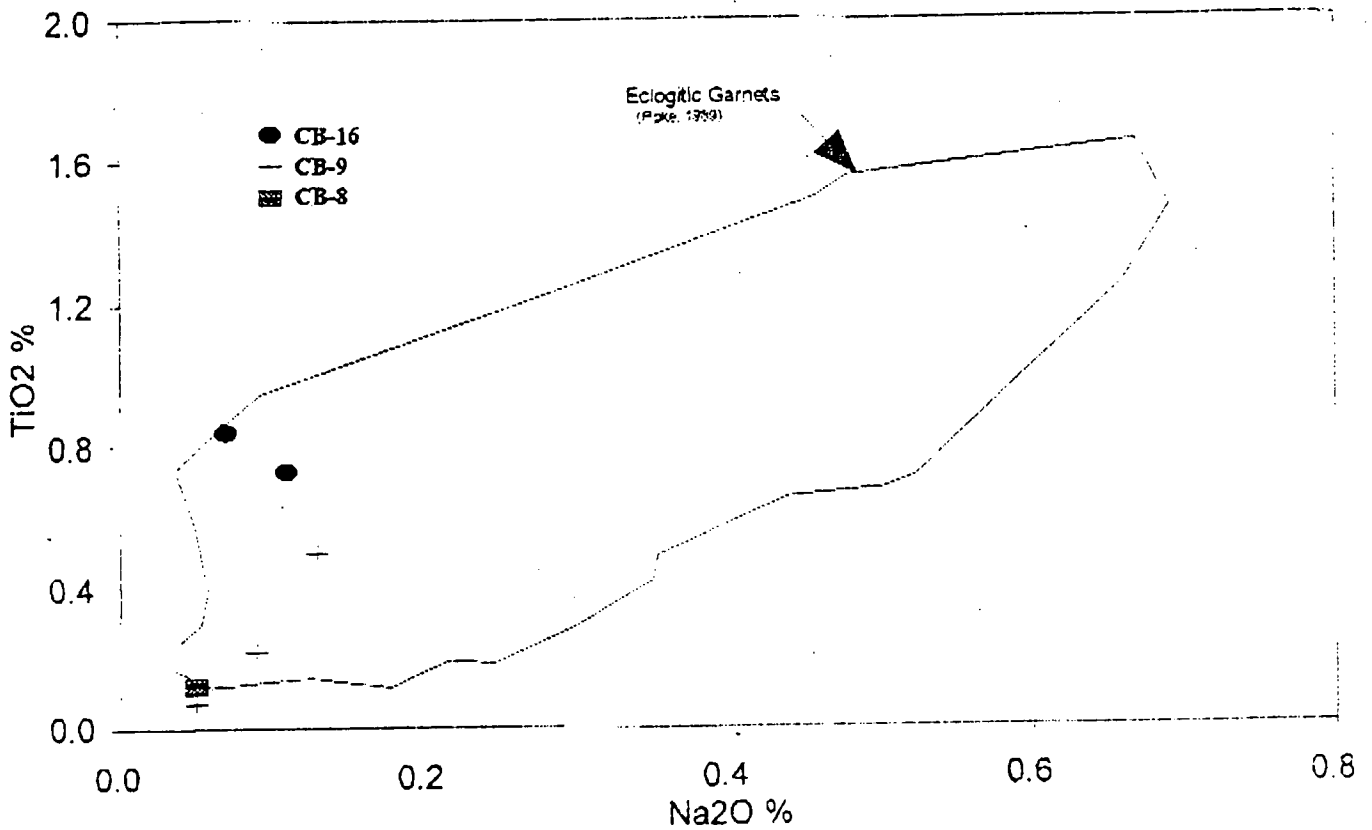
Loring Laboratories Ltd.

629 Beaverdam Road N.E.
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

File #36006

Client: TAKLA STAR

Eclogite Garnet Indicators



Loring Laboratories Ltd.

