GM 58349

ASSESSMENT REPORT FOR PERMITS 1466, 1467, 1478, 1487 AND 1500, ABLOVIAK FJORD

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Énergie et Ressources naturelles
Québec

NTS 24P03/06/07/10/11/12

ASSESSMENT REPORT FOR PERMITS 1466, 1467,1478,1487,AND 1500 ABLOVIAK FJORD, QUEBEC

Company Name:	**Marum Resources Inc., 737142 Alberta Ltd. and International Tower Hill**
Permits:	**1466, 1467, 1478, 1487, and 1500**
Nature of Report:	**Prospecting and Sampling**
Work Conducted During:	**June to November 2000**
Location of Permits:	**Abloviak Fjord, Northeastern Quebec NTS 24P03/06/07/10/11/12**

APEX Geoscience Ltd.

November, 2000

A.K. NOYES
D.J. BESSERER

MRN-GÉOINFORMATION 2001

GM 58349

ASSESSMENT REPORT
FOR PERMITS 1466,1467,1478,1487, AND 1500
ABLOVIAK FJORD, QUEBEC

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EXECUTIVE SUMMARY

Recently, diamond-bearing ultramafic dykes have been discovered within the Abloviak Fjord region prompting much exploration in northeastern Quebec. APEX Geoscience Ltd. conducted exploration within permits held by Marum Resources Inc., 737142 Alberta Ltd. and International Tower Hill. As a result, eight ultramafic dykes were discovered within these permits.

All eight dykes were sampled for caustic fusion for diamonds, diamond indicator minerals and thin section studies. Two of the dykes were sampled on adjacent ground to the permits held by Marum Resources Inc., 737142 Alberta Ltd. and International Tower Hill. The samples were submitted to the Saskatchewan Research Council in Saskatoon for analyses. Diamond indicator mineral pick results and microprobe analyses from K2, K9 and K15 have been received. Pyrope garnet, Cr-diopside, picroilmenite, chromite as well as olivine and phlogopite are among the diamond indicator minerals picked from these ultramafic dykes. The mineral chemistry results are highly encouraging as they compare very well with the chemistry of ultramafic bodies documented by other companies at the Abloviak Fjord area.

Further exploration is recommended at this time, to target sampling of known dykes and to continue exploration for new dykes. The proposed exploration program should consist of three stages premised on the success of the 2000 exploration season and discovery of diamonds in samples already collected. **Stage 1:** a) caustic fusion for diamonds on existing samples; b) a follow-up exploration program consisting of about 21 days utilizing 4 geologists in the 2001 season. The exploration program should include collecting systematic samples of ultramafic dyke rock discovered in the 2000 season, ground geophysical surveying and mapping the extensions of the known dykes; and c) continue exploration for new dykes within the permits. **Stage 2:** analyse samples from the 2001 exploration season for caustic fusion for diamonds, diamond indicator mineral analyses and thin section study. **Stage 3:** report writing and compilation of data from both the 2000 and 2001 exploration programs. The preliminary budget for the exploration program is approximately **$ 187, 500**, not including GST or QST.

INTRODUCTION

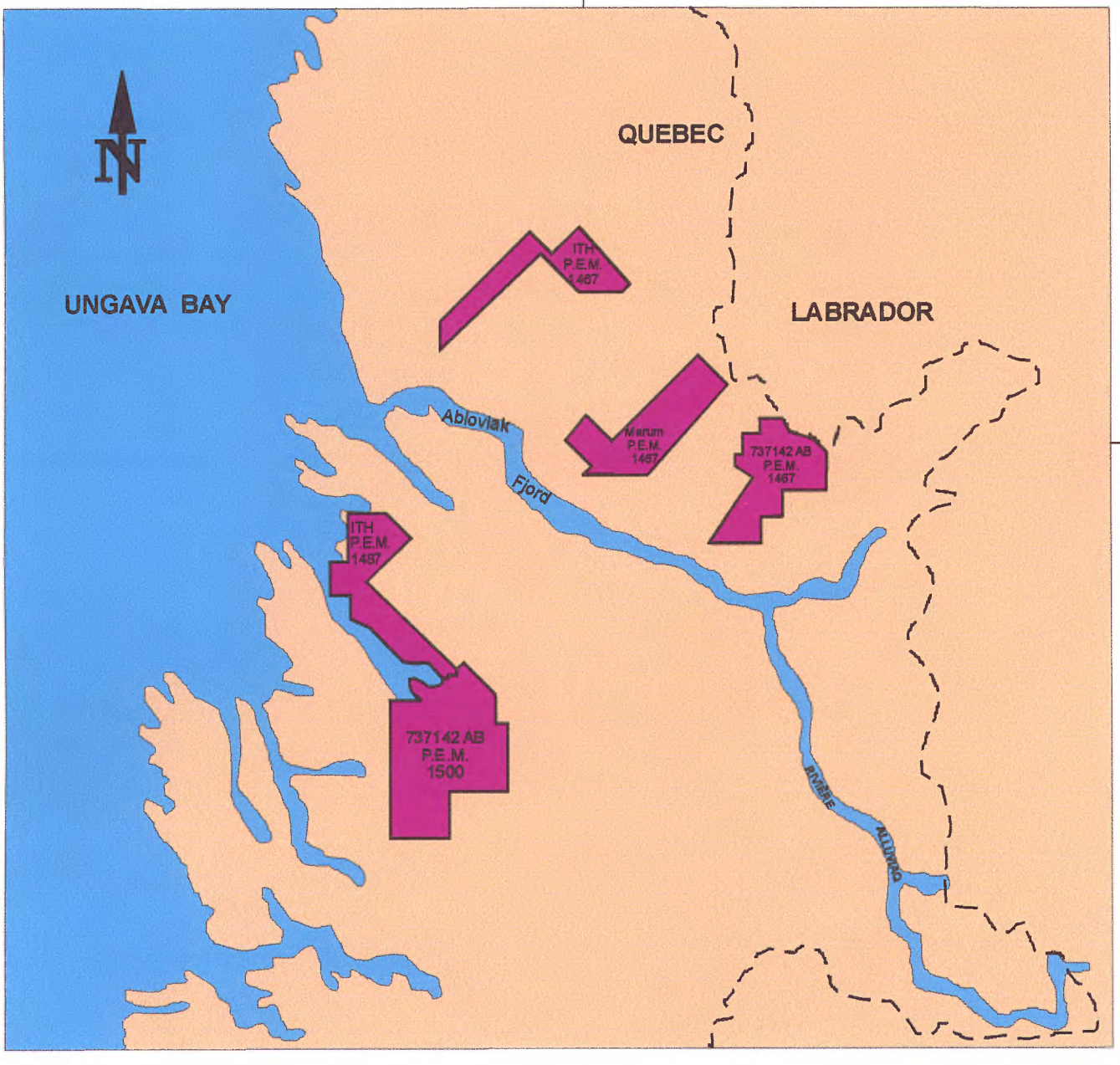
Terms of Reference

APEX Geoscience Ltd. (APEX), was retained during the summer and fall of 2000 as consultants for Marum Resources Inc., 737142 Alberta Ltd. and International Tower Hill to conduct and manage their exploration program at the Abloviak Fjord region permits. The permit area is located in the Torngat Mountains of northeastern Quebec and comprises permits 1466, 1467, 1478, 1487 and 1500. The authors have both personally visited the permits and conducted exploration thereon (Figure 1).

Permit Location and Description

The Marum Resources Inc. (Marum) permit 1466 encompasses 57.0 square kilometers (km^2). 737142 Alberta Ltd. (737142 AB) permits 1478 and 1500 encompass 153.5 km^2 and International Tower Hill (ITH) permits 1467 and 1487 encompass 108.5 km^2. All of these permits are located in the Torngat Mountains of northeastern Quebec (Figure 1) and a legal description of the permits held by Marum, 737142 AB and ITH is provided in Table 1. The permits are within the 1:250,000 scale National Topographic System (NTS) map area 24P. The nearest communities are Kuujjuaq and George River, which are approximately 250 km and 125 km, respectively, south west of the Abloviak Fjord region. The locations of these permits are shown on Figures 1 and 2.

Topographic relief within the Torngat Mountains range from sea level to approximately 3200 feet. Extensive outcrop, felsenmeer and fracture patterns are all characteristic of the terrain within the permits held by Marum, 737142 AB and ITH.



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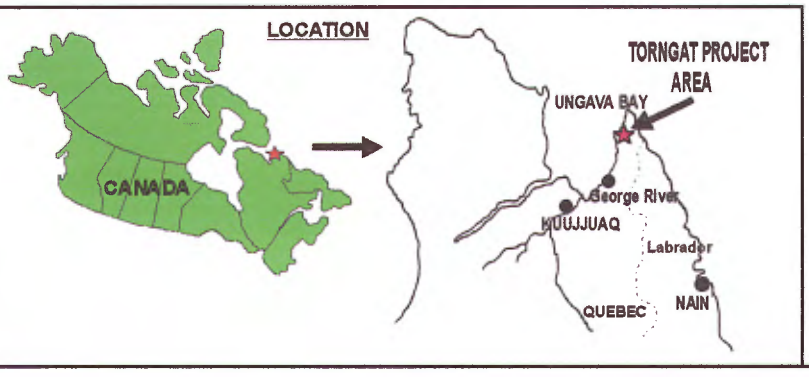
Permits Held by Marum Resources Inc.,
737142 Alberta Ltd. and International Tower Hill; Identifier



Marum Resources Inc.
737142 Alberta Ltd.
International Tower Hill

LOCATION

Scale 0 10 20 Km

NTS 24P

APEX Geoscience Ltd.

EDMONTON, ALBERTA NOVEMBER, 2000

FIGURE 1

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Fig. 2

TABLE 1
Legal Permit Description, Abloviak Fjord Permits*

Permit Number	Issue Date	Permit Holder	Map Area	Area in km^2
1466	October 11th, 1999	Marum Resources Inc.	24P/06/07/10	57.0
1478	November 3rd, 1999	737142 Alberta Ltd.	24P/07	50.0
1500	December 8th, 1999	737142 Alberta Ltd.	24P/03/06	103.5
1467	October 18th, 1999	International Tower Hill	24P/11/12	58.0
1487	November 10th, 1999	International Tower Hill	24P/06	50.5

*Provided by Marum Resources Inc.

Accessibility and Climate

The Abloviak Fjord region is accessible from both George River and Kuujjuaq by float and wheel equipped fixed-wing aircraft. A natural grass airstrip exists at the Torngat Mountain Outfitter's camp. The area is also accessible by helicopter and by barge from George River. Accessibility by float equipped fixed-wing aircraft and boat are dependent on tide levels within Abloviak Fjord and River. All accommodation and food at the Abloviak Fjord camp was provided by Torngat Mountain Outfitter's Ltd.

The Abloviak Fjord region is north of the projected tree line and is susceptible to rapidly changing weather. Poor weather typically arrives from the coast of Ungava Bay and there is a constant threat of fog. Summer months range from mid-June to September with temperatures sometimes exceeding 20°C. Snow accumulation begins about the end of September and lasts till about May with temperatures during the winter months of about -40°C.

