Scott-Smith Petrology

RECEIVED
APR 30 1996
MINING LANDS BRANCH

IMPRESSIONS OF THE GEOLOGY OF THE DRILLHOLE KWG-95-26 INTO THE A6 BODY IN THE ATTAWAPISKAT AREA OF ONTARIO

Report No. SSP-95-14/3

Confidential

Prepared for

KWG Resources Inc.
Suite 200
1750 Brimley Road
Scarborough
Ontario M1P 4X7
Canada

Prepared by

Scott-Smith Petrology
2555 Edgemont Boulevard
North Vancouver
B.C. V7R 2M9
Canada

27th March 1995

1.0 INTRODUCTION

The author spent March 9th, 1995 at the offices of KWG outside Toronto examining the remaining core of drillhole KWG-95-26. Most of the kimberlitic material had been sent for micro-diamond recovery and was not available for examination. The time available proved to be insufficient to complete the examination of the available material. The complete drillcore had apparently been examined and sampled by both Roger Mitchell and Glen Sinclair. Sinclair's samples were made available but time did not permit examination of these samples. Various reports were made available but again time did not permit any detailed examination of them. Two reports were copied for the author's subsequent use: (1) Preliminary log of drillhole 95-26 apparently by Glen Sinclair and (2) Petrographic descriptions core A6 (Hole 94-9) apparently by Roger Mitchell.

The depths of core did not appear consistent. No "way ups" were marked on the samples. Although Sinclair's log of the complete core was available during the examination of the core, it was only reviewed while writing these notes.

The main purpose of this examination appeared to be to (1) examine the internal geology of the body, (2) comment on the potential for variations in diamond content and (3) comment on the suggestions that the body is an alnoite rather than kimberlite. It was requested by Neil Novak of KWG that the detailed 'logging' notes taken were not to be formally recorded but rather that some overall impressions of the geology of the body based on the available information and the remaining core should be formally reported.

2.0 GENERAL GEOLOGY

This body, A6, occurs some 200km from the Monopros Attawapiskat cluster of kimberlites and the bodies are therefore not related.

The general geology of drillhole KWG-95-26 (taken from a sketch) is apparently as follows :

0-70m	Overburden presumably including lake water and sediments.
70-130m	Consolidated carbonates.
130-?	Kimberlite.
?	Kimberlite/gneiss.
?	Granite breccia.
?	Granitic country rock.

3.0 IMPRESSIONS OF THE GEOLOGY

This section presents some of the impressions of the geology based on the limited examination of the remaining core. The igneous rock forming this body will be referred to as kimberlite but should the body turn out to be an alnoite most of the following comments will still apply and the rock names can be substituted.

3.1 Textural classification

All the observed kimberlitic material is classified as hypabyssal facies and there was no evidence for the presence of other textural varieties, except for the granite breccia. However, it should be noted that some of the so-called hypabyssal rocks appear to be more rapidly quenched than is typical of hypabyssal rocks (as noted in both SSP-95-13/3 and Mitchell's report).

3.2 Main kimberlite features

3.2.1 Macrocrysts/megacrysts

Most of the body is composed of macrocrystic kimberlite. Common to abundant anhedral serpentinised olivines range up to 10-20mm in size. In most areas the olivines have clast supported textures. Notably no other mantle-derived xenocrysts or indicator minerals, such as garnet and ilmenite, were observed. This is somewhat unusual for such an olivine-rich kimberlite. Olivines >20mm are common in some areas. Single olivines >10mm should be termed megacrysts. Some areas contain coarser megacrysts as well as some ultramafic xenoliths. One large example of the latter appeared to be composed of garnet which had been replaced by brown material, partly altered chrome diopside and possible olivine. It is often difficult to quickly establish whether a large rounded olivine clast is a single crystal and therefore a megacryst or a polygranular dunite. Although somewhat coarser grained than many kimberlites, the olivines appear to be similar in nature to those of kimberlites rather than many melnoites.

The proportion of mantle material within the core is very variable, ranging from aphanitic kimberlite (e.g. 450-452m) to rocks that could be described as mantle conglomerates that should be more strictly termed peridotite-bearing megacrystic kimberlites (e.g. 419m). Variations can be seen within single samples from 322m and 386m, for example. Some of these variations appear to be due to internal magmatic processes such as flow differentiation. There also appear to be variations between apparent separate phases of intrusion. A few areas of the main kimberlite have less common macrocrysts (e.g. 155m where olivines are <1mm in size and ?189m and 191m and only part of sample 204.5m where macrocrysts appear to be rare) but their significance or origin is difficult to assess. In sample 204.5m the simplest explanation for the sample containing both macrocryst-rich and macrocryst-poor areas would be separate phases of intrusion. The groundmass also varies from abundant mica to less common mica/more common perovskite in the respective areas. The possible 45deg. internal contact between the two areas appears to be veined. In the small sill-like bodies within and below the granite breccia some definite settling has produced kimberlite intersections that displays normal grading with respect to the size and abundance of the coarse constituents.

The abundance of coarse olivine megacrysts and probable dunite xenoliths, the paucity of indicator minerals and the variations in abundance of these constituents are not found in most kimberlites but are known to occur.

3.2.2 Groundmass

The nature of the groundmass of the remnant samples superficially appears to be uniform, but in detail it can be seen to be quite variable, as noted from the petrographic results both in SSP-95-13/3 and Mitchell's report. Some areas contain abundant relatively coarse grained (up to 1-2mm) brown mica (e.g. 180m) while other parts contain little or no mica but can be seen to contain common very fine grained white perovskite and/or spinel (e.g. 158m). The latter grains can form necklaces around olivine grains and/or occur throughout the groundmass. In some, but by no means all, parts of the core the mica-rich groundmass appeared to occur in macrocrystic kimberlite while the mica-poor areas were lacking macrocrysts. This relationship could reflect different phases of intrusion. The different types of groundmass often have a patchy distribution on a small scale (<10mm) that cannot relate to separate phases of intrusions. Such variations may relate to alteration, groundmass segregations and/or late stage contamination of the magma by xenolith digestion but it is not possible to comment further.

In other kimberlites, magma contamination by xenolith digestion has been observed to significantly change the groundmass mineralogy and/or mineral compositions. There is evidence in this body for an intimate association of granite and kimberlite, but it could not be confirmed from this investigation if massive contamination could have affected most of the body. In other Group 1 kimberlites clinopyroxene is the notable groundmass mineral that results only from such contamination. In this body any such contamination is most likely to involve granite, which could introduce K2O and Al2O3 to the magma. It is therefore possible, for example, that the mica crystallisation occurs mainly in contaminated areas of the magma. If there is any validity at all to such a scenario, then a rock type classification for this body could be very difficult to determine. To examine this aspect further would require attempts to establish if such contamination had occurred and then try and establish what type of groundmass represents the most pristine magma (if any exists) and then try and classify only that material. The kimberlite sills could perhaps be useful in this regard.

A brief re-examination of the photographs in SSP-94-7/3 suggests that maybe there is some variation in the rate of crystallisation of the groundmass mica. Nearer the top of the body the mica appears to be rapidly crystallised. The grain size of the mica may increase with depth and be less rapidly crystallised. If there is any validity to this suggestion, it may have implications to identifying any pristine magma as well as establishing the location of the earth's surface at the time of the kimberlite emplacement. The reason for the more rapid crystallisation of some, possibly the upper, kimberlite is not obvious. In more normal situations it would be taken as being near surface.

3.3.3 Indicator mineral content

It is somewhat unexpected that a rock with such abundant mantle-derived olivine as well as observed mantle-derived peridotites and diamonds contains so few other mantle-derived constituents. i.e. indicator minerals. The nature of any indicator minerals recovered could be very important in the interpretation of this body.

3.3.4 Diamond content

This body is composed of apparent separate phases of intrusion that may have different diamond contents. Also within single phases of intrusion, the observed magmatic processes such as flow differentiation and settling must affect the final location of any diamonds that are present in any of these magmas. In summary, there is great potential for significant variations in the micro-diamond content of the rocks from this body. It is not clear from the material examined if any such variations could be significant on a macro or mining scale.

3.3.5 Geology

Overlying sediments : The upper part of the available core (>57m) included a substantial amount of plain fairly uniform whitish to creamy to buff coloured carbonates. Horizontal bedding and some organic material was noted within these rocks. A few sandy horizons are present within the carbonates (e.g. 77m, 90.5m, 107m). The last definite carbonate occurs at 127.3m although this area of the core appears different from the main material above (?contains angular clasts). At 127.4-128.4m the core comprises a thinly bedded (possibly deformed) fine sandy zone. Below that the core appears to be composed of very fine sedimentary material with pockets of sand perhaps with a clayey matrix. Sulphides are present in this material. This sandy material is probably very similar to the sulphide-bearing sedimentary material forming sample KW61 described in SSP-94-7/3. Apparently in the angled hole ASH-94-1 the carbonates directly overlie the granitic country rocks at the same depth.

Upper contact : The sediment to kimberlite contact at 130m does not appear to be a simple intrusive contact. In contrast thin horizontal layers of probable kimberlite appear to be intercalated with the sedimentary material. The kimberlite appears to be hypabyssal within these layers. If the kimberlite is a post-carbonate intrusive, then these stringers could represent apophyses from the main intrusion. This author, however, was left with the impression that this contact may be much more complex and could be very significant in the interpretation of the emplacement of this body. This contact deserves further attention. This contact area is transected by thin vertical veins. This author is not aware of the detailed local country rock geology and whether the sandy material at the base of the overlying country rocks forms parts of the known stratigraphy in the area or whether it is anomalous. This could be very important in interpreting the nature of the upper contact of this body. The age of both the kimberlite and the overlying sediments are obviously also extremely important in the further interpretation of this body. This body contains common mica and it would seem that some of this material may be very suitable for age dating. The suggested contamination of the kimberlite magma will not affect the age determination of kimberlite crystallised mica. It should be noted that xenocrystic granitic mica is likely to occur in the kimberlite but should be different in appearance. Perovskite is present but is likely to be too altered and/or too fine grained to use for age dating. The nature of the perovskite, however, requires re-evaluation if they were to be used for dating.

Upper Kimberlite : At 130.5m a dark brown rock contains abundant sulphides and fine dark mica as well as probable olivine pseudomorphs. This material must be altered kimberlite. This kimberlite also appears to be deformed. Such deformation can occur on alteration. If so, it would perhaps imply that the kimberlite is post-carbonate. By 138m the core appears to comprise altered but fairly typical macrocrystic (up to 20mm) micaceous kimberlite. There is a considerable amount of post emplacement veining in the upper kimberlite (e.g. horizontal at 148-170m). Granite xenoliths start at 132.3m.

Body A6 appears to be a complex kimberlite intrusion which is mixed with a high proportion of granite. There appears to be a very rough progression with depth from kimberlite to kimberlite plus granite xenoliths to granite plus kimberlite veins (first example at 235m then at 238m and 246.5m, and common from 375-395m) to granite breccia with kimberlitic clasts to in situ granite containing kimberlite sills (some graded as at 436-437.5m, 451.5-452.5m). The sills and smaller veins also invade the granite breccia and must post date the breccia.

Granite : Much of the observed granite has a fabric at 45deg. suggesting that it may be in situ and that some of the kimberlite is intrusive into the granite. Other obvious fragments of granite with rotated fabrics are also present. Obviously information for the country rock is required to evaluate this further.

The granite to kimberlite contacts include both sharp and diffuse examples. The sharp contacts show little kimberlite to granite reaction. In the upper part of the core there are a few sharp contacts where the kimberlite appears to be finer grained adjacent to the contact (e.g. 265.3m). In these areas there may be some flow alignment of the elongate constituents parallel to the contact (e.g. 266m). The kimberlite may become coarser grained away from the contact. The bottom half of the drillcore appears to contain granite with veins of kimberlite down to as little as <10mm in width. Below the granite breccia apparent sills with sharp contacts are present. At 249.5m the kimberlite to granite contact is sharp but very irregular. These features show that the kimberlite comprises multiple intrusions.

More diffuse contacts between the kimberlite and granite are also present (e.g. 172-6m and 213m, 225.63-226m, 233.5m, 249.7-249.9m, 370m) where there has probably been some reaction between the two rock types. There are a few examples of zonally altered xenoliths. Sinclair notes common partially digested xenoliths at 167-188m and partially digested xenocrysts at 367-371.5m. The proportion of such contacts does not appear to be sufficient to explain massive contamination of the magma. Xenolith digestion of course can go to completion leaving no recognisable xenolithic clast. Although in some instances the nature of the kimberlite groundmass adjacent to diffuse contacts appears to differ from the nearby main kimberlite, the author was not convinced that groundmass mica crystallisation related only to such contamination.

Granite breccia - At ?422.3m there is a +/-45deg sharp but very irregular contact (sinuous or serrate) from the kimberlite above to the granite breccia below. The nature of this contact deserves further attention and may be important in the interpretation of the origin of this breccia and its relationship to the main kimberlite. It is presumed that the kimberlite is intrusive into the breccia. The breccia is dominated by fragments of material which are likely to represent local granitic country rock. As noted in SSP-95-13/3 this material contains some clasts of probable kimberlitic material. The first apparent kimberlite clast within the breccia occurs near the lower part of the upper contact as observed within the core. During the examination of the core other dark possibly exotic clasts were noted - these may be amphibolite (e.g. 423m) and their location within the country rock is not known but may be very important. This breccia has been invaded by kimberlite sills and veins (above 457m). At 457-457.5m there is a graded sill. Below this sill is in situ country rock. This kimberlite sill therefore may invade a sharp contact between the breccia and in situ country rock but this feature was not examined in detail but it does deserve further attention.

The origin of the breccia was not examined in detail nor is it understood. The simplest explanation would be that it represents a contact breccia. Sinclair in his log describes this rock type as an explosion breccia. Explosion contact breccias in kimberlite pipes (Clement and Reid 1989) are formed in situ and therefore are mono-lithic and grade into the in situ country rock from which they formed. This does not appear to be the case in this breccia. In this respect it is important to establish the source of all the clasts in the breccia in particular the amphibolite clasts. Contact explosion breccias often occur in overhangs of complex root zones to kimberlite pipes. The contact breccias to pipes composed of hypabyssal material can also be intrusion breccias. However the limited amounts of kimberlite observed within this breccia occurs as clasts, **not** as intrusive stringers so this option seems unlikely. Most of the samples examined from the main kimberlite have been described as being hypabyssal and are presumed to postdate the breccia. The kimberlite clasts in the breccia do not appear to represent veins or angular autoliths. The few observed clasts may have more rounded or ?fluidal shapes. Out of context this sample would have been suggested to be of possible crater -facies origin! Perhaps such fluidal clasts can be formed in an explosion breccia.

3.4 Sampling

This hole was sampled in relative detail by both Roger Mitchell and Glen Sinclair who both had access to the full drillcore. It was therefore felt that further petrological sampling was not warranted by this author who only had access to limited core with much of the kimberlitic igneous rock missing. The samples available from Sinclair did appear to be more 'normal' and perhaps more representative of the body than the material available. Very few samples (perhaps four or five) were marked for shipping to Scott-Smith Petrology but these have not yet been received.

3.5 Sinclair's Log

A few comments derived from information in this report are included in the discussion above but does not warrant further comment.

3.6 Mitchell's Report

This report is concerned mainly with the petrography of three samples (of unknown location) while petrography is not the subject of this report. Groundmasses with and without perovskite and spinel are noted by Mitchell which again shows variation in the nature of the groundmass. Mitchell notes that his sample A6-C is a quenched equivalent of the other two samples. The relative locations of such samples are important in the further interpretation of this feature. Variations in the rate of crystallisation are also apparent in the samples in SSP-94-7/3 and were discussed above.

Mitchell classifies the samples as melnoites. There are certainly features described in his report which are atypical of kimberlites and similar to melnoites. Mitchell also notes the heterogeneous abundance of groundmass clinopyroxene which can occur as swaths of quench crystals. Such features are typical of contaminated kimberlite magmas. So at this locality there certainly appears to be potential for magma contamination and modification of the primary features that can appear atypical of kimberlites. Mitchell (pers. comm.), however, believes this process is unlikely to be significant. Mitchell also refers to two of the samples as being autolithic but this feature is neither described nor discussed. Such a texture has not been observed by this author at this locality.

4.0 CONCLUSIONS

This body is composed of diamondiferous generally coarse grained olivine-rich, but indicator mineral-poor, kimberlitic material that is somewhat unusual. As concluded in previous reports, there are some features in this body which are not typical of kimberlite but again these are not sufficient to preclude classification of these rocks as kimberlite or to suggest a classification as an alnoite or melnoite. There are indications of magma contamination by xenolith digestion which can significantly affecting the nature of the rocks formed. With the intimate association of granite and kimberlite within this body there is potential for the massive contamination that would be required to modify the nature of most of this body. However, this could not be confirmed during this present investigation. Even if more alnoitic features were observed, this author would be very reluctant to suggest that this body is a diamondiferous alnoite based on only limited information. In this regard the author is being influenced by the presence of diamonds.

There is a great deal of potential for significant variations in the micro-diamond contents within this body. These variations may result from separate phases of intrusion as well as magmatic processes such as flow differentiation and settling. Some of these variations are relatively small scale and it is not clear if they could affect macro-grades. There must also be significant dilution in some parts of the body. The granite breccia, although of kimberlitic origin, is unlikely to contain significant quantities of diamonds but this should be confirmed.

A6 is a geologically complex body that requires much more detailed work than undertaken during this investigation to understand. It is not clear to this author if the kimberlite pre- or post-dates the overlying sediments. Some parts of the pipe are more rapidly quenched which would typically indicate chilling nearer surface although other possibilities exist. The kimberlite appears to comprise multiple intrusions which post date the granite breccia.

5.0 NOTE

This report presents the best professional opinion of the author based on the limited information available and the time constraints of the project. There may be other information not available to the author which may change this opinion.

RECEIVED

APR 30 1996

MINING LANDS BRANCH

KWG Resources Ltd.

Petrography and Geochemistry of Twelve Core Samples from Hole DR-95-26

43C06NW0001 2.16481

020

KW-95-02

Min Scan Consultants
Toronto, March 1995

020C

CONTENTS

KWG Resources Ltd.

Petrography and Geochemistry of Twelve Core Samples from Hole DR-95-26

Introduction

This hole was drilled into the same ultramafic body as was penetrated by hole DR-94-09. Although the precise petrological classification of this body is still a matter of debate, it is referred to, in field reports and hereunder, as 'kimberlite'. Petrography and geochemistry of a group drill core samples from the earlier hole were described in a previous Min Scan Report (KW-94-01); petrographic reports on samples from DR-94-09 were also prepared by Barbara Scott-Smith and Roger Mitchell.

In the present case, after passing through 135 metres of sedimentary rocks the drill hole intersected the kimberlite body and continued through it until reaching migmatitic biotite-hornblende gneiss at 458m.

Within the kimberlite body there are many xenolithic blocks of intermediate and granitic gneisses but the rocks described and discussed here are, for the most part, samples only of the intrusive kimberlite. However, between 422.5 and 448.6m, sections made up of an red-coloured breccia were intersected. Because of its unusual appearance, it had been suggested that it might be an altered kimberlite breccia and two samples were, therefore, included in this study.

A total of twelve core samples were selected for examination. A polished thin sections was prepared from each sample and portions of each were sent to Chemex Labs for whole rock and trace element analyses.

Petrographic features of the samples (identified by drilling depths) are described below. Probe analyses of garnet grains observed in two of the thin sections are included; analyses were done by Peter Jones in the Earth Sciences Dept. at Carleton University. Results of whole rock and trace element analyses are also reported and discussed.

PETROGRAPHY

146.7m.:'Kimberlite' - The most prominent textural feature of this rock is the presence of abundant, serpentinized olivine macrocrysts. These are sub-rounded in outline, up to 10mm in diameter, and make up from 5 to 7 percent of the volume of the rock. They are dark brown in colour as a result of ferruginous staining.

Serpentinized pseudomorphs after olivine are also present in the ground mass; they form subhedral to sub-rounded grains up to 1.0mm in diameter and make about 10 percent of the volume of the rock. These grains probably originated as olivine microphenocrysts.

Phlogopite occurs in irregular aggregations of laths up to 0.7mm in length. It is a variety weakly pleochroic from colourless to pale brown; however, some of the laths are zoned with darker brown, more strongly pleochroic interiors and pale outer zones.

The matrix is composed of cryptocrystalline serpentine and occasional irregularly outlined carbonate aggregations.

Abundant, fine, subhedral spinel grains are scattered throughout the matrix. They are unzoned and are probably mainly composed of magnetite. Rare traces of pyrite are associated with the spinel grains.

The rock is traversed by many, sub-parallel carbonate veinlets up to 0.5mm wide orientated at right angles to the core axis.

177.5m.: 'Kimberlite' - Macrocrysts made up of rounded, completely serpentinized pseudomorphs after olivine, up to 7.5mm in diameter, are scattered throughout the rock and make up about 7 percent of its volume. The pseudomorphs are composed of pale to dark brown cryptocrystalline serpentine dissected by veinlets of clear serpentine. The fine magnetite grains, often released during serpentinization of olivine are absent, suggesting the original macrocrysts were made up of an iron-poor variety of olivine.

There are also abundant serpentinized pseudomorphs after olivine microphenocrysts; these are subhedral to occasionally sub-rounded in outline and generally between 0.25 and 0.75mm in length. They constitute about 10 percent of the volume of the rock.

In some areas within the section there are many fine laths and irregularly outlined grains of phlogopite, which are intergrown with, and often rim, olivine macrocrysts and microphenocrysts (Plate 1). The phlogopite is a variety strongly pleochroic from pale to bright reddish-brown; it makes up about 20 percent of the volume of some areas of the thin-section but is completely absent in others. There are occasional aggregations of very fine laths of colourless clinopyroxene, accompanied by irregular amounts of green chlorite and minor phlogopite. These pyroxene-rich bodies, which are up to 10mm in diameter, may represent partially digested xenolithic clasts.

The matrix consists of a dense cryptocrystalline of dark grey to dark greenish-grey serpentine in which are scattered abundant fine subhedral magnetite grains, generally less than 0.1mm in diameter.

There are occasional very fine apatite laths in the matrix.

237.0m.: 'Kimberlite' - Sub-rounded pseudomorphs after olivine megacrysts, up to 7.5mm in diameter, are again abundant and make up about 15 percent of the volume of this sample. They are composed of masses of brownish-grey serpentine dissected by fine veinlets of later colourless serpentine.

Olivine pseudomorphs are also present in the groundmass as numerous, highly altered, subhedral microphenocrysts up to 0.5mm in length.

Strongly pleochroic, reddish brown phlogopite is abundant in certain areas within the section. It occurs as irregular grains and fine laths which are intergrown with, and sometimes appear to be mantling, olivine grains.

The matrix is composed of a light to medium grey mass of crptocrystalline serpentine in which are scattered some very fine, magnetite grains and a few fine pyrite grains.

There are a few, discontinuous carbonate veinlets up to 1.0mm. in width.

Portions of two large xenoliths of altered country rocks are present within the area of this thin-section. One appears to have originated as a plagioclase-rich plutonic or gneissose rock and the other as a basic volcanic.

272.0m.: 'Kimberlite' - Olivine macrocrysts are, again, the most prominent textural feature. They are sub-rounded to rounded in outline, up to 5mm in diameter and make up 15 to 20 percent of the volume of the rock. Although traversed by numerous serpentine veinlets, the macrocrysts are composed mainly of fresh olivine.

Olivine also occurs in the ground mass as abundant, subhedral micro-phenocrysts up to 0.5mm in length. These are less heavily serpentinized than was the case in the previous samples and most grains contains some areas of fresh olivine.

Phlogopite occurs as irregular aggregations of ragged laths, often intergrown with olivine. It is a variety pleochroic in shades of reddish-brown; many of the grains are zoned with dark reddish-brown interiors and pale outer zones.

Fine subhedral spinel grains are abundant. When viewed under reflected light, many are found to be zoned with dark grey cores and brownish grey margins. Probe analyses of similar zoned spinel grains in hole 94-09 revealed that their cores are often relatively Cr2O3 rich and their rims relatively rich in FeO and TiO2. Considerable amounts of fine perovskite and traces of pyrite are also present.

The matrix is composed of cryptocrystalline serpentine - it contains many irregular areas of the cloudy, dark brown, isotropic material observed in several of the samples from hole 94-09 (Plate 2). In his petrographic report on samples from 94-09, Roger Mitchell suggested that this material is a garnet belonging to the schorlomite-andradite series and possibly of late-stage deuteric origin. However, it lacks the strong relief typical of garnets in thin section and its presence and mineralogical classification require further investigation.

300.30m.: 'Kimberlite' - Sub-rounded, completely serpentinized olivine megacrysts up to 14mm in diameter make up 10 to 15 percent of volume of this sample.

The ground mass contains abundant serpentinized subrounded to subhedral olivine microphenocrysts up to 0.5mm in length, irregular aggregations of fine, colourless clinopyroxene laths, and irregularly outlined grains of strongly pleochroic, reddish brown phlogopite (Plate 3).

Very fine grained spinel, perovskite and minor pyrite are dispersed throughout. Spinel grains often zoned in manner described in previous sample i.e. dark $Cr2O3$ rich cores and light grey-brown FeO and $TiO2$ rich marginal zones. There are also scattered traces of very fine grained pyrrhotite and chalcopyrite.

In addition to the clinopyroxene grains dispersed within the matrix there are occasional sub-rounded bodies, up to 10mm in diameter, composed almost entirely of aggregations of finely crystalline clinopyroxene. These are likely to be the remnants of xenolithic clasts which have been subjected to intense metasomatic alteration.

346.3: 'Kimberlite': This rock is crowded with serpentinized, rounded olivine megacrysts, up 20mm in diameter; they make up about 75 percent of its volume.

The interstitial space between these large olivine grains contains many irregular laths of phlogopite and serpentinized olivine microphenocrysts set in a cryptocrystalline matrix of serpentine and carbonate.

The phlogopite laths have irregular outlines and are up to about 1.0mm in length; they are strongly pleochroic from very pale to medium reddish brown.

Fine, equant grains of spinel and perovskite are common in the matrix and also within the phlogopite laths. Zoning, of the type described in the previous samples, is often visible in the spinel grains. Pyrite is present in minor amounts, generally in the form of fine skeletal grains situated in the more carbonate-rich portions of the matrix and occasionally in irregularly outlined colloform bodies to 2mm in width.

356.5m. 'Kimberlite' - Sub-rounded to well-rounded serpentinized olivine pseudomorphs to 10.0mm in diameter constitute 30 to 40 percent of the volume of this sample

The remainder of the rock consists of cryptocrystalline serpentinous matrix in which are set scattered, serpentinized olivine micro-phenocrysts, fine laths of two varieties of mica - colourless muscovite and pleochroic reddish brown phlogopite, and abundant fine, equant spinel and perovskite grains. Many of the spinel grains display the type of zoning described in the previous samples.

Also present, are a few remnants of highly altered carbonate xenoliths.

386.3m: 'Kimberlite': This appears to be a contaminated version of the rock type described in the previous samples.

Sub-rounded serpentinized olivine megacrysts, up to 10mm in diameter, are again abundant.

The ground mass contains serpentinized olivine microphenocrysts to 0.5mm and fine laths of reddish brown pleochroic phlogopite in a cryptocrystalline serpentine-rich matrix. Fine spinel grains are disseminated throughout but perovskite is absent in this case. There are minor amounts of finely disseminated pyrite.

There are many irregular bodies up to about 1.0mm in diameter composed of masses of very finely crystalline sericite - these are probably remnants of highly altered xenoliths incorporated in the kimberlite. Occasional clusters of fine, colourless clinopyroxene laths are present around the margins of these sericite bodies and fine, euhedral grains of brown garnet are occasionally present in their cores. Examples of these garnets are shown in Plate 4 and a microprobe analysis of one of them is listed in Table 1, below. The analysis shows the garnet to be melanite - garnets of this type are known to occur in alnoites and closely related rocks (Middlemost, 1985; Gold et al.,1986)) but are not reported from kimberlites.

Table 1: Micro-Probe Analysis of Garnet Grain from 386.3m.

SiO_2	33.26
Al_2O_3	1.60
TiO_2	7.13
Cr_2O_3	0.00
Fe_2O_3	21.24
MnO	0.00
MgO	1.16
CaO	34.22
Total	98.61

Notes: 1: This is the euhedral grain seen in Plate 4.
2: Analyst - Peter Jones, Carleton University

<u>419.8m</u>.:'<u>Kimberlite</u>': Serpentinized olivine megacrysts to 7.5mm in diameter constitute about 10 percent of the volume of this sample.

The ground mass consists interlocking mosaic composed of subequal amounts serpentinized olivine microphenocrysts and fine laths of reddish brown phlogopite (Plate 5). Fine colourless laths of clinopyroxene are present in lesser amounts and there are scattered, irregularly outlined carbonate aggregations up to 1.0mm in diameter.

There are occasional, very irregularly outlined grains, up to 0.25mm in diameter, of colourless garnet. Some are associated with olivine megacrysts (Plate 5) and some are intergrown with carbonate aggregations (Plate 6); in both cases, they appear to have crystallized in situ rather than being of xenocrystic origin. Probe analyses of the garnets shown in Plates 5 and 6 are listed in Table 2 below. The two analyses are very similar and show the garnets to be pure andradites; unlike the garnet analysis in the sample from 386.3m (Table 1) they are not titaniferous.

The presence of andraditic garnets is not a mineralogical characteristic of kimberlites, as defined by Mitchell(1986).

Table 2: Micro-probe Analyses of Garnet Grains from 419.8m

	1	2
SiO2	34.68	35.06
Al2O3	0.83	0.00
TiO2	0.00	0.00
Cr2O3	0.00	0.00
Fe2O3	29.29	30.31
MnO	0.00	0.00
MgO	0.00	0.00
CaO	33.19	33.49
Total	97.99	98.86

Notes: 1: These grains are seen in Plates 5 & 6
2: Analyst - Peter Jones, Carleton University

Fine equant grains of spinel and lesser amounts of perovskite are scattered throughout the ground mass. Many of the spinel grains are enclosed by mantles of secondary sphene, which are, in turn, rimmed by very fine perovskite (Plate 8). Chalcopyrite occurs in minor amounts as scattered very fine, irregularly shaped grains.

427.8m.: Granitic Breccia: This breccia is composed of sub-rounded to sub-angular fragments of plagioclase, quartz, K-feldspar and biotite and of aggregations of all four of these minerals up to 10cm in diameter. Also present is a clast of a coarse grained dioritic rock made of sericitized plagioclase, partially chloritized amphibole, and numerous fine, subhedral sphene and apatite grains.

The matrix of the breccia is made of fine angular fragments of the minerals present in the clasts described above together with varying amounts of carbonate, chlorite and serpentine (Plates 9 and 10). There are also occasional fine specks and discontinuous stringer of pyrite. Red ferruginous staining is common in the matrix.

437.3m: 'Kimberlite': This sample is part of a 0.5m wide kimberlite band within the thick section of granitic breccia found in the lower part of this drill hole.

It resembles the kimberlites from the upper part of the hole in that it contains many rounded, serpentinized olivine megacrysts up to 6mm in diameter; in this thin-section, these megacrysts make up about 10 percent of the volume.

There are also many, irregularly shaped, medium to coarse grained carbonate aggregations and discontinuous veinlets which together constitute 5 percent of the volume.

The matrix consists of sub-equal amounts of completely serpentinized olivine microphenocrysts and fine carbonate grains, occasional fine laths of strongly pleochroic, reddish brown phlogopite, and abundant fine equant spinel and pyrite grains. The spinel grains are generally zoned - they have dark grey, Cr-rich cores enclosed by light brown-grey, Fe-rich marginal zones.