629 Beaverdam Road N.E.
 Calgary Alberta T2K 4W7
 Tel: 274-2777 Fax: 275-0541

#36009

Client: Takeda Star

Pyroxene Classification (after Stephens and Dawson, 1977)

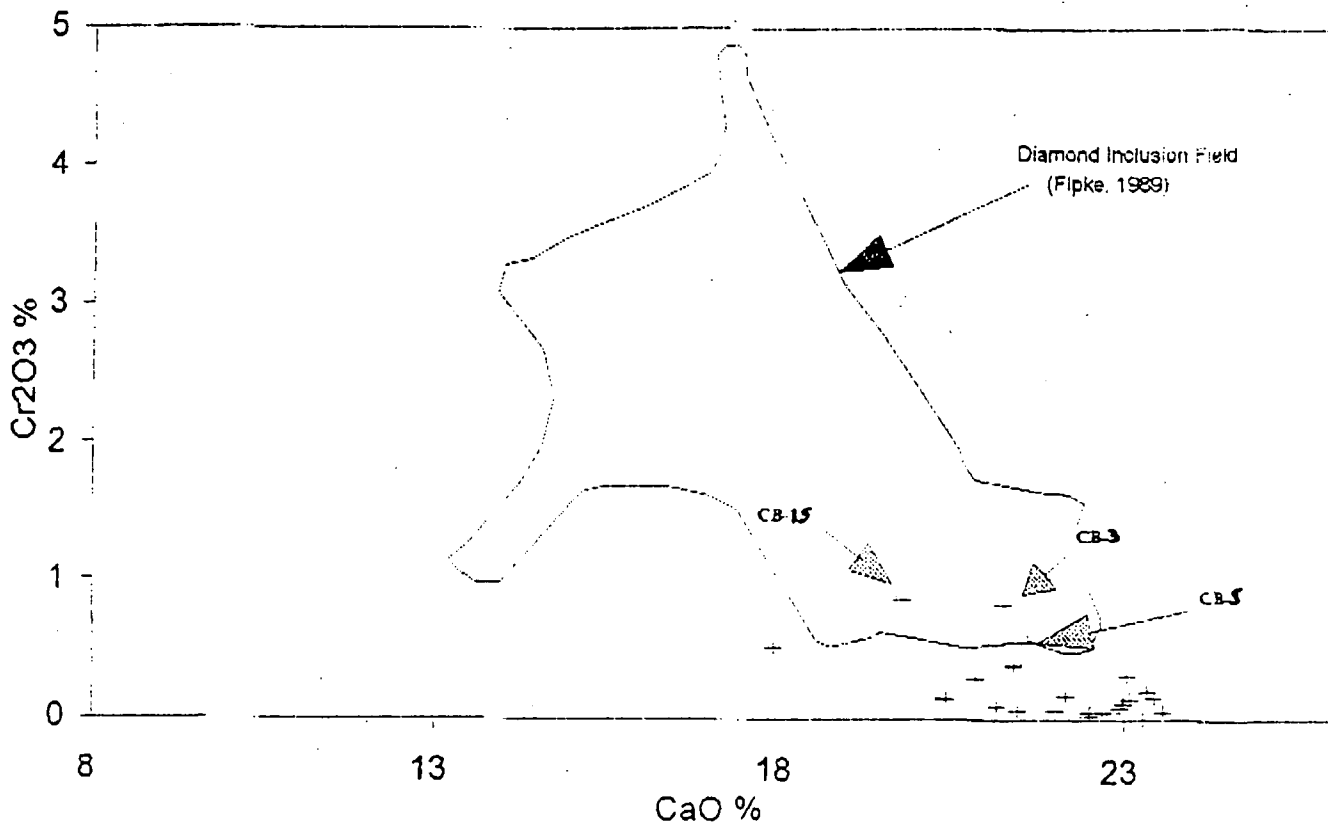
Sample #	Location			Data in wt %							Classification
	P#	C#	R#	TiO2	Al2O3	Cr2O3	FeO	MgO	CaO	Na2O	
CB-3	43	E	1	0.10	0.78	0.08	7.83	14.11	22.53	0.63	CP-4
CB-3	43	F	1	0.03	1.45	0.05	7.28	14.48	22.88	0.64	CP-2
CB-3	43	G	1	0.07	0.65	0.07	5.89	15.68	22.00	1.38	CP-2
CB-3	43	J	1	0.05	1.65	0.83	4.65	18.28	21.23	0.76	CP-2
CB-4	43	B	4	0.01	0.71	0.12	7.74	13.99	22.98	0.57	CP-2
CB-4	43	D	4	0.07	0.76	0.07	7.57	14.37	22.88	0.72	CP-2
CB-4	43	E	4	0.04	1.98	0.08	6.45	14.58	22.94	0.60	CP-2
CB-4	43	F	4	0.10	2.39	0.51	5.69	14.37	17.93	2.07	CP-2
CB-5	43	I	5	0.00	0.85	0.16	5.32	18.19	23.45	0.60	CP-2
CB-5	43	J	5	0.04	1.39	0.07	7.66	15.33	21.46	0.75	CP-4