GEOLOGY

Regional Geology

The Abloviak Fjord region is located within the southeastern arm of the Rae Structural Province situated between the Superior and Nain Structural Provinces. The eastern side of the Rae Province is bounded by the Torngat Orogen that formed as a result of the subduction of the Rae Province beneath the Nain Province between 1840 and 1825 Ma (Scott, 1998; Digonnet *et al.*, 2000). The Tasiuyak Gneiss, which lies between the Nain and Rae Provinces, formed as an accretionary prism during the Torngat Orogen (Figure 3). It is predominantly a homogenous, Paleoproterozoic, metasedimentary unit which extends >1300 km (Scott, 1998) along strike and is exposed for 450 km (Digonnet *et al.*, 2000). The Tasiuyak Gneiss is amphibolite to granulite facies in composition comprised of garnet-quartz-feldspar-biotite ± sillimanite paragneiss (Van Kranendonk, 1996). Two Paleoproterozoic structures are present within the high-grade Torngat Orogen. The first being the Alboviak shear zone, centered on the Tasiuyak Gneiss, is a 10-15 km wide belt with subvertical mylonitic schistosities (Van Kranendonk, 1996) (Figure 3). The second structure is the Komaktorvik shear zone exhibiting intense deformation and has a north-south strike joining the Abloviak shear zone where it veers south (Scott and Machado, 1995). Figure 3 is the generalized regional geology specific to the project area.

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Fig. 3

Abloviak Fjord Geology

The Abloviak Fjord region is host to a swarm of ultramafic dykes and their recent discovery is the cause of much exploration in this area. The dykes are hosted in the amphibolite to granulite facies gneisses and were emplaced within brittle fractures which typically crosscut the direction of gneissosity (Digonet *et al.*, 2000). The dykes generally range in strike from 0° to 60° and are typically discontinuous often containing 'pinch and swell' and horsetail structures. The range in thickness of the ultramafic dykes is from 5 cm up to 2m and can extend from a few meters to several kilometers. Digonnet *et al.* (2000) obtained an $^{40}Ar/^{39}Ar$ phlogopite age of approximately 550 Ma which is significantly younger than the tectonic events surrounding the Torngat Orogen and coincides with the opening of the Iapetus Ocean during the Cambrian.

Mineralogy of the ultramafic dykes as described by Digonnet *et al.* (2000) is as follows: anhedral macrocrysts of olivine, garnet, phlogopite, chromite, magnetite and rare ilmenite set in fine grained matrix of olivine, phlogopite, serpentine and calcite. Olivine and phlogopite are occasionally fresh however most often they are heavily altered by serpentine and chlorite, respectively.

SUMMARY OF PREVIOUS EXPLORATION

Numerous ultramafic dykes have been discovered in northeastern North America and Greenland which are documented in literature as early as 1968 (Digonnet *et al.*, 2000). Exploration for ultramafic dykes in northeastern Quebec was initiated by the discovery of several diamond-bearing dykes in 1994. As partial fulfillment of a Masters degree at the Université du Québec à Montréal in 1997, Digonnet *et al.* (2000) characterized the mineralogy, geochemistry and geochronology of these dykes.

Twin Mining Corporation began exploration in the Ungava Bay area during the summer of 1999 where they found G10 indicator minerals and gem quality diamonds in outcrop. As of February 2000 (Twin Mining press release) 475 gem quality diamonds were extracted from kimberlite dykes of which 80 were macrodiamonds some exceeding 3 mm in one dimension. To date they currently hold a total claim area of 507 km^2 (Twin Mining press release October 2000).

Tandem Resources Ltd. have announced in their October 2000 press release that macrodiamonds were discovered in ultramafic dykes within their permits held along the Abloviak Fjord. A total of 10 diamonds were recovered from a dyke that could be traced for over 3.5 miles; six of the diamonds are microdiamonds and the remaining four are macrodiamonds.

PERMIT EXPLORATION

Personnel and Logistics

On August 6th, Mr. D. Besserer, the party leader from APEX, an APEX geologist and a geologist and prospector from Dumont Nickel Inc. (Dumont) mobilized to the Torngat Mountain Outfitter's camp on the Abloviak River from Kuujjuaq. Mr. D. Besserer and the Dumont prospector demobilized from the Abloviak camp on August 24th. The APEX and Dumont geologists demobilized on August 28th. A total of 8.9 man-days were spent within the Marum permit, 10.6 man-days were spent within the 737142 AB permits and 11.2 man-days were spent

within the ITH permits during the August exploration period. Mr. D. Besserer and the APEX geologist mobilized to the Abloviak camp on September 10th and demobilized on September 25th. A total of 7.6 man-days were spent within the Marum permit, 6 man-days were spent within the 737142 AB permits and 3.4 man-days were spent within ITH permits during the September exploration period.

2000 Exploration

Exploration within permits held by Marum, 737142 AB and ITH consisted of foot and helicopter traverses. A total of eight ultramafic dykes were discovered within permits 1466, 1467, 1478 and 1500. Brief descriptions of the ultramafic dykes are summarized in Table 2.

A total of 16.5 man-days were spent within the Marum permit 1466. One ultramafic dyke (K1-B) was traced onto permit 1466, striking for approximately 400m within the permit. A total of 16.6 man-days of exploration were conducted within the permits held by 737142 AB. A total of six ultramafic dykes K8, K9, K15, K20, K26 and K28 were found within permits 1478 and 1500; four being located within permit 1478 and the remaining two are within permit 1500. A total of 14.6 man-days of exploration were conducted within the permits held by International Tower Hill. One ultramafic dyke, K2, was discovered within permit 1467. The K2 dyke extends from within Twin Mining's permit 1464, which is immediately south of ITH permit 1467.

The majority of ultramafic dykes found within these permits are highly micaceous and typically magnetic. The mineralogy consists primarily of phlogopite, pyroxene and matrix calcite with minor olivine which are visible in hand sample. Preliminary descriptions are shown in Table 2. For a detailed description of the ultramafic dyke samples, refer to Appendix 2.

Table 2
Preliminary Dyke Descriptions

Dyke Name	Permit	Strike Length and Direction	Generalized Mineralogy	Comments
K1-B	Marum-1466	400m on Marum ground/10°	Phlog; cal; pyx; ol.	Possibly terminates near coordinate. Extension of K1.
K2	ITH-1467	1km/60°	Cal; phlog; ol; pyx; mag.	Extension from Twin Mining permit 1464.
K8	737142 AB-1478	1.4km/30°	Cal; phlog; pyx; brecciation at contact.	Crosscuts K9. Within fracture of cliff face.
K9	737142 AB-1478	1km/15°	Gneissic clasts; phlog; cal.	Crosscuts K8. Within fracture of cliff face.
K15	737142 AB-1478	1.4km/?	Vesicular; phlog.	Horse tails and evidence of flow banding.
K20	737142 AB-1478	400m on 737142 AB ground/30°	Phlog; cal; pyx	Not sampled on this permit.
K26	737142 AB-1500	?/20°	Phlog; ol; pyx.	Little outcrop available.
K28	737142 AB-1500	Approx. 200m/360°	Phlog; cal; hem; ol.	Poor exposure of outcrop.

Note: phlog=phlogopite; cal=calcite; ol=olivine; pyx=pyroxene; mag=magnetite; hem=hematite

Rock Sampling

All eight dykes were sampled for caustic fusion, diamond indicator analyses and thin section study. Only two dykes, K8 and K20 were sampled on adjacent permits not held by Marum, 737142 AB or ITH. Two 20L pails of sample (about 50 kg) were collected from each dyke for caustic fusion analyses for diamonds and approximately 15kg of sample was collected for diamond indicator mineral analyses. All sample pails were secured with zip ties and/or security seals under the supervision of Mr. D. Besserer. The samples for caustic fusion and diamond indicator analyses were shipped to the Saskatchewan Research Council (SRC) in Saskatoon on August 24th, 2000 and were received September 5th, 2000. Ultramafic dyke, K20, was collected on August 25th, 2000 and shipped to the SRC on September 16th, 2000 and has been received. The samples collected from the September exploration period were sent to the SRC on September 25th, 2000 and were received during the first week in October 2000. All picked indicator minerals have been sent to R.L. Barnett Geological Consulting Ltd. for microprobe analyses. Sample and dyke locations are shown in Figure 4 and listed in Appendix 2.

2000 Exploration Results

Diamond Indicator Mineral Results

Diamond indicator results from ultramafic dykes K2, K9 and K15 have been received. Results from remaining dykes are pending. Olivine, garnet, chrome (Cr)-diopside, and ilmenite are among the indicator minerals picked from these dykes. Phlogopite was separated as well, and is abundant within the samples. Table 3 summarizes the indicator minerals picked from K2, K9 and K15 dykes. The analytical pick sheets from the SRC are in Appendix 3.

Table 3
Results for Diamond Indicator Minerals from Ultramafic Dykes

Sample Name	Pyrope Garnet		Cr-Diopside		Eclogite	Olivine	Picroilmenite		Chromite	
	DEF	POS	DEF	POS	POS	POS	DEF	POS	DEF	POS
K2	6	0	50	0	0	50	0	11	0	0
K9	0	0	0	0	0	36	0	0	0	0
K15	0	0	3	0	0	0	0	7	0	0

DEF=definite; POS=possible

Mineral Chemistry Results

To date, microprobe results for kimberlite indicator minerals from K2, K9 and K15 have been received from R.L. Barnett Geological Consulting. Also included are phlogopite analyses from K2, K9 and K15. Where possible, mineral chemistry data from Ableviak dykes analyses by Digonnet *et al.* (2000) have been included as a comparison with data from dykes K2, K9 and K15. All mineral chemistry analyses are in Appendix 4 and respective chemistry plots are in Appendix 5.

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All six garnet grains from K2 were microprobed. Mineral chemistry results indicate that four of the garnet grains are eclogitic in composition and the remaining two are pyrope garnets. A comparative plot of MgO vs FeO for eclogitic and pyrope garnet clearly identifies a compositional distinction for the garnet population (Appendix 5). The pyrope garnets are Cr-rich having > 2 weight percent (wt%) Cr_2O_3 and plot as G9 garnets on a CaO vs Cr_2O_3 plot, according to the classification by Dawson and Stephens (1975). One analysis of a garnet from an Ablovlak ultramafic dyke by Digonnet *et al.* (2000) is included and plots as a G9 garnet as well (Appendix 5).

A number of Cr-diopside grains were picked and classified as 'possible' from dykes K2 and K15 (Table 3). Mr. Barnett only probes diamond indicator minerals and since there are more microprobe analyses for Cr-diopside than there were grains picked, we assume that some of the possible olivine grains are Cr-diopsides. An FeO vs Cr_2O_3 chemistry plot identifies three distinct mineral fields for Cr-diopside, olivine and orthopyroxene (Appendix 5). The Cr-diopside grains from K2 and K15 are from the Cr-rich megacryst suite as the majority of Cr_2O_3 contents are between 0.8 and 2.4 wt% as outlined by Mitchell (1986).