440.2: Granitic Breccia: This rock is very similar to the granitic breccia described at 427.8m above. However, in addition to abundant granitic material, it includes some large clasts of a medium grained dioritic rock composed abundant chloritized amphibole laths, anhedral, partially sericitized plagioclase, and abundant fine sphene grains.

WHOLE ROCK AND TRACE ELEMENT GEOCHEMISTRY

Table 3, below, lists the whole rock compositions of the 'kimberlite' samples described and the concentrations they contain of a selected group of trace elements. Also included, for comparison, are average kimberlite values and values from an alnoite in the Oka area of Quebec.

The present samples generally have higher SiO2 and TiO2 contents than the average kimberlite and, in that respect, are similar to alnoites. However, their MgO contents are higher and their Al2O3 and CaO significantly lower, than those of alnoites.

Trace element analyses show that the Cr content of the samples is similar to that found in kimberlites and much higher than would be expected in alnoite. However, values for the incompatible elements are generally lower than those found in either kimberlite or alnoite.

Values from Table 3 are plotted in Figs. 1 and 2., below on diagrams designed by Bergman (1987) to distinguish chemically between kimberlites, lamproites and lamproites.On these plots, kimberlites generally fall within the fields outlined by the dashed lines; lamproites within the solid lines; and lamprophyres within the dot-dash lines. The present samples lie almost entirely within the kimberlite fields.

?

In Report KW-94-01, describing samples from a previous hole drilled into this body (Hole DR-94-09) analytical values were plotted on the same Bergman diagrams as are employed in Figs.1 and 2. The samples from DR-94-09 plotted together in compact groups but, in the present case, significant variations in chemical composition are displayed. Plotting of these chemical variations on a drill section may reveal correlations between chemistry and mineralogy (including, perhaps micro-diamond content).

Table 3 Whole Rock and Trace Element Analyses

Depth	146.7	177.5	237.0	272.0	300.3	346.3
SiO_2	37.34	42.38	47.82	38.33	40.64	36.50
TiO_2	1.73	1.81	2.15	2.32	2.47	1.31
Al_2O_3	2.99	5.99	6.18	4.07	4.92	1.46
Fe_2O_3	10.31	9.02	8.88	11.06	11.49	10.24
MnO	0.09	0.06	0.06	0.16	0.23	0.09
MgO	26.61	25.49	16.06	26.32	23.04	35.53
CaO	6.16	3.50	7.47	6.79	1.29	1.59
Na_2O	0.29	0.57	2.94	0.46	0.96	0.31
K_2O	0.39	0.79	0.84	0.87	1.16	0.42
P_2O_5	0.09	0.29	0.24	0.16	0.45	0.15
LOI	13.16	9.84	7.13	8.76	7.05	11.47
Total	99.79	99.91	98.93	100.20	99.40	99.05

Trace Elements (ppm)

Compatible:						
Cr	1560	1156	884	1496	1360	1904
Incompatible:						
Ba	448	429	439	1270	839	553
Sr	101	229	330	1520	504	150
Nb	80	42	85	105	113	59
Zr	151	150	223	106	250	78

Table 3 (Continued)

Depth	356.5	367.6	386.3	419.8	Avg. Kimb.	Alnoite (Oka)
SiO2	35.92	44.98	42.49	39.35	32.37	35.41
TiO2	1.73	2.05	2.29	2.68	1.44	2.57
Al2O3	1.63	4.92	4.75	4.96	3.31	11.25
Fe2O3	11.63	9.62	8.39	11.09	9.70	6.72
MnO	0.15	0.08	0.09	0.14	0.21	0.24
MgO	34.36	19.19	20.66	21.01	27.11	13.29
CaO	1.59	9.81	10.98	9.90	9.28	18.42
Na2O	0.30	1.00	0.48	0.62	0.20	2.53
K2O	0.39	1.58	1.58	1.66	1.39	2.20
P2O5	0.26	0.58	0.67	0.48	0.65	1.05
LOI	11.15	5.51	7.08	7.03	12.96	1.21
Total	99.42	99.48	99.62	99.09	-	-

Trace Elements (ppm)

Compatible:

Cr	2110	1090	1090	1160	1302	20

Incompatible:

Ba	536	1210	1010	1400	1376	1970
Sr	204	656	302	545	631	1015
Nb	71	95	117	124	137	n.a.
Zr	100	167	244	217	140	225

(Note: Average Kimberlite from Reed & Sinclair,1991)
Alnoite Values from Gold et al,1986)

Fig.1

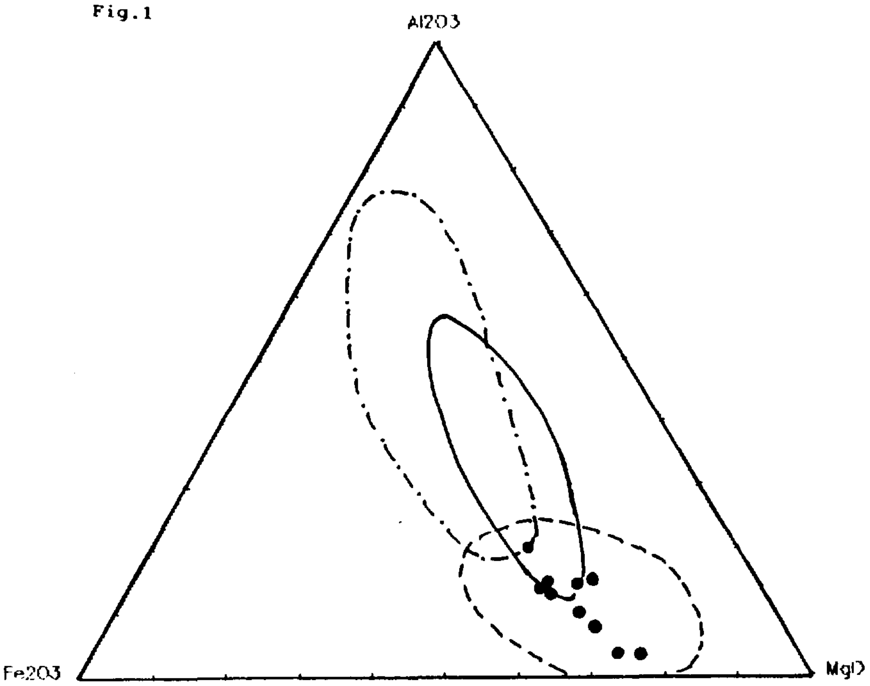
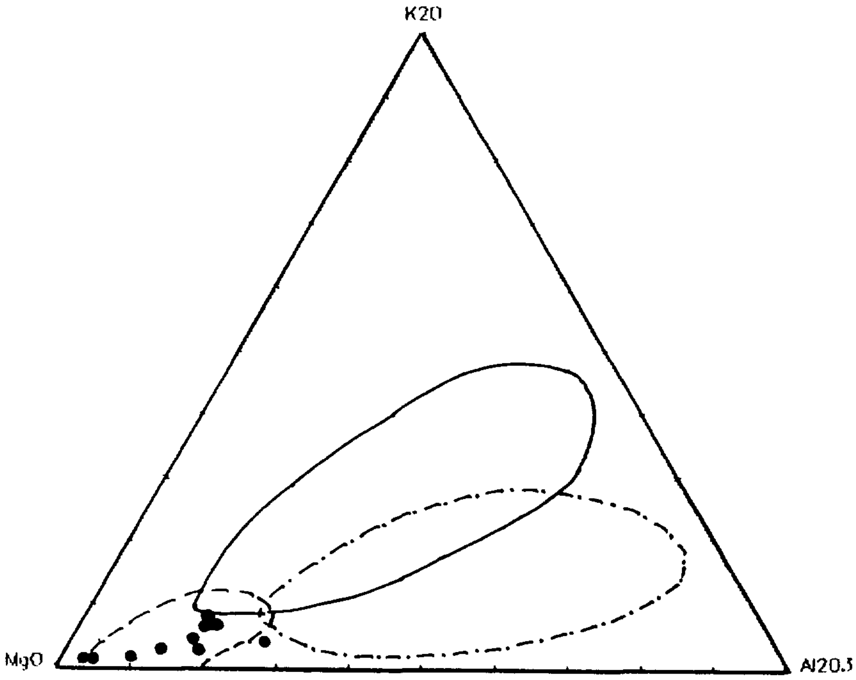


Fig.2



The origin and nature of the breccias, represented by the samples 427.8 and 440.2, have been discussed at length. To assist in the understanding of the nature of this breccia sample was submitted for analyses and the results are tabulated in Table 3, below. The breccia is seen to have the chemical composition of a typical granodiorite - this confirms the petrographic evidence indicating that the rock is essentially composed of brecciated granitic material

Table 4 : Analysis of Red Breccia

Depth	427.8	Avg. Granodiorite
SiO2	62.74	66.88
TiO2	0.35	0.57
Al2O3	13.63	15.66
Fe2O3	3.64	1.33
FeO	-	2.59
MnO	0.04	0.07
MgO	2.30	1.57
CaO	3.63	3.56
Na2O	5.19	3.84
K2O	2.34	3.07
P2O5	0.07	0.21
LOI	5.05	0.65
Total	99.00	-

(Note: Average Granodiorite from AGI Data Sheets)

Trace Elements(ppm)

Cr	120
Ba	449
Sr	361
Nb	8
Zr	119

CONCLUSIONS

Two of the twelve samples described above (427.8m and 440.2m) are composed of granitic explosion breccia, the remaining ten are all samples of the intrusive 'kimberlite'. Samples of intrusive rock from the neighbouring hole DR-94-09 were described in previous reports (i.e. Min Scan Report # KW-94-01, Scott-Smith Report # SSP-95 7/3 and a report by Roger Mitchell dated Aug.9,1994) and appear to be very similar to the material seen in the present case.

Although there are minor mineralogical and textural variations between the 'kimberlite' samples, they are generally quite similar in overall appearance and composition. All contain a distinctly bimodal population of olivine grains (or serpentinized pseudomorphs after olivine) - there are numerous rounded megacrysts ranging up to about 15mm in diameter and, in the ground mass, abundant subhedral microphenocrysts, generally less than 0.5mm in diameter. Reddish brown, strongly pleochroic phlogopite is present in all samples although the amount is very variable, even within a single thin-section. Fine spinel is dispersed throughout the matrices of all of the samples and is generally accompanied by fine grained perovskite; the spinel grains are frequently zoned with dark chrome-rich cores and paler, iron-rich marginal zones.

The features of the samples summarized above could all be found within kimberlite but are not unique to that rock type and several minerals typically present in kimberlites, namely pyrope garnet, chrome diopside and ilmenite were not observed.

Melanitic and andraditic garnets, of apparently primary origin, were observed in the samples from 386.3m. and 419.8m., respectively. The presence of these garnets suggests that, in the strict petrological sense, this rock can not be classified as either a kimberlite or a lamproite (Mitchell, 1986, Mitchell & Bergman, 1991) and, in fact, may be have some affinity to alnoite.

Geochemical results indicate that, although this rock differs in some ways from the average kimberlite, it still falls within the possible range of kimberlitic composition (Dawson,1980).

This intrusion has many mineralogical, textural and chemical resemblances to hypabyssal kimberlite but it also displays certain mineralogical affinities with alnoite. It may represent a yet unnamed type intermediate in composition between alnoite and kimberlite. Since the body from which these samples were taken is known to contain significant amounts of micro-diamonds, fully understanding the nature of this rock may have important exploration implications.

It is recommended that an attempt be made to determine whether or not any correlation exists between the variations in chemical composition (Table 3), and the reported downhole variations in the abundance of microdiamonds.

REFERENCES

Bergman,S.C.,1987. Lamproites and other potassium-rich igneous rocks. In Geol. Soc. London. Spec. Publication No.30

Gold,D.P.,Eby,G.N.,Bell,K. and Valle,M.,1986. Carbonatites, Diatremes and Ultra-alkaline Rocks in the Oka Area, Quebec. GAC Guide Book 21

Middlemost,E.K.A.,1985. Magmas and Magmatic Rocks. Longman.

Mitchell, R.H.,1986. Kimberlites: Mineralogy, Geochemistry and Petrology. Plenum Press, New York

Mitchell, R.H. & Bergman, S.C., 1991. Petrology of Lamproites. Plenum Press, New York

Reed, L.E. & Sinclair. I.G.L.,1991. The Search for Kimberlite in the James Bay Lowlands of Ontario. C.I.M.Bull.vol.84

PLATES

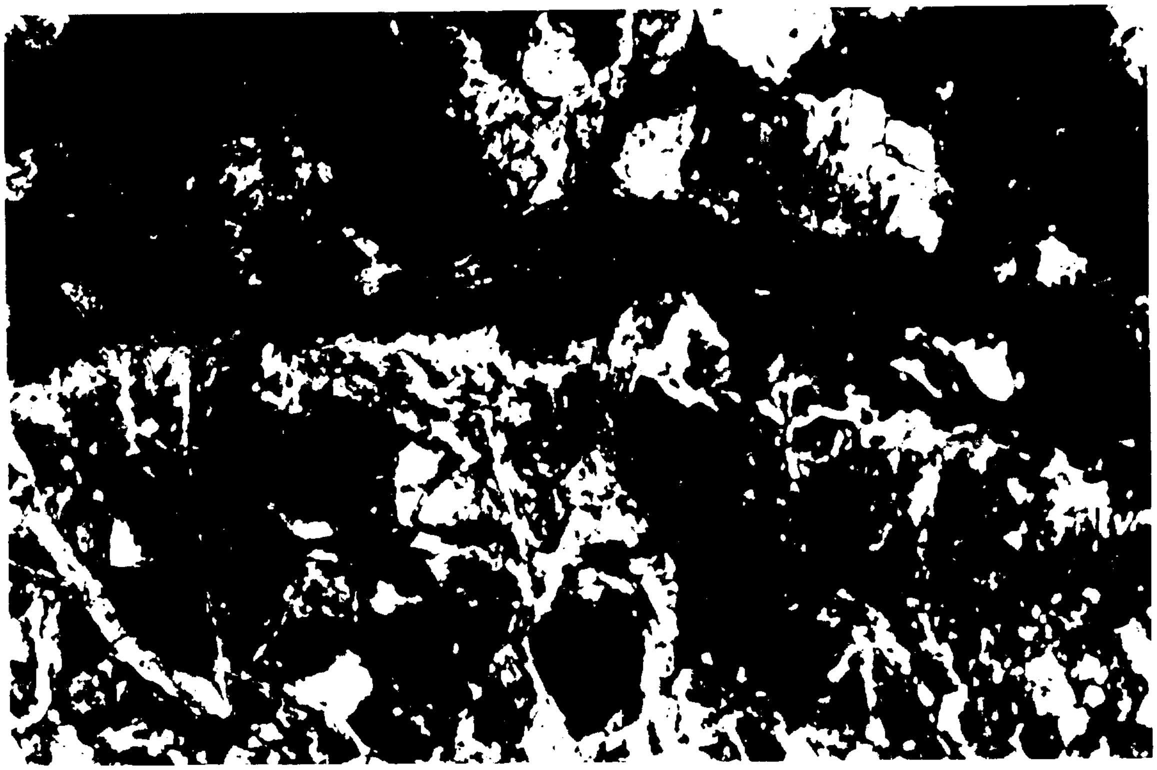


Plate 1: 177.5m.: The lower part of this field is occupied by part of a large serpentinized olivine megacryst. Reddish-brown phlogopite forms a discontinuous rim around the megacryst.
Polarizers Uncrossed. Scale |-----------| 500 Microns

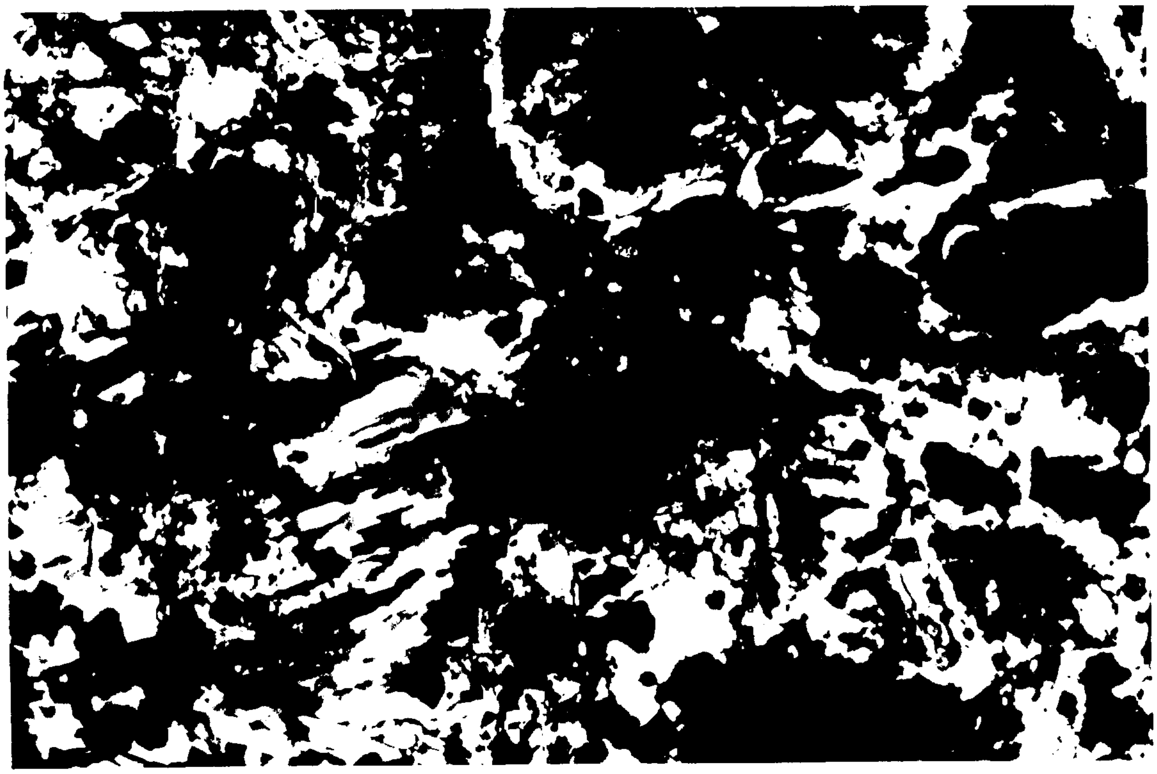


Plate 2: 272.0m.: The matrix of this sample includes many irregular dark brown patches of isotropic material like the area at the centre of this field.
Polarizers Uncrossed Scale |---------| 200 Microns

Plate 3: 300.3m.: Part of a olivine megacryst occupies the right side of the field. The groundmass contains, phlogopite, colourless clinopyroxene, serpentinized olivine microphenocrysts and fine spinel
Polarizers Uncrossed Scale |---------| 200 Microns

Plate 4: 386.3m: Melanitic garnets with opaque interiors. Micro-probe analysis of the smaller, euhedral grain, is listed in Table 1
Polarizers Uncrossed Scale |---------| 200 Microns

Plate 5: 419.8m.: A group of irregular, pale brown garnet grains occurs along the margin of an olivine megacryst. Micro-probe analysis of one of these grains is listed in Table 2.
Polarizers Uncrossed Scale |---------| 200 Microns

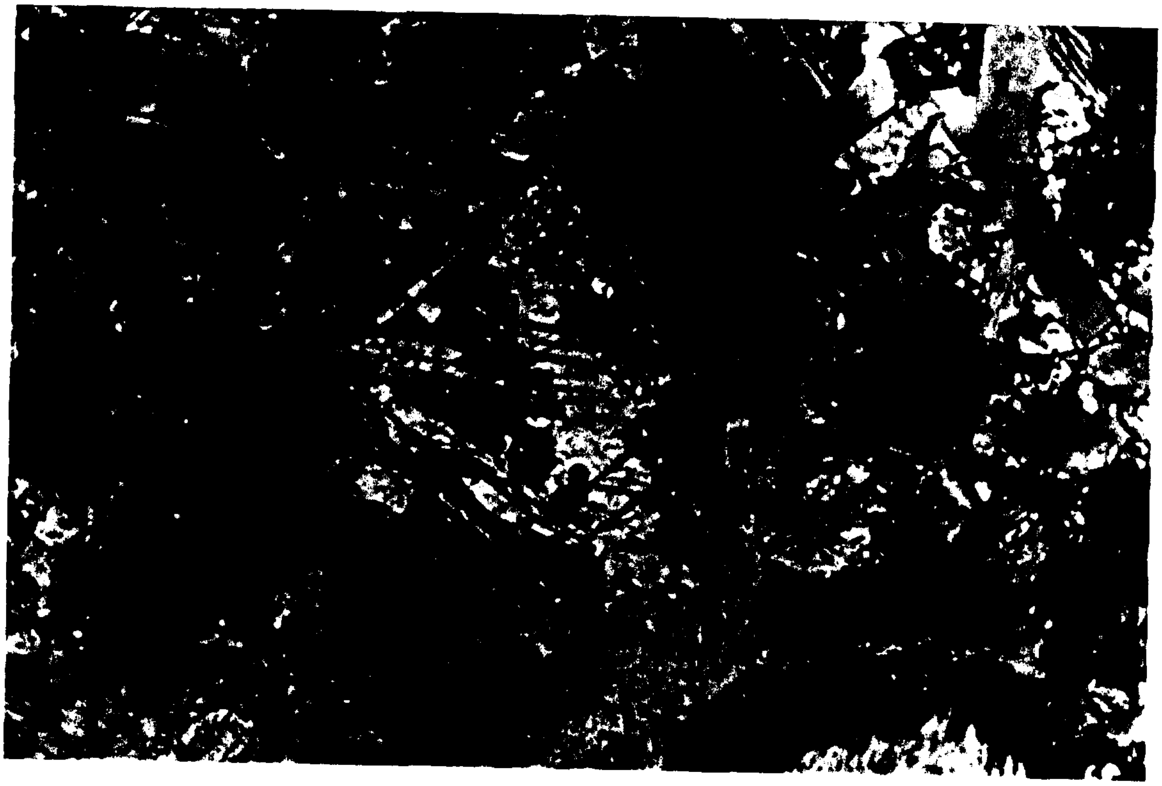


Plate 6: 419.8m.: Irregular grains of pale brown garnet are found around the margins of an carbonate aggregation. Probe analysis of one of these garnets is listed in Table 2.
Polarizers Uncrossed Scale |---------| 200 Microns

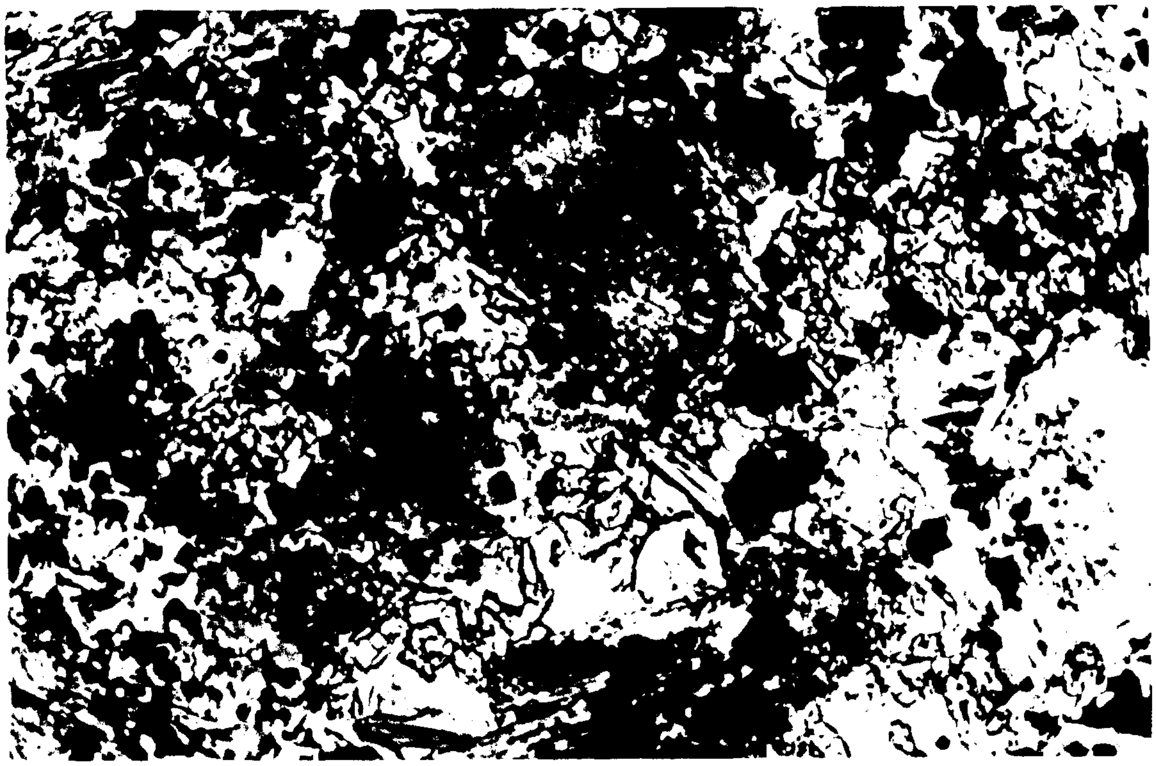


Plate 7: 419.8m.: Ground mass of this sample includes serpentinized olivine microphenocrysts, pleochroic brown phlogopite, colourless clinopyroxene and disseminated fine spinel grains.
Polarizers Uncrossed Scale |---------| 200 Microns

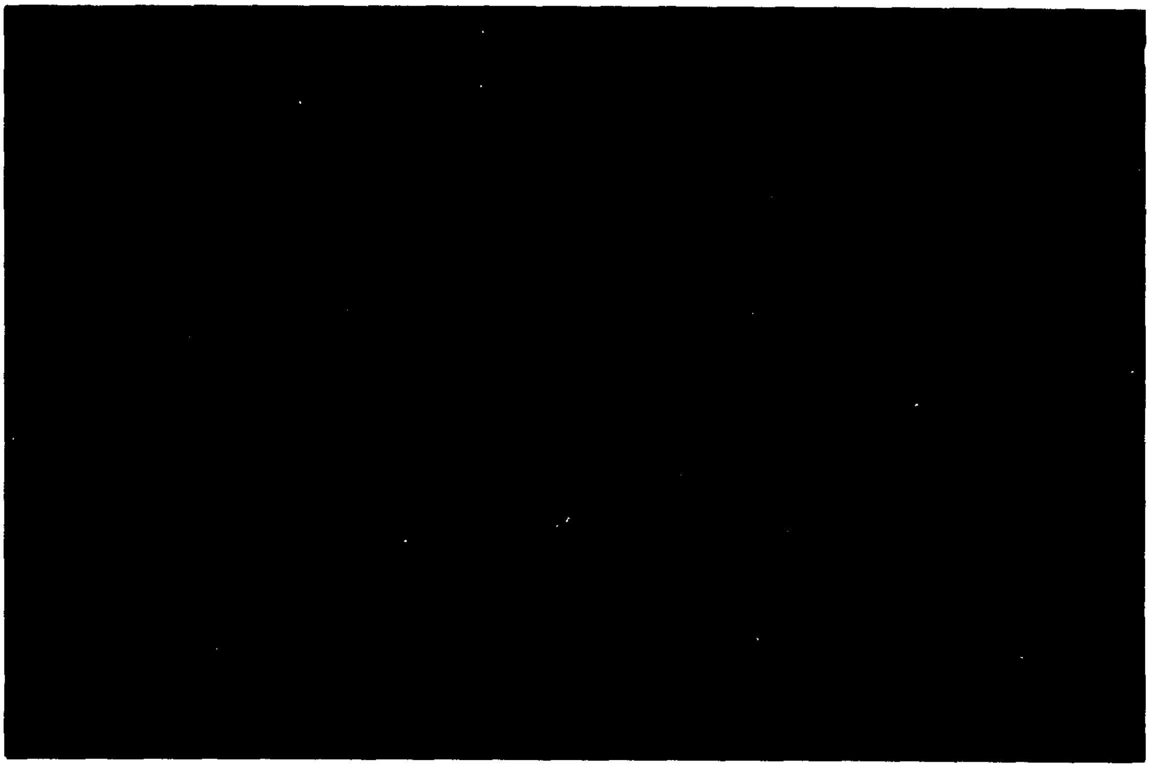


Plate 8: 419.8m.: A zoned spinel grain enclosed by secondary sphene which is, in turn, partially rimmed by fine perovskite grains.
Reflected Light. Scale |-----------| 50 Microns

Plate 9: 427.8m.: Clasts of fresh and sericitized plagioclase are abundant in this sample of granitic breccia.
Crossed Polarizers Scale |----------| 500 Microns

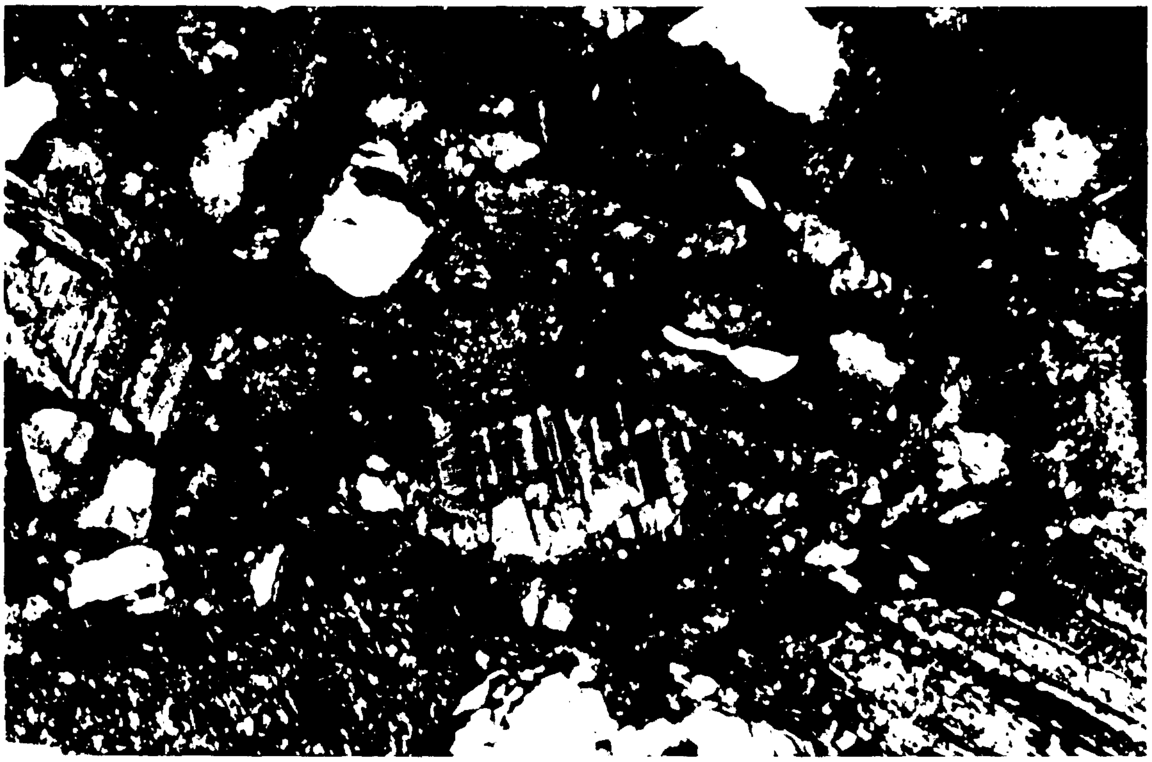


Plate 10: 427.8m.: In this shot of the granitic breccia, a fresh clast of K-Feldspar lies in the centre of the field. Many fragments of partially sericitized plagioclase and of quartz, are also visible.
Crossed Polarizers Scale |----------| 500 Microns

Mitchells report p. 1-14

KYLE LAKE - HOLE DR 95 -26

PETROLOGICAL ASSESSMENT

PETROGRAPHIC CHARACTER

Twenty samples from drill hole DR 95-26 were selected for study on the basis of the apparent degree of freshness and freedom from contamination by country rock material.