CB-5	43	B	6	0.07	1.29	0.05	8.77	13.75	22.49	0.50	CP-4
CB-9	47	B	1	0.03	0.54	0.07	5.26	15.75	23.58	0.70	CP-2
CB-8	47	D	3	0.27	2.70	0.56	6.13	15.52	21.60	0.51	CP-4
CB-11	47	E	4	0.05	1.47	0.39	8.51	14.18	21.41	0.80	CP-4
CB-10	47	G	5	0.03	1.80	0.17	3.51	14.14	22.18	0.58	CP-4
CB-12	47	G	6	0.01	1.53	0.16	8.30	14.77	20.43	1.23	CP-4
CB-12	47	H	6	0.22	3.01	0.32	8.20	15.13	23.04	0.49	CP-4
CB-12	47	I	6	0.13	4.10	0.29	7.23	14.80	20.85	1.18	CP-4
CB-14	47	F	10	0.05	1.10	0.15	6.24	15.07	23.08	0.51	CP-2
CB-14	47	H	10	0.14	0.73	0.00	6.74	15.03	23.27	0.59	CP-2
CB-15	48	F	1	0.38	7.34	0.87	2.85	15.44	19.78	1.73	CP-2
CB-15	48	J	1	0.07	1.87	0.03	6.54	15.38	22.43	0.55	CP-2
CB-15	48	A	2	0.00	0.61	0.21	7.16	14.18	23.33	0.46	CP-2
CB-15	48	A	4	0.05	1.05	0.10	8.09	15.70	21.16	0.48	CP-4
CB-16	48	C	4	0.11	1.83	0.16	7.46	14.29	20.39	2.17	CP-2