Microprobe analyses for the eleven possible picroilmenites from K2 and the seven possible grains from K15 identified them all to be chromite. The Cr_2O_3 contents are high ranging from 37.2-60.0 wt% and TiO_2 contents are low, ranging from 0-4.7 wt%. Picroilmenite typically contains approximately 11wt% Cr_2O_3 and 35-45wt% TiO_2 (Mitchell, 1986). There is an analysis available, however, for one picroilmenite grain yielding an MgO content of 9.12 wt% and a moderate Cr_2O_3 content of 0.54 wt% (Appendix 5).

Phlogopite grains were separated during diamond indicator mineral picking, as they were abundant within the samples. Eight microprobe analyses from five phlogopite grains are available from K2. Fifteen analyses of phlogopite from K9 and sixteen analyses from K15 are also available. All phlogopite microprobe analyses are included in Appendix 4. Two chemistry plots outline the trends for kimberlites and other ultramafic rocks based on the chemical compositions of Al_2O_3, FeO and TiO_2 of phlogopite (Appendix 5). The FeO vs Al_2O_3 chemistry plot identifies a trend towards the composition of minettes for K2, K9 and K15 with a slight tendency of K9 and K15 towards the orangeite trend. In the TiO_2 vs Al_2O_3 chemistry plot, there are two distinct populations. One population has constant Al_2O_3 compositions, consistent with the kimberlite trends and the second population trends towards minette compositions with a slight increase in Al_2O_3 with increasing TiO_2 (Appendix 5). The phlogopite analysis by Digonnet *et al.* (2000) has similar chemical compositions as K2, K9 and K15. The chemistry plots are included in Appendix 5.

2000 Exploration Expenditures

The total expenditures for the summer and fall 2000 fieldwork season is **$101,647.96**, excluding airborne geophysics. The total amount to be allocated to the permits discussed in this report is **$31,900.00** and the remaining **$69,747.96** is to remain unallocated for the purposes of this assessment report. A summary of these expenditures and permit costs are in Appendix 6.

DISCUSSION

Initial discovery of ultramafic dykes in northeastern Quebec prompted a rush in exploration, however there is still much work to be done in this poorly understood region. The nature of emplacement of these dykes, a complete geochronological history of the area, and a firm understanding of the mineralogy and chemical composition of these dykes are important factors that still remain to be answered.

Diamonds are known to exist within ultramafic dykes in the Abloviak Fjord region as reported by Twin Mining Corporation and Tandem Resources Ltd. Twin Mining Corporation alone has recovered 475 gem quality diamonds from their kimberlites (press release February 2000).

Mineral chemistry analyses for indicator minerals picked from dykes K2, K9 and K15 are encouraging as they compare very well with chemistry documented by Digonnet *et al.* (2000) and the chemistry for ultramafic bodies outlined by Mitchell (1986). The chromite mineral chemistry presented in this assessment report compares very well with the chromites from diamondiferous kimberlite pipes of the Temiscamingue and Desmaraisville kimberlite fields of Quebec. The Cr_2O_3 contents of chromites in these diamondiferous kimberlite fields are less than 60 wt% Cr_2O_3 as reported by Moorhead *et al.* (2000) bearing similarities to the chromites analysed from the ultramafic dyke K2 and K15 (Appendix 4 and 5). It is not possible at this stage, to determine conclusively whether the Abloviak dykes contain diamonds based on chemistry alone, as indicator minerals appear to be rare.

The potential for discovering diamond-bearing ultramafic dykes within the permits held by Marum, 737142 AB and ITH is favourable. However, the economic potential for these permits is low based on world statistics.

CONCLUSIONS AND RECCOMENDATIONS

The results to date are favorable. A total of eight ultramafic dykes have been discovered within permits held by Marum, 737142 AB, and ITH, four of which cluster within a single permits (737142 AB, 1478). The ultramafic dykes discussed in this study are mineralogically and chemically similar to dykes found by Twin Mining Corp. and as discussed by Digonnet *et al.* (2000). As well, diamond-bearing dykes are known to exist within the Abloviak Fjord region in close proximity to permits discussed in this report.

Further exploration is recommended at this time, to target sampling of known dykes and to continue exploration for new dykes. The proposed exploration program should consist of three stages premised on the success of the 2000 exploration season and discovery of diamonds in samples already collected. **Stage 1:** a) caustic fusion for diamonds on existing samples; b) a follow-up exploration program consisting of about 21 days utilizing 4 geologists in the 2001 season. The exploration program should include collecting systematic samples of ultramafic dyke rock discovered in the 2000 season, ground geophysical surveying and mapping the extensions of the known dykes; and c) continue exploration for new dykes within the permits. **Stage 2:** analyse samples from the 2001 exploration season for caustic fusion for diamonds, diamond indicator mineral analyses and thin section study. **Stage 3:** report writing

and compilation of data from both the 2000 and 2001 exploration programs. The preliminary budget for the exploration program is approximately **$ 187, 500**, not including GST or QST. A detailed breakdown of the proposed exploration budget is in Appendix 7.

PERMIT TO PRACTICE
APEX Geoscience Ltd.
Signature Dean Besserer
Date November 30, 2000
PERMIT NUMBER: P-5824
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

APEX Geoscience Ltd.

Andrea Noyes

Andrea K. Noyes, M.Sc.

Dean Besserer

Dean J. Besserer, B.Sc., P.Geol.

November 2000
Edmonton, Alberta

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CERTIFICATION

I, A.K. NOYES OF #610 10175 114TH ST., EDMONTON, ALBERTA, CERTIFY AND DECLARE THAT I AM A GRADUATE OF THE UNIVERSITY OF WESTERN ONTARIO WITH A B.SC. DEGREE IN GEOLOGY (1997) AND A GRADUATE OF THE UNIVERSITY OF ALBERTA WITH AN M.SC. DEGREE IN GEOLOGY (2000).

MY EXPERIENCE INCLUDES SERVICE AS A GEOLOGICAL ASSISTANT WITH MONOPROS LTD., YELLOWKNIFE, NORTHWEST TERRITORIES DURING THE SUMMERS OF 1996 TO 1999. SINCE JUNE 2000, I HAVE BEEN EMPLOYED BY APEX GEOSCIENCE LTD. AS AN EXPLORATION GEOLOGIST.

I HAVE NO INTEREST, DIRECT OR INDIRECT, IN THE PERMITS THAT ARE SUBJECT OF THIS REPORT OR SECURITIES OF MARUM RESOURCES INC., 737142 ALBERTA LTD. OR INTERNATIONAL TOWER HILL, NOR DO I EXPECT TO RECEIVE SUCH INTEREST. AS WELL, APEX GEOSCIENCE LTD. HAS NO INTEREST, DIRECT OR INDIRECT, IN THE PERMITS, OR SECURITIES OF MARUM RESOURCES INC., 737142 ALBERTA LTD. OR INTERNATIONAL TOWER HILL, NOR DOES IT EXPECT TO RECEIVE SUCH INTEREST.

THIS REPORT ENTITLED "ASSESSMENT REPORT FOR PERMITS 1466, 1467, 1478, 1487 AND 1500, ABLOVIAK FJORD, QUEBEC" IS BASED UPON STUDY OF PUBLISHED AND UNPUBLISHED DATA AND CONDUCTED FIELD EXAMINATIONS. I HAVE PERSONALLY VISITED THE PERMITS THAT ARE THE SUBJECT OF THIS REPORT.

I HEREBY GRANT MARUM RESOURCES INC. AND 737142 ALBERTA LTD. OF CALGARY, ALBERTA, CANADA AND INTERNATIONAL TOWER HILL OF VANCOUVER, BRITISH COLUMBIA, CANADA PERMISSION TO USE THIS REPORT.

Andrea Noyes

A.K. NOYES, M.SC.

NOVEMBER 2000
EDMONTON, ALBERTA

CERTIFICATION

I, D.J. BESSERER OF 131 FOXBORO LANDING, EDMONTON, ALBERTA, CERTIFY AND DECLARE THAT I AM A GRADUATE OF THE UNIVERSITY OF WESTERN ONTARIO, LONDON WITH A B.SC. DEGREE IN GEOLOGY (1994). I AM REGISTERED AS A PROFESSIONAL GEOLOGIST WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA.

MY EXPERIENCE INCLUDES SERVICE AS A CONTRACT GEOLOGICAL ASSISTANT WITH THE MINISTRY OF NORTHERN DEVELOPMENT AND MINES, ONTARIO, FROM 1991 TO 1992 AND THE GEOLOGICAL SURVEY OF CANADA, OTTAWA IN 1993. FROM 1994 TO 1999, I HAVE CONDUCTED AND DIRECTED PERMIT EXAMINATIONS AND EXPLORATION PROGRAMS ON BEHALF OF COMPANIES AS A GEOLOGIST IN THE EMPLOY OF APEX GEOSCIENCE LTD. SINCE JANUARY 2000, I HAVE BEEN A PRINCIPAL AND SHAREHOLDER OF APEX GEOSCIENCE LTD.

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APPENDIX 1

PHOTOS

Close up of the nodule rich ultramafic dyke, K2. Nodules are pyroxene-magnetite intergrowths that are up to 3cm in diameter.

Photograph showing the width of ultramafic dyke K2. Prospector for scale.

Photograph of K15 ultramafic dyke veins cutting through country rock.

Photograph of K15 ultramafic dyke intermixed with country rock fragments.

Photograph of the ultramafic dyke K8 cutting into mountain side.

Large block of ultramafic dyke from K20 exhibiting flow banding.

Photograph of a small ultramafic dyke vein cutting through country rock from K20.

APPENDIX 2

SAMPLE LOCATIONS

APPENDIX 2

SAMPLE LOCATIONS

Sample Indentifier	Location		Dyke Name	Description
	Easting	Northing		
DNI-09	396748	6583052	K8	Micaceous variety of ultramafic dyke. Magnetic. Evidence of flow banding. Phlogopite and pyroxene macrocrysts. No clasts or nodules. Matrix carbonate.
MMU-01	397262	6583882	K9	Moderately magnetic. Fine grained at contacts. Calcite veins and stringers, 10-15% carbonate in matrix. 30% coarse grained phlogopite. No weathered-out clasts. Some brecciation seen near contacts with country rock. Micaceous variety of ultramafic dyke.
MMU-02	396318	6584120	K15	Micaceous variety of ultramafic dyke. Strongly magnetic. Minor matrix carbonate. Few nodules. Dyke veins cutting through country rock. At chill margins the grain size ranges from very fine to coarse grained. Horse tails and evidence of flow banding. 1.2 wide dyke.
MMU-06	369952	6569574	K28	Micaceous variety of ultramafic dyke. 1m wide. Heavily altered by serpentine. 10% calcite in matrix with some veining. Weakly magnetic. Poor exposure of outcrop. Abundant hematite. Strikes ranges approximately 360° to 30°.
MMU-07	370604	6571253	K26	Micaceous variety of ultramafic dyke. Coarse grained phlogopite. Moderately magnetic. 15% altered olivine macrocrysts. Some pyroxene visible. Very little outcrop in area. Dyke is <1m wide and strike is approximately 20°.
MMU-09	389828	6590280	K1-B	Extension of K1. Abundant olivine macrocrysts both altered and fresh, approximately 15%. Some olivine possess kelyphite rimming. 20% fine grained phlogopite present. 5% pyroxene present. <5% garnet present. 10% calcite in matrix. Moderately magnetic
ITH-01	382970	6607899	K2	Matrix carbonate and veining. Pyroxene nodules intergrown with magnetite are abundant and up to 10cm in diameter. 2cm wide dyke in places which cross-cuts larger dyke - visible chill margins at contacts. Strongly magnetic. Phlogopite rich. Fresh and altered olivine. Approximately 3m wide. No country rock fragments.
DNI-16	401156	6585030	K20	Medium grained, blue-grey matrix. No matrix carbonate. 30% matrix phlogopite. Calcite nodules up to 7 mm in diameter. Pyroxene xenocrysts approximately 2mm. Weathers green-grey. No evidence of garnet or olivine. Width ranges from 0.5m to 1.5m along strike. Chilled margins and stringers into country are abundant.