The petrography of individual samples will not be described in detail as the object this report was to classify, by mineralogical methods, the rocks forming the intrusion.

All samples examined were micaceous. They varied with respect to the amount of macrocrystal olivine and pyroxene present. Rocks with a macroscopic macrocrystal texture were typically pyroxene-poor, whereas those with a massive texture and poikilitic mica were clinopyroxene-rich.

Two "end member" varieties of rock are found with the suite of samples studied. One type exemplified by 356, 358 and 415 is characterized by the presence of large subhedral-to-rounded macrocrystal olivines set in a matrix of mantled spinel, perovskite, apatite and colorless-to-pale brown pleochroic mica laths. The mesostasis is principally a brown optically irresolvable serpentine-chlorite-zeolite mixture that is extremely poor in calcite. Some micas may be mantled and exhibit cores of pale brown mica. Olivines are extensively serpentinized by mixture of retrograde coarse grained lizardite and magnetite. Spinels form necklace textures around some, but not all olivines. The appearance of the typical groundmass oxide assemblage is illustrated in Figure 1.

The other end-member, exemplified by sample 224, is pyroxene-rich and olivine-free (sample 404) or olivine-poor (273). Olivines in these rocks are serpentinized by lizardite. Their morphology is subangular-to-rounded in contrast to the macrocrystal olivines described above. The matrix consists of euhedral-to-subhedral single phase spinels, euhedral-to-subhedral strongly zoned pyroxenes and plates of poikilitic yellow orange mica (Fig. 2). Some portions of the rock consist entirely of closely-packed interlocking prisms of clinopyroxene. Pyroxenes are strongly zoned from colorless cores to pale green margins. The mesostasis is a brown fine grained optically irresolvable mixture of serpentine and chlorite. A characteristic feature of the groundmass is the heterogeneous distribution of euhedral crystals of a sphene-like mineral set in a serpentine mesostasis (Fig.3). Perovskite appears to be absent.

Other samples are gradational in their character between these endmembers. It is clear that the spectrum of rocks present represents a consanguineous series. Differentiation may be expected to progress from olivine-rich rocks to those enriched in clinopyroxene. However, the rocks do not represent a simple differentiated series as the presence of variable amounts of macrocrystal olivine and mantled mica and pyroxene crystals together with resorbed apatite and spinels, indicates the mixing of crystals derived from previous episodes of crystallization with subsequent batches of magma.

MINERAL COMPOSITION DATA

SPINELS

The compositions of mantled spinels in sample 358 are shown in Figure 4. Representative compositions are given in Table 1. These data show that the cores of mantled spinel crystals are chromites which are relatively enriched in Fe compared with kimberlite groundmass chromites. The chromites are zoned and evolve to more Fe-rich, Cr-poor compositions at approximately constant Ti and Al contents from core-to-margin. Table 1 also shows that these chromites in terms of molecular endmember component spinels, have low $MgCr_2O_4$, Mg_2TiO_4 and high $FeCr_2O_4$ contents relative to bona-fide kimberlite-derived spinels (trend 1 on fig. 4).

The mantles of the two phase spinels are composed of titanomagnetite (Table 1). This contains 3-6 wt.% TiO_2, <1 wt.% Al_2O_3, and 1-4 wt.% Cr_2O_3. Mn contents are low (0.5-1.5 wt.% MnO). These spinels are essentially members of the ternary solid solution between $MgFe_2O_4$ (magnesioferrite), Fe_3O_4 (magnetite) and ulvospinel (Fe_2TiO_4). Variation in Ti content [Ti/(Ti+Al+Cr) ratios] occurs without significant change in $Fe^{2+}_T/(Fe^{2+}_T + Mg)$ ratios (Fig. 4). Compositions evolve towards Ti and Mg poor spinels, i.e. towards magnetite.

Discrete spinels lacking chromite cores are found in the evolved clinopyroxene-rich rocks. These have compositions (Table 1) which are similar to the spinels which form mantles about chromite in the less evolved rock types. They plot on figure 4 within spinel trend 2.

The data demonstrate that spinels in the Kyle Lake rocks have compositions which fall within spinel trend 2 as defined by Mitchell (1986, 1995). This trend occurs in a wide variety of rock types ranging from ultramafic lamprophyres (sensu lato) through basaltic rocks and lamproites to minettes and orangeites. Because similar spinels may originate from diverse magmas, spinels belonging to this trend cannot be used to identify their parent magma. However, the data indicate quite clearly that this spinel assemblage is not similar to that of bona-fide kimberlite spinels (trend 1 on Fig. 4).

The spinel data also indicate that:

(1) The parent magma was not peraluminous

(2) Rocks containing mantled spinels are less evolved than rocks containing single phase spinels.

PHLOGOPITE

Phlogopites exhibit limited compositional variation within and between rock types (Table 2). Unfortunately individual micas do not exhibit extensive compositional zonation. The majority of the micas are phlogopites. Micas in the least evolved rocks are relatively poor in TiO_2 and FeO compared with those in the most evolved rocks.

Figures 5 and 6 illustrate mica compositional variation in terms of Al_2O_3 - TiO_2 and Al_2O_3 - FeO_{total} diagrams. These diagrams have proven to be usefull in determining the character of the parental magmas of mica assemblages.

Figure 5 shows that micas within individual rocks follow weak trends of TiO_2 and Al_2O_3 enrichment. In contrast, between rocks, micas become less aluminous and richer in Fe with increasing degree of differentiation. Similar inter-rock compositional trends are evident with respect to FeO although within-grain compositional variation is not well defined. Micas in the most evolved sample (224) rarely have thin discrete mantles of red Fe-rich micas. Note that these are biotites NOT tetraferriphlogopites.

Compositional trends are too limited to determine without ambiguity the parental magma of these micas. However, they cannot be considered to to show any compositional trends indicative of a kimberlite provenance. Trends of increasing Al and Ti within individual rocks are characteristic of ultramafic lamprophyres and minettes. However, the general trend of Al depletion with differentiation is anomalous, although it cannot be considered equivalent to trends exhibited by orangeites or lamproites. This is because the trend does not culminate with the formation of tetraferriphlogopite. Differentiation trends towards biotite are more in accord with an ultramafic lamprophyric parentage.

All micas are poor in BaO (<1.5 wt.%) and have unusually high conents of Na_2O (0.5 -1.0 wt.%). NiO and Cr_2O_3 contents are for the most part negligible (<0.2 wt.%) (Table 2). These compositional features clearly demonstrate that the micas are NOT derived from a kimberlitic magma

In summary, the micas show none of the compositional characteristics of kimberlite, lamproite or orangeite micas. Although minettes contain similar micas to those in the Kyle Lake rocks, the absence of co-existing potassium feldspar suggests that the rocks are not minettes. In conclusion, the micas are probably derived from an ultramafic lamprophyric (sensu lato) parental magma.

PYROXENE

Representative pyroxene compositions are given in Table 3. These data show that the zoned pyroxenes evolve from Na-poor diopside through diopside-aegirine solid solutions to aegirine. All pyroxenes are poor in Fe^{2+} and thus typically contain less than 10 mol. % hedenbergite. Al_2O_3 (0.06 -1.02 wt.%) and TiO_2 (0.7 - 2.4 wt.%) contents are typically low, hence Ti-pyroxene contents are low (0.1 -1.4 mol.%). The low Al contents also result zero calculated CATS moleculess. Cr_2O_3-contents are low (n.d. - 1.0 wt.%), and the low Na pyroxenes cannot be regarded as chrome diopsides.

Whilst Ti and Al are low and similar to those observed in some lamproites and orangeites the evolutionary trend towards aegirine demonstrates that these pyroxenes are not derived from lamproitic or orangeitic magmas. Most pyroxenes in ultramafic lamprophyres are much richer in Al and Ti than these pyroxenes, although pyroxenes similar to the Kyle Lake assemblage have been reported from the Bulljah Pool ultramafic lamprophyre by Hamilton and Rock (Lithos 24, 275-290, 1990).

Pyroxenes are considered not to be a primary mineral in kimberlites by Mitchell (1986, 1995). Pyroxenes may in some instances be formed by contamination of kimberlite with xenoliths. However, the abundance, lack of association with xenoliths, typical igneous texture and morphology exhibited by the pyroxenes in the Kyle Lake rocks indicates that these pyroxenes are primary liquidus pyroxenes.

Barbara Scott Smith might argue that the presence of pyroxene in the Kyle Lake rocks results from the contamination of a kimberlite by reaction with granitic xenoliths. This process is implausible given the low Al contents of the spinels and pyroxenes present. Note that assimilation results only in the precipitation of the current liquidus phases. These may have their compositions slightly modified by the character of the assimilated material. Hence, addition of granitic components rich in Al would be expected to result in the enhanced crystallization of Al-rich micas and spinels, these being the most important liquidus phases in the unevolved rocks. This is not observed. Further, it is doubtfull that low temperature, low volume ultramafic lamprophyric magmas have the heat capacity to assimilate much "granitic" material before they crystallize completely. Certainly it not possible that pyroxene rocks such as KWG 224 could originate by any thermodynamically plausible assimilation/contamination process. The magma is indeed likely to interact with the granites, but material is more likely to be transfered from the magma into the granites than vice versa. The red color of the feldspars in the granitic xenoliths indicates that oxidation of iron as a consequence of fluid transfer has occurred.

OTHER MINERALS

A sphene-like mineral is common in many of the evolved rocks. This contains approximately: 30.2 wt.% SiO_2; 36.2 wt.% TiO_2; 26.6 wt.% CaO; 2.0 wt.% FeO. Analytical totals are characteristically low (about 96.0 wt.%) suggesting that this mineral also contains water.

Perovskites, which occur only in the unevolved rocks, are low FeO (<2 wt%) low Nb_2O_5 (<1.0 wt.%) and low REE_2O_3 (<4 wt.%) types. The low Nb contents suggest that the perovskites are not kimberlitic in character, and the paucity of Na and REE demonstrates that they do not have lamproitic or orangeitic affinities. Perovskite compositions may be regarded as unevolved. Perovskites of similar composition occur in a wide variety of rocks ranging from perovskite pyroxenites through melilitites to alkaline ultramafic lamprophyres.

Back-scattered electron imagery showed that accessory minerals of unusual composition are not typical of these rocks. Baddeleyite and zirconolite-like minerals were rarely encounterd. Pyrite and Fe-Ni sulphides are the only sulphides present.

The following typomorphic minerals were NOT encountered: wadeite or other K-Zr-silicates; priderite or other BA-K hollandites; K-Ba-titanosilicates, melilite, nepheline, sanidine garnet; rutile; magnesian ilmenite; rare earth element carbonates, phosphates or silicates.

CONCLUSION

THE KYLE LAKE INTRUSION IS A COMPLEX BODY RESULTING FROM THE INTRUSION OF SEVERAL DIFFERENT BATCHES OF GENETICALLY RELATED. ALKALINE ULTRAMAFIC LAMPROPHYRE. THE INTRUSION DOES NOT CONTAIN KIMBERLITE, LAMPROITE, MINETTE, OR ORANGEITE.

It is not possible to identify the parental magma as the rocks are too altered for any feldspathoids to be preserved. However, the close proximity to the Lowlands igneous province suggests that the parental magma may have affinities to the melilitoid clan.

Table 1. Representative compositions of spinels

wt.%	1	2	3	4	5	6	7
TiO2	4.69	6.21	6.10	4.64	5.71	4.15	6.29
Al2O3	8.71	7.92	0.43	8.05	0.53	0.26	0.23
Cr2O3	45.62	38.49	0.39	44.03	1.77	0.52	1.10
FeO	25.95	33.38	81.30	30.43	80.17	81.29	80.51
MnO	0.56	0.73	0.79	0.83	0.73	0.61	0.79
MgO	12.67	10.84	4.71	9.98	4.96	5.02	5.13
Total	98.20	97.57	93.70	97.95	93.87	91.86	93.08

Recalculated composition on the basis of stoichiometry

FeO	17.31	21.05	28.61	20.95	27.99	25.98	28.20
Fe2O3	9.60	13.70	58.56	10.54	57.99	61.47	58.13
Total	99.16	98.94	99.59	99.02	99.68	98.01	99.87

Mol. % endmember spinel components

MgAl2O4	15.16	13.48	0.88	14.24	2.06	0.58	0.48
Mg2TiO4	15.62	20.23	0.0	15.70	0.0	0.0	0.0
MgCr2O4	19.76	6.20	0.55	9.45	3.42	0.76	1.50
MgFe2O4	0.0	0.0	23.07	0.0	20.32	26.66	24.50
MnCr2O4	1.40	1.79	0.0	2.11	0.0	0.0	0.0
Fe2TiO4	0.0	0.0	24.00	0.0	22.49	19.00	24.58
FeCr2O4	32.07	35.96	0.0	40.66	0.0	0.0	0.0
Fe3O4	16.00	22.34	51.50	17.85	51.71	53.00	48.94

---

1 - 2 inner and outer core of mantled spinel KWG 356
3 mantle to above.
4 -5 core and mantle spinels KWG 356
6 -7 single phase spinels KWG 224.

All data obtained by Cameca SX-50 WDS electron microprobe

Table 2. Representative compositions of micas.

wt.%	1	2	3	4	5	6	7	8	9	10	11
SiO2	41.46	39.54	38.83	40.73	38.29	36.80	41.32	39.74	37.69	36.63	35.29
TiO2	2.04	2.97	2.57	1.38	3.23	3.65	4.44	5.74	8.81	4.42	2.31
Al2O3	10.92	13.28	14.08	10.59	12.13	13.15	10.38	11.02	10.85	9.89	10.02
Cr2O3	n.d.	n.d.	n.d.	0.06	0.06	n.d.	0.04	0 02	n.d.	n.d.	n.d.
FeO	8.25	6.80	6.39	7.75	9.13	8.93	9.36	9.70	10.85	22.60	29.26
MnO	0.10	0.11	0.09	0.13	0.07	0.06	0.02	0.10	0.12	0.25	0.22
MgO	23.13	23.30	23.08	24.34	20.94	20.73	20.78	19.31	18.09	10.68	8.49
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Na2O	0.65	0.85	0.97	0.29	0.25	0.31	0.65	0.56	0.48	0.21	0.09
K2O	9.16	9.35	9.01	9.89	9.48	9.02	9.21	9.31	8.68	9.16	8.89
BaO	0.15	0.31	0.67	0.52	1.35	1.81	0.34	0.88	0.54	0.19	n.d.
NiO	0.03	0.05	0.04	n.d.	n.d.	n.d.	0.03	n.d.	0.05	0.02	n.d.
Total	95.85	95.88	95.71	95.72	95.01	94.46	96.57	96.22	95.15	94.13	94.57

Total Fe expressed as FeO; n.d. = not detected.

1-3 KWG 358

4-6 KWG 404

7-11 KWG 224

All data obtained by Cameca SX-50 WDS electron microprobe

Table 3. Representative compositions of pyroxenes

wt.%	1	2	3
SiO_2	54.88	54.09	52.43
TiO_2	0.76	1.45	1.48
Al_2O_3	0.06	0.48	1.02
Cr_2O_3	0.04	0.50	0.00
FeO	3.05	15.45	27.61
MnO	0.02	0.08	0.02
MgO	17.01	8.81	0.98
CaO	25.13	12.49	2.46
Na_2O	0.26	6.51	11.72
Total	101.25	99.98	97.83

Recalculated compositions

Fe_2O_3	0.67	16.77	30.20
FeO	2.45	0.36	0.44
Total	101.27	101.54	100.74

Mol.% endmembers

$CaTiAl_2O_6$	0.13	1.05	1.01
$CaAlSiAlO_6$	0.0	0.0	0.0
Ae	1.82	48.24	90.6
Wo	48.56	25.04	4.75
Fs	3.70	0.57	0.73
En	45.80	25.10	2.91

Recalculated into the aegirine-hedenbergite-diopside ternary system

Ae	1.84	49.06	92.56
Hd	7.33	1.13	1.49
Di	90.83	49.81	5.95

Data are for a strongly zoned pyroxene in KWG 404.

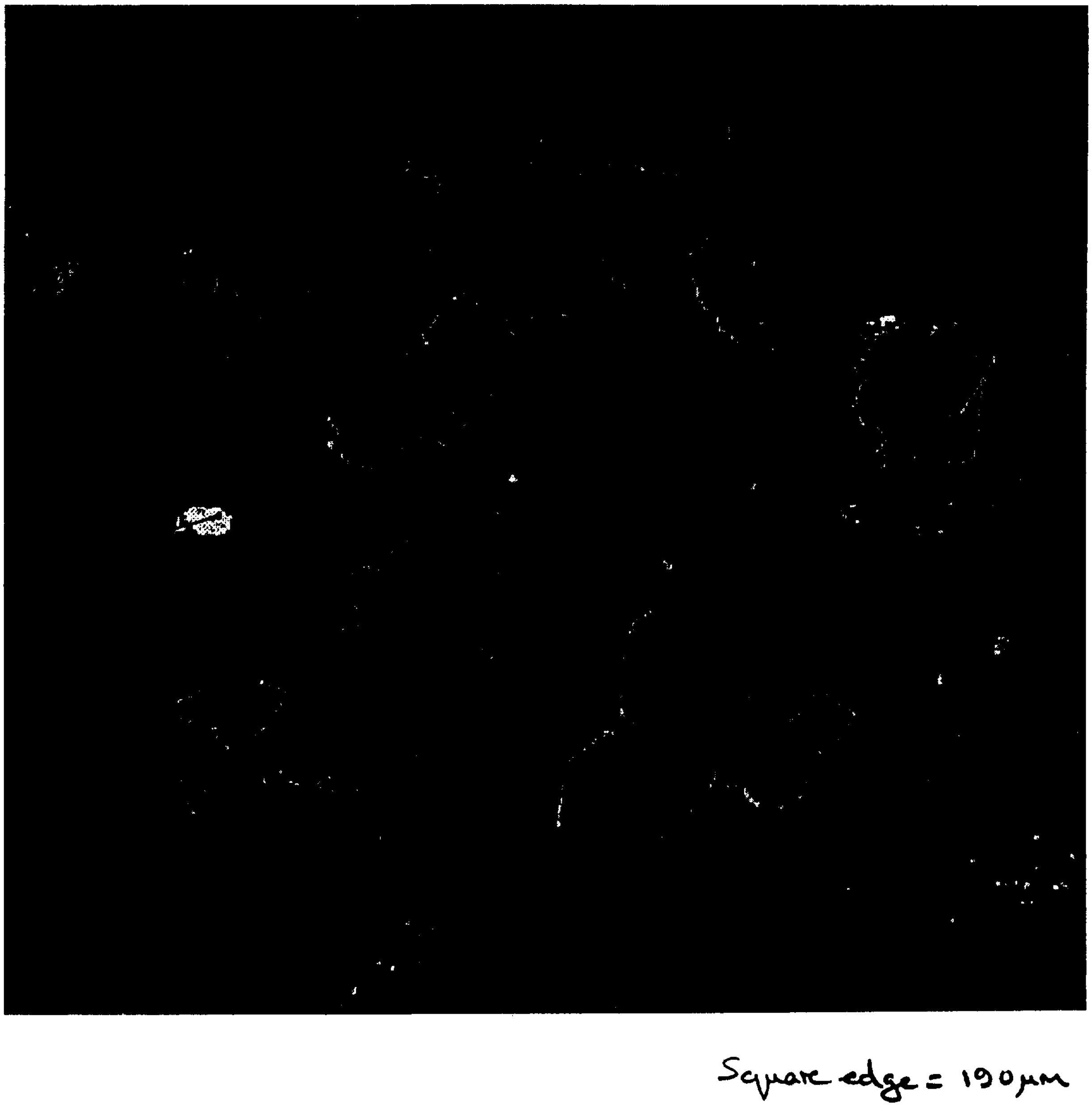
1 - diopside core

2 - aegirine-diopside solid solution intermediate zone

3 - aegirine rim

Fig. 1. 9

BSE-image KWG 356

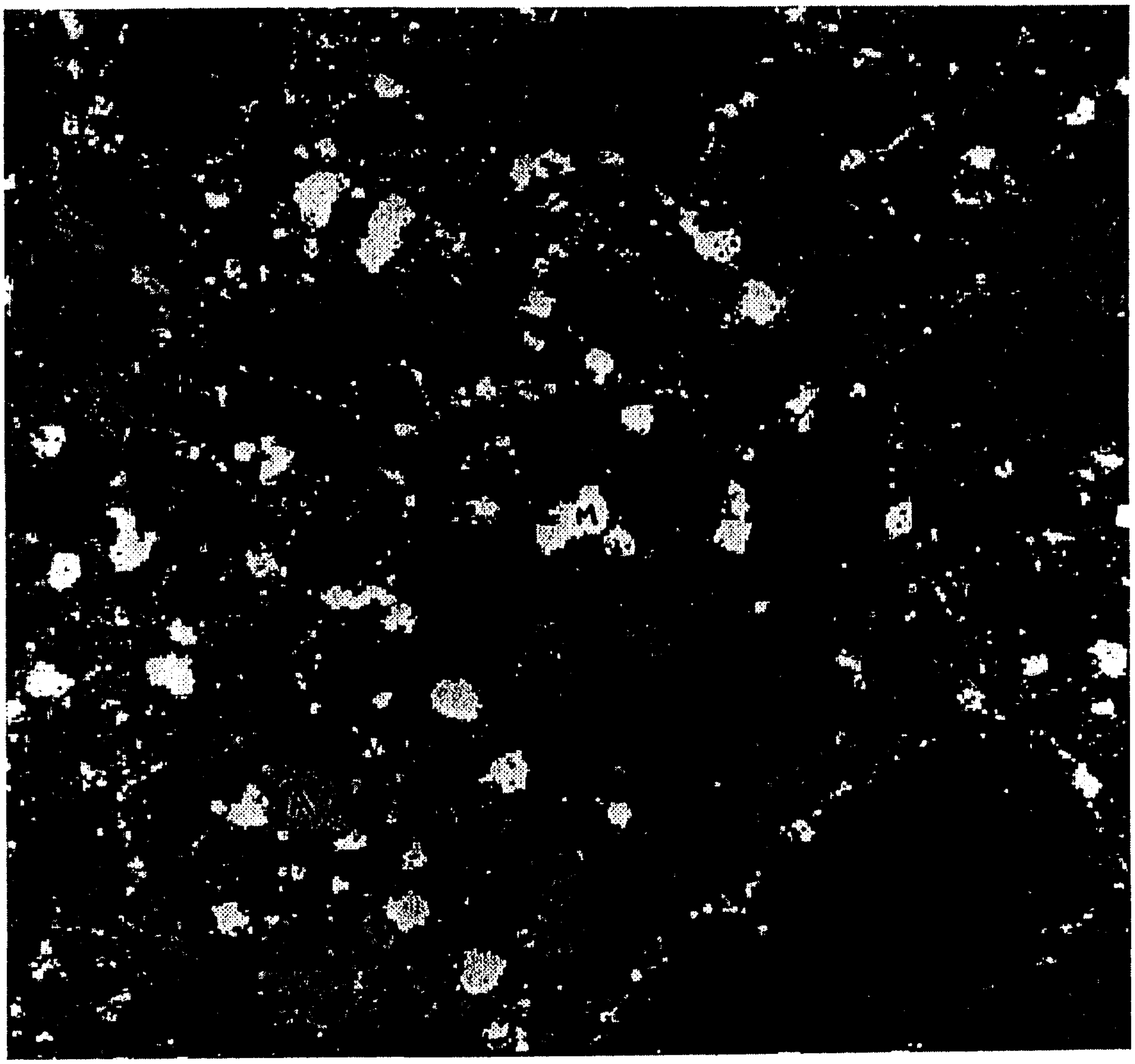


Square edge = 190 μm

P = perovskite
C = chromite
MT = titanomagnetite

Fig. 2.

BSE-image KWG 224

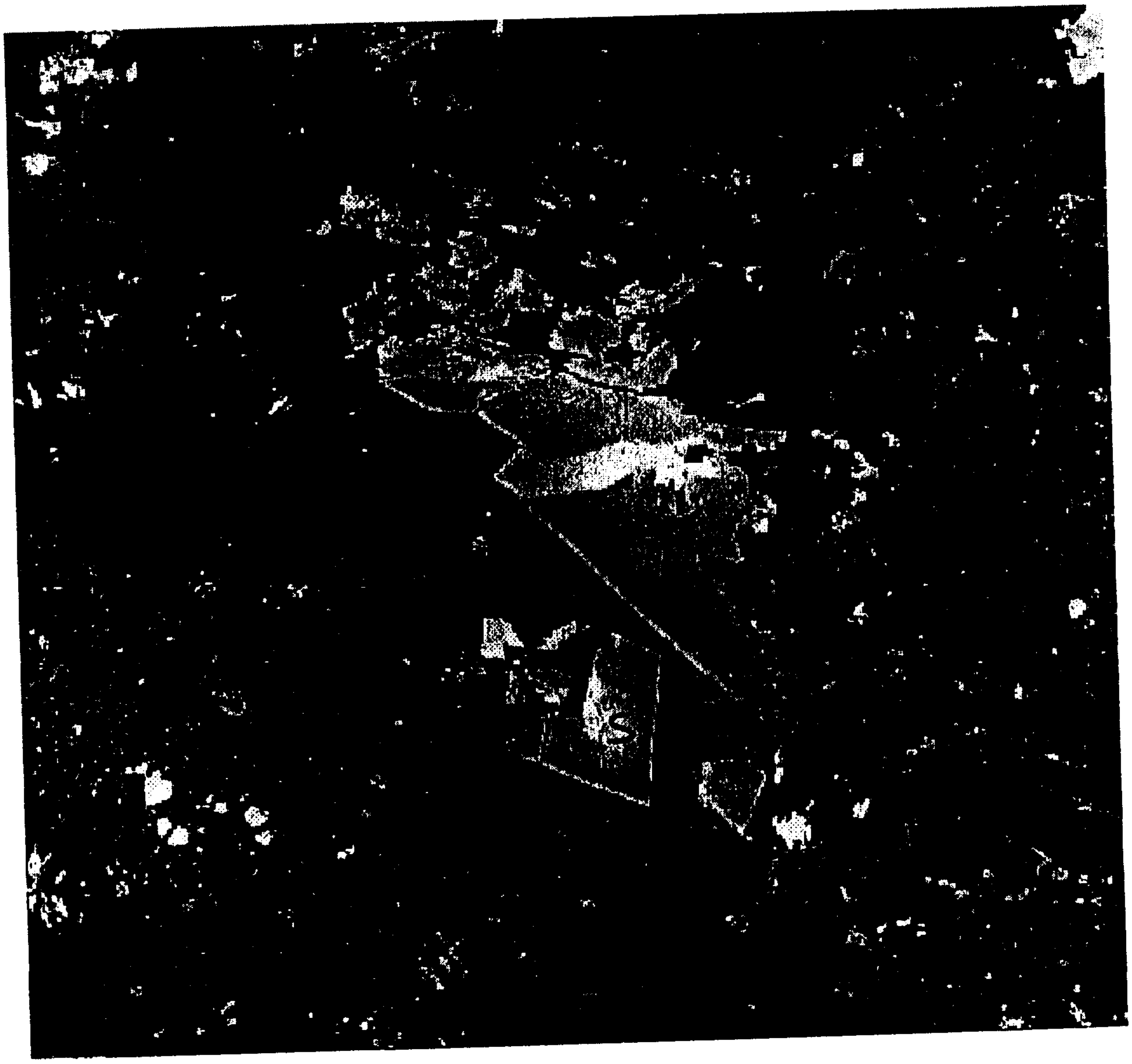


Square edge = 1.2mm

O = olivine
M = titanomagnetite
A = apatite
Grey matrix is diopside + phlogopite

Fig. 3.

BSE-image KWG 404

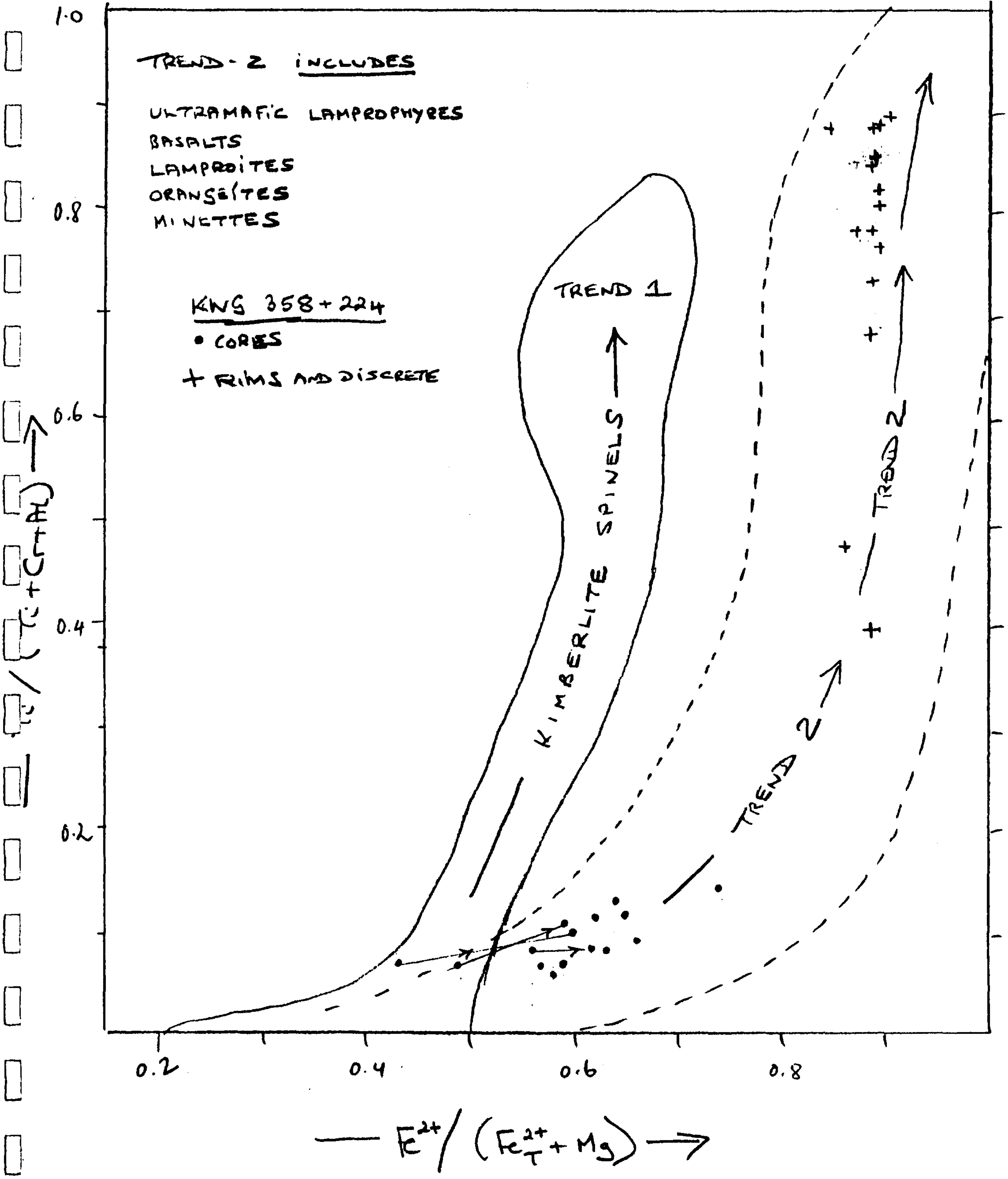


Square edge = 500μm.

S = sphene-like phase

P = zoned pyroxene

Fig. 4.


