TECHNICAL REPORT
ON THE
TORNGAT DIAMOND PROPERTY,
NUNAVIK REGION, QUEBEC
FOR
TWIN MINING CORPORATION

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SUMMARY

Introduction

MPH Consulting Limited has been retained by Twin Mining Corporation to complete an Independent Technical Report on the Torngat Diamond Property located in the eastern Ungava region of northern Quebec. This Report complies with Canadian National Instrument 43-101 and Form 43-101F guidelines and was prepared in conformity with generally accepted Canadian mining industry practice. The report assesses the technical and economic potential of the project area and recommends a follow up program.

The report is based on personal observations of bedrock exposures and blasted surface trenches, where the samples were obtained, direct observation of sub-sample/sample acquisition, handling and transportation, together with extensive communications with Twin Mining's technical and managerial staff. MPH principals P. A. Sobie and H. J. Coates visited the Torngat Property on five separate occasions between April 8th and September 20th, 2000. No site visit was made in connection with the current report.

The Torngat Diamond Property is located in northeastern Quebec at Alluviaq Fjord on the eastern shore of Ungava Bay, Nunavik district, at approximate geographic coordinates: 59° 30' north latitude; 65° 10' west longitude. Access to the Property is by boat (Skidoo), fixed-wing float (Ski-equipped) plane or helicopter from Kuujjuaq or Kangiqsualujjuaq, both of which have scheduled air service. The nearest permanent settlement is the town of Kangiqsualujjuaq (formerly George River) located about 90 km south-southwest of the Property. The town of Kuujjuaq (formerly Fort Chimo) is located about 250 km southwest of the Property. Montreal lies approximately 1,500 km to the south-southwest.

Between 1999 and 2000 Twin Mining staked mineral rights covering some 506.85 km^2 in the eastern Ungava region of Quebec. After completion of work programs these holdings have been consolidated and reduced to cover all of the known diamondiferous dykes. The area over which the Company currently has mineral rights include one Permis d' Exploration Miniere ("PEM") covering an unsurveyed area of some 5,000 hectares or 50 km^2 and 34 map staked mineral claims covering an unsurveyed area of 1181.4 hectares. The Torngat property is 100% owned by Twin Mining Corporation.

History

The eastern sub-arctic region of Canada and the geologically equivalent areas across the Labrador Sea in west Greenland have been known for over 50 years to host alkaline mafic to ultramafic intrusions including kimberlite, carbonatite and lamprophyre dykes. The first diamonds were reported in West Greenland in 1974, while the first occurrence in the Torngat region was reported in 1997.

The earliest diamond exploration on the current property commenced in 1997, when Fjordland Minerals Limited acquired a Mineral Exploration Permit on 400 square kilometres centered on Abloviak Fjord. In 1997 the company completed a limited till sampling program. Results from the 41 samples were below expectations and the agreement was terminated.

In 1999 Twin Mining Corporation acquired a 444 square kilometre area under Mineral Exploration Permits covering the known alkaline dykes.

Geological Setting
The Torngat property is within the Torngat Orogen in the Southeastern Churchill Province near the northwestern margin of the ancient North Atlantic Craton. The east to northeasterly trending alkaline dykes of the kimberlite-lamprophyre clan that host the diamond occurrences are currently known to exist within a large area.

Post tectonic alkaline dykes of the kimberlitic affinity are widespread throughout the North Atlantic Craton and tens of kilometres beyond its margins into neighbouring rocks of the Makkovik Province/Keltidian Mobile Belt and the Torngat Orogen/ Nagssugtoqidian Mobile Belt. Macrodiamonds have been found in the Torngat Orogen / Nagssugtoqidian Mobile Belt at Alluviaq Fjord, Quebec and at Sarfartoq, and Sukkertoppen, West Greenland. In terms of temporal range, the various alkaline dykes have radiometric ages from Lower Cambrian to Cryogenian (range $613^{+/-}24$ to $549^{+/-}5$ Ma).

The Torngat property lies astride the boundary between the Burwell domain crustal wedge in the northeast and the reworked Archean Rae Province in the southwest. The two crustal domains are separated by the Tasiuyak domain and the semi-coincident Alluviaq (Abloviak) shear zone. The northeast-southwesterly trending alkaline dykes crosscut the older units approximately at right angles. The kimberlitic dyke system has been traced across the property through all of the above lithological units by a combination of reconnaissance geological mapping and geophysical interpretation.

The dykes are described as locally serpentinized olivine and phlogopite phenocrysts and macrocrysts in a fine to coarse grained matrix of phlogopite, olivine, spinel (Ti-Mg chromite, Ti-Mg magnetite, Mg-Al chromite), perovskite, rutile, pyrite, apatite, diamond and interstitial carbonate. Calcite is present in all dykes, forming approximately 10-15% of the rock, while fine-grained magnetite is in relatively high abundance. Garnets including chrome pyrope and calcic pyrope almandine types are widespread as well as chrome diopside. Clinopyroxene is locally present within ultramafic xenoliths. The dykes were originally classified as Group I hypabyssal phlogopite kimberlites, the terminology has since been revised to hypabyssal ultramafic lamprophyres or aillikite dykes.