APPENDIX 3

DIAMOND INDICATOR PICK RESULTS

Indicator Mineral Grain Description **Group: AP00.15**

Lower 1 Fraction

REP- Repicked Sample B-Blank DEF-Definite POS-Possible

No.	Sample Name	Pyrope Gt.		Cr. Diop.		Eclog.	Olivine	Picked	Others
		DEF	POS	DEF	POS	POS	POS	%	picked by
1	K2	6	0	50	0	0	50	20	20
	Comments: 20 other possible phlogopite								bfm
2	K9	0	0	0	0	0	36	100	15
	Comments: 15 other possible phlogopite								BFM
3	K12	0	0	0	0	0	50	1	50
	Comments: 50 other possible phlogopite								BFM
4	K13	17	0	1	0	40	11	50	60
	Comments: 60 other possible phlogopite								BFM
5	K15	0	0	3	0	0	0	35	30
	Comments: 30 other possible phlogopite								PMS
6									
	Comments:								
7									
	Comments:								
8									
	Comments:								
9									
	Comments:								
10									
	Comments:								
11									
	Comments:								
12									
	Comments:								
	rep K13	0	0	0	0	0	0	50	0
	Comments:								pms

9/28/00

Indicator Mineral Grain Description

Group: AP00.15

Lower 2 Fraction

REP- Repicked Sample B-Blank DEF-Definite POS-Possible

No.	Sample Name	Picroilmenite		Chromite		% Picked	Others
		DEF	POS	DEF	POS		picked by
1	K2	0	11	0	0	10	0
	Comments: These indicators were picked initially out of the caustic residue before fusion.						pms
2	K9	0	0	0	0	100	0
	Comments: picked from caustic residue						pms
3	K12	0	34	0	12	10% of CR	0
	Comments: 23 ilmenites picked from fusion CR; 12 ilmenites picked before Na2O2 fusion						pms
4	K13	0	21	0	19	15% of CR	0
	Comments: 14 ilmenites picked from fusion CR; 7 ilmenites picked before Na2O2 fusion						pms
5	K15	0	7	0	0	100	0
	Comments: picked from caustic residue						pms
6							
	Comments: All of the possible chromites had a reddish color to them but still very translucent and black thus making						
7	it difficult to determine.						
	Comments:						
8							
	Comments:						
9							
	Comments:						
10							
	Comments:						
11							
	Comments:						
12							
	Comments:						
	rep K13	0	0	0	0	15	0
	Comments:						pms

APPENDIX 4

MINERAL CHEMISTRY

APPENDIX 4

MICROPROBE ANALYSES

Microprobe analyses for minerals picked from K2

	Phlogopite							
	1	3 (core)	3 (inter)	3 (rim)	4	6 (core)	6 (rim)	7
SIO2	37.46	36.20	36.12	38.48	37.04	36.56	37.59	37.73
TIO2	3.38	3.82	3.93	3.17	3.73	3.95	3.59	3.55
AL2O3	14.45	15.47	15.55	12.99	14.72	15.27	14.84	14.88
CR2O3	0.09	0.11	0.09	0.06	0.09	0.07	0.17	0.08
FEO	6.64	6.10	6.25	7.39	6.80	6.58	6.52	6.87
MGO	22.31	21.78	22.05	22.39	22.07	21.98	22.36	22.34
MNO	0.10	0.02	0.09	0.06	0.07	0.07	0.08	0.04
CAO	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
BAO	0.92	1.32	1.45	0.52	1.07	1.37	0.87	0.78
K20	9.35	9.31	9.26	9.60	9.53	9.09	9.27	9.46
NA2O	0.26	0.26	0.32	0.30	0.30	0.25	0.29	0.25
F	0.88	0.83	0.78	0.86	0.75	0.82	0.81	0.80
CL	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
-	95.84	95.24	95.91	95.82	96.17	96.02	96.39	96.78
O=F+CL	0.37	0.35	0.33	0.36	0.32	0.35	0.34	0.34
TOTAL	95.47	94.89	95.58	95.46	95.85	95.67	96.05	96.44

inter=intermediate

	Eclogite Garnet			Garnet		
	3	4	5	6	1	2
SIO2	40.84	40.41	40.89	40.63	41.94	41.89
TIO2	0.20	0.19	0.18	0.22	0.11	0.13
AL2O3	20.59	20.63	20.85	20.91	22.08	22.05
CR2O3	4.55	4.95	4.63	4.64	3.80	3.82
FEO	13.38	13.58	13.04	12.63	8.61	8.32
MGO	15.47	14.76	15.44	15.36	18.50	17.97
MNO	0.58	0.76	0.48	0.53	0.48	0.46
CAO	4.83	5.03	4.85	5.04	4.89	5.11
NA2O	0.01	0.01	0.00	0.03	0.00	0.00
TOTAL	100.45	100.32	100.36	99.99	100.41	99.75

Microprobe analyses from K2 cont'd

	Chromites									
	1	2	3	4	5	6	7	8	9 (core)	9 (rim)
SIO2	0.04	0.02	0.05	0.09	0.02	0.03	0.09	0.02	0.04	0.04
TIO2	0.39	0.99	3.05	0.09	0.61	0.43	3.18	0.38	0.00	4.74
AL2O3	6.08	9.82	1.52	8.07	2.79	5.48	4.15	9.76	12.89	4.16
CR2O3	58.89	56.13	37.16	58.70	60.67	59.49	46.51	57.97	58.26	51.93
FEO	23.99	21.14	49.77	22.71	24.84	23.37	35.77	20.62	15.77	29.47
MNO	0.47	0.50	0.49	0.46	0.59	0.45	0.47	0.40	0.38	0.60
MGO	9.71	11.85	6.11	9.80	10.28	10.32	8.32	11.24	13.09	8.15
ZNO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NIO	0.18	0.10	0.36	0.15	0.21	0.16	0.25	0.18	0.12	0.21
TOTAL	99.75	100.55	98.51	100.07	100.01	99.73	98.74	100.57	100.55	99.30

	Olivine							
	2	4	11	20	28	31	37	38
SIO2	39.42	40.81	40.88	41.05	39.64	40.36	40.82	40.74
TIO2	0.04	0.02	0.01	0.00	0.02	0.01	0.04	0.01
AL2O3	0.01	0.01	0.02	0.01	0.03	0.03	0.04	0.02
CR2O3	0.00	0.00	0.00	0.13	0.00	0.07	0.01	0.04
FEO	17.59	8.39	8.87	9.25	15.49	11.19	9.29	10.21
MGO	42.33	50.27	50.19	49.35	44.12	47.49	49.63	48.18
MNO	0.24	0.08	0.12	0.15	0.22	0.16	0.15	0.18
CAO	0.04	0.03	0.02	0.10	0.05	0.10	0.05	0.08
K2O	0.03	0.01	0.01	0.02	0.01	0.02	0.01	0.00
NA2O	0.01	0.04	0.01	0.00	0.03	0.00	0.02	0.00
NIO	0.01	0.38	0.41	0.41	0.16	0.36	0.33	0.27
TOTAL	99.72	100.04	100.54	100.47	99.77	99.79	100.39	99.73

	Orthopyroxene									
	1	3	5	6	7	8	9	10	13	14
SIO2	58.76	57.87	57.48	58.08	58.64	58.32	58.34	57.55	57.87	58.37
TIO2	0.01	0.00	0.00	0.06	0.03	0.07	0.00	0.04	0.03	0.05
AL2O3	0.48	1.45	1.58	0.50	0.48	0.47	0.47	0.43	0.44	0.44
CR2O3	0.37	0.23	0.32	0.12	0.29	0.34	0.28	0.32	0.22	0.30
FEO	4.45	5.13	5.00	5.62	4.52	4.44	4.69	4.64	4.41	4.53
MGO	35.51	35.20	35.02	34.99	35.58	35.96	35.36	36.13	36.15	36.00
MNO	0.13	0.16	0.20	0.13	0.12	0.10	0.16	0.12	0.14	0.20
CAO	0.45	0.35	0.37	0.45	0.47	0.44	0.41	0.45	0.42	0.44
K2O	0.02	0.01	0.01	0.03	0.00	0.00	0.01	0.02	0.00	0.02
NA2O	0.07	0.00	0.00	0.07	0.08	0.14	0.07	0.08	0.07	0.10
NIO	0.09	0.07	0.07	0.06	0.10	0.04	0.10	0.08	0.12	0.10
TOTAL	100.34	100.47	100.05	100.11	100.31	100.32	99.89	99.86	99.87	100.55

Microprobe analyses from K2 cont'd

	Orthopyroxene cont'd									
	16	17	18	19	21	22	24	26	27	29
SIO2	57.95	58.17	58.21	58.11	57.79	57.80	58.33	57.50	57.68	58.35
TIO2	0.05	0.04	0.02	0.00	0.04	0.05	0.05	0.00	0.02	0.04
AL2O3	0.47	0.45	0.47	0.46	0.44	0.47	0.48	1.50	1.51	0.43
CR2O3	0.40	0.32	0.27	0.22	0.23	0.20	0.28	0.32	0.36	0.35
FEO	4.75	4.51	4.53	4.93	5.56	5.54	4.62	5.13	5.14	4.50
MGO	36.21	35.96	36.08	36.02	35.72	35.41	35.76	35.29	35.12	35.92
MNO	0.12	0.13	0.05	0.12	0.15	0.16	0.14	0.19	0.22	0.14
CAO	0.42	0.42	0.44	0.25	0.35	0.28	0.44	0.28	0.26	0.43
K2O	0.00	0.04	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01
NA2O	0.09	0.12	0.08	0.12	0.06	0.07	0.13	0.01	0.00	0.09
NIO	0.04	0.11	0.09	0.07	0.07	0.08	0.07	0.08	0.07	0.11
TOTAL	100.50	100.27	100.25	100.30	100.41	100.07	100.30	100.31	100.39	100.37