TREND - 2 INCLUDES
ULTRAMAFIC LAMPROPHYRES
BASALTS
LAMPROITES
ORANGEITES
MINETTES
KWG 358 + 224
• CORES
+ RIMS AND DISCRETE
TREND 1
KIMBERLITE SPINELS
TREND 2
TREND 2
1.0
0.8
0.6
0.4
0.2
0.2
0.4
0.6
0.8
— Ti / (Ti + Cr + Al) →
— $Fe^{2+} / (Fe^{2+}_T + Mg)$ →

Fis. 5

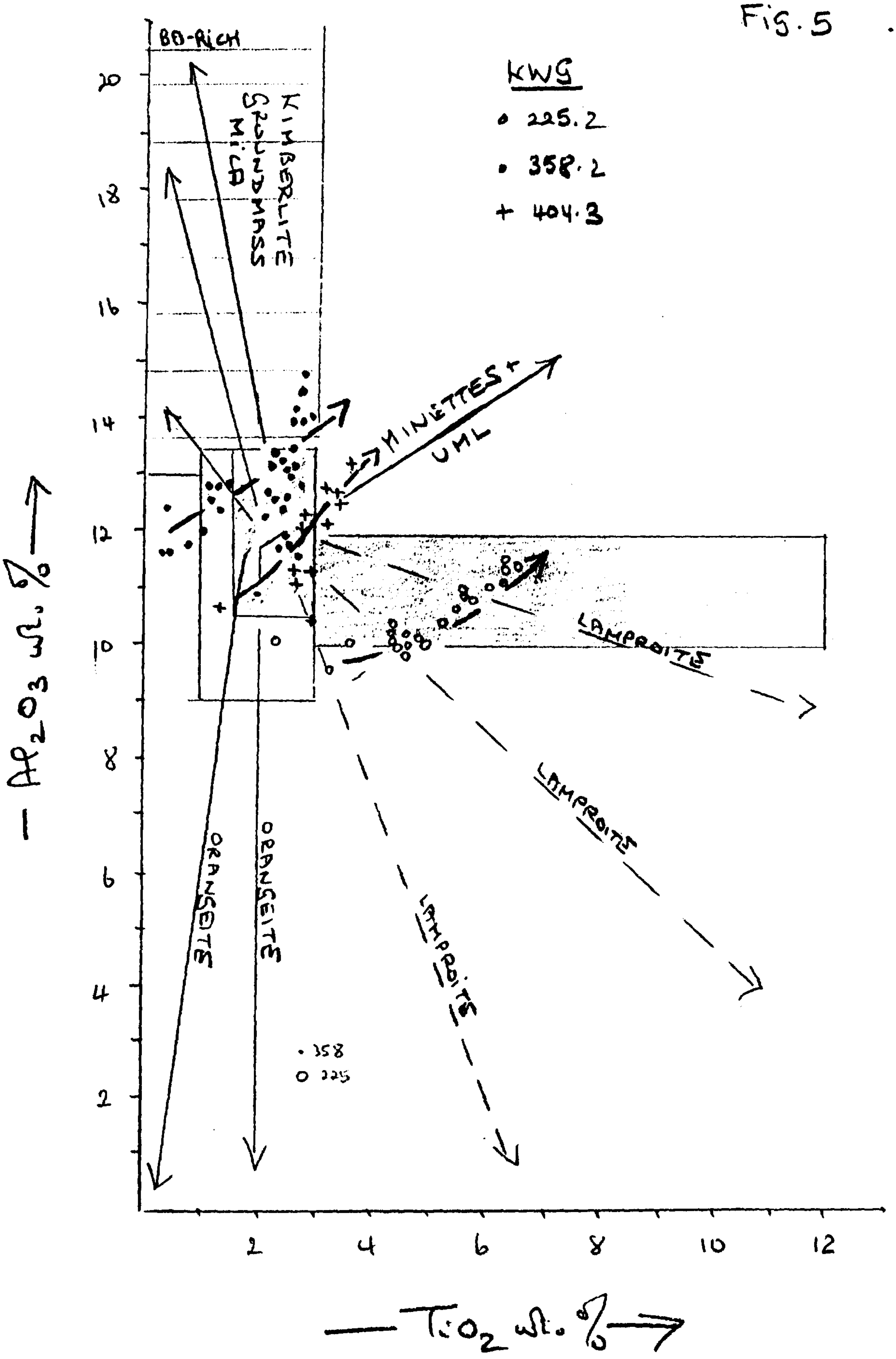
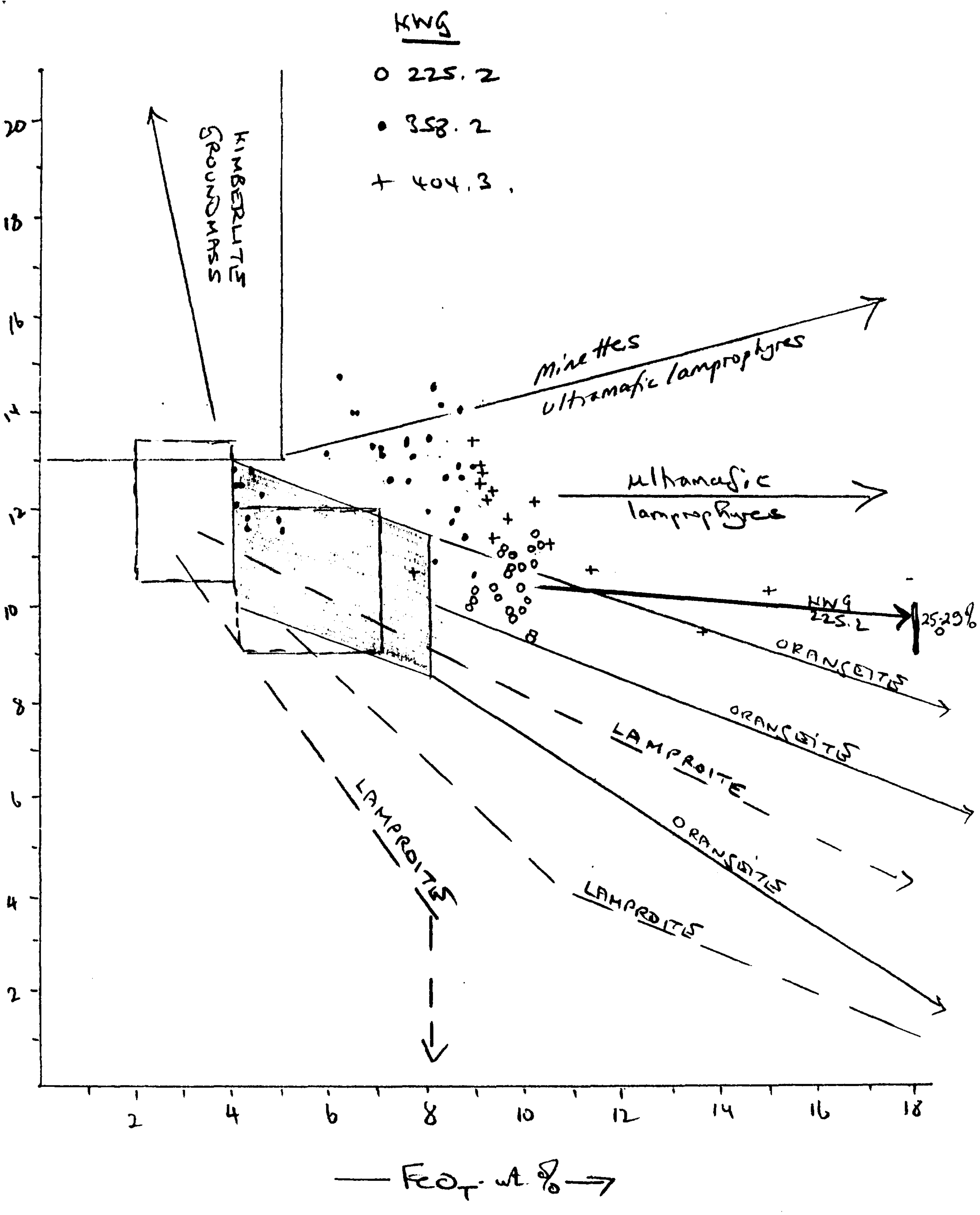

BO-RICH
KIMBERLITE GROUNDMASS MICA
MINETTES + UML
LAMPROITE
LAMPROITE
LAMPROITE
ORANGEITE
ORANGEITE
KWG
• 225.2
• 358.2
+ 404.3
• 358
o 225
20
18
16
14
12
10
8
6
4
2
2
4
6
8
10
12
Al$_2$O$_3$ wt. %
TiO$_2$ wt. %

Fig 6.


KWG
o 225.2
• 358.2
+ 404.3
KIMBERLITE GROUNDMASS
Minettes
ultramafic lamprophyres
ultramafic lamprophyres
KWG 225.2
25-29%
ORANGEITE
ORANGEITE
ORANGEITE
LAMPROITE
LAMPROITE
LAMPROITE
20
18
16
14
12
10
8
6
4
2
2
4
6
8
10
12
14
16
18
FeOT wt.%

DIAMOND DRILL HOLE LOG

Client:	KWG Resources Inc.	**Hole No.** DR 95-26
Drilled by:	Midwest Drilling, Winnipeg, Manitoba	Page 1 of 8
Logged by:	Derek E. McBride and Roger Thomas	

LOCATION:

Province:	Ontario	Project Name:	Spider #1
County/District:	Kenora (Patricia Portion)	Claim No:	1160175
Latitude/Longitude:	52° 27.820'N / 85° 24.223'W	UTM:	16 608450E 5813590N
Grid:	A 6	Grid reference:	Ashton 5+25N 3+75E

DRILL HOLE CHARACTERISTICS:

Core Size:	BQ	Hole orientation:	0°
Depth of Casing:	131 m	Hole inclination:	90°
Total depth:	494 m		
Date Drilled:	19 January - 31 January, 1995		
Date Logged:	February 1, 1995		
Date Log Printed:	27 January 1996		

2.16[illegible]

CORE DISPOSITION:

Unsampled core is stored at:

KWG/Spider resources Inc., Exploration Office
487112 Ontario Inc.
Suite 200 - 1750 Brimley Rd.
Scarborough, Ontario
M1P 4X7

"M. S." = magnetic susceptibility

REGISTERED PROFESSIONAL ENGINEER
RDT
R.D. THOMAS
PROVINCE OF ONTARIO

Roger D Thomas

HOLE NUMBER: DR 95-26

From (m)	To (m)	Description	Sample No	From (m)	To (m)			Depth (m)	M. S. (10^{-3})
0.00	56.5	OVERBURDEN: Mainly seabottom clays with the odd bouldery layer, ie. 44m boulders of limestones and Precambrian sediments.							
56.5	130.0	LIMESTONE: Buff to greyish white beds and blobs of greyish chert. 62.0 - 65.0 10% cherty layers; limestone is drusy @ 68.0 becomes more greyish 70.0 - 79.5 muddy, medium grey colour 73.5 - 74.5 Laminated, 90° CA 74.5 - 78.0 white, aphanitic 78.0 - 83.5 more buffish and bedded at 90° CA; minor silica sand 89.3 - 106.5 much more laminated, greenish grey muds and grey muds, core recovery drops to 50%-60% 106.5 - 109.0 unconsolidated white sand 109.0 - 127.5 pale off-white limestone @ 114.5 becomes "worm burrowed" @125.0 becomes much darker grey and fossiliferous 127.5 - 130.0 sandy and silty						57	0.02
								58	0.02
								61	0.00
								62.5	0.00
								64	0.00
								66	0.00
								67	0.00
								70	0.05
								72	0.00
								74.5	-0.02
130.0	300.6	KIMBERLITE, "KYLE-TYPE" Dark green, soft, weathered with rusty red inclusions, small dark fragments to 1 cm and rusty brown to 2 cm. 130.0 - 132.0 highly weathered, dirty blue grey 132.0 - 138.5 generally a dark blue green matrix with rusty oval masses to 3 cm. Some areas are relatively unweathered but most soft, almost muddy @138.5 fragmental with olivine ovals, mostly all brown but larger show "ladder structure" typical of younger olivine. Suggestion of foliation with CA=60-70°	95-26-01	135	140			77	0.02
			95-26-02	140	146			78.5	0.02
			95-26-03	146	152			80	0.05
			95-26-04	152	158			81.5	0.05
			95-26-05	158	164			83	0.05
			95-26-06	164	170			85.5	0.05
			95-26-07	170	176			85.7	0.00
			95-26-08	176	182			87.5	0.05

HOLE NUMBER: DR 95-26

From (m)	To (m)	Description	Sample No	From (m)	To (m)			Depth (m)	M. S. (10^{-3})
130.0	300.6	KIMBERLITE, "KYLE-TYPE" *(cont.)* @145.0 schistose surface with good crenulations; variable, but brown phlogopite mica is always present @147.0 larger rounded olivine masses to 3 cm with pale green core. 149.0 - 158.0 finer grained and less fragments; most masses rounded and less than 6 mm; locally sections with bluish fine-grained masses to 1.5 cm 149.1 3 mm ilmenite mass; lots of calcitic fractures at CA=80° @154.0 weathering ends 154.5 - 158.0 fine-grained, almost black mass @156.0 possible S_1 at 65-70°CA 158.0 - dark fine-grained matrix with 20-25% rounded dark masses to 1.5 cm 101.5 - 162.0 fine-grained black fragment; locally more orange masses appear to be partially resorbed gneiss, up to 0.2m diameter; lots of serpentine and/or talc as fractures at 80-90°CA 164.0 - 174.0 15% gneissic fragments; other greenish rock fragments to 5 cm @175.0 matrix turns darker grey-black with less obvious fragments @179.5 20 cm orange gneiss: orange colour due to twinned orange feldspar 184.0 - 184.6 granitic gneiss, orange 186.0 - 186.3 granitic gneiss, orange 193.2 - 193.7 highly recrystallized 194.5 - 198.0 highly recrystallized Above 194 orange feldspar with white quartz fragments; internal banding (CA=50° - 90°); almost a hybrid rock with <8 cm fragments of dark oval material @189.0 mud seam; section still has bluish soapstone veinlets	95-26-09	182	188			89	0.02
			95-26-10	188	194			90.5	0.12
			95-26-11	194	200			97.5	0.05
			95-26-12	200	206			102	0.07
			95-26-13	206	212			103	0.02
			95-26-14	212	218			107	0.02
			95-26-15	218	224			108	0.05
			95-26-16	224	230			109	0.02
			95-26-17	230	236			110	0.05
			95-26-18	236	242			111.5	0.05
			95-26-19	242	248			113	0.12
			95-26-20	248	254			114	0.02
			95-26-21	254	260			116	0.05
			95-26-22	260	266			117.5	0.00
			95-26-23	266	272			119	0.02
			95-26-24	272	278			121.5	0.02
			95-26-25	278	284			122	0.00
			95-26-26	284	290			123.5	0.02
			95-26-27	290	296			126.5	0.07
			95-26-28	296	302			128.5	0.05
								130.5	0.57

HOLE NUMBER: DR 95-26

From (m)	To (m)	Description	Sample No	From (m)	To (m)			Depth (m)	M. S. (10^{-3})
130.0	300.6	KIMBERLITE, "KYLE-TYPE" (cont.) 197.0 - 203.5 paler in colour than before; lots of black spots 199.4 - 200.3 gneissic zones as above 199.4 - 200.3 gneissic zones as above 202.0 - 203.0 gneissic zones as above 212.0 - 212.5 gneissic zones as above 216.0 - 216.3 gneissic zones as above 218.5 - gneissic zones as above 203.5 - 221.3 medium to dark grey matrix with 10%-20% 1cm black ovoids; this type of rock is very magnetic @211.5 sulphides, including millerite needles to 1mm and *trace chalcopyrite* @216.0 1.5cm ovoid of ilmenite; this section is highly *magnetic* 221.3 - 259.0 from this point the rock becomes a gneissic breccia with 50%-70% gneissic and altered gneissic xenoliths in a phlogopitic kimberlite matrix with black ovoids to 1cm 259.0 - 267.0 75%-80% randomly oriented and variable grey gneiss to 3m diameter in normal ovoid rich medium to dark grey matrix; ovoids are black 207.0 - 278.0 20% gneissic xenoliths to 0.3m 278.0 - 290.0 15% gneissic xenoliths to 0.3m; most are variable types of grey gneiss in medium to dark grey, fine-grained matrix with dark, fine-grained ovoids to 1cm which are commonly magnetic and have cryptocrystalline ilmenite; overall rock is magnetic; larger rounded masses with pale grey olivines in ladder structure are present						132	1.97
								133	3.87
								134.9	0.22
								136.5	1.20
								138	33.7
								139	0.22
								141	44.8
								142	19.7
								143.5	30.7
								145	38.5
								146.5	0.17
								148	10.4
								149.3	41.4
								150.5	6.30
								152	51.8
								153.5	17.7
300.6	313.7	GRANITIC GNEISS Generally a pale grey to light pinkish grey gneissic rock with banding parallel to S_1 @ 65°; locally biotitic but generally very homogeneous						155	52.0
								157.5	17.4
								158	27.6
								159.5	36.2

HOLE NUMBER: DR 95-26

From (m)	**To (m)**	**Description**	**Sample No**	**From (m)**	**To (m)**			**Depth (m)**	**M. S. (10^{-3})**
313.7	338.3	KIMBERLITE Fine-grained dark grey to black matrix with black ovoids to 1cm; many gneissic inclusions varying from orangy partially resorbed to grey fresh type 313.7 - 320.0 25% inclusions, mainly resorbed type 320.0 - 334.5 50%-60% fresh gneissic fragments 320.5 - 322.0 S_1 CA=20°, grey 323.0 - 324.5 S_1 CA=20°, pink 324.6 - 325.5 S_1 CA=80°, grey 326.2 - 327.0 S_1 CA=80°, grey 328.0 - 328.5 S_1 CA=60°, grey 331.0 - 331.8 S_1 CA=60°, grey 333.5 - 334.0 S_1 CA=50°, pale grey 334.0 - 338.3 typical kimberlite is moderately magnetic	95-26-29	314	320			161	19.6
								164	0.40
			95-26-30	326	332			165.5	0.35
			95-26-31	332	338			167	17.9
								168.5	10.9
								170	21.9
								171.5	25.5
								173	2.77
								174.5	5.05
338.3		CONTACT: CA=40°						176	1.07
338.3	422.0	GRANITIC GNEISS - KIMBERLITE BRECCIA Pale grey biotite gneiss, less than 10% biotite with S_1 CA=65°-70°; locally pinkish (350.0-354.5) or finer grained medium grey. Short sections of "normal type" kimberlite at 345.2-346.6, 347.5-349.0, 351.5-351.7, 355.4-358.4, and 358.8-359.4 @ 359.4 turns medium grey biotite gneiss, S_1 CA≈35° 360.8 - 362.5 mainly kimberlite 363.7 - 364.2 mainly kimberlite 364.3 - 366.8 pinkish biotite gneiss, S_1 CA=75° 366.8 - 371.5 kimberlite with round black masses to 1cm and variable rock, including gneiss, inclusions to 8cm 371.5 - 378.4 orangy-red, medium-grained biotite gneiss; S_1 poor CA=20° 378.0 - 378.4 few 1cm kimberlite dikelets 378.4 - 385.0 Kimberlite typically dark brown matrix with black ovoids and green serpentine masses to 1cm 380.1 - 381.5 coarse, recrystallized orangy feldspar in a dark kimberlitic matrix to 5cm	95-26-32	334	349			177	2.37
								178.5	40.2
			95-26-33	356	362			180	13.2
								181.5	16.3
			95-26-34	367	372			183	3.95
								184.5	0.27
			95-26-35	379	385			186	0.32
								187.5	3.35
			95-26-36	395	401			189	73.4
			95-26-37	401	407			190	61.3
			95-26-38	407	413			192	23.3
			95-26-39	413	419			193	0.30

HOLE NUMBER: DR 95-26

From (m)	To (m)	Description	Sample No	From (m)	To (m)			Depth (m)	M. S. (10^{-3})
338.3	422.0	GRANITIC GNEISS - KIMBERLITE BRECCIA (cont.) 332.0 - 382.5 grey recrystallized gneiss 385.0 - 386.0 grey gneiss, CA=60° 386.0 - 387.0 kimberlite breccia 387.0 - 395.5 fine-grained grey gneiss; S_1 CA=60° 395.5 - 422.3 kimberlite breccia, matrix of kimberlite makes up 40%-50%, remainder partially digested gneiss	95-26-40	419	425			194.5	2.10
								196	0.17
								197	89.3
			95-26-41	425	431			198.5	1.22
			95-26-42	431	437			200	0.30
422.3	457.6	CONTACT BRECCIA Maroon to red gneissic breccia containing angular polymict fragments of pinkish gneissic granite to 10cm, recrystallized feldspar to 6mm; locally gneissosity CA=60° 435.2 - 438.0 kimberlite breccia, matrix of kimberlite with hematized gneiss xenoliths to 5cm 438.0 - 448.5 contact breccia as above 448.5 - 453.5 kimberlite breccia as above 453.5 - 457.0 contact breccia 457.0 - 457.6 kimberlite breccia						201.5	5.87
			95-26-43	437	443			203	1.75
			95-26-44	443	449			204.5	22.6
			95-26-45	449	455			206	59.3
								207.5	0.22
								208.5	58.4
								210	0.20
457.6	494.0	BIOTITE AND HORNBLENDE GNEISS Mainly a grey banded gneiss; S_1 CA=60° 457.6 - 460.5 pinkish feldspars 460.5 - 494.0 more hornblende concentrated in bands parallel to S_1; some <0.25m sections of feldspathic material; non-magnetic 457.6 - 473.0 medium-grained hornblende type 473.0 - 477.7 fine-grained biotite-hornblende-quartz gneiss; banding and gneissosity at CA=65°-70°; minor medium green mineral and «1% red-brown garnet(?) 477.7 - 482.6 laminated biotite-hornblende and more felsic type which has some pinkish feldspar; banding varies from CA=70° @ 476.0 to 35° @ 480.7 to 70° @ 482.6						211.5	1.35
								213	2.95
								214.5	27.6
								216	126
								217.5	0.40
								219	8.42
								220	2.30
								222	0.07
								223	0.75

From (m)	To (m)	Description	Sample No	From (m)	To (m)			Depth (m)	M. S. (10^{-3})
457.6	494.0	BIOTITE AND HORNBLENDE GNEISS (cont.) 482.6 - 483.6 similar to previous but felsic laminae show tight to isoclinal folding with axial plane CA=65° 483.6 - 484.5 same as 473.0 - 477.7 484.5 - 486.0 felsic pegmatitic type 486.0 - 490.5 banded biotite-hornblende type with more pale grey felsic bands @489.5 fold axis from CA=30° down hole @489.0 to CA=30° up hole @ 490.0 490.5 - 490.9 same small band as at 487.0 - 487.5 492.2 - 492.7 same band as at 485.0 485.0 - 494.0 biotite-hornblende type @493.0 S_0-S_1 CA=60°-70°						224.5	103
								226	0.37
								228	0.57
								229	0.52
								230.5	3.85
								232	0.25
								233.5	0.72
								235	0.27
								236.5	0.20
								238	0.32
494.0		END OF HOLE						239.5	0.50
								241	90.8
								242	2.20
								243	12.0
								245	21.6
								246.5	0.40
								248	0.07
								249.5	23.0
								251	0.95
								252.5	14.6
								254	6.15

KYLE LAKE DH-95-26

Lakefield Report

	From	To	Length	Mass	Kimberlite	Kimberlite	Diamond Totals			Grade for Whole Sample			Grade for Kimberlite Only		
Sample #	(m)	(m)	(m)	(kg)	Fraction	Mass (kg)	Micros	acro	Octacarats	OCt*/kg	Ct/kg	Ct/tonne	OCt*/kg	Ct/kg	Ct/tonne
95-26-01	135	140	4.6	4.7	1.00	4.70	4	0	83,789	17,827	1.78E-04	0.18	17,827	1.78E-04	0.18
95-26-02	140	146	6.4	6.3	1.00	6.30	8	0	165,297	26,238	2.62E-04	0.26	26,238	2.62E-04	0.26
95-26-03	146	152	5.6	6.1	0.65	3.97	9	1	1,407,562	230,748	2.31E-03	2.31	354,997	3.55E-03	3.55
95-26-04	152	158	6	6.2	0.30	1.86	3	1	304,693	49,144	4.91E-04	0.49	163,813	1.64E-03	1.64
95-26-05	158	164	6	7.1	0.30	2.13	4	2	379,184	53,406	5.34E-04	0.53	178,021	1.78E-03	1.78
95-26-06	164	170	6	7.2	0.25	1.80	0	0	0	0	0	0.00	0	0	0.00
95-26-07	170	176	6	7.3	0.20	1.46	1	1	136,382	18,682	1.87E-04	0.19	93,412	9.34E-04	0.93
95-26-08	176	182	6	6.8	0.20	1.36	3	0	171,267	25,186	2.52E-04	0.25	125,932	1.26E-03	1.26
95-26-09	182	188	6	7.4	0.20	1.48	3	1	264,126	35,693	3.57E-04	0.36	178,464	1.78E-03	1.78
95-26-10	188	194	6	6.8	0.20	1.36	0	0	0	0	0	0.00	0	0	0.00
95-26-11	194	200	6	7.6	0.20	1.52	0	0	0	0	0	0.00	0	0	0.00
95-26-12	200	206	6	8.2	0.30	2.46	2	0	46,135	5,626	5.63E-05	0.06	18,754	1.88E-04	0.19
95-26-13	206	212	6	14.6	0.92	13.43	0	0	0	0	0.00E+00	0.00	0	0.00E+00	0.00
95-26-14	212	218	6	15.5	0.75	11.63	4	1	215,135	13,880	1.39E-04	0.14	18,506	1.85E-04	0.19
95-26-15	218	224	6	14.1	0.60	8.46	3	0	58,117	4,122	4.12E-05	0.04	6,870	6.87E-05	0.07
95-26-16	224	230	6	13.8	0.50	6.90	4	1	603,503	43,732	4.37E-04	0.44	87,464	8.75E-04	0.87
95-26-17	230	236	6	15.1	0.55	8.31	2	2	412,749	27,334	2.73E-04	0.27	49,699	4.97E-04	0.50
95-26-18	236	242	6	15.4	0.33	5.08	0	0	0	0	0.00E+00	0.00	0	0.00E+00	0.00
95-26-19	242	248	6	15.3	0.58	8.87	2	0	133,742	8,741	8.74E-05	0.09	15,071	1.51E-04	0.15
95-26-20	248	254	6	14.1	0.68	9.59	10	2	667,963	47,373	4.74E-04	0.47	69,667	6.97E-04	0.70
95-26-21	254	260	6	16	0.38	6.08	0	5	660,214	41,263	4.13E-04	0.41	108,588	1.09E-03	1.09
95-26-22	260	266	6	15.2	0.32	4.86	6	2	1,158,834	76,239	7.62E-04	0.76	238,247	2.38E-03	2.38
95-26-23	266	272	6	13.8	0.55	7.59	3	1	150,560	10,910	1.09E-04	0.11	19,837	1.98E-04	0.20
95-26-24	272	278	6	14.8	0.80	11.84	9	2	793,928	53,644	5.36E-04	0.54	67,055	6.71E-04	0.67
95-26-25	278	284	6	15	0.85	12.75	9	3	533,906	35,594	3.56E-04	0.36	41,875	4.19E-04	0.42
95-26-26	284	290	6	15.5	0.78	12.09	2	2	474,253	30,597	3.06E-04	0.31	39,227	3.92E-04	0.39
95-26-27	290	296	6	16.2	0.60	9.72	16	4	4,581,050	282,781	2.83E-03	2.83	471,301	4.71E-03	4.71
95-26-28	296	302	6	15.6	0.67	10.39	2	2	1,135,300	72,776	7.28E-04	0.73	109,273	1.09E-03	1.09
o Sample	302	314	12		0.00										
95-26-29	314	320	6	14.6	0.73	10.66	29	9	4,256,784	291,561	2.92E-03	2.92	399,398	3.99E-03	3.99
o Sample	320	326	6		0.00										
95-26-30	326	332	6	14.4	0.58	8.35	6	1	385,254	26,754	2.68E-04	0.27	46,127	4.61E-04	0.46
95-26-31	332	338	6	16.8	0.70	11.76	7	0	151,062	8,992	8.99E-05	0.09	12,845	1.28E-04	0.13
o Sample	338	344	6		0.00										
95-26-32	344	349	4.5	8.5	0.56	4.72	4	1	416,279	48,974	4.90E-04	0.49	88,241	8.82E-04	0.88
o Sample	349	356	7.5		0.00										
95-26-33	356	362	6	15.8	0.63	9.95	75	10	5,160,102	326,589	3.27E-03	3.27	518,395	5.18E-03	5.18
o Sample	362	367	5		0.00										
95-26-34	367	372	4.5	11.4	1.00	11.40	2	1	76,499	6,710	6.71E-05	0.07	6,710	6.71E-05	0.07
o Sample	372	379	7		0.00										
95-26-35	379	385	6.5	16.1	0.66	10.63	8	0	386,043	23,978	2.40E-04	0.24	36,330	3.63E-04	0.36
o Sample	385	395	10.3		0.00										
95-26-36	395	401	5.7	15	0.61	9.15	0	0	0	0	0.00E+00	0.00	0	0.00E+00	0.00
95-26-37	401	407	6	16	0.40	6.40	1	0	4,735	296	2.96E-06	0.00	740	7.40E-06	0.01
95-26-38	407	413	6	13.7	0.75	10.28	6	3	1,706,387	124,554	1.25E-03	1.25	166,072	1.66E-03	1.66
95-26-39	413	419	6	14.6	0.80	11.68	34	20	17,534,351	1,200,983	1.20E-02	12.01	1,501,229	1.50E-02	15.01
95-26-40	419	425	6	13.8	1.00	13.80	4	0	71,147	5,156	5.16E-05	0.05	5,156	5.16E-05	0.05
95-26-41	425	431	6	13.4	1.00	13.40	2	1	186,722	13,934	1.39E-04	0.14	13,934	1.39E-04	0.14
95-26-42	431	437	6	14.1	1.00	14.10	3	0	104,955	7,444	7.44E-05	0.07	7,444	7.44E-05	0.07
95-26-43	437	443	6	13.1	1.00	13.10	1	0	52,090	3,976	3.98E-05	0.04	3,976	3.98E-05	0.04
95-26-44	443	449	6	14	1.00	14.00	0	0	0	0	0.00E+00	0.00	0	0.00E+00	0.00
95-26-45	449	455	6	12.7	1.00	12.70	0	0	0	0	0.00E+00	0.00	0	0.00E+00	0.00
Totals	135	455	319.6	560	0.65	364.06	291	79	45,030,099	80,454	8.05E-04	0.80	123,690	1.24E-03	1.24