The sub-vertical Torngat kimberlitic dyke system lies for the most part inside a northeast-southwesterly trending rectangular area measuring approximately 20 kilometres in strike length by about five kilometres wide. Twenty-four individual dykes or dyke segments have been outlined in the main Torngat Dyke System. Dyke widths vary from a few centimetres up to two metres or more where mapped in detail or exposed by trenching during the Twin Mining exploration programs.

Mineralogically the dykes are typified by a phlogopite-rich groundmass and phlogopite macrocrysts. They are perovskite poor and devoid of zircon and illmenite.

Deposit Types

The Torngat occurrences are classified as kimberlitic dyke-hosted diamond deposits. The fundamental characteristics of the known mineral deposits are summarized as follows:

- **Temporal Range:** The kimberlitic dykes are indicated to be Lower Cambrian to earliest Neoproterozoic III in age with K-Ar dates in the range of $579^{+/-}4$ to $549^{+/-}5$ Ma and with a Sm-Nd date at $550^{+/-}10$ Ma.
- **Rock Types:** Hypabyssal ultramafic lamprophyres or aillikite dykes.
- **Depositional Environment:** Kimberlitic bodies intruded from the mantle under high pressure with rapid quenching.
- **Paleotectonic Setting:** The Torngat dykes intrude the Early Proterozoic (1860-1790 Ma) collision zone between the Rae Province in the west and the North Atlantic Craton (Nain Province) in the east.
- **Structure:** The alkaline dyke emplacement corresponds generally with rifting associated with a major global tectonic event, the Lower Paleozoic separation of the Laurentia proto-continent from the South American porton of the Gondwana proto-continent.
- **Associated Deposits:** None known.
- **Primary Ore Mineralogy:** Diamond.
- **Mineralization Texture/Structure:** Diamonds occur as sparsely disseminated discrete grains of xenocrystic origin
- **Gangue Mineralogy/Texture:** Locally serpentinized olivine and phlogopite phenocrysts and macrocrysts in a fine to coarse grained matrix of phlogopite, olivine, spinel (Ti-Mg chromite, Ti-Mg magnetite, Mg-Al chromite), perovskite, rutile, pyrite, apatite, diamond and interstitial carbonate. Garnets including chrome pyrope and calcic pyrope almandine types are widespread as well as chrome diopside. Clinopyroxene is locally present within ultramafic xenoliths.
- **Weathering:** Dykes weather more rapidly than host rocks to form topographic depressions.

Mineralization

Dyke sets are found along 5 different trends; the Main, West, Dallas, East and South dyke systems. The dykes are sub-vertical and vary in thickness from a few centimetres up to two metres or more. Over three field seasons Twin Mining has carried out a variety of surface sampling programs on the five dyke systems.

Of the five dyke sets, the Main Dyke system is the most thoroughly investigated. The system has been sampled in five stages including:

- 1999 Due Diligence Microdiamond Sampling.
- April-May 2000 10 tonne Mini-bulk Sampling
- Summer 2000 systematic Microdiamond Sampling
- August-September 2000 342 tonne Mini-bulk Sample
- September 2001, follow-up Microdiamond sampling

The microdiamond and mini-bulk sample results for the Main Dyke programs are summarized as follows:

- The 1999 due diligence samples were collected from surface exposures mainly from the Torngat 1 and 2/3 dykes. The accumulated samples, totalling 968.14 kilograms, yielded 475 small diamonds, totalling 0.1664 carats. The majority exhibited 62.5% -75% preservation, white colour and transparent to translucent clarity.
- The April-May, 2000 mini-bulk samples were collected from surface exposures mainly from the Torngat 1, Torngat 2 and Kakivuk (Pita) dykes. In total 42.84 dry tonnes of kimberlite was processed recovering 242 (>0.85 mm) macro diamonds for a cumulative total of 3.46 carats, with the largest stone measuring 3.8 x 3.6 x 3.2 mm and weighing 0.2010 carats. Only a few macrodiamonds recovered had discernable crystal structures. The majority exhibited irregular shape, white colour and transparent to translucent clarity.
- The 2000 microdiamond samples were collected from widespread surface exposures throughout the entire Main Dyke System. The accumulated samples, totalling 2693.16 kilograms, yielded 827 small diamonds, totalling 0.310 carats. The majority exhibited 62.5% -75% preservation, white colour and transparent to translucent clarity.
- The August-September, 2000 mini-bulk samples were collected by surface test pitting at the AD-2 site. The process plant bottom cut-off screen was a 1mm slotted wedge wire screen. The accumulated samples, totalling 341.6 tonnes kilograms, yielded 1543 diamonds, totalling 13.025 carats, with the largest stone measuring 4.24mm x 3.54mm x 4.60mm and weighing 0.6847 carats. The majority exhibited 62.5% -75% preservation, white colour and transparent to translucent clarity.
- The September 2001 follow-up microdiamond samples were acquired in the vicinity of the earlier DU sample site. One hundred kilogram portions of each of the samples were tested by caustic disolution. The accumulated samples, totalling 900.0 kilograms, yielded 391 small diamonds, totalling 0.123 carats. The majority exhibited 62.5% -75% preservation, white colour and transparent to translucent clarity.