	Orthopyroxene cont'd									
	30	32	33	34	35	36	37 (inter)	38 (inter)	39	40
SIO2	58.04	58.47	58.38	58.03	57.67	58.30	57.58	58.13	58.59	58.07
TIO2	0.03	0.05	0.07	0.03	0.00	0.01	0.04	0.02	0.01	0.02
AL2O3	0.41	0.45	0.42	0.43	1.58	0.44	0.45	0.45	0.45	0.44
CR2O3	0.23	0.30	0.38	0.26	0.33	0.24	0.23	0.34	0.36	0.39
FEO	5.79	4.37	4.45	6.84	5.00	5.13	5.91	4.51	4.60	4.64
MGO	35.19	35.66	35.76	33.95	35.36	35.78	35.31	35.72	35.58	35.70
MNO	0.15	0.07	0.13	0.24	0.18	0.10	0.15	0.17	0.04	0.15
CAO	0.36	0.44	0.49	0.41	0.37	0.29	0.40	0.44	0.41	0.39
K2O	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.01
NA2O	0.06	0.12	0.12	0.12	0.02	0.06	0.13	0.10	0.10	0.11
NIO	0.11	0.11	0.13	0.03	0.02	0.08	0.11	0.06	0.14	0.08
TOTAL	100.38	100.06	100.34	100.36	100.54	100.44	100.31	99.95	100.29	100.00

	Cr-Diopside									
	1	2	3	4	5	6	7	8 (core)	8 (rim)	9
SIO2	55.32	54.91	54.99	55.20	54.86	55.24	55.51	55.38	50.28	54.09
TIO2	0.16	0.21	0.21	0.14	0.16	0.22	0.18	0.19	1.65	0.08
AL2O3	1.67	1.74	1.70	1.75	1.55	1.97	1.69	1.77	5.14	1.77
CR2O3	1.25	1.82	1.31	3.30	2.57	1.88	1.54	1.28	1.08	2.56
FEO	4.57	3.57	3.63	2.15	2.65	2.60	2.77	4.36	5.80	2.47
MGO	15.59	15.50	15.47	15.63	16.03	16.54	16.74	15.88	16.07	16.04
MNO	0.11	0.12	0.09	0.06	0.10	0.08	0.05	0.13	0.35	0.10
CAO	19.81	20.60	20.96	20.18	20.17	19.70	20.46	19.45	19.38	21.11
K2O	0.04	0.04	0.02	0.01	0.04	0.05	0.03	0.04	0.03	0.02
NA2O	1.65	1.51	1.52	1.87	1.77	1.74	1.44	1.69	0.37	1.51
TOTAL	100.17	100.02	99.90	100.29	99.90	100.02	100.41	100.17	100.15	99.75

Microprobe analyses from K2 cont'd

	Cr-Diopside cont'd									
	10	11	12	13 (rim)	13 (inter)	14	15	16	17	18
SIO2	53.81	55.36	55.33	54.91	55.11	55.46	55.12	54.64	55.00	54.97
TIO2	0.12	0.19	0.22	0.15	0.16	0.16	0.17	0.17	0.16	0.21
AL2O3	1.89	1.98	1.65	1.46	1.39	1.81	1.52	1.76	1.88	1.75
CR2O3	2.26	2.30	2.60	1.73	1.39	2.00	2.18	2.06	1.15	2.23
FEO	2.92	2.82	3.18	3.98	3.95	2.43	3.00	3.56	5.04	3.36
MGO	16.70	15.87	16.28	15.62	15.87	16.30	16.15	15.49	15.54	15.32
MNO	0.12	0.07	0.06	0.08	0.20	0.12	0.08	0.04	0.17	0.10
CAO	21.14	19.66	19.12	20.61	20.75	20.40	20.25	20.11	19.64	20.44
K2O	0.01	0.01	0.04	0.02	0.02	0.03	0.04	0.02	0.03	0.02
NA2O	0.99	1.99	1.90	1.54	1.40	1.69	1.79	1.83	1.84	1.82
TOTAL	99.96	100.25	100.38	100.10	100.24	100.40	100.30	99.68	100.45	100.22

	Cr-Diopside cont'd									
	19	20	21	22	23	24	25	26	27	28
SIO2	54.44	54.77	54.41	55.02	54.56	55.32	55.55	54.84	54.91	54.97
TIO2	0.17	0.24	0.18	0.15	0.14	0.21	0.11	0.21	0.22	0.16
AL2O3	1.79	1.83	1.76	1.72	1.69	1.54	2.62	1.57	1.89	2.20
CR2O3	1.90	1.85	1.90	1.98	1.85	2.26	1.98	2.64	2.24	1.98
FEO	3.78	3.33	3.61	3.60	2.61	3.06	2.62	2.93	2.83	2.11
MGO	15.61	16.32	15.69	15.59	16.61	16.09	15.46	16.25	15.93	15.84
MNO	0.10	0.10	0.12	0.03	0.05	0.14	0.07	0.10	0.14	0.04
CAO	20.10	19.56	20.41	20.30	20.72	19.61	19.72	19.52	19.78	20.88
K2O	0.01	0.02	0.03	0.02	0.02	0.04	0.02	0.04	0.01	0.01
NA2O	1.98	1.74	1.79	1.95	1.85	1.91	2.36	1.96	2.11	1.73
TOTAL	99.88	99.76	99.90	100.36	100.10	100.18	100.51	100.06	100.06	99.92

	Cr-Diopside cont'd									
	29	30	31	32	33	34	35	36	37	38
SIO2	54.57	55.37	55.10	54.47	55.07	55.47	54.87	54.03	54.60	54.95
TIO2	0.20	0.18	0.17	0.21	0.19	0.17	0.19	0.18	0.15	0.20
AL2O3	1.96	1.93	1.62	1.49	1.67	1.76	1.91	0.67	1.65	2.06
CR2O3	2.24	2.28	2.49	2.82	1.72	1.61	1.32	2.70	1.79	2.27
FEO	2.96	2.83	2.82	3.15	2.52	2.82	4.89	2.75	2.68	2.69
MGO	16.04	15.91	16.14	16.48	16.82	16.54	15.53	16.35	16.75	16.08
MNO	0.07	0.08	0.08	0.15	0.10	0.07	0.12	0.11	0.08	0.08
CAO	19.64	19.77	20.03	19.19	20.62	20.28	19.46	22.22	20.44	19.78
K2O	0.01	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03
NA2O	2.05	2.16	2.05	1.84	1.63	1.72	1.88	1.20	1.59	2.06
TOTAL	99.74	100.53	100.53	99.83	100.37	100.47	100.19	100.24	99.76	100.20

Microprobe analyses from K2 cont'd

	Cr-Diopside cont'd									
	39	40	41	42	43	44	45	46	47	48
SIO2	53.01	54.72	55.10	55.12	54.77	54.60	54.48	55.19	55.11	54.85
TIO2	0.41	0.17	0.22	0.18	0.21	0.17	0.26	0.20	0.21	0.15
AL2O3	1.75	1.80	2.00	1.68	2.33	2.22	1.55	1.94	1.93	2.16
CR2O3	1.65	1.21	2.42	1.88	1.99	2.05	2.31	2.34	2.25	1.58
FEO	3.03	4.25	2.75	2.33	2.23	2.10	2.93	2.84	2.90	2.09
MGO	17.73	16.25	15.78	16.60	16.18	15.84	16.68	15.73	16.06	16.09
MNO	0.15	0.06	0.09	0.05	0.07	0.06	0.04	0.08	0.07	0.11
CAO	21.66	19.81	19.82	20.75	20.64	20.87	19.72	19.41	19.61	20.86
K2O	0.02	0.01	0.01	0.02	0.03	0.02	0.03	0.03	0.02	0.03
NA2O	0.63	1.79	1.97	1.69	1.93	1.82	1.84	2.27	2.22	1.97
TOTAL	100.04	100.07	100.16	100.30	100.38	99.75	99.84	100.03	100.38	99.89

	Cr-Diopside cont'd									
	49	50	51	52	53	54	55	56	57	58
SIO2	54.55	54.52	54.99	54.31	54.73	54.52	54.80	54.97	54.45	54.85
TIO2	0.25	0.22	0.21	0.17	0.17	0.20	0.21	0.16	0.25	0.16
AL2O3	1.71	1.64	1.66	0.48	1.78	1.83	1.60	1.68	2.27	1.70
CR2O3	2.75	2.71	2.54	2.19	1.81	1.79	2.59	1.74	1.91	1.90
FEO	2.84	3.12	3.09	3.03	3.44	3.54	3.12	2.33	1.96	2.41
MGO	16.16	16.25	16.26	16.40	15.69	15.74	16.45	16.80	16.32	16.59
MNO	0.14	0.11	0.08	0.07	0.10	0.07	0.11	0.00	0.04	0.07
CAO	19.25	19.24	19.19	22.50	20.38	20.47	19.32	20.78	20.88	20.66
K2O	0.05	0.05	0.04	0.01	0.03	0.01	0.04	0.03	0.02	0.02
NA2O	2.08	2.10	2.18	1.07	1.79	2.05	1.93	1.63	1.79	1.73
TOTAL	99.78	99.96	100.24	100.23	99.92	100.22	100.17	100.12	99.89	100.09

	Cr-Diopside cont'd	
	59	60
SIO2	54.22	54.79
TIO2	0.57	0.11
AL2O3	0.72	1.68
CR2O3	1.45	1.69
FEO	3.02	2.50
MGO	17.84	16.77
MNO	0.11	0.05
CAO	21.27	20.91
K2O	0.02	0.03
NA2O	0.72	1.81
TOTAL	99.94	100.34

Microprobe analyses for phlogopite from K9

	Phlogopite									
	1	2 (core)	2 (inter)	2 (rim)	5 (core)	5 (dark)	5 (inter)	5 (rim)	10 (core)	10 (rim)
SIO2	37.65	37.14	37.74	39.06	38.29	40.32	38.86	39.88	37.73	37.05
TIO2	3.96	4.67	4.01	2.03	2.46	1.09	2.31	0.57	3.82	4.13
AL2O3	13.36	15.29	14.27	13.39	11.26	12.13	11.46	11.59	14.48	14.74
CR2O3	0.17	0.08	0.05	0.08	0.05	0.09	0.02	0.01	0.08	0.08
FEO	7.92	8.82	7.22	6.85	9.44	7.10	9.36	6.44	7.23	6.39
MGO	21.65	19.48	22.05	23.04	22.07	24.50	22.35	25.03	22.15	21.68
MNO	0.02	0.03	0.09	0.18	0.14	0.11	0.15	0.12	0.06	0.05
CAO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAO	0.26	0.58	0.65	0.52	0.66	0.49	0.54	0.43	0.69	0.93
K20	8.33	9.06	9.46	9.41	9.26	9.56	9.37	9.72	9.33	9.41
NA2O	0.36	0.53	0.46	0.39	0.37	0.36	0.34	0.25	0.40	0.36
F	0.57	0.64	0.60	0.64	0.67	0.72	0.61	0.78	0.57	0.52
CL	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	94.25	96.33	96.60	95.59	94.67	96.47	95.37	94.82	96.54	95.34
O=F+CL	0.24	0.27	0.25	0.27	0.28	0.30	0.26	0.33	0.24	0.22
TOTAL	94.01	96.06	96.35	95.32	94.39	96.17	95.11	94.49	96.30	95.12