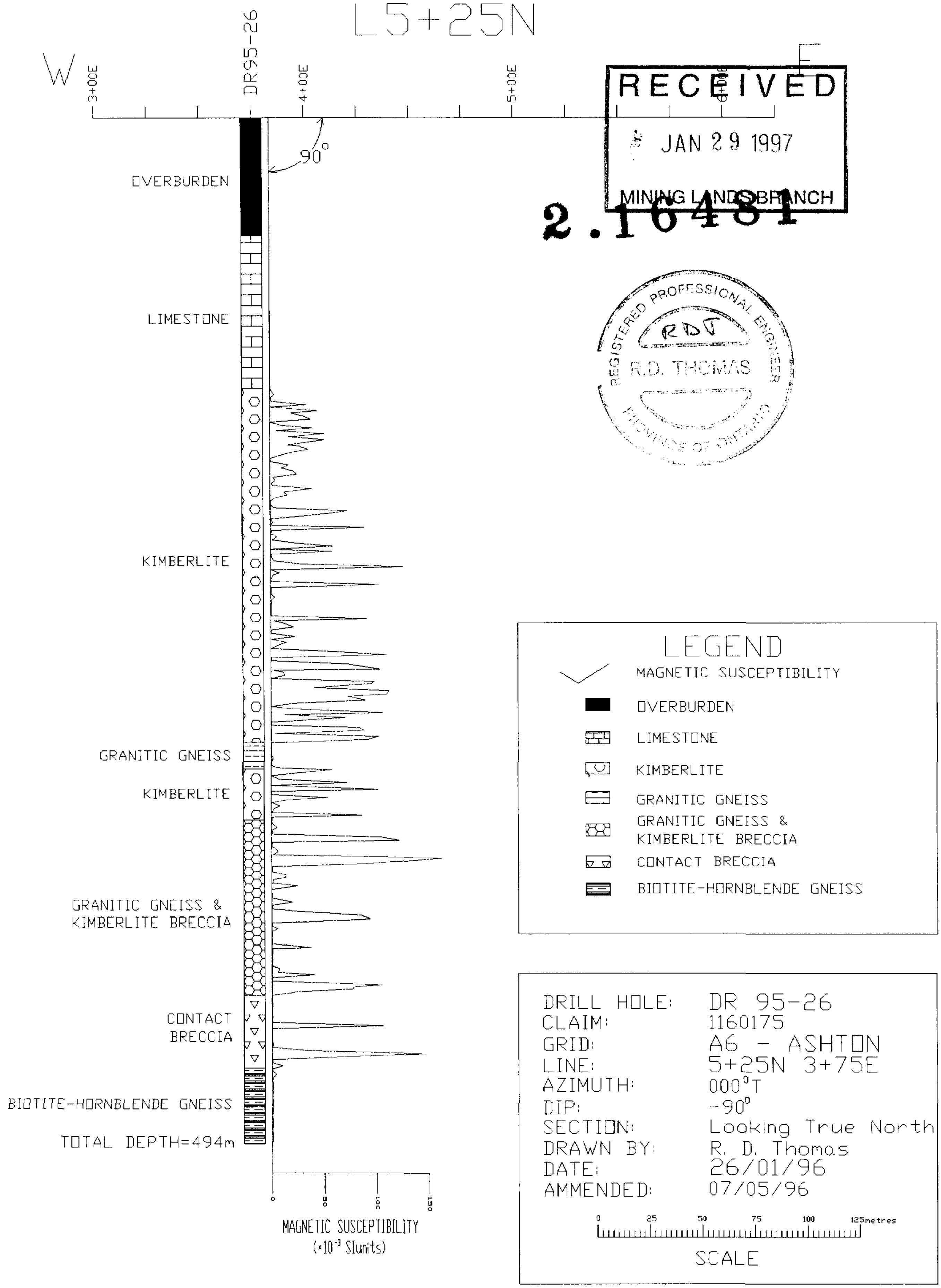
*OCt=Octacarat

Depth (m)	M. S. (10^{-3})	Depth (m)	M. S. (10^{-3})	Depth (m)	M. S. (10^{-3})	Depth (m)	M. S. (10^{-3})	Depth (m)	M. S. (10^{-3})	Depth (m)	M. S. (10^{-3})	Depth (m)	M. S. (10^{-3})
255.5	0.87	291	0.37	326	0.55	361	0.55	396.5	0.20	431.2	0.45	466.8	0.92
257	64.5	292.5	0.35	327.5	53.7	362.4	0.90	398	0.42	433	0.62	468	0.37
258.5	110	293.5	83.3	328.7	14.9	364	0.95	399.5	37.3	434.1	0.27	469.5	0.70
260	0.17	295	88.3	330	0.20	365.5	13.6	400	0.75	435.5	0.57	470	0.57
261.5	0.20	296.5	2.97	331.5	7.97	367	13.7	402.5	0.67	437.1	106	472.5	0.52
263	72.3	298	102	333	2.50	368.2	1.72	403.9	0.17	438.5	0.17	474	0.97
265.5	104	299.5	91.1	334.5	0.42	370	0.87	405.5	0.65	440	0.50	475.5	0.97
266	2.82	301	0.22	336	86.2	371.2	24.4	406.9	0.30	441.5	0.25	477	1.15
267	11.9	302.5	0.27	337	0.67	373	0.12	408.6	0.67	443	0.05	478.5	0.95
268.5	12.9	304	0.57	339	0.12	374.1	0.15	409.7	7.10	444.5	0.20	480	0.30
270	0.20	305.5	0.10	340	1.07	376	0.22	411.5	5.55	446	0.87	481.5	0.57
271.5	98.0	307	0.15	342	5.52	377.1	1.37	412.6	40.7	447.5	0.27	483	0.75
272.5	95.6	308.3	1.75	343	1.42	379	19.4	414	0.22	449	34.7	484.5	0.62
274.5	41.2	310.5	0.20	345	0.27	380.5	0.25	415.6	0.17	450.5	147	486	0.67
276	112	312	0.70	346.5	105	382	0.42	417.5	105	452	67.2	487.5	0.05
277.5	110	313	5.72	348	122	383	26.0	418.5	77.8	453.5	0.17	489	0.82
278.7	72.9	314	57.9	349	0.80	384.5	85.1	419.5	77.1	455	0.17	490	0.90
280.5	89.9	315.5	26.8	351	0.15	386	94.1	421	22.1	456.5	9.67	491.5	0.75
282	21.4	317	0.15	352	3.52	387.5	0.17	422.4	0.47	457.8	0.55	493	0.72
283.6	0.22	318.5	7.30	353.5	6.35	389	0.17	424	0.30	459	0.55		
284.5	19.8	320	72.2	355	1.52	390.5	5.40	425.2	0.35	460.5	3.60		
286.5	106	321.5	0.20	356.5	162	392	0.32	426.8	0.67	462	1.00		
287.5	13.0	323.5	102	358	129	393.5	0.67	428.1	0.55	463.5	0.00		
289	70.3	324.5	0.15	359.5	88.8	395	0.10	429.7	0.37	465	0.95		

L5+25N

2.16481

R.D. THOMAS



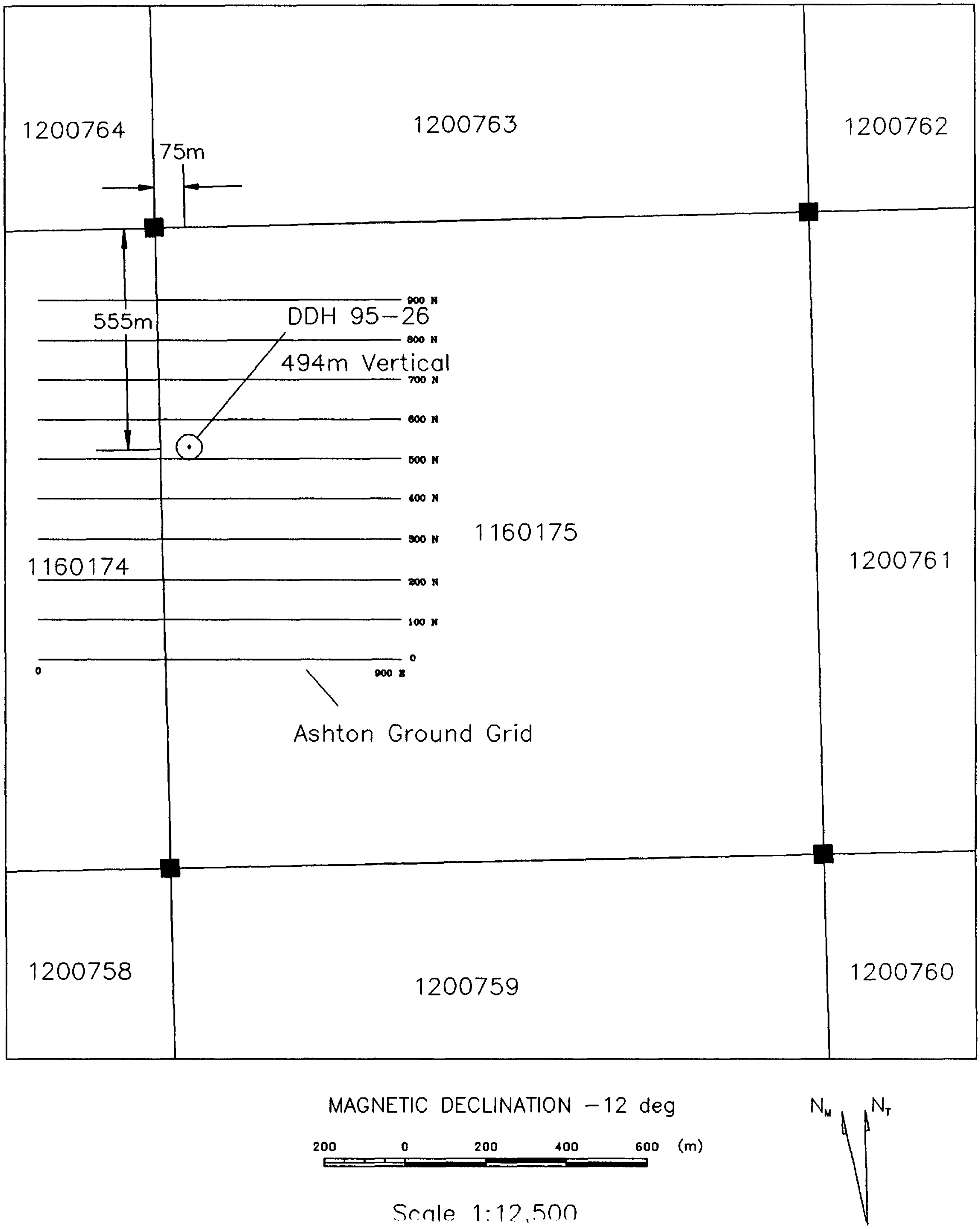
DRILL HOLE: DR 95-26
CLAIM: 1160175
GRID: A6 - ASHTON
LINE: 5+25N 3+75E
AZIMUTH: 000°T
DIP: -90°
SECTION: Looking True North
DRAWN BY: R. D. Thomas
DATE: 26/01/96
AMMENDED: 07/05/96

0 25 50 75 100 125metres
SCALE

DRILL HOLE LOCATION PLAN

CLAIM 1160175

SHEET 524852 – NTS 43C/6



Minscan
GLENS LOG
page 1-8

PRELIMINARY LOCK OF DRILL HOLE 95-26
(N.B. May be modified after petrographic examination)

SUMMARY

118.0-135.0 : Limestone

135.0-140.0 : Transition

140.0-149.0 : Kimberlite

149.0-203.0 : Kimberlite/Gneiss Breccia

	Kimberlite : Gneiss Ratio	
149.0 - 167.0	3 : 7	Kim 30%
167.0 - 203.0	1 : 4	Kim 20%

203.0-211.0 : Kimberlite

211.0-301.5 : Kimberlite/Gneiss Breccia

	Kimberlite : Gneiss Ratio
211.0 - 224.3	1 : 1
224.3 - 227.0	8 : 1
227.0 - 254.0	1 : 5
254.0 - 269.0	1 : 3
269.0 - 301.5	9 : 1

301.5-313.6 : Biotite Gneiss

313.6-338.4 : Kimberlite/Gneiss Breccia

Kimberlite : Gneiss Ratio

1 : 1

338.4-345.0 : Biotite Gneiss

345.0-346.5 : Kimberlite

346.5-355.5 : Biotite Gneiss

355.5-359.5 : Kimberlite

359.5-367.0 : Gneiss

367.0-371.5 : Kimberlite/Gneiss Breccia

Kimberlite : Gneiss Ratio

8 : 1

371.5-378.3 : Granitic Gneiss

378.3-386.8 : Kimberlite/Gneiss Breccia

Kimberlite : Gneiss Ratio

4 : 1

386.8-395.3 : Biotite Gneiss

395.3-422.5 : Kimberlite/Gneiss Breccia

Kimberlite : Gneiss Ratio

1 : 1

422.5-432.5 : Granitic Explosion Breccia

432.5-438.5 : Explosion Breccia and Kimberlite Bands

Kimberlite : Granite

1 : 4

438.5-448.6 : Granitic Explosion Breccia

448.6-458.0 : Explosion Breccia and Kimberlite Bands

Kimberlite : Granite

1 : 1

458.0-472.0 : Migmatitic Gneiss

LOG OF DRILL HOLE 95-26

118 - 135 m. LIMESTONE: White, fine grained chalky limestone with many irregular interdigitations of argillaceous material. Argillaceous component becomes progressively more abundant down section.

Irregular cracks with fine carbonaceous coatings abundant in bottom 3m.

135 - 140 m. TRANSITION ZONE: Heavily decomposed kimberlite with xenolithic blocks up to 50 cms in width Xenoliths are composed of vari-coloured (dark greenish-grey to medium reddish brown), fine grained rock containing rounded clasts to 1cm in diameter - may be heavily altered tuff.

140.0-149.0 m. KIMBERLITE: Light greenish grey, fine grained serpentine-rich, magnetic matrix containing occasional fine phlogopite flakes. Subrounded ilmenite nodule (0.4mm diameter at 149.10m)

Abundant (7-10% of volume) sub-rounded serpentinized pseudomorphs after olivine up to 4 cm in diameter which contain internal networks of very fine magnetite veinlets. Possible other generation of olivine microphenocrysts visible.

Occasional sub-rounded xenoliths of quartzo-feldspathic rocks to 5cms. in diameter.

The rock is transected by abundant fine veinlets, generally more or less normal to core axis.

Irregular zones of reddish oxidation found throughout this section.

(SAMPLE KW-110 AT 146.7)

149.0 - 167.0 m. KIMBERLITE/GNEISS BRECCIA: Kimberlite component generally similar to above but zones of red staining are absent.

Xenolithic blocks of basic and granitic gneisses up to 70cms. in diameter make up about 70% of volume of this section. Gneissosity orientated at variable angles.

(SAMPLE KW-111 AT 160.5)

167.0 - 188.0 m. KIMBERLITE/GNEISS BRECCIA: kimberlite is crowded with rounded, partially digested, xenoliths of basic and granitic gneiss up to 30.0cm in width. These xenoliths make up about 80% of the volume of this section.

There are many irregular talc veinlets up to 2 or 3cm in width orientated at 70 to 80 to core axis. Also occasional fine carbonate veinlets.

(SAMPLE KW-112 AT 177.5)

188.0-203.0m. KIMBERLITE/GNEISS BRECCIA: Mainly composed of large blocks of intermediate and granitic gneiss - gneissosity at 70 to 85 degrees.

Kimberlite bands between gneiss blocks make up about 20 percent of volume of the rock.

Occasional talc-lined fractures at about 40 degrees to c.a.

203.0-211.0m. KIMBERLITE: Light greenish grey serpentine-rich magnetic matrix. Abundant (7%) dark-greenish grey olivine megacrysts up to 2cm in diameter - also many fine olivine micro-phenocrysts in matrix. Fine phlogopite sparsely dispersed in matrix.

Some fine carbonate veining and occasional irregularly outlined carbonate bodies to 1cm in width.

(SAMPLE KW-113 AT 205.0)

211.0-224.3m. KIMBERLITE/GNEISS BRECCIA:Gneiss predominates It is a mainly granitic variety with many biotite-rich bands. Attitude of gneissosity in blocks ranges from 30 to 80 degrees.

Kimberlite, similar to that described above, occurs in bands up to 30cm wide. Contacts between kimberlite and gneiss generally sharp but with some coarsening in grain size in gneiss adjacent to contacts.

kimberlite:gneiss ratio 1 : 1

224.3-227.0m. KIMBERLITE dominates in this section but there are some gneissic xenoliths to 15cm in diameter Kimberlite similar to that described for 203.0 - 211.0

Kimberlite:Gneiss ratio 8 : 1

(SAMPLE KW113b AT 225.40)

227.0-254.0m. KIMBERLITE/GNEISS BRECCIA: Composed of blocks of gneiss up to about 1m in diameter. Interstitial kimberlite makes up only about 20% of the volume of this section.

Orientation of gneissosity in adjacent blocks variable - indicating chaotic breccia.

Kimberlite similar to that logged above but olivine megacrysts are generally only slightly serpentinized.

Contacts between kimberlite and gneissic blocks generally sharp

(SAMPLE KW-114 AT 237.10)

254.0-269.0m : KIMBERLITE/ GNEISS BRECCIA kimberlite component 25% - kimberlite bands up to 70cm long. Kimberlite contains abundant rounded olivine megacrysts to 0.5cm in diameter. Matrix calcareous and magnetic Many irregularly outlined carbonate aggregation to 0.10cm in width which are often enclosed by phlogopite rims. Pyrite occurs in trace amounts.

Gneiss blocks included basic and granitic types.

269-301.5m. : KIMBERLITE/GNEISS BRECCIA:granitic and gneissose xenoliths, up to 30cm in width, make up about 10% of the volume.

Kimberlite is similar to that described above but includes some serpentinized olivine pseudomorphs up to 7.5cm in diameter.

Matrix is strongly magnetic but contains less carbonate than before; however, there are some fine carbonate veinlets at 90.

Orientation of gneissosity in xenoliths is orientated as 30 to 40 degrees.

In addition to xenoliths of gneiss there are some made up of medium grey, equigranular quartzite containing finally disseminated pyrite

(SAMPLES KW-116 AT 272.1m, KW-117 AT 295.8m and KW-118 AT 300.3m)

301.5-313.6m. BIOTITE GNEISS: Single large xenolith or wall rock protruberance of biotite gneiss. Gneissosity at 60 to 70 degrees to CA

313.6-338.4m. KIMBERLITE/GNEISS BRECCIA: Xenoliths of gneiss and bands kimberlite each occur in bands up to 1.0m. wide.

Ratio of kimberlite:xenoliths 1:1

Zone of talcose fractures and sub-vertical shearing 329.2-39.4

(SAMPLE KW-119 AT 329.2)

338.4-345.0m. BIOTITE GNEISS: Large xenolith or wall-rock protruberance of biotite gneiss. Gneissosity at 60-70 degrees to CA.

345.0-346.5m KIMBERLITE: Kimberlite as before with abundant large olivine megacrysts up to 7.5cm in diameter.

(SAMPLE KW-120 AT 346.3m)

346.5-355.5m BIOTITE GNEISS: Grey biotite gneiss with gneissosity at 40 to 50 to CA

Single kimberlite band 351.5-351.7

(SAMPLE KW-121 AT 351.5)

355.4-359.5m KIMBERLITE: Weak banding in kimberlite at 45 . Kimberlite is crowded with rounded olivine megacrysts to 3cm in diameter. Olivines mostly replaced by serpentine and meshwork of fine magnetite veinlets.

Occasional xenoliths of biotite chlorite Schist to 50 cm in diameter.

(SAMPLE KW-122 AT 356.5)

359.5-367.0m. GRANITIC GNEISS: predominantly pink granitic with gneissosity at 80. Minor kimberlite band 362.0 to 362.3

367.0-371.5m KIMBERLITE/GNEISS BRECCIA: Mainly kimberlite with numerous gneissic xenoliths to 20 cms in width. Smaller xenocrysts show evidence of partial digestion.

Kimberlite matrix pale greenish grey, fine grained, magnetic. Sub-rounded megacrysts of generally fresh olivine to 3cm in diameter Traces of pyrite associated with some of olivine megacrysts. Occasional irregularly outlined carbonate aggregations to 1.0cm in width - remnants of carbonate xenoliths ?

Kimberlite : Gneiss Ratio 1 : 1

(SAMPLE KW-124 AT 367.6)

371.5-378.3 m. GRANITIC GNEISS: pinkish granitic gneiss with some coarse pegmatitic veining.

378.3-386.8m KIMBERLITE/GNEISS BRECCIA: many xenoliths of grey biotite gneiss.

kimberlite:gneiss ratio 4:1

Band of coarse pegmatite breccia 380.5-381.5

(SAMPLES KW-125 AT 381.0. KW-126 AT 386.3)

386.8-395.3m BIOTITE GNEISS with gneissosity at 45 to 50 degrees to CA

Some penetration of gneiss by sub-vertical kimberlite veinlets at lower contact.

395.3-422.5 KIMBERLITE/GNEISS BRECCIA: xenoliths of biotite and hornblende Gneiss to 1m. in width.
Kimberlite:Gneiss Ratio 1:1

Kimberlite/Gneiss contacts sharp at varying angles.

Kimberlite contains many, very large olivine megacrysts (to 10mm in diameter)

(SAMPLES KW-127 AT 407.5, KW-128 AT 419.8)

422.5-432.5 :GRANITIC BRECCIA: Explosion Breccia - overall reddish pink in colour. A coarse breccia composed predominantly of sub-angular granitic clasts, up tp 10cm in diameter, together a lesser amount of clasts of dark grey, fine grained amphibolite.

Matrix is composed of finely comminuted fragment of the rocks forming the larger clasts. Not magnetic and only occasionally slightly calcareous

432.5-438.5 : GRANITIC BRECCIA as above traversed by some bands of fine grained kimberlite to 0.5m.
Kimberlite:breccia ratio 1:4

438.5-448.6: GRANITIC BRECCIA: As before

(SAMPLE KW-132 AT 440.2)

448.6-458.0: GRANITIC BRECCIA as above with some bands of fine grained kimberlite to 40 cms.wide.
Kimberlite:Breccia Ratio 1:2

458.0-472.0m: MIGMATITIC GNEISS: Typical biotite-hornblende gneiss with pegmatitic bands.
Gneissosity at 40 to 60 degrees.

Kyle Lk #1

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
185 Concession Street, Postal Bag 4300
Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365

2.16481

KWG Resources Inc.
Suite 200, 1750 Brimley Road
Scarborough, Ontario
CANADA M1P 4X7

March 31, 1995

RECEIVED
APR 30 1996
MINING LANDS BRANCH

Attention: Neil Novak

Re: Lakefield Research Project 8900-835 Batch #4

Dear Neil:

Lakefield Research has completed the caustic dissolution treatment of the twelve diamond drill core samples identified as 95-26-01 through 95-26-12.

Thirty-nine diamonds were identified from the nine of the twelve caustic dissolution residues; the highest total per sample was from 95-26-03 which contained ten diamonds. Of note, twenty-seven of the diamonds occurred as octahedra, twinned octahedra and fragmented octahedra with four diamonds occurring as dodecahedra (tetrahexahedra). Only four synthetic diamonds were observed, one each from four of the residues.

Procedures

Caustic Dissolution

The caustic dissolution treatment, directly uses diamond's property of high resistance to chemical attack. The procedure was developed, and refined to improve and streamline the process for routine diamond exploration samples, in response to the microdiamond losses attributed to standard attrition milling and also to reduce the weight of final concentrate.

The major advantage of the caustic dissolution process is the ability to recover, without breakage, all of the diamonds contained within the sample regardless of their particle size (+100 mesh), liberation size, quality or origin. The latter may account for actual diamond xenocrysts from the 'kimberlitic' material, and / or quality control stones added by Lakefield Research or by the client, and / or diamonds attributed to the exploratory core drilling equipment.

Diamond losses and modifications to the size distribution profile due to stone breakage are eliminated. A comparison of the efficiency of the caustic dissolution treatment and attrition milling flowsheets was undertaken using 'seeded' kimberlite samples. The results clearly indicated breakage and losses of microdiamonds from the milled samples; the normalized stone frequency (SPFK) and octacarat weights (OCPFK) typically were reduced by a factor of two to ten times. Anomalously high stone frequency data indicating breakage was reported; corresponding stone weights and microdiamond grades were invariably low.

Routine quality control tests are utilized to evaluate the efficiency of the caustic dissolution technique. As such, the samples are *blind* spiked, prior to the fusion step, with green diamonds typically measuring from 10 to 80 mesh; these stones have been neutron irradiated to produce the distinctive coloration.

Lakefield Research is not responsible for determination of the origin, quality or valuation of any diamonds recovered.

The caustic dissolution is followed by water and acid leaching, and magnetic separations will produce several fractions commonly containing relict indicator minerals and a non-magnetic fraction possibly containing microdiamonds.

The Lakefield Research facility has sixteen pottery kilns which can treat up to 8 kg each (using -3/8" to -2" crushed feed material) and are run in a 24 hour cycle. The use of smaller sample charges may be dictated by the abundance of carbonate minerals. Prior to the dissolution stage, a cursory mineralogical examination, by XRD and / or acid leach test (note effervescence), is carried out to identify any potentially deleterious phases. The carbonates, in particular, may exhibit a vigorous reaction to the hot caustic soda.

At the appropriate sodium hydroxide to sample ratio and optimum temperatures, the reaction is allowed to continue overnight. As depicted in the flowsheet, the process consists of dissolving the entire sample in a molten sodium hydroxide bath and typically recovering the +100 mesh residue.

After drying, the dissolution residue is split into three magnetic and non-magnetic fractions using the permanent magnet followed by the Frantz Barrier Magnetic Separator. Extreme care is required as the non-magnetic, diamondiferous, portion of the residue commonly amounts to no more than a few milligrams. The concentrate products are then submitted for microscopy.

Very few minerals survive the harsh attack; therefore weight reductions commonly exceed 99% of the initial sample weight. The high weight loss with optimum stone recovery is another major advantage of the caustic dissolution technique.

Only highly resistant minerals such as diamond, graphite, moissanite, zircon, chromite, kyanite, etc. survive the caustic attack. Of note, partially dissolved indicator minerals including colorless to opaque spinel, garnet, and ilmenite, as rounded relicts of original coarse grains, may occur in the dissolution residue.

Results

The data sheets are attached.

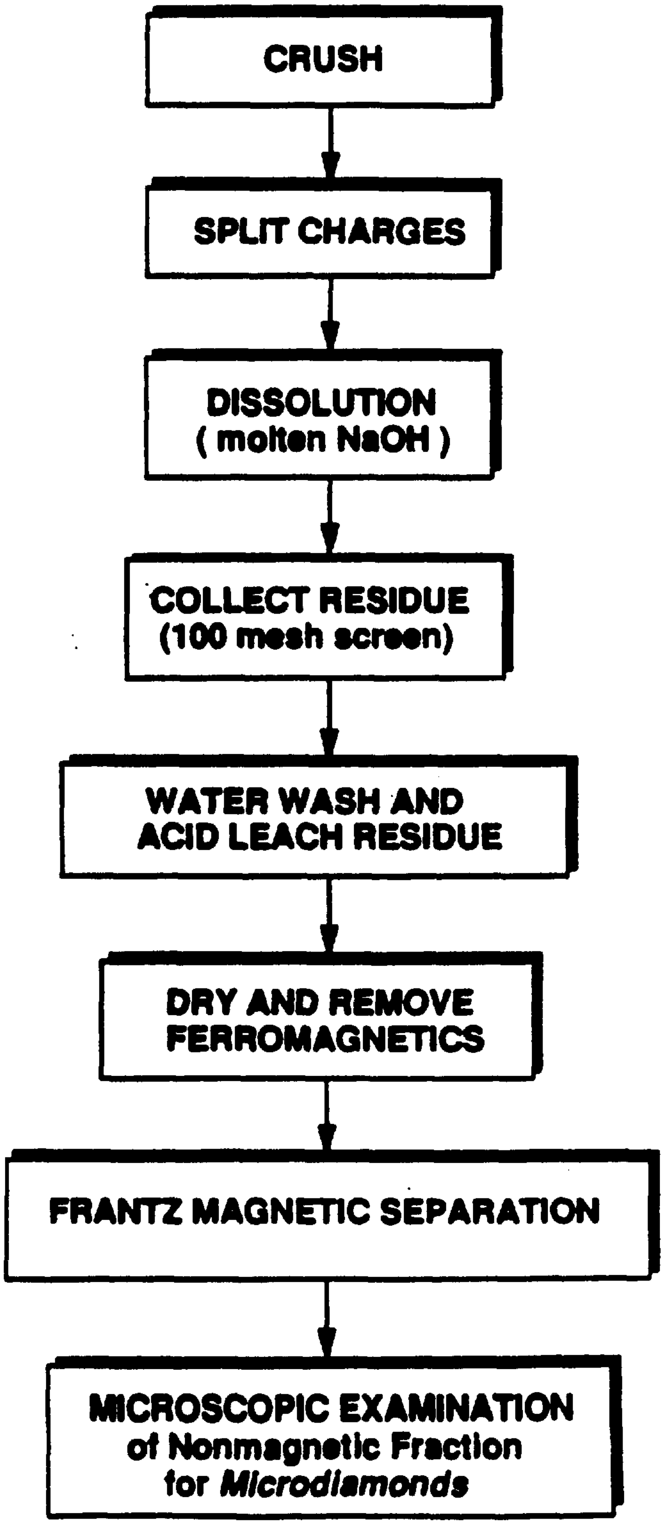
The residues will be forwarded to Scarborough under separate cover. The original invoice was forwarded to KWG Resources Inc., Montreal, Quebec.

If there are any questions, please call me.

Best regards
LAKEFIELD RESEARCH

Greg Davison
Senior Mineralogist
PH# 705-652-2019

DIAMOND FLOWSHEET 1. CAUSTIC DISSOLUTION



LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Box 4300, 185 Concession St., Lakefield, Ontario, KOL 2HO
Phone : 705-652-2000 - FAX : 705-652-6365

KWG Resources
630 Rene Levesque Blvd., Suite 3200
Montreal, Quebec, H3B 1S6

Attn : Mr. Neil Novak

Lakefield, March 2, 1995

Date Rec. : February 21, 1995
LR. Ref. : FEB3012.C95
Reference : LR9548891
Project : 8900-835 Batch #4

SUMMARY INFORMATION

No.	Sample ID	Batch ---	Wt kg	# Pours ---	#Diamonds ---
1	95-26-01	4	4.7	1	4
2	95-26-02	4	6.3	1	8
3	95-26-03	4	6.1	1	10
4	95-26-04	4	6.2	1	4
5	95-26-05	4	7.1	1	6
6	95-26-06	4	7.2	1	0
7	95-26-07	4	7.3	1	2
8	95-26-08	4	6.8	1	3
9	95-26-09	4	7.4	1	4
10	95-26-10	4	6.8	1	0
11	95-26-11	4	7.6	1	0
12	95-26-12	4	8.2	1	2

Greg Davison

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-01 **Batch # :** 4
Client : KWG Resources **Weight :** 4.7

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.39	0.28	0.27	54243	White	Clear	Fragment
0.19	0.17	0.17	10245	White	Clear	Fragment
0.17	0.17	0.15	7749	White	Clear	Octahedron
0.19	0.14	0.23	11551	Brown	Clear	Octahedron

Monday, February 27, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-01 **Batch # :** 4
Client : KWG Resources **Weight :** 4.7

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, minor oxides, and trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, and trace oxides.

Total Weight (octacarats):	83789	Number of Syndites:	1
Number of Diamonds:	4		
CPHT (Total sample Grade):	17		
SPFK (+ 100 mesh):	42		
OCPFK (+ 100 mesh):	891379		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-02 **Batch # :** 4
Client : KWG Resources **Weight :** 6.3

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.28	0.25	0.17	21955	White	Clear	Complex crystal
0.28	0.22	0.17	19516	White	Clear	Fragmented octahedron
0.19	0.19	0.16	11250	White	Clear	Octahedron
0.22	0.22	0.13	11939	White	Clear	Fragmented octahedron
0.22	0.17	0.07	4821	White	Clear	Fragment
0.39	0.37	0.29	75739	White	Clear	Twinned octahedron
0.25	0.22	0.17	17564	White	Clear	Fragmented octahedron
0.19	0.14	0.05	2511	White	Clear	Fragmented octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-02
Batch # : 4
Weight : 6.3

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, oxides, minor silicates (including trace garnet).
-10+100	Non-Magnetic	Rock fragments, silicates (clear, white, brown), trace oxides.