The Torngat Property has the distinction of being the first site in Quebec to produce a diamond that has been faceted. The rough stone measuring 4.97mm x 3.87mm x 3.40mm and weighing 0.566 carats was processed to obtain heptagonal, step cut jewel weighing 0.212 carats. Unfortunately all residues from past microdiamond samples, and all tails and concentrates from the mini-bulk samples have been discarded, meaning auditing the veracity of past recoveries is not possible. Twin also did not carry out routine spiking of microdiamond samples, nor use an umpire facility for duplicates, so all results as reported herein must be considered final.

Exploration

Twin Mining undertook exploration work on the Torngat Property intermittently between 1999 and 2001. The work phases listed as follows will be described below:

- Summer 1999: Initial property acquisition, site visit, reconnaissance geological investigations and due diligence microdiamond sampling.
- Winter 1999-2000: Fixed-wing High Resolution Airborne Magnetometer ("HRAM") survey completed over 444 km^2 area.
- April-May 2000: Collection of five approximately 10 tonne macrodiamond mini-bulk samples.

- Summer 2000: HRAM survey follow-up, mapping, prospecting and collection of 111 (including 9 from the AD-2 trenches) 50 kg microdiamond samples. Duplicate 300 kg samples were collected at twenty-nine of the microdiamond sample sites.
- August-September 2000: Excavation of a planned 500 tonne mini-bulk sample from the Torngat 1 dyke.
- September 2001: Collection of 9 approximately 300 kilogram microdiamond follow-up samples in the DU Area.

In 1999 Twin Mining Corporation acquired Mineral Exploration Permits covering the known alkaline dykes. The company collected samples from several outcropping kimberlitic dykes during its field evaluations. The accumulated samples, totalling 968.14 kilograms, yielded 475 small diamonds, including 68 macrodiamonds. The samples were tested for diamond content using caustic dissolution at the facilities of SGS-Lakefield in Lakefield, Ontario

Between December, 1999 and January, 2000 Twin Mining contracted SIAL Geosciences Inc. ("SIAL") of Montreal, Quebec to conduct an airborne magnetic survey over their Torngat Diamond Property. The original property, which extended to the airborne survey boundary, contained twenty-nine northeast-southwesterly trending linear to en echelon magnetic anomalies, including four that have been identified, so far, as having diamondiferous alkaline dyke causative sources. The SIAL fixed-wing aeromagnetic survey has proven quite effective in identifying alkaline dikes on the Twin Mining property.

In the Spring of 2000 Twin Mining Corporation conducted a first pass macrodiamond sampling program as an initial small test of a number of outcropping dykes that were found during previous reconnaissance in 1999 to contain a significant number of microdiamonds and small macrodiamonds. It collected, transported and processed five approximately 10 tonne mini-bulk samples. The purpose of the program was to recover macrodiamonds and gain a preliminary view of the diamond potential of the dykes. The field program was carried out during the month of April and the first half of May, 2000. Five approximately 10 tonne samples were extracted along an approximately 20 kilometer strike length of the kimberlitic dyke system.

The samples were processed under the supervision of MRDI Canada at the Saskatchewan Research Council's ("SRC") facility in Saskatoon, using jigs to concentrate the heavy minerals. In total 42.84 dry tonnes of kimberlite was processed recovering 242 (>0.85 mm) macro diamonds for a cumulative total of 3.46 carats.

In 2000 Twin Mining Corporation completed its first full field season of systematic exploration work on the Torngat diamond property. The helicopter supported program had the following principal objectives:

- To locate, map and sample all outcropping and subcropping alkaline dykes throughout the project area using a combination of geological reconnaissance and prospecting together with airborne and ground magnetics.
- To check for the existence of possible kimberlite pipes or blows using the same methodology as above.

- To systematically collect a series of approximately 50 kilogram samples throughout the property for petrography, kimberlite indicator mineral (KIM) oxide analysis, KIM trace element analysis and microdiamond analysis.

Geological mapping and prospecting activities were carried out between mid July and the end of August, 2000. Alkaline dykes found during this work were further delineated along strike. No kimberlite pipes were found, while many anomalies with pipe-like geophysical signatures were determined to be caused by concentrations of magnetic minerals in the Tasiuyak gneiss. More detailed geological mapping was conducted on four geophysical grids, the SW, Kakivuq, AD-DD and North grids, which cumulatively cover approximately 18 square kilometres. This work concentrated mainly on the alkaline dykes, some related blows and structural features in the adjacent wall rocks. Detailed mapping was done at the AD-2 mini bulk sample site.