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File #36009
Client: TAKLA STAR

Clinopyroxene



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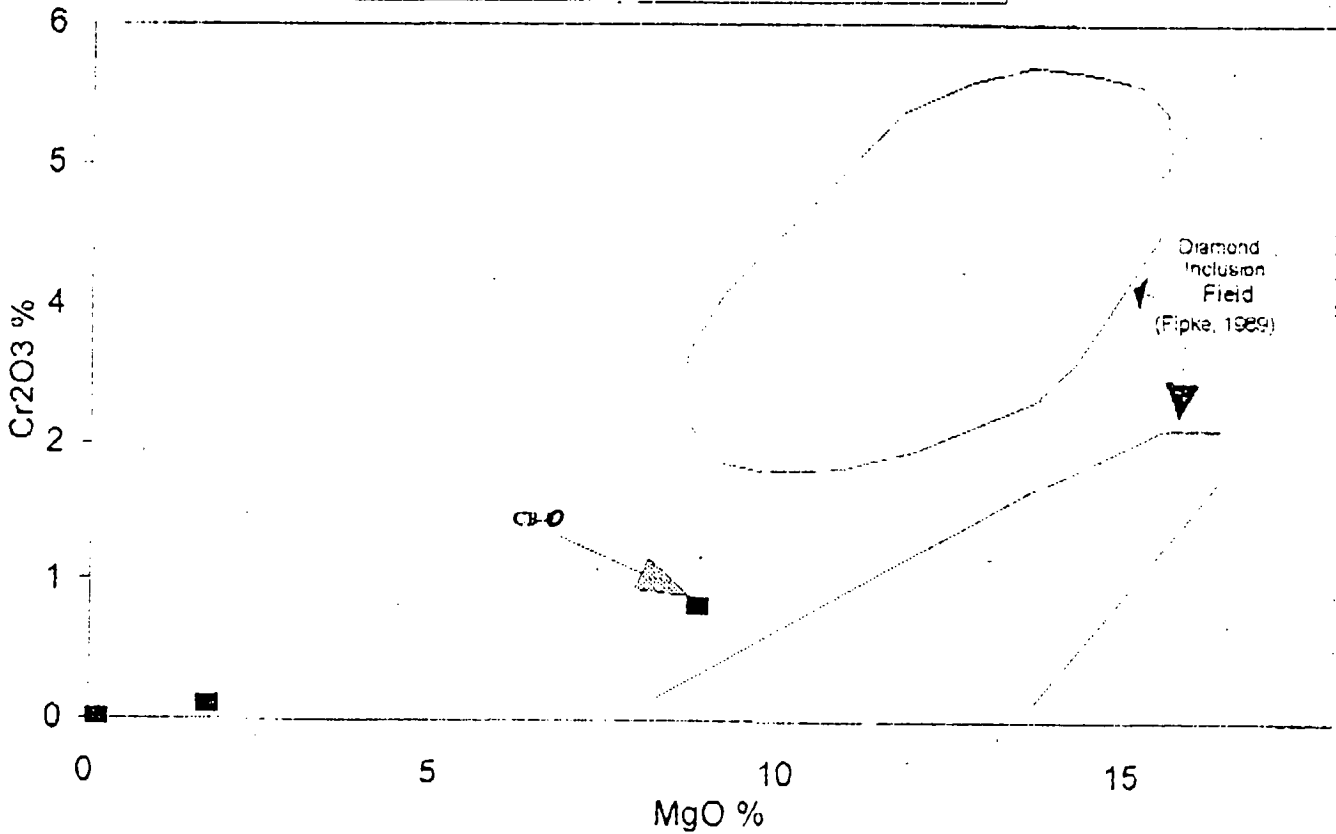
629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

File #38009
Client: Takla Star

Ilmenite Analyses

Sample #	Location			Data in wt %	
	P#	C#	R#	MgO	Cr2O3
CS-7	43	C	9	1.72	0.13
CS-9	47	E	1	0.11	0.02
CS-0	40	J	2	8.80	1.00

Ilmenite Indicators



12.2 Appendix
Sample Site Descriptions

Christina Lake Project- Christina Block NTS 73M

Sample #	Location	Microscope work
CB-1	110°24'W; 55°23'15"N Sample taken on creek draining NW into Winifred Lake. -upstream from beaver dam.	Magnetite removed from panned conc. -heavy liquid to be done.