Total Weight (octacarats):	165297
Number of Diamonds:	8
CPHT (Total sample Grade):	26
SPFK (+ 100 mesh):	63
OCPFK (+ 100 mesh):	1311886

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-03 **Batch # :** 4
Client : KWG Resources **Weight :** 6.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.34	0.34	0.29	59925	White	Clear	Octahedron
0.28	0.22	0.18	20664	White	Clear	Fragmented octahedron
0.19	0.17	0.21	12656	White	Clear	Octahedron
0.37	0.28	0.20	37310	White	Clear	Fragmented dodecahedron
0.34	0.28	0.21	36162	White	Clear	Fragmented octahedron
0.34	0.19	0.12	14464	White	Clear	Fragmented dodecahedron
0.19	0.14	0.09	4520	White	Clear	Fragment
0.14	0.11	0.07	2009	White	Clear	Fragment
0.17	0.11	0.10	3444	White	Clear	Fragment
1.05	0.82	0.79	1216406	Brown	Clear	Fragment

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-03
Batch # : 4
Weight : 6.1

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, minor oxides, trace garnet.
-10+100	Non-Magnetic	Rock fragments, silicates (clear, white, brown), trace oxides, graphite, and sulphides.

Total Weight (octacarats): 1407562

Number of Syndites: 0

Number of Diamonds: 10

CPHT (Total sample Grade): 230

SPFK (+ 100 mesh): 81

OCPFK (+ 100 mesh): 11537400

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-04 **Batch # :** 4
Client : KWG Resources **Weight :** 6.2

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.62	0.42	0.46	217833	White	Clear	Fragmented twinned octahedron
0.25	0.19	0.08	7232	White	Clear	Fragmented octahedron
0.22	0.19	0.19	15268	White	Clear	Twinned octahedron
0.42	0.37	0.23	64359	White	Clear	Fragmented twinned octahedron

Monday, February 27, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Sample # : 95-26-04
Batch # : 4
Client : KWG Resources
Weight : 6.2

Caustic Residue:

Mesh	Fraction	Description
	Oversize	-----
+100	Magnetic	Oxides.
+100	Non-Magnetic	Silicates (clear, white, trace green, trace garnet), minor rock fragments, and trace moissanite.

Total Weight (octacarats):	304693
Number of Diamonds:	4
CPHT (Total sample Grade):	49
SPFK (+ 100 mesh):	32
OCPFK (+ 100 mesh):	2457206

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-05 **Batch # :** 4
Client : KWG Resources **Weight :** 7.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.28	0.25	0.24	30996	White	Clear	Slightly brownish fragmented octahedron
0.34	0.34	0.28	57859	White	Clear	Octahedron
0.51	0.42	0.28	108486	White	Clear	Fragmented dodecahedron
0.57	0.39	0.33	132594	White	Clear	Octahedron
0.31	0.22	0.18	22730	White	Clear	Fragmented octahedron
0.31	0.22	0.21	26518	White	Clear	Fragmented dodecahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: *705-652-2000* FAX: *705-652-6365*

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-05
Batch # : 4
Weight : 7.1

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, minor oxides, trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, and trace oxides.

Total Weight (octacarats):	379184
Number of Diamonds:	6
CPHT (Total sample Grade):	53
SPFK (+ 100 mesh):	42
OCPFK (+ 100 mesh):	2670312

Number of Syndites: 0

Authorizing Signature

Notes: *1 carat =* 10^8 *octacarats.*
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-06 **Batch # :** 4
Client : KWG Resources **Weight :** 7.2

Stone Dimension, mm			**Weight**	**Stone Description**		
X	**Y**	**Z**	**(octacarats)**	**Colour**	**Clarity**	**Morphology**

Caustic Residue:

Mesh	**Fraction**	**Description**
+10	Oversize	Rock fragments.
-10+100	Magnetic	Oxides, and rock fragments.
-10+100	Non-Magnetic	Silicates (clear, white, brown, green, trace garnet), trace sulphides.

Total Weight (octacarats): 0

Number of Syndites: 0

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-07 **Batch # :** 4
Client : KWG Resources **Weight :** 7.3

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.62	0.42	0.21	99445	White	Clear	Fragment
0.37	0.31	0.18	36936	White	Clear	Fragment

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-07 **Batch # :** 4
Client : KWG Resources **Weight :** 7.3

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, minor oxides, minor garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), trace rock fragments, and oxides.

Total Weight (octacarats):	136382
Number of Diamonds:	2
CPHT (Total sample Grade):	18
SPFK (+ 100 mesh):	13
OCPFK (+ 100 mesh):	934126

Number of Syndites: 0

GD

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-08 **Batch # :** 4
Client : KWG Resources **Weight :** 6.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.42	0.42	0.33	106548	White	Clear	Octahedron
0.34	0.28	0.22	37884	White	Clear	Complex crystal
0.31	0.28	0.17	26834	White	Clear	Fragmented twinned octahedron

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-08
Batch # : 4
Weight : 6.8

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, and minor oxides.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, trace oxides, and graphite.

Total Weight (octacarats): 171267

Number of Syndites: 0

Number of Diamonds: 3

CPHT (Total sample Grade): 25

SPFK (+ 100 mesh): 22

OCPFK (+ 100 mesh): 1259318

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-09 **Batch # :** 4
Client : KWG Resources **Weight :** 7.4

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.59	0.42	0.32	144648	White	Clear	Twinned octahedron
0.42	0.39	0.28	84378	White	Clear	Fragmented twinned octahedron
0.31	0.22	0.20	25256	White	Clear	Fragment
0.19	0.19	0.14	9844	White	Clear	Octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client: KWG Resources
Sample # : 95-26-09
Batch # : 4
Weight : 7.4

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, and minor oxides.
-10+100	Non-Magnetic	Silicates (clear, white, brown, green), minor rock fragments, trace oxides, and graphite.

Total Weight (octacarats):	264126
Number of Diamonds:	4
CPHT (Total sample Grade):	35
SPFK (+ 100 mesh):	27
OCPFK (+ 100 mesh):	1784635

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-10
Batch # : 4
Weight : 6.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, minor oxides, and trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, trace oxides.

Total Weight (octacarats): 0

Number of Syndites: 0

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-11 **Batch # :** 4
Client : KWG Resources **Weight :** 7.6

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, mica, minor oxides, and trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, trace oxides.

Total Weight (octacarats): 0 Number of Syndites: 1

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

69

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-12 **Batch # :** 4
Client : KWG Resources **Weight :** 8.2

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.31	0.31	0.23	39936	White	Clear	Octahedron
0.17	0.17	0.12	6199	White	Clear	Fragmented twinned octahedron

Wednesday, March 01, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-12
Batch # : 4
Weight : 8.2

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, and trace oxides.
-10+100	Non-Magnetic	Silicates (clear, white, brown, green), trace rock fragments, and oxides.

Total Weight (octacarats):	46135
Number of Diamonds:	2
CPHT (Total sample Grade):	5
SPFK (+ 100 mesh):	12
OCPFK (+ 100 mesh):	281312

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
185 Concession Street, Postal Bag 4300
Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365

KWG Resources Inc.
Suite 200, 1750 Brimley Road
Scarborough, Ontario
CANADA M1P 4X7

March 31, 1995

RECEIVED
APR 30 1996
MINING LANDS BRANCH

Attention: Neil Novak

Re: Lakefield Research Project 8900-835 Batch #5

Dear Neil:

Lakefield Research has completed the caustic dissolution treatment of the thirteen diamond drill core samples identified as 95-26-13 through 95-26-25.

Seventy-one diamonds were identified from the eleven of the thirteen caustic dissolution residues; the highest total per sample was from 95-26-20 and 95-26-25 which each contained twelve diamonds. Of note, forty-six of the diamonds occurred as octahedra, twinned octahedra and fragmented octahedra with five diamonds occurring as dodecahedra (tetrahexahedra). Only eight synthetic diamonds were observed from six of the residues.

Procedures

Caustic Dissolution

The caustic dissolution treatment, directly uses diamond's property of high resistance to chemical attack. The procedure was developed, and refined to improve and streamline the process for routine diamond exploration samples, in response to the microdiamond losses attributed to standard attrition milling and also to reduce the weight of final concentrate.

LAKEFIELD RESEARCH CHILE SA., Los Ebanistas 8585, Parque Industrial La Reina, Santiago, Chile
Fono 56-2-273-0487 Facsimil 56-2-273-0250

The major advantage of the caustic dissolution process is the ability to recover, without breakage, all of the diamonds contained within the sample regardless of their particle size (+100 mesh), liberation size, quality or origin. The latter may account for actual diamond xenocrysts from the 'kimberlitic' material, and / or quality control stones added by Lakefield Research or by the client, and / or diamonds attributed to the exploratory core drilling equipment.

Diamond losses and modifications to the size distribution profile due to stone breakage are eliminated. A comparison of the efficiency of the caustic dissolution treatment and attrition milling flowsheets was undertaken using 'seeded' kimberlite samples. The results clearly indicated breakage and losses of microdiamonds from the milled samples; the normalized stone frequency (SPFK) and octacarat weights (OCPFK) typically were reduced by a factor of two to ten times. Anomalously high stone frequency data indicating breakage was reported; corresponding stone weights and microdiamond grades were invariably low.

Routine quality control tests are utilized to evaluate the efficiency of the caustic dissolution technique. As such, the samples are *blind* spiked, prior to the fusion step, with green diamonds typically measuring from 10 to 80 mesh; these stones have been neutron irradiated to produce the distinctive coloration.

Lakefield Research is not responsible for determination of the origin, quality or valuation of any diamonds recovered.

The caustic dissolution is followed by water and acid leaching, and magnetic separations will produce several fractions commonly containing relict indicator minerals and a non-magnetic fraction possibly containing microdiamonds.

The Lakefield Research facility has sixteen pottery kilns which can treat up to 8 kg each (using -3/8" to -2” crushed feed material) and are run in a 24 hour cycle. The use of smaller sample charges may be dictated by the abundance of carbonate minerals. Prior to the dissolution stage, a cursory mineralogical examination, by XRD and / or acid leach test (note effervescence), is carried out to identify any potentially deleterious phases. The carbonates, in particular, may exhibit a vigorous reaction to the hot caustic soda.

At the appropriate sodium hydroxide to sample ratio and optimum temperatures, the reaction is allowed to continue overnight. As depicted in the flowsheet, the process consists of dissolving the entire sample in a molten sodium hydroxide bath and typically recovering the +100 mesh residue.

After drying, the dissolution residue is split into three magnetic and non-magnetic fractions using the permanent magnet followed by the Frantz Barrier Magnetic Separator. Extreme care is required as the non-magnetic, diamondiferous, portion of the residue commonly amounts to no more than a few milligrams. The concentrate products are then submitted for microscopy.

Very few minerals survive the harsh attack; therefore weight reductions commonly exceed 99% of the initial sample weight. The high weight loss with optimum stone recovery is another major advantage of the caustic dissolution technique.

Only highly resistant minerals such as diamond, graphite, moissanite, zircon, chromite, kyanite, etc. survive the caustic attack. Of note, partially dissolved indicator minerals including colorless to opaque spinel, garnet, and ilmenite, as rounded relicts of original coarse grains, may occur in the dissolution residue.

Results

The data sheets are attached.

The residues will be forwarded to Scarborough under separate cover. The original invoice was forwarded to KWG Resources Inc., Montreal, Quebec.

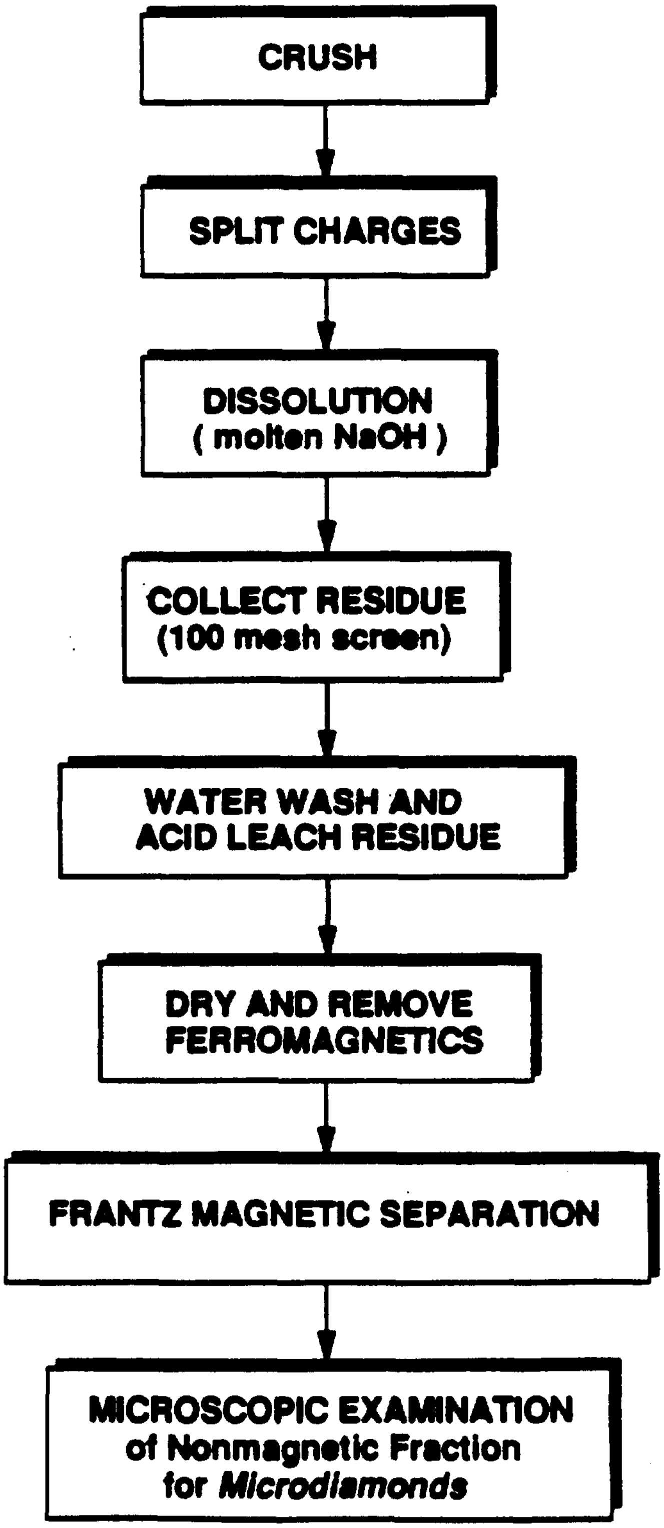
If there are any questions, please call me.

Best regards
LAKEFIELD RESEARCH

Greg.

Greg Davison
Senior Mineralogist
PH# 705-652-2019

DIAMOND FLOWSHEET 1. CAUSTIC DISSOLUTION



LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Box 4300, 185 Concession St., Lakefield, Ontario, KOL 2HO
Phone : 705-652-2038 - FAX : 705-652-6441

KWG Resources
630 Rene Levesque Blvd., Suite 3200
Montreal, Quebec, H3B 1S6

Attn : Mr. Neil Novak

Lakefield, March 23, 1995

Date Rec. : February 24, 1995
LR. Ref. : FEB3013.C95
Reference : LR9548961
Project : 8900-835 Batch #5

SUMMARY INFORMATION

No.	Sample ID	Batch ---	Wt kg	# Pours ---	#Diamonds ---
1	P5-95-26-13	5	14.6	2	0
2	P6-95-26-14	5	15.5	2	5
3	P7-95-26-15	5	14.1	2	3
4	P8-95-26-16	5	13.8	2	5
5	P9-95-26-17	5	15.1	2	4
6	P10-95-26-18	5	15.4	2	0
7	P11-95-26-19	5	15.3	2	2
8	P12-95-26-20	5	14.1	2	12
9	P13-95-26-21	5	16.0	2	5
10	P14-95-26-22	5	15.2	2	8
11	P15-95-26-23	5	13.8	2	4
12	P16-95-26-24	5	14.8	2	11
13	P17-95-26-25	5	15.0	2	12

Greg.

Greg Davison

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-13 **Batch # :** 5
Client : KWG Resources **Weight :** 14.6

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, brown, mica, trace garnet), rock fragments, and minor oxides.

Total Weight (octacarats): 0 Number of Syndites: 1

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-14
Batch # : 5
Weight : 15.5

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.22	0.17	0.17	11709	White	Clear	Dodecahedron
0.59	0.42	0.36	162729	White	Clear	Twinned octahedron
0.17	0.17	0.17	8782	White	Clear	Dodecahedron
0.22	0.19	0.14	11250	White	Clear	Dodecahedron
0.25	0.22	0.20	20664	White	Clear	Dodecahedron

Tuesday, March 21, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-14 **Batch # :** 5
Client : KWG Resources **Weight :** 15.5

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	-----
-10+100	Non-Magnetic	Rock fragments and oxides, mica, minor other silicates (clear, white, green, brown).

Total Weight (octacarats): 215135 Number of Syndites: 1

Number of Diamonds: 5

CPHT (Total sample Grade): 13

SPFK (+ 100 mesh): 16

OCPFK (+ 100 mesh): 693984

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-15 **Batch # :** 5
Client : KWG Resources **Weight :** 14.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.19	0.17	0.18	10848	White	Clear	Octahedron
0.31	0.25	0.21	29833	White	Clear	Octahedron
0.25	0.25	0.15	17435	White	Clear	Octahedron

Tuesday, March 21, 1995

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Sample # : 95-26-15
Batch # : 5
Client : KWG Resources
Weight : 14.1

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	-----
-10+100	Non-Magnetic	Oxides, silicates (clear, white, brown, green), trace rock fragments.

Total Weight (octacarats):	58117
Number of Diamonds:	3
CPHT (Total sample Grade):	4
SPFK (+ 100 mesh):	10
OCPFK (+ 100 mesh):	206090

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-16
Batch # : 5
Weight : 13.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.71	0.65	0.60	495075	White	Clear	Octahedron
0.45	0.31	0.33	83344	White	Clear	Fragmented twinned octahedron
0.28	0.19	0.19	19085	White	Clear	Fragmented octahedron
0.11	0.11	0.13	2984	White	Clear	Octahedron
0.19	0.14	0.06	3013	White	Clear	Fragment

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-16
Batch # : 5
Weight : 13.8

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, minor oxides, and trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, borwn), minor rock fragments, trace oxides, and graphite.

Total Weight (octacarats):	603503
Number of Diamonds:	5
CPHT (Total sample Grade):	43
SPFK (+ 100 mesh):	18
OCPFK (+ 100 mesh):	2186607

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-17 **Batch # :** 5
Client : KWG Resources **Weight :** 15.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.59	0.34	0.34	122950	White	Clear	Complex crystal
0.22	0.19	0.22	17679	White	Clear	Octahedron
0.25	0.19	0.21	18985	White	Clear	Octahedron
0.59	0.57	0.42	253134	Grey	Milky	Fragmented cube

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-17
Batch # : 5
Weight : 15.1

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, oxides, and trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, and trace oxides.

Total Weight (octacarats):	412749
Number of Diamonds:	4
CPHT (Total sample Grade):	27
SPFK (+ 100 mesh):	13
OCPFK (+ 100 mesh):	1366718

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-18 **Batch # :** 5
Client : KWG Resources **Weight :** 15.4

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, brown, green, trace garnet), rock fragments, and minor oxides.

Total Weight (octacarats): 0 Number of Syndites: 1

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Friday, March 24, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-19 **Batch # :** 5
Client : KWG Resources **Weight :** 15.3

Stone Dimension, mm			Weight	Stone Description		
X	**Y**	**Z**	**(octacarats)**	**Colour**	**Clarity**	**Morphology**
0.45	0.39	0.30	96432	White	Clear	Complex crystal
0.37	0.28	0.20	37310	White	Clear	Complex crystal

Tuesday, March 21, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-19
Batch # : 5
Weight : 15.3

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Oxides, minor rock fragments and silicates, including trace garnet.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor rock fragments, trace oxides, and sulphides.

Total Weight (octacarats):	133742
Number of Diamonds:	2
CPHT (Total sample Grade):	8
SPFK (+ 100 mesh):	6
OCPFK (+ 100 mesh):	437065

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-20 **Batch # :** 5
Client : KWG Resources **Weight :** 14.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.28	0.25	0.25	32287	White	Clear	Twinned octahedron
0.28	0.25	0.20	25830	White	Clear	Twinned octahedron
0.31	0.28	0.23	36305	White	Clear	Twinned octahedron
0.62	0.45	0.19	95972	White	Clear	Complex crystal
0.19	0.14	0.15	7533	White	Clear	Octahedron
0.22	0.19	0.21	16875	White	Clear	Fragmented octahedron
0.31	0.28	0.23	36305	White	Clear	Octahedron
0.42	0.34	0.26	67158	White	Clear	Twinned octahedron with graphite
0.28	0.22	0.26	29848	White	Clear	Fragment
0.48	0.45	0.33	128805	White	Clear	Octahedron
0.54	0.54	0.33	170951	White	Clear	Fragmented octahedron
0.28	0.28	0.14	20090	White	Clear	Fragmented octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-20
Batch # : 5
Weight : 14.1

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, brown, green), oxides and rock fragments.

Total Weight (octacarats):	667963
Number of Diamonds:	12
CPHT (Total sample Grade):	47
SPFK (+ 100 mesh):	42
OCPFK (+ 100 mesh):	2368665

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination
of the origin, quality or valuation of any diamonds recovered.

Tuesday, March 21, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-21 **Batch # :** 5
Client : KWG Resources **Weight :** 16.0

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.76	0.39	0.22	119334	White	Clear	Fragmented octahedron
0.79	0.51	0.16	115718	White	Clear	Fragmented octahedron
0.59	0.59	0.28	177193	White	Clear	Fragmented complex crystal
0.57	0.39	0.19	76342	White	Clear	Fragmented octahedron
0.65	0.57	0.26	171626	White	Clear	Fragmented octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-21
Batch # : 5
Weight : 16.0

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, brown, green, mica, minor garnet), oxides, and trace rock fragments.

Total Weight (octacarats):	660214
Number of Diamonds:	5
CPHT (Total sample Grade):	41
SPFK (+ 100 mesh):	15
OCPFK (+ 100 mesh):	2063171

Number of Syndites: 2

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-22 **Batch # :** 5
Client : KWG Resources **Weight :** 15.2

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.88	0.71	0.69	767366	White	Clear	Octahedron
0.28	0.28	0.18	25830	White	Clear	Fragmented octahedron
0.34	0.25	0.20	30996	White	Clear	Fragmented octahedron
0.22	0.22	0.19	17449	White	Clear	Glassy octahedron
0.25	0.22	0.21	21697	White	Clear	Glassy octahedron
0.25	0.22	0.19	19630	White	Clear	Octahedron
0.42	0.25	0.28	54243	White	Clear	Twinned octahedron
0.62	0.51	0.39	221621	White	Clear	Fragmented twinned octahedron

Tuesday, March 21, 1995

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-22 **Batch # :** 5
Client : KWG Resources **Weight :** 15.2

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, green, trace garnet), minor oxides and rock fragments.

Total Weight (octacarats):	1158834
Number of Diamonds:	8
CPHT (Total sample Grade):	76
SPFK (+ 100 mesh):	26
OCPFK (+ 100 mesh):	3811954

Number of Syndites: 2

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-23 **Batch # :** 5
Client : KWG Resources **Weight :** 13.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.57	0.37	0.31	115661	White	Clear	Octahedron
0.31	0.11	0.14	8839	White	Clear	Fragmented octahedron
0.25	0.22	0.19	19630	White	Clear	Octahedron
0.19	0.11	0.16	6428	White	Clear	Octahedron

Tuesday, March 21, 1995

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-23
Batch # : 5
Weight : 13.8

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, green, trace garnet), minor oxides and rock fragments.

Total Weight (octacarats):	150560
Number of Diamonds:	4
CPHT (Total sample Grade):	10
SPFK (+ 100 mesh):	14
OCPFK (+ 100 mesh):	545507
Number of Syndites:	1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-24 **Batch # :** 5
Client : KWG Resources **Weight :** 14.8

Stone Dimension, mm			Weight (octacarats)	Stone Description		
X	Y	Z		Colour	Clarity	Morphology
0.57	0.28	0.23	66010	White	Clear	Fragmented complex crystal
0.22	0.17	0.15	10332	White	Clear	Fragmented octahedron
0.34	0.25	0.14	21697	White	Clear	Fragment
0.22	0.17	0.12	8265	White	Clear	Fragment
0.34	0.31	0.21	39778	White	Clear	Octahedron
0.28	0.28	0.25	35875	White	Clear	Dodecahedron
0.42	0.22	0.21	36162	White	Clear	Fragmented complex crystal
0.14	0.14	0.13	4663	White	Clear	Fragment
0.39	0.22	0.21	33751	Brown	Clear	Fragmented complex crystal
0.94	0.59	0.53	527061	Off white	Milky	Fragment
0.22	0.17	0.15	10332	Off white	Milky	Fragment

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-24
Batch # : 5
Weight : 14.8

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Garnets.
-10+100	Magnetic	Garnet, oxides, and trace rock fragments.
-10+100	Non-Magnetic	Silicates (clear, white, brown,blue, garnet), trace oxides, and graphite.

Total Weight (octacarats):	793928
Number of Diamonds:	11
CPHT (Total sample Grade):	53
SPFK (+ 100 mesh):	37
OCPFK (+ 100 mesh):	2682189

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-25
Batch # : 5
Weight : 15.0

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.59	0.37	0.28	109691	White	Clear	Fragmented octahedron
0.39	0.34	0.24	57859	White	Clear	Fragment
0.28	0.25	0.15	19372	White	Clear	Fragment
0.88	0.71	0.12	133455	White	Clear	Macle
0.22	0.19	0.21	16875	White	Clear	Fragmented octahedron
0.34	0.25	0.17	26346	White	Clear	Fragmented twinned octahedron
0.34	0.28	0.27	46494	White	Clear	Twinned octahedron
0.28	0.19	0.18	18081	White	Clear	Fragmented octahedron
0.51	0.28	0.26	67158	White	Clear	Fragment
0.22	0.19	0.17	13661	White	Clear	Fragmented octahedron
0.22	0.19	0.22	17679	White	Clear	Octahedron
0.19	0.17	0.12	7232	White	Clear	Octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-25 **Batch # :** 5
Client : KWG Resources **Weight :** 15.0

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	----
-10+100	Non-Magnetic	Oxides, silicates (clear, white, brown, green, trace garnet), minor rock fragments, and trace graphite.

Total Weight (octacarats):	533906	Number of Syndites:	0
Number of Diamonds:	12		
CPHT (Total sample Grade):	35		
SPFK (+ 100 mesh):	40		
OCPFK (+ 100 mesh):	1779687		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-27
Batch # : 6
Weight : 16.2

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Oxides and rock fragments.
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor oxides, and rock fragments.

Total Weight (octacarats):	4581050
Number of Diamonds:	20
CPHT (Total sample Grade):	282
SPFK (+ 100 mesh):	61
OCPFK (+ 100 mesh):	14139046

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
185 Concession Street, Postal Bag 4300
Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365

KWG Resources Inc.
Suite 200, 1750 Brimley Road
Scarborough, Ontario
CANADA M1P 4X7

March 31, 1995

Attention: Neil Novak

Re: Lakefield Research Project 8900-835 Batch #6

Dear Neil:

Lakefield Research has completed the caustic dissolution treatment of the thirteen diamond drill core samples identified as 95-26-26 through 95-26-38.

One hundred and ninety-one diamonds were identified from the twelve of the thirteen caustic dissolution residues; the highest total per sample was from 95-26-33 which contained eighty-five diamonds. Of note, one hundred and fifty-two of the diamonds occurred as octahedra, twinned octahedra and fragmented octahedra with only one diamond occurring as a dodecahedron (tetrahexahedron). Only nine synthetic diamonds were observed from a total of six of the residues; one from each of five residues and four from 95-26-34.

Procedures

Caustic Dissolution

The caustic dissolution treatment, directly uses diamond's property of high resistance to chemical attack. The procedure was developed, and refined to improve and streamline the process for routine diamond exploration samples, in response to the microdiamond losses attributed to standard attrition milling and also to reduce the weight of final concentrate.

The major advantage of the caustic dissolution process is the ability to recover, without breakage, all of the diamonds contained within the sample regardless of their particle size (+100 mesh), liberation size, quality or origin. The latter may account for actual diamond xenocrysts from the 'kimberlitic' material, and / or quality control stones added by Lakefield Research or by the client, and / or diamonds attributed to the exploratory core drilling equipment.

Diamond losses and modifications to the size distribution profile due to stone breakage are eliminated. A comparison of the efficiency of the caustic dissolution treatment and attrition milling flowsheets was undertaken using 'seeded' kimberlite samples. The results clearly indicated breakage and losses of microdiamonds from the milled samples; the normalized stone frequency (SPFK) and octacarat weights (OCPFK) typically were reduced by a factor of two to ten times. Anomalously high stone frequency data indicating breakage was reported; corresponding stone weights and microdiamond grades were invariably low.

Routine quality control tests are utilized to evaluate the efficiency of the caustic dissolution technique. As such, the samples are *blind* spiked, prior to the fusion step, with green diamonds typically measuring from 10 to 80 mesh; these stones have been neutron irradiated to produce the distinctive coloration.

Lakefield Research is not responsible for determination of the origin, quality or valuation of any diamonds recovered.

The caustic dissolution is followed by water and acid leaching, and magnetic separations will produce several fractions commonly containing relict indicator minerals and a non-magnetic fraction possibly containing microdiamonds.

The Lakefield Research facility has sixteen pottery kilns which can treat up to 8 kg each (using -3/8" to -2" crushed feed material) and are run in a 24 hour cycle. The use of smaller sample charges may be dictated by the abundance of carbonate minerals. Prior to the dissolution stage, a cursory mineralogical examination, by XRD and / or acid leach test (note effervescence), is carried out to identify any potentially deleterious phases. The carbonates, in particular, may exhibit a vigorous reaction to the hot caustic soda.

At the appropriate sodium hydroxide to sample ratio and optimum temperatures, the reaction is allowed to continue overnight. As depicted in the flowsheet, the process consists of dissolving the entire sample in a molten sodium hydroxide bath and typically recovering the +100 mesh residue.

After drying, the dissolution residue is split into three magnetic and non-magnetic fractions using the permanent magnet followed by the Frantz Barrier Magnetic Separator. Extreme care is required as the non-magnetic, diamondiferous, portion of the residue commonly amounts to no more than a few milligrams. The concentrate products are then submitted for microscopy.

Very few minerals survive the harsh attack; therefore weight reductions commonly exceed 99% of the initial sample weight. The high weight loss with optimum stone recovery is another major advantage of the caustic dissolution technique.

Only highly resistant minerals such as diamond, graphite, moissanite, zircon, chromite, kyanite, etc. survive the caustic attack. Of note, partially dissolved indicator minerals including colorless to opaque spinel, garnet, and ilmenite, as rounded relicts of original coarse grains, may occur in the dissolution residue.

Results

The data sheets are attached.

The residues will be forwarded to Scarborough under separate cover. The original invoice was forwarded to KWG Resources Inc., Montreal, Quebec.