During the summer field season Twin Mining field crews collected a total of 111 approximately 50 kg microdiamond /petrographic samples, including 9 from AD-2 mini-bulk sample trenches. In addition a total of 29 approximately 300 kg larger microdiamond samples were collected from a selection of the previously sampled smaller microdiamond sample sites. Processing of the microdiamond samples was done at the Caustic Dissolution facilities of SGS-Lakefield.

In August 2000, Twin Mining collected, approximately 360 gross wet tonnes of unweathered lamprophyric dyke material from AD-2. Processing of the mini-bulk macrodiamond samples was conducted at the Dense Media Separation ("DMS") facilities of SGS-Lakefield Research. Diamond recovery results are shown in the following table.

Sample	Sample Wt. Tonnes	# of Diamonds	Carat Weight
Sample A	90.7	240	4.744
Sample C	57.7	312	2.405
Sample NN	158.3	916	5.329
Sample NN Truck 6	34.9	75	0.550
GRAND TOTAL	**341.6**	**1,543**	**13.025**

In September 2001 Twin Mining collected a series of ~300 kilogram microdiamond infill samples along a 2.5 kilometre section of the Torngat Dyke System known as the DU area. The initial DU sample site is located approximately 6 kilometres northeast of Alluviaq Fjord at UTM-NAD 27 coordinates, Zone 20, 6596869m.N; 382775m.E; elevation 457.2m. ASL. After a property wide microdiamond sampling program in 2000 this area was determined to be the most promising, consistently diamondiferous prospect.

A total of 9 samples each weighing about 300 kilograms were obtained including 7 samples from new sites and 2 where 50 kilogram samples were previously collected. The alkaline dyke samples were submitted to SGS-Lakefield where diamonds were recovered by caustic dissolution. A total of 900 kilograms of alkaline dyke material was processed recovering a total of 391 small diamonds weighing 0.1223 carats, including 60 macrodiamonds.

Unfortunately, virtually all of the microdiamond residues as well as the tails and concentrates from all of the mini-bulk sampling have been discarded by Twin. This effectively means that in most cases, results to date must be regarded as final, and no upgrading is possible through auditing of past results for inefficiencies. Twin has been remiss by not instituting standard procedures of spiking samples, auditing samples, duplicating samples and using umpire facilities for analytical work. There is however, more material available from virtually every microdiamond site, presently stored at SGS Lakefield, which will allow for further refinement of interpretations to date, without fieldwork.

Drilling
No drilling has been done on the Torngat Property. The dykes have widespread exposure on surface and Twin Mining's general exploration efforts have been focused to date on evaluating the dykes by surface sampling and manual/Pionjar trenching.

Sampling Method and Approach
Three types of samples have been acquired in connection with Twin Mining's exploration programs:

- Approximately 10 tonne macrodiamond scoping samples
- Approximately 50 kilogram and approximately 300 kilogram microdiamond samples
- An approximately 360 tonne mini-bulk sample

Sampling methodology and approach for each sample category was subject to a QA/QC procedures manual and audits by MPH Consulting. All samples were collected in accordance with the standard procedures.

Sample Preparation, Analysis and Security
Sample preparation and analyses were conducted at two facilities, utilizing three methodologies for three types of samples. The Saskatchewan Research Council ("SRC") jig plant facility in Saskatoon, Saskatchewan was utilized to process the 10 tonne scoping samples while the caustic dissolution and dense media separation ("DMS") facilities of SGS-Lakefield located in Lakefield, Ontario were used for the microdiamond and mini-bulk samples respectively. The Lakefield DMS plant was also used to retreat the scoping sample tailings from SRC. The SRC and SGS-Lakefield laboratories are both formally accredited by the Standards Council of Canada under ISO/IEC Guide 17025.

Data Verification
The data verification aspects include the confirmation of existence of work sites such as survey grids, property boundaries, microdiamond sample sites and scoping sample and mini-bulk sample trenches by MPH and audits of the sample processing phases by MRDI.

Prior to proceeding with the 2000 sampling programs Twin Mining retained MPH to prepare a QA/QC manual for the sample collection, handling and transportation aspects of the program and MRDI-Canada to prepare a similar QA/QC manual for the sample processing part of the program.

In-laboratory data verification is a normal part of SRC and SGS-Lakefield QA/QC protocol. All process efficiencies are monitored by spiking samples with known natural and synthetic diamonds. No abnormalities were found with the Torngat analytical results. Twin Mining did not implement any intra-laboratory data verification procedures.

Adjacent Properties

Following Twin Mining's claim staking activities and announcements in 1999 several junior exploration companies obtained mineral rights in the Alluviaq Fjord area. Although attention in the area has decreased considerably since then, a few claims adjacent to the original Twin Mining holdings remain in good standing. These properties have little significance in terms of the Twin Mining holdings.

Mineral Processing and Metallurgical Testing

To the knowledge of MPH Consulting Limited no mineral processing studies or metallurgical testing has been undertaken for the current property.