CB-2	110°53'W; 55°32'N Sample taken on minor creek draining north into Sunday Ck. <u>Troymin Res. Block</u>	No mineral separation techniques done.
CB-3	110°46'W; 55°22'45"N Sample drains NE into Winifred Lk	A heavy liquid separation was done.
CB-4	110°43'W; 55°22'N Both CB-3 &4 are almandine rich and contain much gneissic rock as well as fossiliferous ls, either from the shield or bordering it.	A heavy liquid separation was done.
CB-5	110°37'W; 55°24'N -very sand rich creek, no gravel seen.	
CB-6	111°22'30"W; 55°42'N Sampled on Christina R.; only sand seen in this portion of the river. -Sample taken in Troymin Res. Block	No mineral separation techniques done.
CB-7	1 km south of Sample CB-6 in May River -sampled in gravel rich section	A heavy liquid separation was done using ATB.
CB-8	111°13'W; 55°39'N Minor creek draining NE into Jackfish River. -sampled in Troymin Res. Block	No mineral separation techniques done.
CB-9	111°05'W; 55°39'N -sampled on gravel bar on Jackfish R.; panned conc. indicated a lot of almandine garnets.	A heavy liquid separation was done.
CB-9B	a sample of the sand along the road was panned.	no tests done.
CB-10	111°05'W; 55°37'30"N -sampled on Birch Ck., a very slow, sand rich beaver infested creek.	A heavy mineral separation was done.
CB-11	110°46'W; 55°37'30"N Creek draining west into Christina Lake.	A heavy liquid separation was done.
CB-12	110°48'W; 55°37'N Monday Ck., a another slow moving beaver infested creek.	No heavy liquid separation was done.
CB-13	110°52'30"W; 55°36'30"N -similar velocity as creeks sampled above (CB-11 &12) -no gravel found in sampling; sand rich.	A heavy liquid separation was done.
CB-14	110°57'W; 55°51'30"N -sampled along Pony Creek, where gravel was noted and sampled.	No heavy liquid separation was done but is recommended.

CB-15	110°52'30"W; 55°50'N -sampled along Waddell Ck, a low velocity, sand rich,creek.	No heavy liquid tests done.
CB-16	Christina River, sample located just east of CB-15. -sample taken along gravel bar, where almandine garnets were seen in abundance.	A heavy liquid separation was done.
CB-17	110°45'W; 55°49'30"N Very slow moving, beaver infested creek.	A heavy liquid separation was done.
CB-18	14 km south on the Lac la Biche winter road -creek drains west into May River.	to be panned
CB-19	111°35'15"W; 55°30'N See laser airphoto plot, series 91-192. LN-75, AS 4201-238 -sample taken just south of clearing where pegmatite with possible emeralds were located.	to be panned.
CB-20	111°29'30"W; 55°29'N Sample taken at base of Steepbank Lake gravel pit. -see above airphoto laser plot.	A heavy liquid separation to be done.
CB-21 (Logan R.)	111°49'20"W; 55°20'20"N Sampled just west of Lac la Biche winter road -mainly sand noted in creek, where panned sample was taken.	
Sand River nts 73L/11	111°11'W; 54°34'N Sample taken on gravel bar along Sand River.	A heavy liquid separation was done on a portion of the panned conc. sample.

Appendix II

Description of the Locations of Permits

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080334

AGGREGATE AREA:

1 169 HECTARES

DESCRIPTION OF LOCATION:

4-02-073: 36

4-03-073: 29;30;31SP,NP;32

PORTION(S) LYING OUTSIDE GRIST LAKE FOREST RECREATION AREA.

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

12/8

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080335

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-04-073: 19-36

4-04-074: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

128

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080336

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-01-074: 19-36

4-01-075: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

124

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080337

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-02-074: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

mt

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080338

AGGREGATE AREA:

9 039 HECTARES

DESCRIPTION OF LOCATION:

4-03-074: 1-5;6SP,NP;7SWP,N;8-36
PORTION(S) LYING OUTSIDE THE GRIST LAKE FOREST RECREATION AREA.