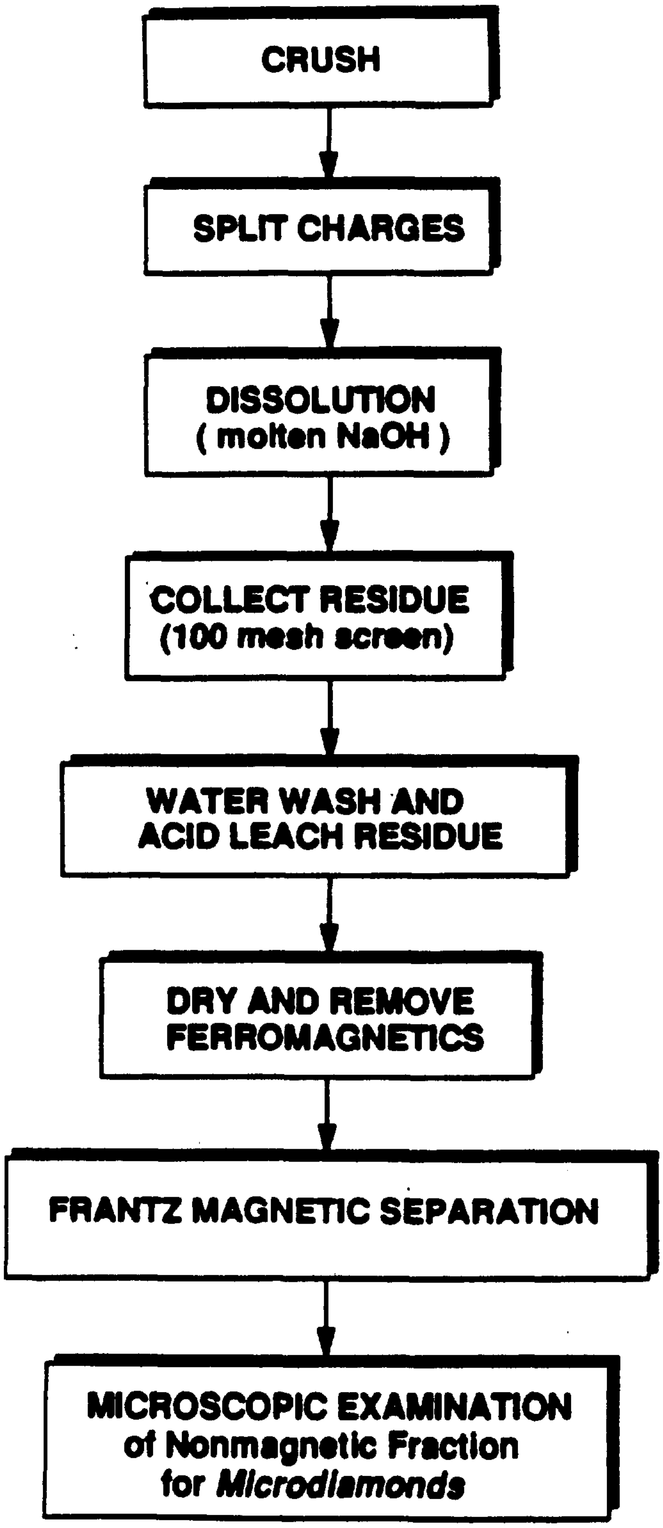
If there are any questions, please call me.

Best regards
LAKEFIELD RESEARCH

Greg

Greg Davison
Senior Mineralogist
PH# 705-652-2019

DIAMOND FLOWSHEET 1. CAUSTIC DISSOLUTION



LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Box 4300, 185 Concession St., Lakefield, Ontario, KOL 2HO
Phone : 705-652-2038 - FAX : 705-652-6441

KWG Resources
630 Rene Levesque Blvd., Suite 3200
Montreal, Quebec, H3B 1S6

Attn : Mr. Neil Novak
416-321-1405

Lakefield, March 30, 1995

Date Rec. : March 6, 1995
LR. Ref. : MAR3002.C95
Reference : LR9549056
Project : 8900-835 Batch #6

SUMMARY INFORMATION

No.	Sample ID	Batch	Wt	# Pours	#Diamonds
		---	kg	---	---
1	95-26-26	6	16.2	2	4
2	95-26-27	6	15.4	2	20
3	95-26-28	6	15.2	2	4
4	95-26-29	6	14.6	2	38
5	95-26-30	6	14.4	2	7
6	95-26-31	6	16.8	3	7
7	95-26-32	6	8.5	1	5
8	95-26-33	6	15.8	2	85
9	95-26-34	6	11.4	2	3
10	95-26-35	6	16.1	2	8
11	95-26-36	6	15.0	2	0
12	95-26-37	6	16.0	2	1
13	95-26-38	6	13.7	2	9

Greg Davison

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-26
Batch # : 6
Weight : 15.5

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.54	0.37	0.28	99244	White	Clear	Fragmented twinned octahedron
0.74	0.57	0.49	365638	White	Clear	Fragmented octahedron
0.17	0.14	0.12	5166	White	Clear	Octahedron
0.14	0.11	0.15	4305	White	Clear	Octahedron

Friday, March 31, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-26 **Batch # :** 6
Client : KWG Resources **Weight :** 15.5

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	-----
- 10 + 100	Non-Magnetic	Oxides, silicates (clear, white, brown, green, garnet), trace rock fragments.

Total Weight (octacarats):	474353
Number of Diamonds:	4
CPHT (Total sample Grade):	30
SPFK (+ 100 mesh):	12
OCPFK (+ 100 mesh):	1530172

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination
of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-27
Batch # : 6
Weight : 16.2

Stone Dimension, mm			Weight (octacarats)	Stone Description		
X	Y	Z		Colour	Clarity	Morphology
0.57	0.51	0.36	185976	White	Clear	Fragmented complex crystal
0.45	0.37	0.18	53726	White	Clear	Fragment
0.51	0.48	0.33	144906	White	Clear	Fragmented twinned octahedron
0.28	0.22	0.19	21812	White	Clear	Fragmented twinned octahedron
0.28	0.19	0.18	18081	White	Clear	Fragmented complex crystal
0.19	0.17	0.15	9040	White	Clear	Fragment
0.19	0.19	0.15	10547	White	Clear	Fragmented octahedron with graphite
0.31	0.28	0.31	48933	White	Clear	Fragmented octahedron with graphite
0.22	0.19	0.21	16875	White	Clear	Octahedron with graphite
0.34	0.19	0.20	24108	White	Clear	Fragmented twinned octahedron
0.22	0.19	0.16	12857	White	Clear	Fragmented octahedron
0.17	0.17	0.13	6715	White	Clear	Fragmented octahedron
0.28	0.22	0.16	18368	White	Clear	Fragment
0.19	0.14	0.15	7533	White	Clear	Fragmented octahedron
0.42	0.17	0.18	23247	White	Clear	Fragment
0.28	0.22	0.24	27552	White	Clear	Fragmented octahedron
0.19	0.19	0.15	10547	White	Clear	Fragmented twinned octahedron
0.28	0.19	0.13	13058	White	Clear	Fragmented twinned octahedron with graphite
1.39	0.99	0.98	2411804	Brown	Clear	Fragmented octahedron
1.36	1.14	0.55	1515360	Brown	Clear	Fragmented dodecahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-28 **Batch # :** 6
Client : KWG Resources **Weight :** 15.6

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.39	0.28	0.23	46207	White	Clear	Fragmented complex crystal
1.14	0.39	0.47	377692	White	Clear	Twinned octahedron
1.05	0.57	0.57	605283	White	Clear	Twinned octahedron
0.48	0.42	0.29	106118	White	Clear	Twinned octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Sample # : 95-26-28
Batch # : 6
Client : KWG Resources
Weight : 15.6

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-----	Magnetic	-----
-10+100	Non-Magnetic	Silicates (clear, white, brown, green, trace garnet), oxides, and trace rock fragments.

Total Weight (octacarats):	1135300
Number of Diamonds:	4
CPHT (Total sample Grade):	72
SPFK (+ 100 mesh):	12
OCPFK (+ 100 mesh):	3638782

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-29 **Batch # :** 6
Client : KWG Resources **Weight :** 14.6

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.99	0.91	0.83	1333976	White	Clear	Octahedron with graphite
0.57	0.39	0.33	132594	White	Clear	Fragmented complex crystal
0.45	0.37	0.31	92528	White	Clear	Fragmented octahedron
0.34	0.25	0.30	46494	White	Clear	Octahedron
0.22	0.17	0.15	10332	White	Clear	Fragmented octahedron
0.25	0.25	0.24	27896	White	Clear	Octahedron
0.25	0.19	0.30	27121	White	Clear	Octahedron
0.42	0.39	0.33	99445	White	Clear	Octahedron with graphite
0.31	0.22	0.22	27781	White	Clear	Fragmented octahedron
0.14	0.14	0.15	5381	White	Clear	Octahedron
0.31	0.25	0.23	32674	White	Clear	Octahedron
0.34	0.28	0.13	22386	White	Clear	Fragment
0.28	0.19	0.21	21094	White	Clear	Octahedron
0.28	0.25	0.19	24538	White	Clear	Fragmented octahedron
0.25	0.25	0.24	27896	White	Clear	Octahedron
0.25	0.17	0.12	9298	White	Clear	Fragmented octahedron
0.19	0.17	0.17	10245	White	Clear	Fragmented twinned octahedron
0.31	0.31	0.22	38199	White	Clear	Fragmented octahedron
0.17	0.14	0.16	6888	White	Clear	Octahedron
0.19	0.17	0.16	9643	White	Clear	Fragmented octahedron
0.34	0.22	0.27	37195	White	Clear	Octahedron
0.25	0.22	0.17	17564	White	Clear	Twinned octahedron
0.28	0.22	0.20	22960	White	Clear	Fragmented twinned octahedron
0.22	0.14	0.16	9184	White	Clear	Fragment
0.31	0.25	0.25	35516	White	Clear	Fragmented twinned octahedron
0.82	0.54	0.47	371621	White	Clear	Fragmented octahedron
0.14	0.14	0.13	4663	White	Clear	Octahedron
0.62	0.62	0.49	340324	White	Clear	Octahedron with graphite
0.22	0.17	0.14	9643	White	Clear	Octahedron
0.19	0.17	0.18	10848	White	Clear	Octahedron
0.25	0.14	0.15	9686	White	Clear	Fragmented twinned octahedron
0.25	0.19	0.14	12656	White	Clear	Fragmented octahedron
0.57	0.17	0.19	32718	White	Clear	Fragmented complex crystal
0.94	0.74	0.76	935734	Brown	Clear	Very pale pinky/brown fragmented twinned octahedron
0.39	0.22	0.19	30536	Brown	Clear	Fragment
0.59	0.42	0.28	126567	Brown	Clear	Fragmented octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-29
Batch # : 6
Weight : 14.6

0.71	0.39	0.35	175787	Brown	Clear	Fragmented complex crystal
0.51	0.28	0.26	67158	Brown	Clear	Fragmented complex crystal

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
	Magnetic	-----
- 10+100	Non-Magnetic	Mica, rock fragments, oxides, and minor silicates (clear, white, brown, trace garnet).

Total Weight (octacarats):	4256784
Number of Diamonds:	38
CPHT (Total sample Grade):	291
SPFK (+ 100 mesh):	130
OCPFK (+ 100 mesh):	14578027

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination
of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-30 **Batch # :** 6
Client : KWG Resources **Weight :** 14.4

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.68	0.51	0.42	260366	White	Clear	Twinned octahedron
0.37	0.22	0.10	14924	White	Clear	Fragment
0.19	0.14	0.21	10547	White	Clear	Octahedron
0.17	0.11	0.15	5166	White	Clear	Octahedron
0.19	0.19	0.16	11250	White	Clear	Octahedron
0.37	0.19	0.12	15670	White	Clear	Fragment
0.48	0.34	0.23	67330	White	Clear	Fragment

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project:	8900-835	**Sample # :**	95-26-30	**Batch # :**	6
Client :	KWG Resources			**Weight :**	14.4

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Oxides, rock fragments, silicates (including mica).
-10+100	Non-Magnetic	Silicates (clear, white, brown), minor oxides, and trace sulphides.

Total Weight (octacarats):	385254	Number of Syndites:	0
Number of Diamonds:	7		
CPHT (Total sample Grade):	26		
SPFK (+ 100 mesh):	24		
OCPFK (+ 100 mesh):	1337689		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-31 **Batch # :** 6
Client : KWG Resources **Weight :** 16.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.25	0.22	0.13	13431	White	Clear	Fragment
0.31	0.25	0.27	38357	White	Clear	Twinned octahedron
0.19	0.14	0.17	8538	White	Clear	Octahedron
0.31	0.28	0.25	39462	White	Clear	Fragmented octahedron
0.25	0.17	0.14	10848	White	Clear	Octahedron
0.31	0.25	0.24	34095	White	Clear	Fragmented octahedron with graphite
0.19	0.19	0.09	6328	White	Clear	Fragmented octahedron with graphite

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-31 **Batch # :** 6
Client : KWG Resources **Weight :** 16.8

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Oxides, rock fragments, mica, and trace other silicates.
-10+100	Non-Magnetic	Silicates (clear, white, brown), and trace oxides.

Total Weight (octacarats):	151062	Number of Syndites:	1
Number of Diamonds:	7		
CPHT (Total sample Grade):	8		
SPFK (+ 100 mesh):	20		
OCPFK (+ 100 mesh):	449590		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination
of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-32
Batch # : 6
Weight : 8.5

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.34	0.25	0.29	44944	White	Clear	Fragmented twinned octahedron with graphite
0.62	0.48	0.40	214676	White	Clear	Fragmented octahedron
0.37	0.34	0.33	73873	White	Clear	Octahedron
0.42	0.37	0.27	75552	White	Clear	Fragmented octahedron
0.19	0.17	0.12	7232	White	Clear	Octahedron with graphite

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-32 **Batch # :** 6
Client : KWG Resources **Weight :** 8.5

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	-----
- 10 + 100	Non-Magnetic	Silicates (white, clear, brown, green, trace garnet and mica), oxides, and trace rock fragments.

Total Weight (octacarats):	416279
Number of Diamonds:	5
CPHT (Total sample Grade):	48
SPFK (+ 100 mesh):	29
OCPFK (+ 100 mesh):	2448700

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-33 **Batch # :** 6
Client : KWG Resources **Weight :** 15.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.34	0.25	0.31	48043	White	Clear	Fragmented twinned octahedron
0.28	0.19	0.16	16072	White	Clear	Fragmented octahedron
0.19	0.14	0.12	6027	White	Clear	Fragmented twinned octahedron
0.19	0.14	0.12	6027	White	Clear	Fragmented octahedron
0.34	0.31	0.21	39778	White	Clear	Twinned octahedron with graphite
0.31	0.25	0.20	28413	White	Clear	Fragmented twinned octahedron
0.22	0.19	0.17	13661	White	Clear	Fragmented octahedron
0.37	0.28	0.28	52234	White	Clear	Fragmented twinned octahedron
0.25	0.22	0.17	17564	White	Clear	Fragmented octahedron
0.19	0.11	0.12	4821	White	Clear	Fragmented octahedron
0.34	0.25	0.15	23247	White	Clear	Fragmented octahedron
0.28	0.22	0.18	20664	White	Clear	Octahedron
0.19	0.17	0.16	9643	White	Clear	Octahedron
0.28	0.25	0.16	20664	White	Clear	Fragmented twinned octahedron with graphite
0.34	0.31	0.20	37884	White	Clear	Octahedron
0.31	0.22	0.15	18942	White	Clear	Fragment
0.37	0.34	0.24	53726	White	Clear	Fragmented octahedron
0.39	0.34	0.28	67502	White	Clear	Fragmented twinned octahedron
0.39	0.37	0.26	67904	White	Clear	Octaheron with graphite
0.39	0.37	0.22	57457	White	Clear	Fragmented twinned octahedron
0.25	0.25	0.15	17435	White	Clear	Fragmented octahedron
0.39	0.34	0.18	43394	White	Clear	Fragmented octahedron
0.34	0.19	0.16	19286	White	Clear	Fragmented complex crystal
0.28	0.22	0.17	19516	White	Clear	Fragmented twinned octahedron with graphite
0.17	0.14	0.16	6888	White	Clear	Fragmented octahedron
0.22	0.19	0.14	11250	White	Clear	Fragmented octahedron with graphite
0.19	0.14	0.14	7031	White	Clear	Fragmented octahedron
0.28	0.22	0.12	13776	White	Clear	Fragmented octahedron
0.48	0.42	0.31	113436	White	Clear	Twinned octahedron with graphite
0.42	0.28	0.18	38745	White	Clear	Fragmented octahedron
0.42	0.34	0.27	69741	White	Clear	Fragmented octahedron with graphite
0.17	0.14	0.12	5166	White	Clear	Fragment
0.48	0.45	0.33	128805	White	Clear	Octahedron with graphite
0.25	0.22	0.15	15498	White	Clear	Fragmented twinned octahedron with graphite

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-33 **Batch # :** 6
Client : KWG Resources **Weight :** 15.8

0.39	0.31	0.32	70716	White	Clear	Octahedron with graphite
0.25	0.22	0.18	18597	White	Clear	Fragmented twinned octahedron
0.48	0.22	0.24	46838	White	Clear	Fragmented twinned octahedron
0.25	0.17	0.11	8523	White	Clear	Fragmented octahedron with graphite
0.31	0.25	0.19	26992	White	Clear	Fragmented octahedron
0.54	0.45	0.32	139596	White	Clear	Fragmented octahedron
0.42	0.34	0.29	74907	White	Clear	Fragmented twinned octahedron
0.34	0.25	0.19	29446	White	Clear	Fragmented twinned octahedron
0.28	0.19	0.14	14063	White	Clear	Fragment
0.39	0.34	0.21	50626	White	Clear	Fragmented twinned octahedron with graphite
0.48	0.45	0.27	105386	White	Clear	Fragmented octahedron with graphite
0.37	0.34	0.27	60442	White	Clear	Complex crystal
0.42	0.34	0.28	72324	White	Clear	Fragmented twinned octahedron
0.28	0.14	0.13	9327	White	Clear	Fragmented octahedron
0.34	0.14	0.12	10332	White	Clear	Fragment
0.17	0.14	0.13	5596	White	Clear	Fragmented octahedron with graphite
0.28	0.22	0.11	12628	White	Clear	Fragmented octahedron
0.51	0.31	0.27	76715	White	Clear	Fragmented octahedron with graphite
0.28	0.28	0.24	34440	White	Clear	Fragmented complex crystal
0.14	0.11	0.10	2870	White	Clear	Fragmented octahedron
0.25	0.19	0.13	11752	White	Clear	Fragmented twinned octahedron
0.19	0.19	0.15	10547	White	Clear	Fragmented octahedron
0.28	0.17	0.12	10332	White	Clear	Fragmented twinned octahedron
0.14	0.14	0.10	3587	White	Clear	Fragment
0.14	0.11	0.12	3444	White	Clear	Fragment with graphite
0.19	0.19	0.20	14063	White	Clear	Octahedron
0.34	0.22	0.16	22041	White	Clear	Fragment with graphite
0.19	0.17	0.12	7232	White	Clear	Fragment
0.28	0.25	0.18	23247	White	Clear	Fragmented twinned octahedron
0.14	0.11	0.14	4018	White	Clear	Fragmented complex crystal
0.17	0.14	0.15	6457	White	Clear	Fragmented octahedron
0.19	0.17	0.14	8437	White	Clear	Fragmented octahedron
0.37	0.31	0.32	65665	White	Clear	Fragmented octahedron
0.28	0.25	0.21	27121	White	Clear	Fragment
0.28	0.28	0.18	25830	White	Clear	Fragmented octahedron
0.48	0.28	0.25	60987	White	Clear	Fragmented octahedron with graphite
0.28	0.28	0.23	33005	White	Clear	Octahedron
0.28	0.22	0.22	25256	White	Clear	Fragmented twinned octahedron
0.76	0.71	0.52	503685	Brown	Clear	Fragmented twinned octahedron

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-33 **Batch # :** 6
Client : KWG Resources **Weight :** 15.8

0.57	0.45	0.38	174496	Brown	Clear	Fragmented octahedron
0.39	0.25	0.22	39778	Brown	Clear	Fragment
0.57	0.51	0.51	263466	Brown	Clear	Octahedron
0.37	0.34	0.35	78351	Brown	Clear	Fragmented octahedron
0.42	0.34	0.33	85239	Brown	Clear	Fragmented octahedron
0.57	0.57	0.49	281260	Brown	Clear	Octahedron
0.62	0.48	0.49	262978	Brown	Clear	Fragmented octahedron
0.51	0.39	0.41	148264	Brown	Clear	Fragmented octahedron
0.39	0.37	0.32	83574	Brown	Clear	Fragmented octahedron
0.39	0.28	0.26	52234	Brown	Clear	Twinned octahedron
0.62	0.54	0.41	245930	Brown	Clear	Fragmented octahedron
0.85	0.62	0.62	587202	Brown	Clear	Fragmented octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-33
Batch # : 6
Weight : 15.8

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Oxides, minor rock fragments and mica.
- 10 + 100	Non-Magnetic	Silicates (clear, white, brown).

Total Weight (octacarats): 0ɛ2 ? 5160102

Number of Diamonds: 85

CPHT (Total sample Grade): 326

SPFK (+ 100 mesh): 268

OCPFK (+ 100 mesh): 16329437

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Friday, March 31, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-34
Batch # : 6
Weight : 11.4

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.17	0.17	0.17	8782	White	Clear	Fragmented octahedron
0.54	0.31	0.21	62982	White	Clear	Fragmented complex crystal
0.17	0.14	0.11	4735	White	Clear	Fragmented octahedron

Tuesday, March 21, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project:	8900-835	**Sample # :**	95-26-34	**Batch # :**	6
Client :	KWG Resources			**Weight :**	11.4

Caustic Residue:

Mesh	Fraction	Description
	Oversize	-----
	Magnetic	-----
-10+100	Non-Magnetic	Silicates (green, clear, white, brown, trace garnet, mica), oxides, and minor rock fragments.

Total Weight (octacarats):	76499	Number of Syndites:	4
Number of Diamonds:	3		
CPHT (Total sample Grade):	6		
SPFK (+ 100 mesh):	13		
OCPFK (+ 100 mesh):	335525		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-35 **Batch # :** 6
Client : KWG Resources **Weight :** 16.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.22	0.19	0.19	15268	White	Clear	Octahedron
0.39	0.28	0.21	42189	White	Clear	Fragmented octahedron
0.28	0.25	0.19	24538	White	Clear	Fragmented complex crystal
0.42	0.31	0.19	44987	White	Clear	Fragmented octahedron
0.42	0.31	0.17	40251	White	Clear	Fragmented twinned octahedron
0.48	0.37	0.36	114168	White	Clear	Fragmented octahedron
0.37	0.31	0.34	69769	White	Clear	Octahedron with black inclusions
0.25	0.25	0.30	34870	White	Clear	Octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-35 **Batch # :** 6
Client : KWG Resources **Weight :** 16.1

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Oxides, rock fragments, mica, and trace garnet.
-10+100	Non-Magnetic	Silicates (white, clear, brown, mica), trace graphite, oxides, and minor rock fragments.

Total Weight (octacarats):	386043	Number of Syndites:	0
Number of Diamonds:	8		
CPHT (Total sample Grade):	23		
SPFK (+ 100 mesh):	24		
OCPFK (+ 100 mesh):	1198893		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-36
Batch # : 6
Weight : 15.0

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments.
-10+100	Non-Magnetic	Rock fragments, silicates (mica, clear, white, brown).

Total Weight (octacarats): 0

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

Number of Syndites: 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-37
Batch # : 6
Weight : 16.0

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.17	0.14	0.11	4735	White	Clear	Fragmented octahedron

Caustic Residue:

Mesh	Fraction	Description
+10	Oversize	Rock fragments.
-10+100	Magnetic	Rock fragments, silicates (green, white, mica), and minor oxides.
-10+100	Non-Magnetic	Silicates (clear, white, brown, green), minor oxides and rock fragments.

Total Weight (octacarats): 4735

Number of Syndites: 0

Number of Diamonds: 1

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 3

OCPFK (+ 100 mesh): 14798

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-38 **Batch # :** 6
Client : KWG Resources **Weight :** 13.7

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
1.16	0.79	0.68	1120218	White	Clear	Fragmented octahedron with graphite
0.51	0.48	0.39	171252	White	Clear	Fragmented octahedron
0.65	0.54	0.45	282192	White	Clear	Fragmented octahedron
0.19	0.11	0.12	4821	White	Clear	Fragmented complex crystal
0.22	0.14	0.15	8610	White	Clear	Octahedron
0.31	0.31	0.26	45145	White	Clear	Fragmented octahedron with graphite
0.25	0.22	0.21	21697	White	Clear	Complex crystal
0.22	0.19	0.20	16072	White	Clear	Fragmented complex crystal
0.42	0.37	0.13	36377	White	Clear	Fragment

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-38
Batch # : 6
Weight : 13.7

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	-----
- 10 + 100	Non-Magnetic	Oxides, silicates (white, clear, brown, green, trace garnet), minor rock fragments.

Total Weight (octacarats):	1706387
Number of Diamonds:	9
CPHT (Total sample Grade):	124
SPFK (+ 100 mesh):	32
OCPFK (+ 100 mesh):	6227690

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

MINÉRAUX INDICATEURS ALMAZ INC.

RESSOURCES KWG LTÉE

THE EXTRACTION OF DIAMOND FROM KYLE LAKE KIMBERLITE

JAMES BAY LOWLANDS
ONTARIO, CANADA

REPORT OF A GOLD ESSAY

Sample 95-26-01 to 12: 135.4m - 0.206m; 766kg, No. 9501

Mousseau Tremblay
May 1995

MEMO TO: Neil Novak
KWG RESOURCES

SUBJECT: The presence of gold in sample DDH 95-34, Kyle Lake 1, No.9501

On March 24, 1995, Dr. Bram Janse visited the diamond extraction laboratory of Minéraux Indicateurs ALMAZ Inc. located in Rouyn-Noranda, Québec run by Mr. Marc-André Cloutier and Mousseau Tremblay. Other than doing the round of the newly acquired equipment and watching its functioning, Dr. Janse examined with care the recent outputs resulting from the treatment of the Kyle Lake 1 Sample. The outputs were as follows:

- A vial containing the 15 diamonds recovered from the sample.
- A vial containing the suite of heavy indicator-accompanying minerals forming a concentrate also recovered from the sample.
- Split core samples of the rocks intersected in DDH 95-34

The weight of the heavy mineral concentrates; a few grams relative to the + total weight of the samples, it is but a very small part of the mineral content of the rock. In particular, the content of kimberlite-type pyrope garnets is insignificant, even if a few grains are present. The most important and noticeable part of the concentrate is however made of pyrite and more than likely of chalcopyrite. It is likely that the sulphide content is also gold-bearing to an extent that remains unknown. A relevant characteristic of the sample, I believe, is the presence of abundant accidental crustal xenoliths, largely igneous rocks of acidic nature.

The "coarse" concentrates grains; larger than 250 microns had not been "fused". The finer concentrates had gone through a very poor fusion caustic soda process, largely unsuccessful due to the very low temperatures used; less than 200-300°C. Hence my statement that these concentrates had not in effect been fused. In fact Dr. Janse gave us our first clues regarding a successful fusion. It apparently cannot be achieved unless done at temperatures that cannot be inferior to 700-800°C. Dr. Janse suggested that we use sodium hypochlorite as the solvent in connection with the high temperature.

Upon his departure Dr. Janse asked for and was given all of the concentrates to bring back to Australia with him in order to have further tests done. On first analysis the summary examination of the indicator minerals suggests that the rock is indeed a kimberlite. On May 8, Dr. Bob Ramsay of the consulting firm Mineral Analysis, who had been charged by Dr. Janse with probing and otherwise testing the various concentrate minerals sent a report to Mr. Norm Brewster. He had found "a significant number of very fine-grained, malleable bright yellow flakes" subsequently confirmed by electron micro-analysis to be a gold-silver alloy of which the gold-silver proportions are typical of Archean gold in Canada.

On first analysis the coarse (+250 microns) sulphide content of the kimberlite rock sample has no other origin than the sample itself. They have not been salted accidentally. The sulphides (pyrite and chalcopyrite) are probably found either as part of the crustal xenoliths liberated during the mechanical attrition process. Likewise they can be found as xenocrystals liberated from the igneous rocks within the kimberlite matrix during the kimberlite's own attrition process brought about by its tumultuous gas fluxed ascension in the pipe at the time of extrusion.

Dr. Rob Ramsay reports that the gold flakes that he found and probed are very fine-grained certainly less than 250 microns. On quick analysis I propose two origins for the fine free gold:

- same as above.
- salting from the Technical College Wilfley table used to recover the diamonds and heavy minerals finer than 250 microns. All remember that Mr. Pierre Gauthier insisted that we shall recover same at a time when we were not equipped to do so and had to use the school facilities.

The fact that the gold particles were not damaged beyond being etched and pitted do corroborate the mild if not ineffective fusion process to which they were subjected. Hence my position that the -250 micron heavy concentrates had not been fused effectively.

In order to find more, a representative kimberlite sample was assembled by us, from the core pieces (hand samples) remaining after the test. We believe the sample was quite representative both as to its xenolith and kimberlite content. It was assayed for gold. The result; less than 5 ppb in gold content. This should lay to rest the possibility that the kimberlite could be gold bearing to any extent on its own. An assay of the accidental crustal xenoliths only might have brought different results.

I personally believe that the free gold flakes content of the heavy concentrates was introduced in from the College Wilfley table. I do not believe that the matter should be pursued further unless for reasons of scholarly curiosity and interest.

LAKEFIELD RESEARCH

A Division of Falconbridge Limited
185 Concession Street, Postal Bag 4300
Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365

KWG Resources Inc.
Suite 200, 1750 Brimley Road
Scarborough, Ontario
CANADA M1P 4X7

April 3, 1995

Attention: Neil Novak

Re: Lakefield Research Project 8900-835 Batch #7

Dear Neil:

Lakefield Research has completed the caustic dissolution treatment of the seven diamond drill core samples identified as 95-26-39 through 95-26-45.

Sixty-five diamonds were identified from the five of the seven caustic dissolution residues; the highest total per sample was from 95-26-39 which contained fifty-four diamonds. Of note, twenty-four of the diamonds occurred as octahedra, twinned octahedra and fragmented octahedra while ten of the diamonds were whole to fragmented complex crystals. The majority of the remaining diamonds reported as fragments. Only one synthetic diamond was observed from residue 95-26-42. The data sheets are attached.

Procedures

Caustic Dissolution

The caustic dissolution treatment, directly uses diamond's property of high resistance to chemical attack. The procedure was developed, and refined to improve and streamline the process for routine diamond exploration samples, in response to the microdiamond losses attributed to standard attrition milling and also to reduce the weight of final concentrate.

The major advantage of the caustic dissolution process is the ability to recover, without breakage, all of the diamonds contained within the sample regardless of their particle size (+100 mesh), liberation size, quality or origin. The latter may account for actual diamond xenocrysts from the 'kimberlitic' material, and / or quality control stones added by Lakefield Research or by the client, and / or diamonds attributed to the exploratory core drilling equipment.

Diamond losses and modifications to the size distribution profile due to stone breakage are eliminated. A comparison of the efficiency of the caustic dissolution treatment and attrition milling flowsheets was undertaken using 'seeded' kimberlite samples. The results clearly indicated breakage and losses of microdiamonds from the milled samples; the normalized stone frequency (SPFK) and octacarat weights (OCPFK) typically were reduced by a factor of two to ten times. Anomalously high stone frequency data indicating breakage was reported; corresponding stone weights and microdiamond grades were invariably low.

Routine quality control tests are utilized to evaluate the efficiency of the caustic dissolution technique. As such, the samples are *blind* spiked, prior to the fusion step, with green diamonds typically measuring from 10 to 80 mesh; these stones have been neutron irradiated to produce the distinctive coloration.

Lakefield Research is not responsible for determination of the origin, quality or valuation of any diamonds recovered.

The caustic dissolution is followed by water and acid leaching, and magnetic separations will produce several fractions commonly containing relict indicator minerals and a non-magnetic fraction possibly containing microdiamonds.

The Lakefield Research facility has sixteen pottery kilns which can treat up to 8 kg each (using -3/8" to -2" crushed feed material) and are run in a 24 hour cycle. The use of smaller sample charges may be dictated by the abundance of carbonate minerals. Prior to the dissolution stage, a cursory mineralogical examination, by XRD and / or acid leach test (note effervescence), is carried out to identify any potentially deleterious phases. The carbonates, in particular, may exhibit a vigorous reaction to the hot caustic soda.

At the appropriate sodium hydroxide to sample ratio and optimum temperatures, the reaction is allowed to continue overnight. As depicted in the flowsheet, the process consists of dissolving the entire sample in a molten sodium hydroxide bath and typically recovering the +100 mesh residue.