Mineral Resource and Mineral Reserve Estimates

To the knowledge of MPH Consulting Limited no mineral resource or mineral reserve estimates have been undertaken for the current property.

Other Relevant Data and Information

To the knowledge of MPH Consulting Limited there is no other relevant data and information concerning the current property.

Interpretation and Conclusions

Exploration work to date at Torngat to date has been confined to the prospecting, mapping and sampling of surface exposures of the diamondiferous kimberlite/lamprophyre dyke systems. During this work Twin Mining has collected microdiamond and other types of bedrock samples at over one hundred different sites. The work has been carried out however in a rather unorthodox fashion though, in that two phases of mini-bulk sampling preceded systematic prospecting and sampling of the dyke system, with the unfortunate result that the larger mini-bulk sample has been poorly sited. This in turn, reflects badly on the economic potential of the project. Industry standard sampling methods have been followed for the most part.

MPH is of the opinion that there have been some very important accomplishments namely:

- Mineral chemistry work on character samples taken from the five mini-bulk sample sites, as well as three further samples from the 2nd AD-2 bulk sample, are demonstrating <u>conclusively that the dyke at these localities has sampled diamond-bearing mantle, and most critically in MPH's opinion, that mineral chemistry is an effective tool for prioritizing areas of the dyke system with better grade potential.</u>
- The dyke system has been traced along surface, and fairly comprehensively sampled wherever it outcrops, with small microdiamond samples of nominally 24kg. splits from larger samples that are presently stored at SGS Lakefield.
- In most places the surface morphology suggests that reasonable mining widths are present, ie. consistently in excess of 1m, for this style of deposit.
- Five small mini-bulk samples were collected in 2000 from sites offering easy access with little substantiating exploration beforehand, with two of the sites, namely AD-2 on the short (~1.2km) Torngat 1 Dyke and the DU site on the northern portion of the Main Dyke, returning modestly encouraging +0.85mm grades of ~16cpht.

- The larger 341t sample at the AD-2 site carried out later in 2000 was disappointing in returning only ~13 carats for a recovered grade of <4cpht. MPH was not in favour of this program at the time, thinking it premature as it preceded the prospecting/sampling program. MPH now has serious reservations with respect to the veracity of the grade result, based on the limited audit conducted by MRDI/SGS Lakefield and believes that more audit work should have beeen carried out on the DMS tailings, and that grade factorization calculations were warranted. All that being said however, this site offers no economic potential within the area sampled, and further costs in terms of auditing are only justified in an ore-dressing study, and full diamond recovery context.
- The 341t sample did however deliver some 1,543 small macrodiamonds and a relatively flat size-frequency distribution curve, with the largest weighing 0.685 carat and was therefore of some value in demonstrating that commercial diamonds are present at Torngat and larger stones can be expected.
- Microdiamond character samples were collected from the five mini-bulk sampled sites, and when compared with those taken regionally along the ~35km of dyke strike extent, results in isolating zones with superior fine diamond content to those mini-bulk sampled.
- The microdiamond work however needs to be optimized in MPH's opinion, by processing the 2nd half of sample splits at a separate facility, and as well by re-processing any residues that still exist from the first pass samples, in order that 100% confidence in the results is obtained before any firm conclusions are drawn. This is MPH's standard procedure on all projects, and Twin has been remiss in this regard, with no sample spiking, duplicate sample processing at an umpire facility, or residue auditing of samples having been carried out.
- There is some suggestion of a general drop-off in recoveries with time, evident from samples taken from the same area. A total audit of all results is needed including examination of all residues, and tabulation and modeling of all statistics.
- The airborne geophysical work carried out by Twin has demonstrated that this is an effective tool for locating this system of intrusives at outcrop, however was not optimal in that low-level, high-resolution equipment is needed to locate more of the dykes, and any associated blows, in areas of overburden coverage.

Thus far the work at Torngat is suggesting that perhaps five areas within the known dykes may have the potential to meet target revenue/tonne thresholds for a Canadian sub-arctic location, which MPH believes are ~C$200/tonne. These are:

- <u>The DU Zone</u> where multiple microdiamond samples, some promising indicator mineral chemistry, and the best of the small mini-bulk samples are all present within an approximately 1.5km extent of the Main Dyke, which exhibits good widths where exposed.
- <u>The DU North Zone</u>, which lies across a small lake and is somewhat offset from DU, and which has three adjacent moderately anomalous microdiamond samples over ~1.5km.
- <u>The DU South Zone</u>, which similarly lies across a small lake from the DU Zone dyke, and has returned three moderately anomalous samples representing a further strike extent of interest of ~2km.
- <u>The NG1-3 Dykes</u>, which although narrower have returned the best single microdiamond sample result on the property at Dyke NG-3, including the only +1.18mm diamond

recovered from these 24kg. samples. These three closely spaced dykes may have some real high-grade promise which needs to be investigated