	Phlogopite cont'd				
	11	15	18	21	24
SIO2	37.67	37.46	37.58	37.39	37.10
TIO2	3.97	4.18	5.09	4.29	4.23
AL2O3	14.16	14.07	14.03	14.19	14.95
CR2O3	0.12	0.05	0.08	0.05	0.03
FEO	6.94	7.49	8.09	7.19	6.83
MGO	21.74	21.52	20.41	21.58	21.46
MNO	0.02	0.09	0.06	0.06	0.07
CAO	0.00	0.00	0.00	0.00	0.00
BAO	0.59	0.49	0.69	0.61	0.89
K20	9.50	9.35	8.99	9.24	9.28
NA2O	0.41	0.45	0.46	0.36	0.32
F	0.64	0.55	0.59	0.57	0.64
CL					
TOTAL	95.76	95.70	96.07	95.53	95.80
O=F+CL	0.27	0.23	0.25	0.24	0.27
TOTAL	95.49	95.47	95.82	95.29	95.53

inter-intermediate; dark-dark portion of grain

Microprobe analyses of diamond indicator minerals from K15

	Ilmenite	Cr-diopside		Chromite						
	1	1	2	1	2	3	4	5	6	7
SIO2	0.00	54.36	54.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TIO2	46.78	0.18	0.11	0.08	0.16	0.08	0.00	0.05	0.10	0.18
AL2O3	0.51	2.19	1.90	29.82	28.00	29.28	24.86	29.63	29.57	27.60
CR2O3	0.54	1.65	1.60	39.84	41.84	41.26	45.49	39.99	39.49	41.33
FEO	40.64	2.00	2.14	15.21	16.93	15.64	15.74	16.29	15.85	17.19
MNO	0.28	0.06	0.06	0.30	0.37	0.25	0.34	0.36	0.25	0.32
MGO	9.12	16.50	16.64	14.88	13.10	13.93	13.93	13.83	14.35	12.82
CAO	N/A	21.00	21.22	N/A	N/A	N/A	N/A	N/A	N/A	N/A
K2O	N/A	0.03	0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NA2O	N/A	1.82	1.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZNO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NIO	0.13	N/A	N/A	0.21	0.14	0.13	0.14	0.10	0.08	0.15
NB2O5	0.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL	98.26	99.79	100.02	100.34	100.54	100.57	100.50	100.25	99.69	99.59

	Phlogopite									
	1 (core)	1 (rim)	5 (basal)	5 (dark)	7 (core)	7 (dark)	10 (basal)	10 (inter)	10	10 (core)
SIO2	37.20	37.42	37.17	37.55	37.74	36.63	37.34	37.06	37.13	37.13
TIO2	5.55	5.07	5.23	4.77	4.80	4.70	5.20	5.21	4.98	2.99
AL2O3	12.95	13.48	13.49	13.48	13.58	13.37	13.06	13.40	13.83	11.22
CR2O3	0.08	0.13	0.10	0.14	0.20	0.28	0.12	0.13	0.15	0.10
FEO	7.92	7.79	7.40	7.63	7.91	7.83	7.71	7.49	7.97	14.49
MGO	20.67	21.23	21.13	20.92	20.25	20.04	21.00	21.29	21.20	18.55
MNO	0.05	0.04	0.04	0.09	0.04	0.03	0.09	0.01	0.00	0.19
CAO	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
BAO	0.51	0.45	0.52	0.44	0.42	0.38	0.40	0.54	0.39	0.58
K20	9.48	9.31	9.44	9.36	9.29	9.58	9.42	9.17	9.27	8.30
NA2O	0.47	0.35	0.41	0.37	0.46	0.41	0.40	0.36	0.44	0.38
F	1.02	1.08	1.02	0.98	0.81	0.65	0.95	0.92	1.08	1.47
CL	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.01
-	95.91	96.36	95.95	95.73	95.50	93.92	95.70	95.59	96.44	95.43
O=F+CL	0.43	0.45	0.43	0.41	0.34	0.28	0.40	0.39	0.45	0.62
TOTAL	95.48	95.91	95.52	95.32	95.16	93.64	95.30	95.20	95.99	94.81

basal=basal section
dark=dark portion of grain
inter=intermediate
N/A=not analysed