After drying, the dissolution residue is split into three magnetic and non-magnetic fractions using the permanent magnet followed by the Frantz Barrier Magnetic Separator. Extreme care is required as the non-magnetic, diamondiferous, portion of the residue commonly amounts to no more than a few milligrams. The concentrate products are then submitted for microscopy.

Very few minerals survive the harsh attack; therefore weight reductions commonly exceed 99% of the initial sample weight. The high weight loss with optimum stone recovery is another major advantage of the caustic dissolution technique.

Only highly resistant minerals such as diamond, graphite, moissanite, zircon, chromite, kyanite, etc. survive the caustic attack. Of note, partially dissolved indicator minerals including colorless to opaque spinel, garnet, and ilmenite, as rounded relicts of original coarse grains, may occur in the dissolution residue.

Results

The data sheets are attached.

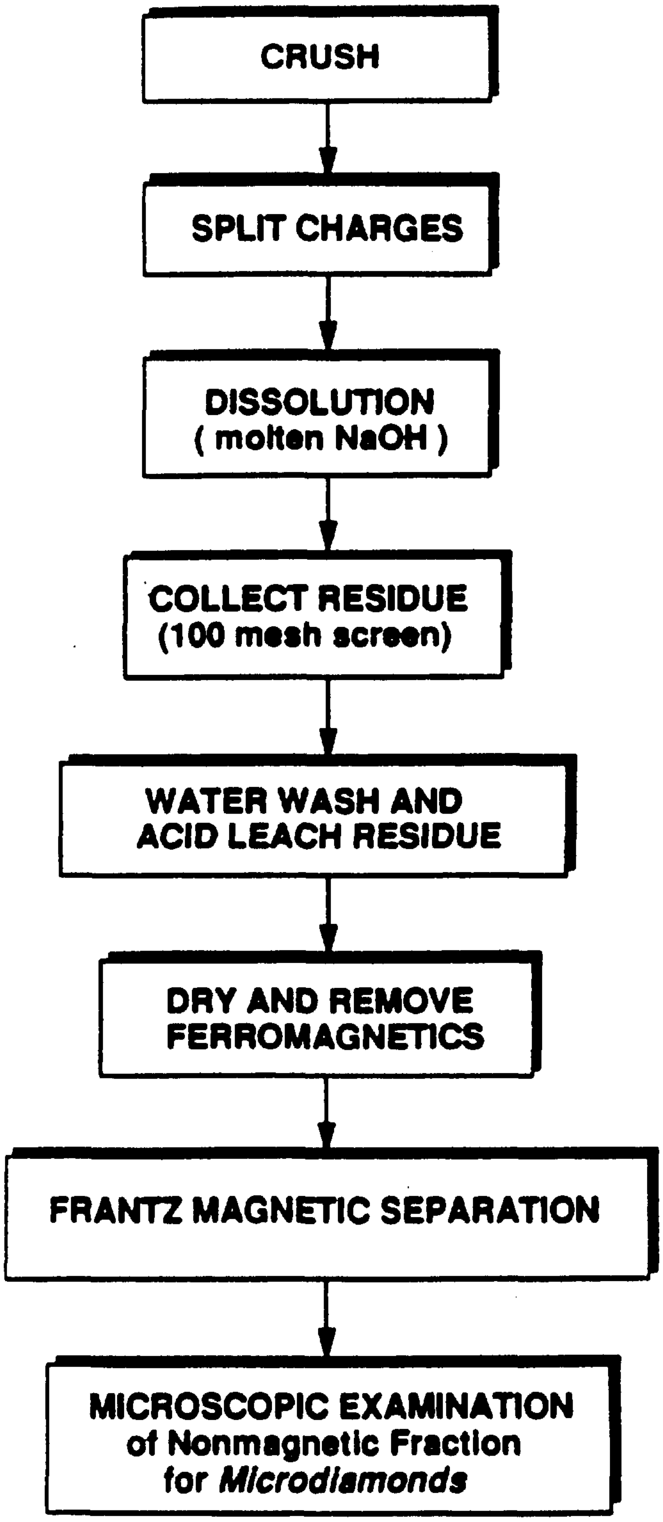
The residues will be forwarded to Scarborough under separate cover. The original invoice will be forwarded to KWG Resources Inc., Montreal, Quebec.

If there are any questions, please call me.

Best regards
LAKEFIELD RESEARCH

Greg Davison
Senior Mineralogist
PH# 705-652-2019

DIAMOND FLOWSHEET 1. CAUSTIC DISSOLUTION



LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Box 4300, 185 Concession St., Lakefield, Ontario, KOL 2HO
Phone : 705-652-2038 - FAX : 705-652-6441

KWG Resources
630 Rene Levesque Blvd., Suite 3200
Montreal, Quebec, H3B 1S6

Attn : Mr. Neil Novak

Lakefield, April 4, 1995

Date Rec. : March 21, 1995
LR. Ref. : **MAR3016.C95**
Reference : 9549204
Project : 8900-835 Batch #7

SUMMARY INFORMATION

No.	Sample ID	Batch ---	Wt kg	# Pours ---	#Diamonds ---
1	95-26-39	7	14.6	2	54
2	95-26-40	7	13.8	2	4
3	95-26-41	7	13.4	2	3
4	95-26-42	7	14.1	2	3
5	95-26-43	7	13.1	2	1
6	95-26-44	7	14.0	2	0
7	95-26-45	7	12.7	2	0

Greg Davison

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-39 **Batch # :** 7
Client : KWG Resources **Weight :** 14.6

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
1.42	0.94	0.60	1420650	White	Clear	Fragmented complex crystal with graphite
0.91	0.74	0.27	322358	White	Clear	Fragmented complex crystal
0.48	0.28	0.25	60987	White	Clear	Fragmented complex crystal
0.17	0.14	0.13	5596	White	Clear	Fragmented octahedron with graphite
0.25	0.14	0.11	7103	White	Clear	Fragmented twinned octahedron with graphite
0.25	0.22	0.11	11365	White	Clear	Fragmented octahedron
0.31	0.19	0.17	18784	White	Clear	Fragmented octahedron with graphite
0.22	0.14	0.10	5740	White	Clear	Fragmented twinned octahedron
0.14	0.14	0.07	2511	White	Clear	Fragment
0.22	0.14	0.13	7462	White	Clear	Fragmented twinned octahedron
0.22	0.19	0.06	4821	White	Clear	Fragment
0.11	0.11	0.10	2296	White	Clear	Twinned octahedron with graphite
0.39	0.11	0.08	6428	White	Clear	Fragment
0.14	0.14	0.16	5740	White	Clear	Fragmented twinned octahedron
0.25	0.17	0.17	13173	White	Clear	Octahedron
0.28	0.19	0.16	16072	White	Clear	Fragmented octahedron
0.25	0.22	0.24	24796	White	Clear	Octahedron with graphite
0.45	0.17	0.10	13776	White	Clear	Fragment
0.28	0.25	0.16	20664	White	Clear	Fragment
0.48	0.34	0.27	79039	White	Clear	Fragment
0.34	0.28	0.23	39606	White	Clear	Fragmented octahedron with graphite
0.31	0.22	0.17	21467	White	Clear	Fragmented octahedron with graphite
0.25	0.14	0.11	7103	White	Clear	Fragment
0.17	0.14	0.16	6888	White	Clear	Octahedron
0.48	0.42	0.36	131733	White	Clear	Octahedron
0.62	0.22	0.27	68191	White	Clear	Fragmented complex crystal
0.31	0.28	0.17	26834	White	Clear	Fragment with graphite
0.71	0.28	0.25	89687	White	Clear	Fragmented complex crystal
0.45	0.28	0.28	64288	White	Clear	Fragment
0.31	0.19	0.19	20994	White	Clear	Fragment with graphite
2.16	1.62	0.86	5346121	Brown	Clear	Complex crystal
2.19	1.71	0.98	6497106	Brown	Clear	Complex crystal
1.08	0.62	0.56	671809	Brown	Clear	Fragment
0.76	0.62	0.36	306860	Brown	Clear	Fragment
0.62	0.34	0.12	45460	Brown	Clear	Fragment with graphite

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-39 **Batch # :** 7
Client : KWG Resources **Weight :** 14.6

0.39	0.19	0.07	9844	Brown	Clear	Fragment
0.65	0.39	0.10	46207	Brown	Clear	Fragment
0.65	0.54	0.23	144231	Brown	Clear	Fragment
0.85	0.54	0.19	155410	Brown	Clear	Fragment
0.85	0.79	0.58	699132	Brown	Clear	Fragment
0.31	0.25	0.22	31254	Brown	Clear	Fragment
0.85	0.74	0.34	380562	Brown	Clear	Fragmented octahedron
0.48	0.31	0.19	50985	Brown	Clear	Fragmented octahedron
0.25	0.14	0.10	6457	Brown	Clear	Fragment
0.59	0.28	0.21	63283	Brown	Clear	Fragment
0.57	0.31	0.23	72611	Brown	Clear	Fragment
0.59	0.28	0.13	39175	Brown	Clear	Fragment
0.28	0.17	0.08	6888	Brown	Clear	Fragment
0.96	0.68	0.31	362997	Brown	Clear	Fragmented octahedron
0.37	0.14	0.06	5596	Brown	Clear	Fragment
0.37	0.22	0.07	10446	Brown	Clear	Fragment
0.45	0.28	0.15	34440	Brown	Clear	Fragment
0.42	0.17	0.07	9040	Brown	Clear	Fragment
0.54	0.25	0.05	12269	Brown	Clear	Fragment

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Sample # : 95-26-39
Batch # : 7
Client : KWG Resources
Weight : 14.6

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Oxides, and minor rock fragments.
- 10 + 100	Non-Magnetic	Silicates (clear, white, brown), trace oxides, graphite, and sulphides.

Total Weight (octacarats): 17534351
Number of Syndites: 0
Number of Diamonds: 54
CPHT (Total sample Grade): 1200
SPFK (+ 100 mesh): 184
OCPFK (+ 100 mesh): 60049147

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-40 **Batch # :** 7
Client : KWG Resources **Weight :** 13.8

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.34	0.22	0.20	27552	White	Clear	Fragmented octahedron
0.31	0.25	0.22	31254	White	Clear	Fragmented twinned octahedron
0.22	0.14	0.11	6314	White	Clear	Fragmented complex crystal with graphite
0.17	0.14	0.14	6027	White	Clear	Fragmented complex crystal with graphite

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-40 **Batch # :** 7
Client : KWG Resources **Weight :** 13.8

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Oxides and rock fragments.
- 10 + 100	Non-Magnetic	Silicates (clear, white, brown), trace oxides, graphite, and sulphides.

Total Weight (octacarats):	71147	Number of Syndites:	0
Number of Diamonds:	4		
CPHT (Total sample Grade):	5		
SPFK (+ 100 mesh):	14		
OCPFK (+ 100 mesh):	257780		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-41
Batch # : 7
Weight : 13.4

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.62	0.42	0.34	161007	White	Clear	Complex crystal
0.22	0.22	0.16	14694	White	Clear	Fragment
0.22	0.22	0.12	11020	White	Clear	Fragment

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Sample # : 95-26-41
Batch # : 7
Client : KWG Resources
Weight : 13.4

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Rock fragments, silicates, and minor oxides.
- 10 + 100	Non-Magnetic	Silicates (clear, white, brown).

Total Weight (octacarats):	186722	Number of Syndites:	0
Number of Diamonds:	3		
CPHT (Total sample Grade):	13		
SPFK (+ 100 mesh):	11		
OCPFK (+ 100 mesh):	696724		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-42
Batch # : 7
Weight : 14.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.37	0.34	0.36	80589	White	Clear	Octahedron
0.19	0.17	0.20	12054	White	Clear	Octahedron
0.37	0.17	0.11	12312	White	Clear	Octahedron

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835
Client : KWG Resources
Sample # : 95-26-42
Batch # : 7
Weight : 14.1

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Rock fragments and silicates, with minor oxides.
- 10 + 100	Non-Magnetic	Silicates (clear, white, brown), trace oxides, corundum, and minor rock fragments.

Total Weight (octacarats):	104955
Number of Diamonds:	3
CPHT (Total sample Grade):	7
SPFK (+ 100 mesh):	10
OCPFK (+ 100 mesh):	372184

Number of Syndites: 1

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-43 **Batch # :** 7
Client : KWG Resources **Weight :** 13.1

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology
0.31	0.31	0.30	52090	White	Clear	octahedron

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Rock fragments, silicates, and minor oxides.
- 10 + 100	Non-Magnetic	Silicates (clear, white, brown), trace oxides, and sulphides.

Total Weight (octacarats): 52090

Number of Syndites: 0

Number of Diamonds: 1

CPHT (Total sample Grade): 3

SPFK (+ 100 mesh): 3

OCPFK (+ 100 mesh): 198818

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Monday, April 03, 1995

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-44 **Batch # :** 7
Client : KWG Resources **Weight :** 14.0

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Rock fragments, silicates, and minor oxides.
- 10 + 100	Non-Magnetic	Silicates (brown, clear, white).

Total Weight (octacarats):	0	Number of Syndites:	0
Number of Diamonds:	0		
CPHT (Total sample Grade):	0		
SPFK (+ 100 mesh):	0		
OCPFK (+ 100 mesh):	0		

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
P.O. Bag 4300, 185 Concession Street, Lakefield, Ontario, KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

DIAMOND RECOVERY BY CAUSTIC DISSOLUTION

Project: 8900-835 **Sample # :** 95-26-45 **Batch # :** 7
Client : KWG Resources **Weight :** 12.7

Stone Dimension, mm			Weight	Stone Description		
X	Y	Z	(octacarats)	Colour	Clarity	Morphology

Caustic Residue:

Mesh	Fraction	Description
+ 10	Oversize	Rock fragments.
- 10 + 100	Magnetic	Oxides, rock fragments, minor silicates (including trace garnet).
- 10 + 100	Non-Magnetic	Silicates (brown, clear, white), minor rock fragments, trace graphite, and sulphides.

Total Weight (octacarats): 0 Number of Syndites: 0

Number of Diamonds: 0

CPHT (Total sample Grade): 0

SPFK (+ 100 mesh): 0

OCPFK (+ 100 mesh): 0

Authorizing Signature

Notes: 1 carat = 10^8 octacarats.
Lakefield Research is not responsible for the determination of the origin, quality or valuation of any diamonds recovered.

Monday, April 03, 1995

- AMENDED -

Ministry of Northern Development and Mines
Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number
W9660.00348

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

2.16481

Instructions: Please
- Refer t ... sessment work or consult the Mining Record
- A sepa ... p.
- Techni
- A sketch showing the claims the work is assigned to, ... any this form.

43C06NW0001 2.16481

900

Recorded Holder(s) KWG RESOURCES INC.	Client No. 224701
Address 3200-630 Rene Levesque Blvd. W. Montreal Quebec H3B 1S6	Telephone No. 514-866-6001

Mining Division PORCUPINE MD	Township/Area ATTAWAPISKAT RIVER AREA	M or G Plan No. 524852

Dates Work Performed From: JAN 19/95 To: APR. 3/95

Work Performed (Check One Work Group Only)

	Work Group	Type
	Geotechnical Survey	
✓	Physical Work, Including Drilling	DIAMOND DRILLING
	Rehabilitation	
	Other Authorized Work	
	Assays	
	Assignment from Reserve	

RECORDED
FEB 16 1996

Total Assessment Work Claimed on the Attached Statement of Costs $ 288,505

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
MIDWEST DRILLING	180 CREE CRESCENT WINNIPEG MAN. R3J 3W1
ROGER THOMAS M.Sc P.Eng.	1373 CORKERY RD. CARP. ONT. K0A 1L0

2.16481

(attach a schedule if necessary)

Certification of Beneficial Interest * **See Note No. 1 on reverse side**

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	Date	Recorded Holder or Agent (Signature)

Certification of Work Report

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying
NEIL D. NOVAK EXPLN. MGR. KWG RES. INC 1000-350 BAY ST TORONTO ONT M5H 2S6

Telepone No. 416-869-0626	Date original Feb 16/96 amendment MAY 7/96	Certified By (Signature)

For Office Use Only

Total Value Cr. Recorded 288,505	Date Recorded	Mining Recorder	Received Stamp originally Rec'd MAY 10 1996 FEB 16/96 210 Cameron
	Deemed Approval Date MAY 16/96	Date Approved MAY 10, 1996.	
	Date Notice for Amendments Sent APR. 29, 1996		

0241 (03/91)

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned **from** this Claim	Reserve: Work to be Claimed at a Future Date
	1160175	16	288505	38,400	172,800	77,305
	1160174	16		38,400		
	1200758	16		12,800		
	1200759	16		12,800		
	1200760	16		12,800		
	1200761	16		12,800		
	1200762	16		12,800		
	1200763	16		12,800		
	1200764	16		12,800		
	1200765	16		6,400		
	1200766	16		6,400		
	1200767	16		6,400		
	1200768	16		6,400		
	1200769	16		6,400		
	1200750	16		6,400		
	1200757	16		6,400		
	Total Number of Claims 16		Total Value Work Done	Total Value Work Applied 211,200	Total Assigned From 172,800	Total Reserve 77305

0241 (03/91)

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to priorize the deletion of credits. Please mark (✓) one of the following:

1. ☑ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☐ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature	Date

Ministry of
Northern Development
and Mines
Ontario

Ministère du
Développement du Nord
et des mines

for Assessment Credit
État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

W9660.00348

2.16481

Personal information collected on this form is obtained under the authority of the **Mining Act**. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la **Loi sur les mines** et serviront à tenir à jour un registre des concessions minières. Adresser toute quesiton sur la collece de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain	15,022.50	15 022.50
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Various (see attached list)	176,987.55	
			176,987.55
Supplies Used Fournitures utilisées	Type Various (see attached list)	43,967.66	
			43,967.66
Equipment Rental Location de matériel	Type Various (see attached list)	4,443.62	
			4,443.62
		Total Direct Costs Total des coûts directs	240,421

2. Indirect Costs/Coûts indirects

** **Note:** When claiming Rehabilitation work Indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type Various (see attached list)	44,922.75	
			44,923
Food and Lodging Nourriture et hébergement	MIDWEST	10,150.00	10,150
Mobilization and Demobilization Mobilisation et démobilisation	MIDWEST	2,800	2800
		Sub Total of Indirect Costs Total partiel des coûts indirects	57,873
		Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)	48,084
		Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) **Valeur totale du crédit d'évaluation** (Total des coûts directs et indirects admissibles)	288,505

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit		Total Assessment Claimed
	× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation		Évaluation totale demandée
	× 0,50 =	

MAY 10 1996
PORCUPINE MINING DIVISION

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Exploration Manager Agent I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de ______________________ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature

Date
MAY 7/96 (amended)
original Feb. 16/96

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

- AMENDED -

Ministry of Northern Development and Mines
Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9660.00349

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

2.16481

Instructions:
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for requirements of filing assessment work or consult the Mining Recorder.
- A separate copy of this form must be completed for each Work Group.
- Technical reports and maps must accompany this form in duplicate.
- A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s): KWG RESOURCES INC.	Client No.: 224701
Address: 3200-630 RENE LEVESQUE BLVD. W. MONTREAL PQ H3B 1S6	Telephone No.: 514-866-6001
Mining Division: PORCUPINE / Township/Area: ATTAWAPISKAT RIVER AREA	M or G Plan No.: 524852
Dates Work Performed From: JAN 19/95	To: APR. 3/95

Work Performed (Check One Work Group Only)

Work Group	Type
☐ Geotechnical Survey	
☐ Physical Work, Including Drilling	
☐ Rehabilitation	
☑ Other Authorized Work	PETROLOGIC REPORTS
☐ Assays	
☐ Assignment from Reserve	

Total Assessment Work Claimed on the Attached Statement of Costs $ 11,114

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
ROGER MITCHELL PH.D.	1427 RIDGEWAY ST. THUNDER BAY ONT. P7E 5J7
BARBARA SCOTT-SMITH PH.D.	2555 EDGEMONT BLVD. NORTH VANCOUVER B.C. V7R 2M9
GLEN SINCLAIR PH.D.	MINSCAN CONSULTANTS TD CENTRE SUITE 2550 TORONTO. M5K 1E7

(attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	Date	Recorded Holder or Agent (Signature)

Certification of Work Report

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying: NEIL D. NOVAK, EXPLN. MGR. KWG RESOURCES INC 1000-350 BAY ST TORONTO ONT M5H 2S6

Telephone No.	Date	Certified By (Signature)
416-869-0626	original Feb. 16/96 amendment May 7/96	

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	Received Stamp
11,114		Not Dated Gary White	MAY 10 1996 Feb 16/96 FIRST Rec. 210 PORCUPINE MINING DIVISION
	Deemed Approval Date	Date Approved	
	Date Notice for Amendments Sent		

0241 (03/91)

2.16481

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to the Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	1160175	16	11,114	-	-	11,114
	Total Number of Claims 1		Total Value Work Done 11,114	Total Value Work Applied -	Total Assigned From -	Total Reserve 11,114

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to priorize the deletion of credits. Please mark (✓) one of the following:

1. ☑ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☐ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: **Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.**

Note 2: **If work has been performed on patented or leased land, please complete the following:**

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature	Date

Amended (original filed Feb 16/96)

Ministry of Northern Development and Mines
Ontario
Ministère du Développement du Nord et des mines

Statement of Costs for Assessment Credit
État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction W9660.00349

2.16481

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type PETROLOGY	11,114.09	
			11,114.09
Supplies Used Fournitures utilisées	Type		
Equipment Rental Location de matériel	Type		

Total Direct Costs
Total des coûts directs 11,114

2. Indirect Costs/Coûts indirects

** Note: When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type		
Food and Lodging Nourriture et hébergement			
Mobilization and Demobilization Mobilisation et démobilisation			

Sub Total of Indirect Costs
Total partiel des coûts indirects

Amount Allowable (not greater than 20% of Direct Costs)
Montant admissible (n'excédant pas 20 % des coûts directs)

Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs)
Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles) 11,114

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit × 0.50 = Total Assessment Claimed

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation × 0.50 = Évaluation totale demandée

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Exploration Mgr./Agent I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

MAY 10 1996

2.10 Commit

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de ______________ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature

Date May 7/96 (amended)
original Feb 16/96

0212 (04/91)

Note : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

DRILLHOLE 95-26 KYLE LAKE KIMBERLITE ASSESSMENT REPORT STATEMENT OF COSTS

Amended May 7/96
~~original~~ invoices on file with original submission
NP

2.16481

DIRECT COSTS		
WAGES		
management Minroc 1809	$ 5,136.00	
management Nominex 95-01to 06	$ 9,886.50	
Subtotal wages		$ 15,022.50
CONTRACTORS AND CONSULTANTS FEES		
geophysical Hogg Jan/95	$ 802.50	
geological McBride 95-18/19	$ 10,593.00	
drilling Midwest 5-992	$ 59,629.60	
Helisupport for drill FAD-40	$ 30,896.63	
Helisupport for drill FAA-158	$ 19,205.94	
CFGleeson 95-209	$ 1,726.00	
ScottSmith Petrology 95-1	✓$ 1,791.66	
Roger Mitchell	✓$ 4,129.56	
Lakehead university	$ 428.00	
Minscan Consultants	$ 4,764.87	
Lakefield Research	$ 47,296.58	
Mineraux Almax Inc	$ 6,837.30	
Subtotal Contractors etc.		$ 188,101.64
SUPPLIES USED		
see McBride 95-19	$ 710.10	
see Midwest 5-992	$ 10,777.21	
Fuel re Heli-support FAD-48	$ 32,480.35	
Subtotal supplies		$ 43,967.66
EQUIPMENT RENTAL		
satelite system Telesat 58949	$ 3,807.32	
telephone	$ 351.30	
equip for drill site Nominex 95-02	$ 285.00	
Subtotal equipment rental		$ 4,443.62
Total direct costs		$ 251,535.42
INDIRECT COSTS		
TRANSPORTATION		
Nakina Outpost 31/01/95	$ 41,002.49	
Travel Voyage Claudelle	$ 2,239.36	
Neil Novak expenses	$ 1,680.90	
Subtotal Transportation		$ 44,922.75
FOOD AND LODGING		
see Midwest 5-992	$ 10,150.00	
Subtotal food and lodging		$ 10,150.00
MOBILIZATION		
mobilization Midwest 5-992	$ 2,800.00	
Subtotal mobilization		$ 2,800.00
Total indirect costs		$ 57,872.75

appeared in Sudbury - ∴ another form required

11,114.09

176,987.55

Ontario

60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

(705) 360-8330
Fax: 360-2001

File: **W9660.00348**

January 28, 1997

2.16481

Mr. Steve Munro
KWG Resources Inc.
1000 - 350 Bay Street
Toronto, ON
M5H 3S6

Dear Mr. Munro:

Subject: **APPROVAL OF ASSESSMENT WORK CREDIT ON MINING LAND, CLAIM P-1160175 IN BMA 524-852 (G-4147)**

The deficiencies for this submission, as outlined on the 45 Day Notification dated April 29, 1996 have been corrected.

Accordingly, assessment work credit has been approved as outlined on the amended Declaration of Assessment Work Form received on May 10, 1996. The credit has been approved under Section 16 (Exploratory Drilling) of the Assessment Work Regulation.

The approval date is **May 10, 1996.**

If you have any questions regarding this correspondence, please contact Terry Binkley at (705) 360-8338.

Sincerely,

Dale Messenger
Acting Mining Recorder
Porcupine Mining Division

/tb

cc: R. Gashinski, Senior Manager, Mining Lands

RECEIVED
JAN 29 1997
MINING LANDS BRANCH

Ontario

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

Geoscience Assessment Office
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (705) 670-5853
Fax: (705) 670-5863

July 30, 1996

Our File: 2.16481
Transaction #: W9660.00349

Mining Recorder
Ministry of Northern Development & Mines
60 Wilson Avenue, 1st Floor
Timmins, Ontario
P4N 2S7

Dear Mr. White:

SUBJECT: APPROVAL OF ASSESSMENT WORK CREDIT ON MINING LAND, CLAIM(S) 1160175 IN ATTAWAPISKAT RIVER AREA

Assessment work credit has been approved as outlined on the Report of Work Form. The credit has been approved under Section 18 (Microscopic studies) of the Assessment Work Regulation.

The approval date is July 30, 1996. Please indicate this approval on the claim record.

If you have any questions regarding this correspondence, please contact Steven Beneteau at (705) 670-5861.

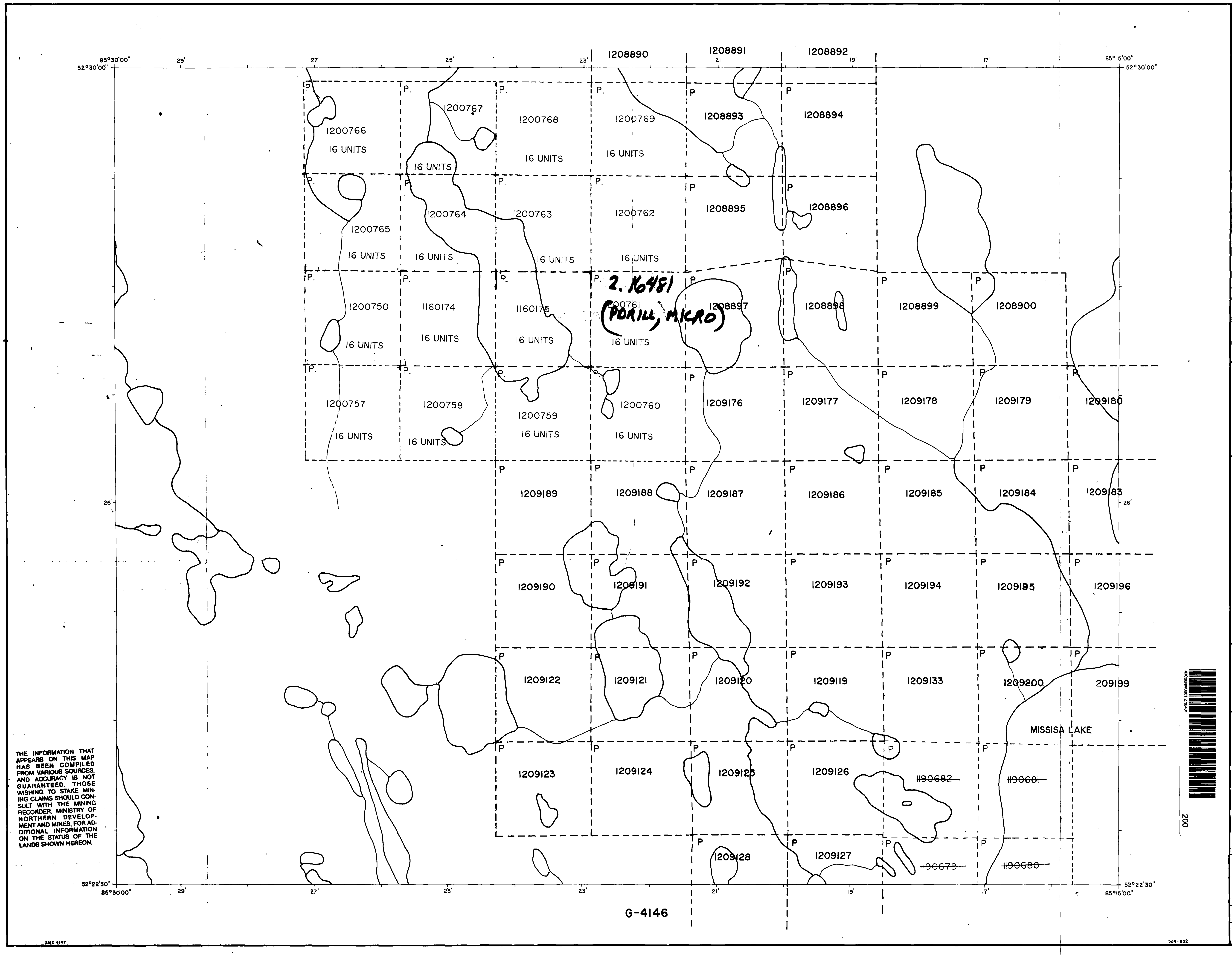
Yours sincerely,
ORIGINAL SIGNED BY:

Ron C. Gashinski
Senior Manager, Mining Lands Section
Mines and Minerals Division

SBB SBB/jf

cc: Resident Geologist
Timmins, Ontario

✓ Assessment Files Library
Sudbury, Ontario



2. 16481
(PDRILL, MICRO)

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

LEGEND

HIGHWAY AND ROUTE No.
OTHER ROADS
TRAILS
SURVEYED LINES:
  TOWNSHIPS, BASE LINES, ETC.
  LOTS MINING CLAIMS, PARCELS, ETC.
UNSURVEYED LINES.
  LOT LINES
  PARCEL BOUNDARY
  MINING CLAIMS ETC
RAILWAY AND RIGHT OF WAY
UTILITY LINES
NON-PERENNIAL STREAM
FLOODING OR FLOODING RIGHTS
SUBDIVISION OR COMPOSITE PLAN
RESERVATIONS
ORIGINAL SHORELINE
MARSH OR MUSKEG
MINES ⚒
TRAVERSE MONUMENT ◆

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	◓
" , MINING RIGHTS ONLY	◒
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	⬒
" , MINING RIGHTS ONLY	⬓
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	Ⓡ
CANCELLED	⊗
SAND & GRAVEL	ⓢ

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File

2. 164 81

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
METRES 0 200 1000 (1 KM) 2000 (2 KM)

AREA

524-852

M.N.R. ADMINISTRATIVE DISTRICT
MOOSONEE
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
KENORA / PATRICIA PORTION

Ontario
Ministry of Natural Resources
Ministry of Northern Development and Mines

Date OCTOBER/1992
ACTIVATED NOVEMBER 09, 1992.
Number G-4147