- Sample AD-2, which was a single microdiamond sample collected from near the bottom of the exposed 300m vertical extent of the Torngat 2 Main Dyke, which in-turn was mini-bulk sampled on top of the scarp at site DD (5.3cpht). This sample is likely sourced from a far higher grading deeper portion of the dyke, which is however exposed within the face of the fjord to result in this piece of fallrock.
- The RRR#4 Site Area is of lesser interest having paradoxically returned the low macrodiamond grade of 3.4cpht from the mini-bulk sample, yet has the best garnet chemistry of the present dataset. Tonnage potential here also seems favourable with blows located, and this area needs to be better understood at a later date, with some further encouragement from the priority sites

Recommendations

MPH has concluded that several areas thus far identified by Twin Mining show indications of being significantly better in terms of grade, then those sites mini-bulk sampled thus far by the company. The large existing sample material database allows for these zones to be better understood with further analytical studies, prior to fieldwork.

Phase 1 – Pre-field Analytical Studies

A priority in MPH's opinion is to immediately examine any remaining microdiamond residues for signs of inefficient dissolution, and construct the statistical database that will allow for better interpretation of the results to date, and all on-going microdiamond work. All should be reprocessed by a 2nd facility.

MPH recommends that the following be initiated with specific respect to the DU Zone:

- Two further samples be utilized for KIM liberation, analysis and interpretation to compare with the existing sample at the DU mini-bulk site, and the other Torngat samples. These should be 10kg. samples extracted from existing microdiamond samples 887587 and 887584, representing the northern and southern limbs of the zone.
- Petrographic examinations and interpretations should be carried out on the same material.
- Any microdiamond residues that still exist from this zone, as portrayed in Figure 8-7 from sample DB-07 on the west to GL-06 on the east, be re-processed, and also, all sample sites have the second split of the microdiamond samples processed at the umpire facility.
- Geostatistical modeling of the micro-macrodiamond database be carried out to provide an overall estimate of potential macrodiamond grade.

For DU North and DU South, similarly characterize these with firstly a KIM/petrographical sample from the best microdiamond site, namely, sample 887592 for DU North, and 887571 for DU South. Also process the sample split of the three anomalous microdiamond samples from each, as per above, at the umpire facility.

For the NG Dykes, MPH recommends:

- KIM samples be processed from each of the three dykes, including the NG3 sample site that returned the +1.18mm diamond.

- Petrographic examinations and interpretations also be carried out on the same material.
- All existing microdiamond samples from these dykes have the residues re-processed should they exist, and the remaining sample material processed at the 2nd facility.

A few other microdiamond samples returned anomalous results that warrant a first step of preparing KIM interpretations for these sites, namely 887576 and 578 on Pita 1, and 887633 on the extreme north end of exposed Torngat 1 dyke, but offset from the overall DU North dyke. Each of these should have a KIM/petrographical sample processed and interpreted for comparative purposes, and to have the rest of the microdiamond split processed as well as the original residue, should they exist, re-processed.

Finally, each of the other dykes on the property, ie. The South Dykes, Dallas Dyke, Richard Dykes etc., and each splay of the Main Dyke, should have a KIM/petrographic sample processed and interpreted from the best microdiamond site. This will a) complete the KIM assessment of each known dyke and b) allow for better petrologic conclusions as to the entire Torngat intrusive system, and c) may show some thus-far not recognized potential for these dykes.

Completion of all of the above will allow for concise comparisons of all areas, and ultimately a definitive ranking of the best interval for further exploration work.

Phase 1 Budget Summary

DESCRIPTION	ESTIMATE	TOTAL
Staffing		**$ 15,000**
KIM/Petrographic/Microdiamond Samples		**$ 257,000**
Report Costs		**$ 10,000**
Management Fee		**$ 25,000**
Sub-Total		**$ 307,000**
Contingency @ 10%		**$ 30,000**
Sub-Total		**$ 337,000**
GST @7% (May be wholly or partially refundable)		**$ 25,600**
TOTAL *		**$ ~360,000**

<u>Phase 2 – Field Exploration</u>

Assuming continued success above with Phase 1, which should be pragmatically defined as expert independent grade estimates of >50cpht based on the combined KIM/petrographic/microdiamond data for each zone, MPH anticipates that several zones may be deemed of high interest, and therefore warrant further exploration. This should comprise three main functions namely:

- Mini-bulk sampling each with small 10t samples for comparative purposes with the present database of sites, with the 2006 samples taken from the absolute best microdiamond site in each zone.
- Low level, high-resolution geophysics to ascertain whether any parallel dykes are nearby, and whether blows etc. exist particularly at some of the offset locations which is common with these deposits.

- A limited core drilling program of say 1,000m per zone to test for depth continuity to -200m and with sampling, grade variations and KIM changes, with depth. Also 500m of coring should be reserved for testing airborne targets with short holes. It would be very useful as well if this program encompasses sampling and mapping of the exposure of Torngat 1 dyke on the fjord face, from site DD to the AD-6 high-grade microdiamond sample. This can be accomplished with proper equipment by lowering men from the top.