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

124

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080339

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-01-075: 19-36

4-01-076: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

hca

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080340

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-02-075: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

nt

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080341

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-03-075: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

NSA

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080342

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-01-076: 19-36

4-01-077: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

RDH

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080343

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-02-076: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

hst

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080344

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-03-076: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

n81

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080345

AGGREGATE AREA:

9 152 HECTARES

DESCRIPTION OF LOCATION:

4-04-076: 19-22; 23N, SE; 24-36

4-04-077: 1-3; 10-15; 22-27; 34-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

128

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080346

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-06-076: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

nd

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080347

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-07-076: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

not

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080348

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-08-076: 1-3;10-15;22-27;34-36

4-08-077: 1-3;10-15;22-27;34-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

1701

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080349

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-01-077: 19-36

4-01-078: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

ms

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080350

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-02-077: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

MSH

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080351

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-03-077: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

mx

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080352

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-04-077: 4-9;16-21;28-33

4-05-077: 1-3;10-15;22-27;34-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

7.24

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080353

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-05-077: 4-9;16-21;28-33

4-06-077: 1-3;10-15;22-27;34-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

msd

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080354

AGGREGATE AREA:

8 960 HECTARES

DESCRIPTION OF LOCATION:

4-06-077: 4-9;16-21;28-33

4-06-078: 1-15;17;18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

124

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080355

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-07-077: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

had

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080356

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-01-078: 19-36

4-01-079: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

NSA

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080357

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-02-078: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

128

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080358

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-03-078: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

hst

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080359

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-04-078: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

hrt

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080360

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-05-078: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

not

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080361

AGGREGATE AREA:

6 656 HECTARES

DESCRIPTION OF LOCATION:

4-06-078: 22-28;31-36

4-06-079: 1-8;11-13;17;18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

NA

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080362

AGGREGATE AREA:

8 960 HECTARES

DESCRIPTION OF LOCATION:

4-07-078: 1-23;25-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

128

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080363

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-02-079: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

104

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080364

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-03-079: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

12/11

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080365

AGGREGATE AREA:

8 896 HECTARES

DESCRIPTION OF LOCATION:

4-03-080: 4-6; 7L1; 8SE, L3, L4, L6, NE; 9; 16-18

4-04-079: 1-3; 10-15; 22-27; 34-36

4-04-080: 1-3; 10-15

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

nd

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9393080366

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

4-04-079: 4-9;16-21;28-33

4-05-079: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

1788

Appendix III

Statement of Expenditures

**TAKLA STAR RESOURCES LTD.
STATEMENT OF EXPENDITURES
DECEMBER 31, 1994
CHRISTINA BLOCK**

CHRISTINA

GEOPHYSICAL SURVEY COSTS

FIELD STAFF EXPENSES
ACCOUNTING FEES
SUPPLIES
COMMUNICATIONS
DELIVERY AND FREIGHT
TRAVEL AND ACCOMODATION
AUTOMOTIVE EXPENSE
CONSULTING FEES
GEOPHYSICAL CONTRACTS
EQUIPMENT EXPENSE
EQUIPMENT RENTAL
MEALS/ENTERTAINMENT/SUSTENANCE
REFERENCE MATERIALS
ASSAYING
FIELD STAFF WAGES
MANAGEMENT SALARIES

SUBTOTAL	<u>0.00</u>
OVERHEAD COMPONENT - 15%	0.00

TOTAL GEOPHYSICAL SURVEY COSTS	<u>0.00</u>
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GEOCHEMICAL SURVEY COSTS

FIELD STAFF EXPENSES	2,601.25
ACCOUNTING FEES	240.00
SUPPLIES	2.97
COMMUNICATIONS	47.62
DELIVERY AND FREIGHT	0.00
TRAVEL AND ACCOMODATION	3.93
AUTOMOTIVE EXPENSE	536.86
CONSULTING FEES	0.00
GEOPHYSICAL CONTRACTS	0.00
EQUIPMENT EXPENSE	1,871.08
EQUIPMENT RENTAL	0.00
MEALS/ENTERTAINMENT/SUSTENANCE	24.85
REFERENCE MATERIALS	3.20
ASSAYING	9,294.00
FIELD STAFF WAGES	5,562.53
MANAGEMENT SALARIES	248.00

	<u>20,436.29</u>
OVERHEAD COMPONENT - 15%	3,065.44

TOTAL GEOCHEMICAL SURVEY COSTS	<u>23,501.73</u>
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GRAND TOTALS

<u>23,501.73</u>