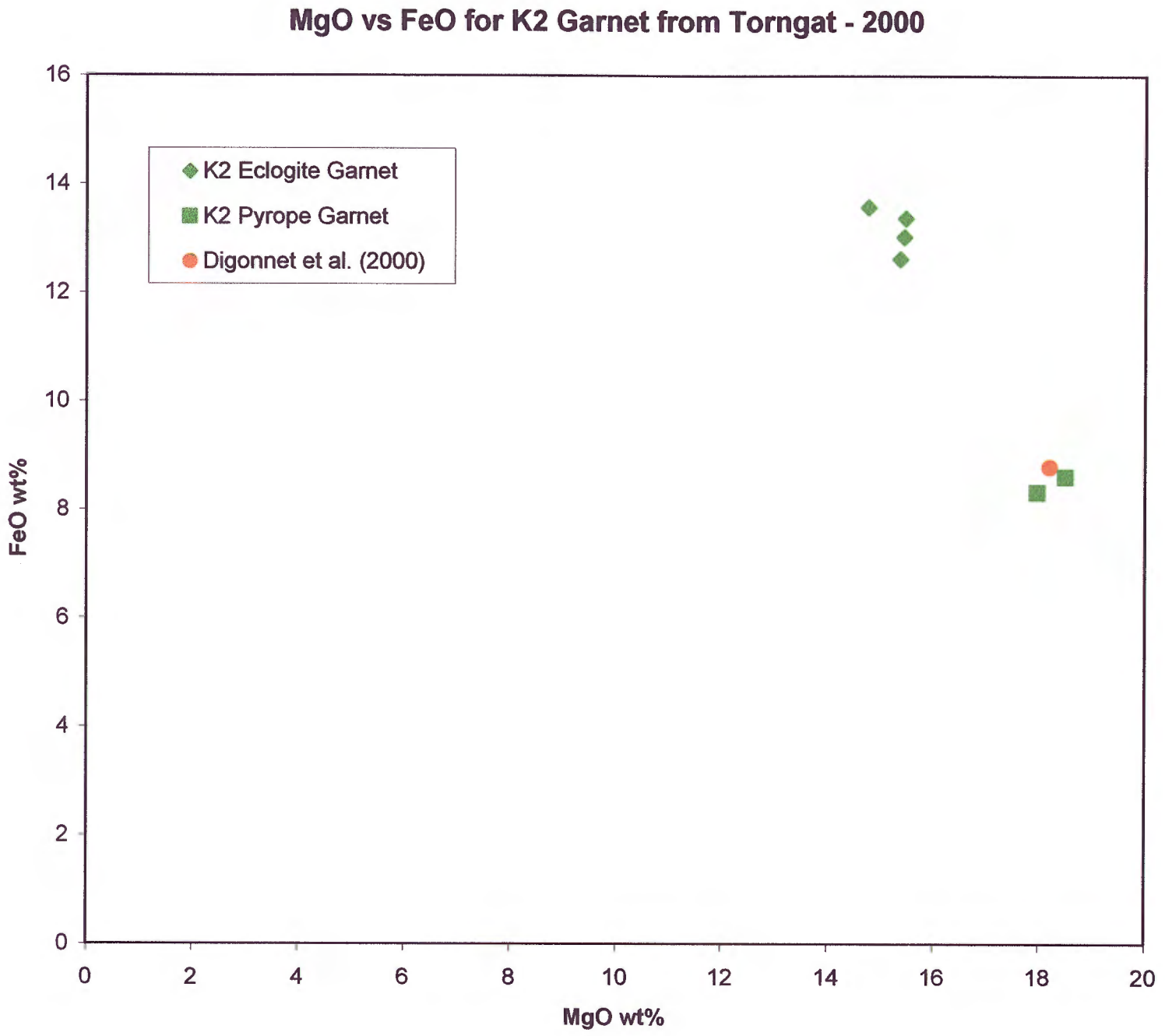
Microprobe analyses for K15 cont'd

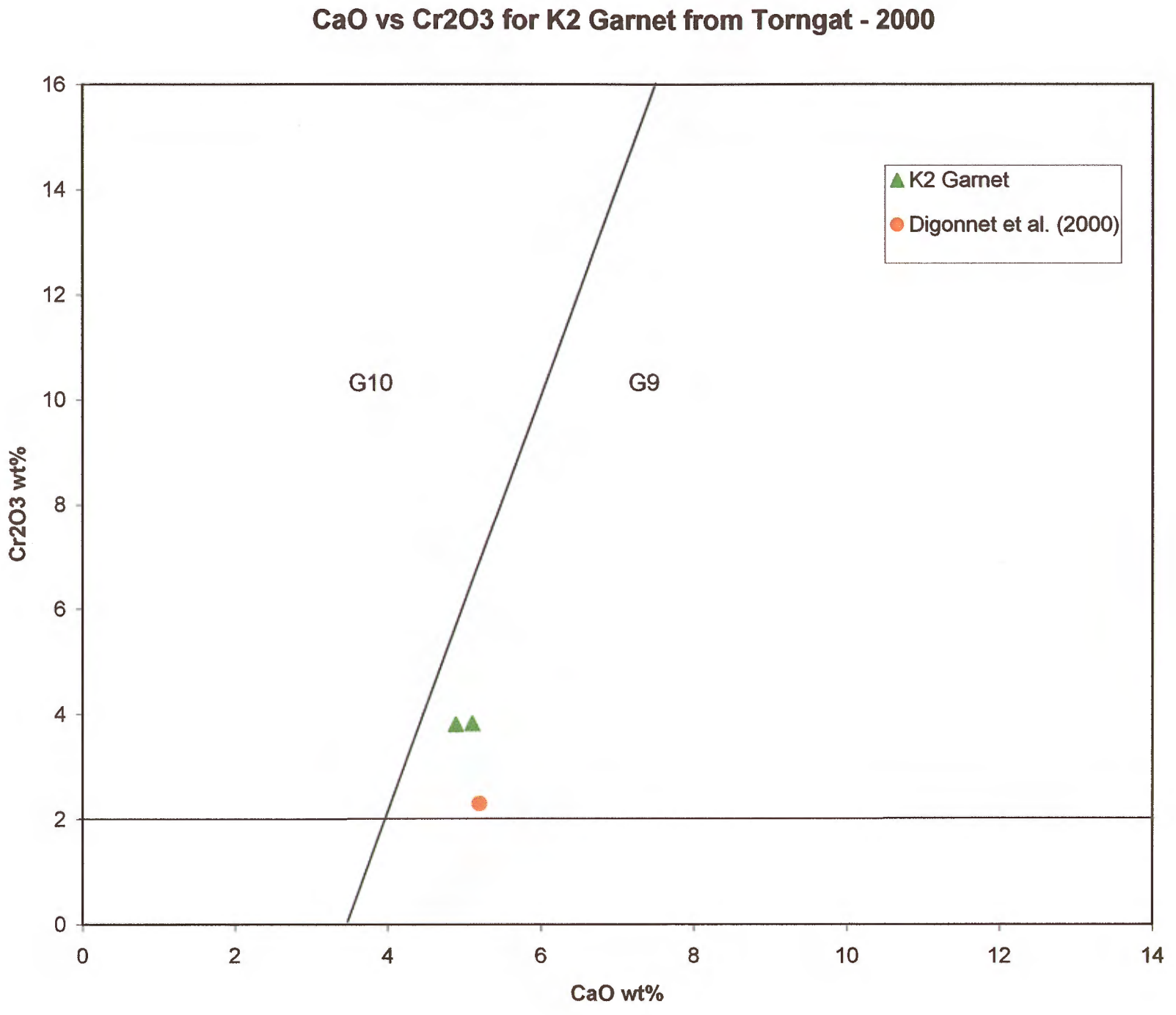
	Phlogopite					
	10 (rim)	13 (core)	13 (inter)	13	19	25
SIO2	36.50	38.08	37.68	37.67	37.13	37.54
TIO2	3.42	5.24	4.77	3.40	4.93	5.06
AL2O3	10.80	13.32	13.54	11.56	13.23	13.17
CR2O3	0.12	0.20	0.11	0.05	0.12	0.09
FEO	20.66	8.10	7.73	12.86	7.32	7.54
MGO	13.61	20.34	21.05	18.03	20.69	21.03
MNO	0.25	0.05	0.04	0.24	0.06	0.03
CAO	0.01	0.00	0.00	0.00	0.00	0.01
BAO	0.72	0.47	0.49	0.75	0.39	0.57
K20	9.14	9.19	9.36	9.01	9.29	9.42
NA2O	0.30	0.49	0.36	0.38	0.43	0.42
F	1.26	0.88	0.96	1.51	0.91	0.91
CL	0.00	0.01	0.01	0.01	0.01	0.00
TOTAL	96.79	96.37	96.10	95.47	94.51	95.79
O=F+CL	0.53	0.37	0.41	0.64	0.39	0.38
TOTAL	96.26	96.00	95.69	94.83	94.12	95.41