Phase 2 Budget Summary

DESCRIPTION	ESTIMATE	TOTAL
Mob/ Demob		**$ 100,000**
Staffing		**$ 100,000**
Support Costs		**$ 250,000**
Core Drilling/Trenching / Microdiamond Samples		**$ 575,000**
Geophysics		**$ 150,000**
Report Costs		**$ 50,000**
Management Fee		**$ 100,000**
Sub-Total		**$ 1,325,000**
Contingency @ 10%		**$ 130,000**
Sub-Total		**$ 1,455,000**
GST @7% (May be wholly or partially refundable)		**$ 102,000**
TOTAL *		**$ ~1,550,000**

This program should be definitive in terms of better establishing the economic potential of the Torngat dyke system, and in establishing the best possible site for further work which would include delineation drilling and larger bulk samples in order to construct the first resource estimate(s).

A total budget of approximately $1,800,000, excluding GST is estimated for the exploration program.

1.0 INTRODUCTION

MPH Consulting Limited ("MPH") has been retained by Twin Mining Corporation "Twin Mining" or "the Company") to complete an Independent Technical Report ("Report") on the Torngat Diamond Property located in the eastern Ungava region of northern Quebec. This Report complies with Canadian National Instrument 43-101 and Form 43-101F guidelines and was prepared in conformity with generally accepted Canadian mining industry practice. The report assesses the technical and economic potential of the project area and recommends a follow up program.

MPH understands that this Report will be used by Twin Mining for securities regulatory filings and for exploration/development fundraising activities.

1.1. Authorization and Terms of Reference

Twin Mining initially approached MPH in April, 2000, to prepare a Quality Control / Quality Assurance Manual (MPH Consulting Limited, 2000A) to describe the system and procedures to be followed to ensure the integrity of an initial macrodiamond scoping sampling program of some of the Torngat kimberlite dykes. Following the field program MPH prepared a report dated May 30th, 2000 entitled "Technical Audit of Sample Acquisition, Handling and Transportation Procedures for a Macrodiamond Sampling Program, Torngat Diamond Project, Northern Quebec" (MPH Consulting Limited, 2000B). MPH was also retained in July, 2000 to assist with development of suitable field procedures for testing of diamond exploration targets and also to conduct an independent procedural audit of the acquisition, transportation and storage of a mini-bulk sample. Following the field program MPH prepared a report dated November 24th , 2000 entitled "Second Technical Audit of General Exploration Methodology, Sample Acquisition, Handling and Transportation Procedures for a Diamond Exploration Program, Torngat Diamond Project, Northern Quebec" (MPH Consulting Limited, 2000C). Mr. Paul Sobie, and Mr. Howard Coates, both Vice Presidents of MPH Consulting Limited jointly conducted the work.

Subsequently, Twin Mining retained MPH on March 1, 2006, to prepare an Independent Technical Report to conform with National Instrument 43-101. This report on the Torngat property dated April 5th, 2006 was commissioned and authorized by Mr. Hermann Derbuch, President & Chief Executive Officer of Twin Mining Corporation. The report was prepared in Toronto between March 7th and April 5th, 2006

1.2. Qualifications of MPH and Authors

MPH is an international geological and mining consulting firm, which was incorporated in the Province of Ontario in 1967. MPH provides a wide range of geological and mining consulting services to the international mining industry, including geological, evaluation and valuation reports, pre-feasibility and feasibility studies on mineral properties. The firm's services are provided through offices in Toronto, Canada, and Gabarone, Botswana. MPH is not an insider, associate or affiliate of Twin Mining.

The Report has been prepared principally by Mr. Howard Coates, P.Geo, and Mr. Paul Sobie, P.Geo, both Vice Presidents and Principal Geological Consultants with MPH. The preparation of the Report was in consultation with geophysicist Mr. Jeremy Brett, M.Sc., P. Geo., a Senior Consultants with MPH. Mr. Brett has 12 years experience in the mining industry including extensive experience in diamond, gold and base metal exploration and mining projects throughout the world. Mr. Sobie is MPH's principal diamond consultant with 20 years of worldwide experience. Mr. Coates has over 35 years experience in the mining industry that also includes extensive experience in the evaluation of diamond, gold and base metal exploration and mining projects throughout the world.

The principals involved in the preparation of this Report have a demonstrated track record in undertaking independent assessments of Resources and Reserves, project evaluations and audits, technical reports and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies and financial institutions worldwide. More importantly, all of the authors of this Report have the relevant experience to the deposit type reviewed in this Report.

Neither MPH nor any of the authors of this Report (nor their family members or associates) have a business relationship, other than acting as an independent consultant, with Twin Mining or any associated company, nor with any company mentioned in the Report, which is likely to materially influence their impartiality or create the perception that, the credibility of the Report could be compromised or biased in any way. The views expressed herein are genuinely held and deemed independent of Twin Mining.