inter-intermediate

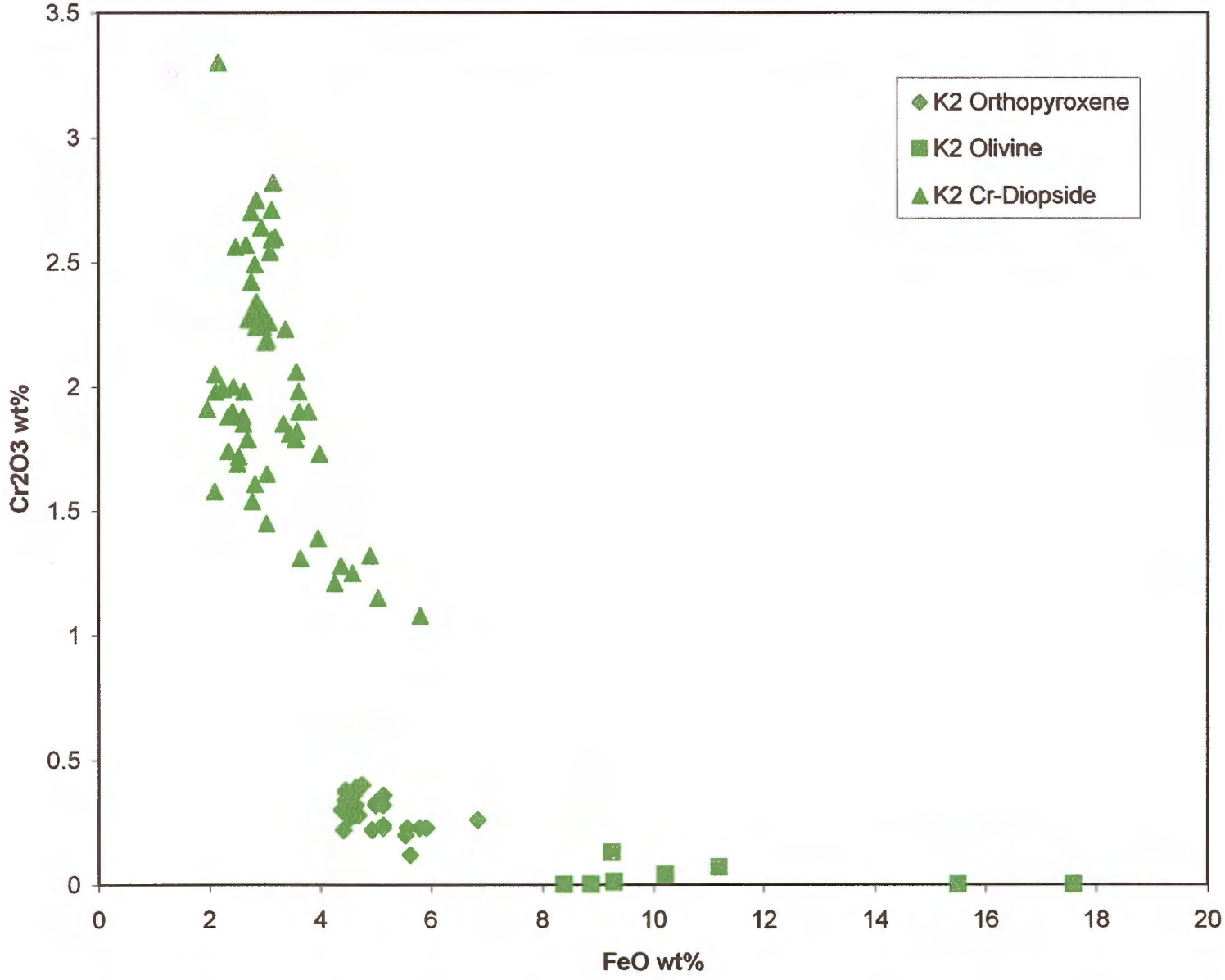
APPENDIX 5

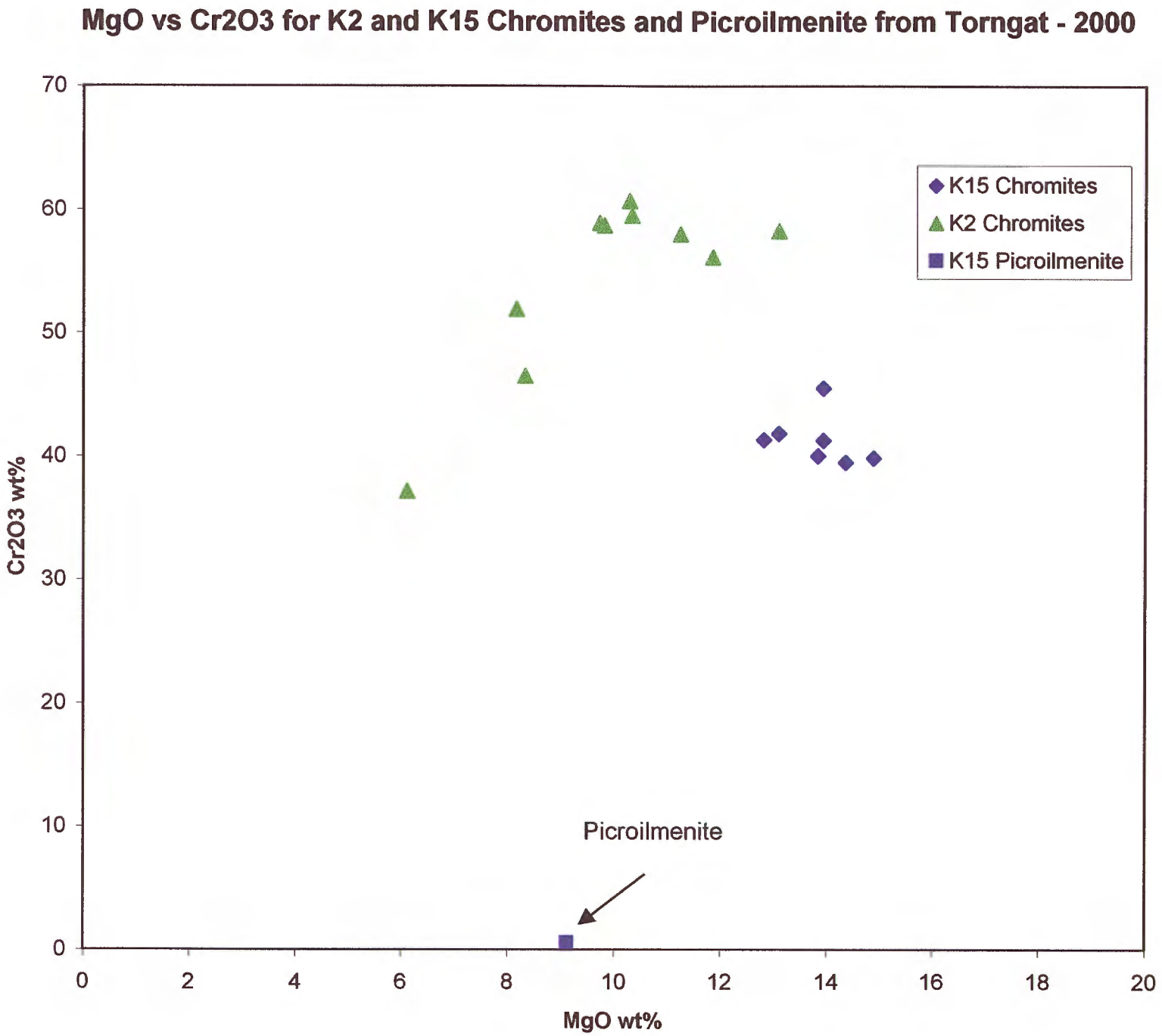
CHEMISTRY PLOTS

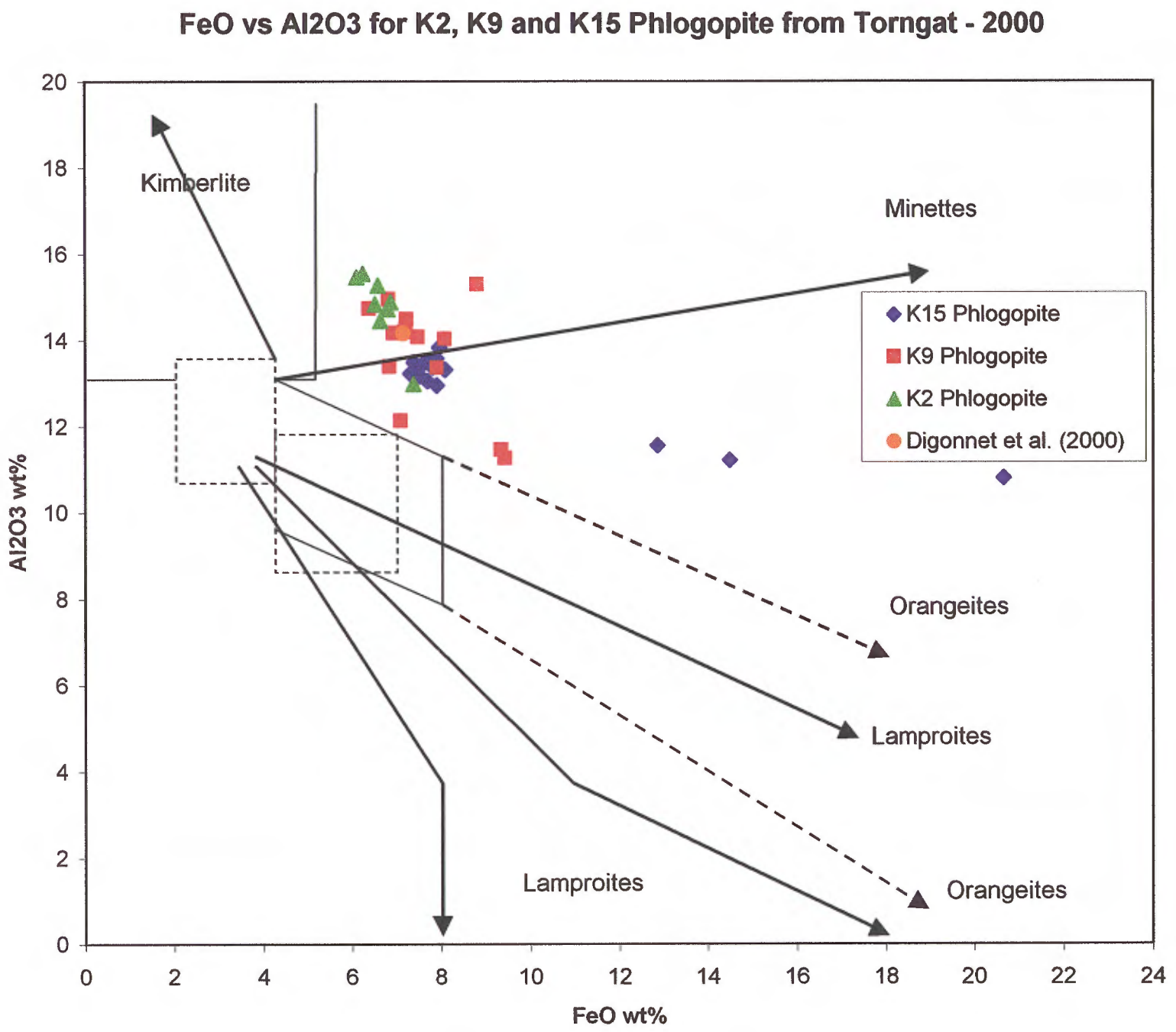

MgO vs FeO for K2 Garnet from Torngat - 2000
K2 Eclogite Garnet
K2 Pyrope Garnet
Digonnet et al. (2000)
FeO wt%
MgO wt%
0
2
4
6
8
10
12
14
16
18
20

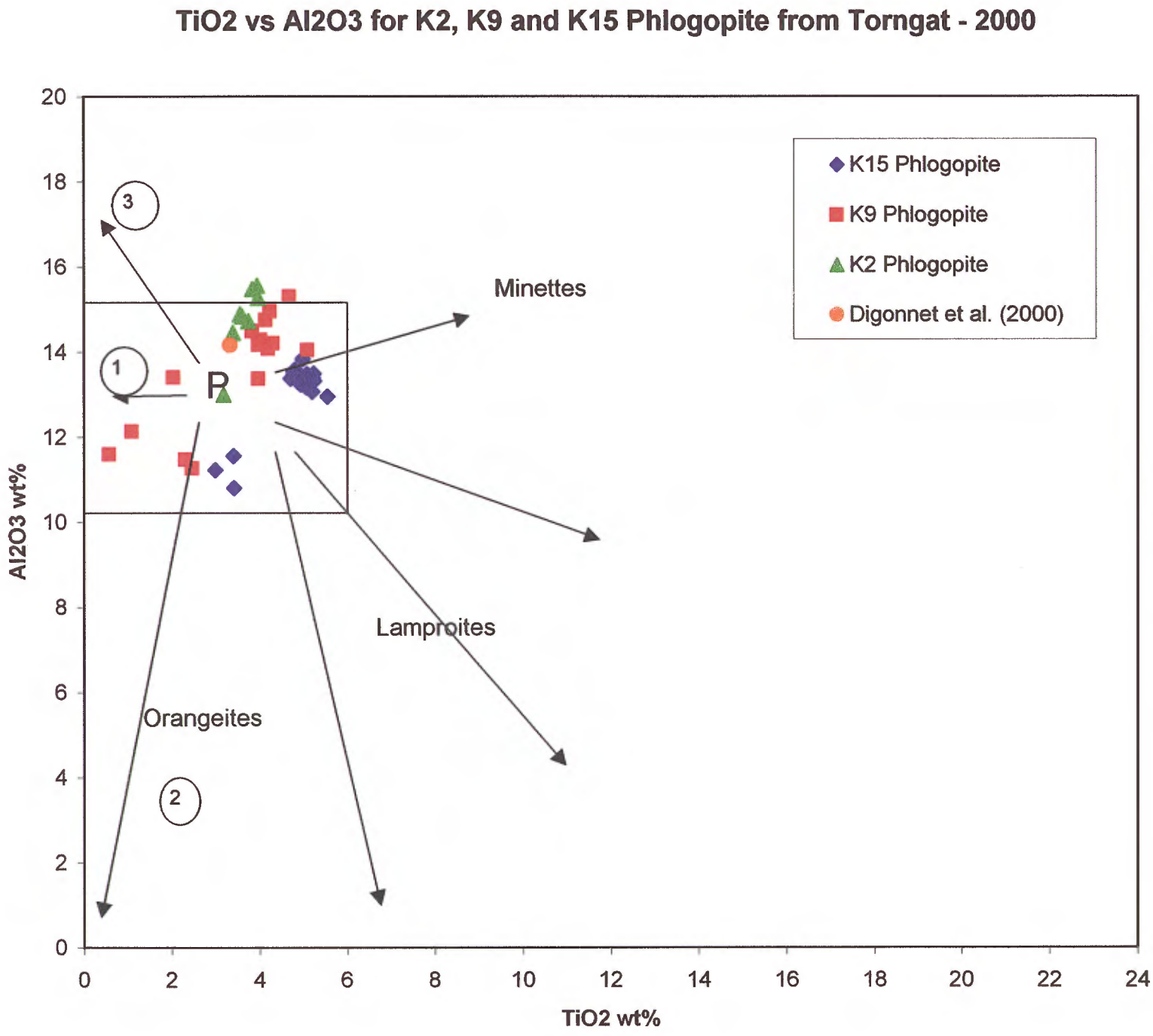

CaO vs Cr2O3 for K2 Garnet from Torngat - 2000
16
14
12
10
8
6
4
2
0
Cr2O3 wt%
0
2
4
6
8
10
12
14
CaO wt%
G10
G9
K2 Garnet
Digonnet et al. (2000)

FeO vs Cr2O3 for K2 Orthopyroxene, Olivine and Cr-Diopside from Torngat - 2000




MgO vs Cr2O3 for K2 and K15 Chromites and Picroilmenite from Torngat - 2000
70
60
50
40
30
20
10
0
Cr2O3 wt%
0
2
4
6
8
10
12
14
16
18
20
MgO wt%
K15 Chromites
K2 Chromites
K15 Picroilmenite
Picroilmenite


FeO vs Al2O3 for K2, K9 and K15 Phlogopite from Torngat - 2000
Kimberlite
Minettes
Orangeites
Lamproites
Lamproites
Orangeites
K15 Phlogopite
K9 Phlogopite
K2 Phlogopite
Digonnet et al. (2000)
Al2O3 wt%
FeO wt%
0
2
4
6
8
10
12
14
16
18
20
22
24


TiO2 vs Al2O3 for K2, K9 and K15 Phlogopite from Torngat - 2000
K15 Phlogopite
K9 Phlogopite
K2 Phlogopite
Digonnet et al. (2000)
Minettes
Lamproites
Orangeites
R
1
2
3
Al2O3 wt%
TiO2 wt%
0
2
4
6
8
10
12
14
16
18
20
22
24

APPENDIX 6

EXPLORATION EXPENDITURES

APPENDIX 6

EXPLORATION EXPENDITURES AND PERMIT AMOUNTS
PROVIDED BY MARUM RESOURCES INC.

ITEM	AMOUNT
MIR Teledetection-Exploration Fees	$8,025.00
Ministre des Finances - Quebec	$90.16
MIR Teledetection-Invoice 99-MB107	$4,173.00
Veritas GeoServices Ltd.-Invoice 2306-M0001	$244.99
HSBC-accomodations	$42,638.88
Portolan Geomatics Inc.-maps for Apex	$1,605.75
Portolan Geomatics Inc.-cartography	$1,011.12
Stratagex-Invoice 20032 and 20023	$1,999.15
APEX Geoscience Invoice to ITH	$17,443.43
APEX Geoscience Invoice to Marum	$17,580.59
APEX Geoscience Invoice to 737142 AB	$6,835.89
TOTAL	**$101,647.96**
PERMIT	**WORK AMOUNT**
MMU 1466 - October 11, 2000	$5,700
ITH 1467 - October 18, 2000	$5,800
ITH 1487 - November 10, 2000	$5,050
737142 1478 - November 3, 2000	$5,000
737142 1500 - December 8, 2000	$10,350
TOTAL AMOUNT ALLOCATED TO PERMITS	**$31,900.00**
REMAINING UNALLOCATED AMOUNT	**$69,747.96**

APPENDIX 7

PROPOSED BUDGET

APPENDIX 7

PROPOSED BUDGET

BUDGET ITEM	ESTIMATED COST
Salaries Four geologists for 21 field days.	$29, 500
FIELD-RELATED COSTS **Stage 1: Exploration Program 2001** Includes accommodation for four geologists and pilot at Torngat Mountain Outfitters camp, 50 hours of helicopter time (Bell Long Ranger) and fuel, mobilization and demobilization costs and fixed-wing transportation to and from the camp. Also includes provision for sample bags and pails, field gear, rental charges and satellite phone usage.	$107, 000
Stage 2: Processing Costs Includes diamond indicator, caustic fusion and mineral chemistry analyses for both newly found dykes and follow-up work on dykes.	$41, 000
Stage 3: Reporting Costs Includes office time for two geologists, ACAD usage and map making.	$10, 000
Total Estimated Project Costs	**$187, 500**