Moreover, neither the authors of the Report nor MPH (nor their family members or associates) have any financial interest in the outcome of any transaction involving the properties considered in this Report, other than the payment of normal professional fees for the work undertaken in their preparation (which are based upon hourly charge-out rates and reimbursement of expenses). The payment of such fees is not dependent upon the content or the conclusions of either this Report, or any consequences of any proposed transaction.

Twin Mining has accepted that the qualifications, expertise, experience, competence, and professional reputation of MPH's Principals, Associate Geologists and Engineers and are deemed appropriate and relevant for the preparation of this Report. Twin Mining has also accepted that MPH's principals are members of professional bodies that are appropriate and relevant for the preparation of this Report.

1.3. Scope of Work and Sources of Information

Twin Mining commissioned MPH to compile the Technical Report on the properties and develop an exploration/development program.

In preparing this Report, MPH reviewed geological reports and maps, miscellaneous technical papers, company letters, memoranda and other public and private information as listed in the "Reference" section of this report. In addition, MPH completed three site visits and interviews with key personnel as well as drawing on its own experience in diamond projects and previous work in Canada and elsewhere.

The report is based on personal observations of bedrock exposures and blasted surface trenches, where the samples were obtained, direct observation of sub-sample/sample acquisition, handling and transportation, together with extensive communications with Twin Mining's technical and managerial staff, particularly Dallas Davis, Director Diamond Mining. Additional discussions were held with Richard Roy of Francaumaque Explorations who personally oversaw the entire exploration/sample collection/transportation process. P. A. Sobie visited the Torngat Property between July 31st and August 3rd, 2000, while H. J. Coates visited the site on four occasions, between April 8th and 11th and between April 27th and 29th during the scoping sampling program, between August 24th and 27th, 2000 during the start-up of bulk sampling and between September 17th and 20th, 2000 near the end of the sampling field work. No site visit was made in connection with the current report.

Mr. W.J. Anderson, P. Geol., MPH President completed the peer review of this report.

This report is based on information known to MPH as of April 5, 2006.

All measurement units used in this report are metric, and currency is expressed in Canadian Dollars. The exchange rate on April 5, 2006 was US $1.00 equal to 1.16 Canadian Dollars.

2.0 RELIANCE ON OTHER EXPERTS

MPH assumed that all of the information and technical documents reviewed and listed in the "References" are accurate and complete in all material aspects. While MPH carefully reviewed all of this information, MPH has not concluded any extensive independent investigation to verify their accuracy and completeness.

MPH has not searched titles to the land holdings and has not independently verified the legal status of the ownership of the Property or the underlying agreements. Information provided in this report with respect to land holdings and legal status is that provided to MPH by Twin Mining.

The information, conclusions contained herein are based on the information available to MPH at the time of preparation of this Report, assumptions, conditions and qualifications as set forth in the Report and data listed in the "References".

Twin Mining has warranted that a full disclosure of all material information in its possession or control has been made to MPH. Twin Mining has agreed that neither it nor its associates will make any claim against MPH to recover any loss or damage suffered as a result of MPH's reliance upon the information provided by Twin Mining for use in the preparation of this Report. Twin Mining has also indemnified MPH against any claim arising out of the assignment to prepare this Report, except where the claim arises as a result of any proved wilful misconduct or negligence on the part of MPH. This indemnity is also applied to any consequential extension of work through queries, questions, public hearings or additional work required arising from MPH's performance of the engagement.

Twin Mining has reviewed draft copies of the Report for factual errors. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statement and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this Report.

MPH reserves the right to, but will not be obligated to, revise this Report and conclusions thereto if additional information becomes known to MPH subsequent to the date of this report.

3.0 PROPERTY DESCRIPTION AND LOCATION

The Torngat Diamond Property is located in northeastern Quebec at Alluviaq Fjord on the eastern shore of Ungava Bay, Nunavik district, at approximate geographic coordinates: 59^o 30' north latitude; 65^o 10' west longitude (Figure 3-1). The nearest permanent settlement is the town of Kangiqsualujjuaq (formerly George River) located about 90 km south-southwest of the Property. The town of Kuujjuaq (formerly Fort Chimo) is located about 250 km southwest of the Property. Montreal lies approximately 1,500 km to the south-southwest.

Between 1999 and 2000 Twin Mining staked mineral rights covering some 506.85 km^2 in the eastern Ungava region of Quebec. After completion of work programs these holdings have been consolidated and reduced to cover all of the known diamondiferous dykes.

The area over which the Company currently has mineral rights include one Permis d' Exploration Miniere ("PEM") covering an unsurveyed area of some 5,000 hectares or 50 km^2 and 34 map staked mineral claims covering an unsurveyed area of 1181.4 hectares (Figure 3-2). Property acquisition in far northern Quebec is by map staking based on precise UTM coordinates. PEM's are valid for 5 years and may be renewed for an additional 5 year period. Annual licence renewal fees are $75/km^2. A summary of mineral rights is provided in Table 3-1.

The Torngat property is 100% owned by Twin Mining Corporation.

The status of the mineral rights, surface rights and details of agreements have not been certified by MPH Consulting Limited.

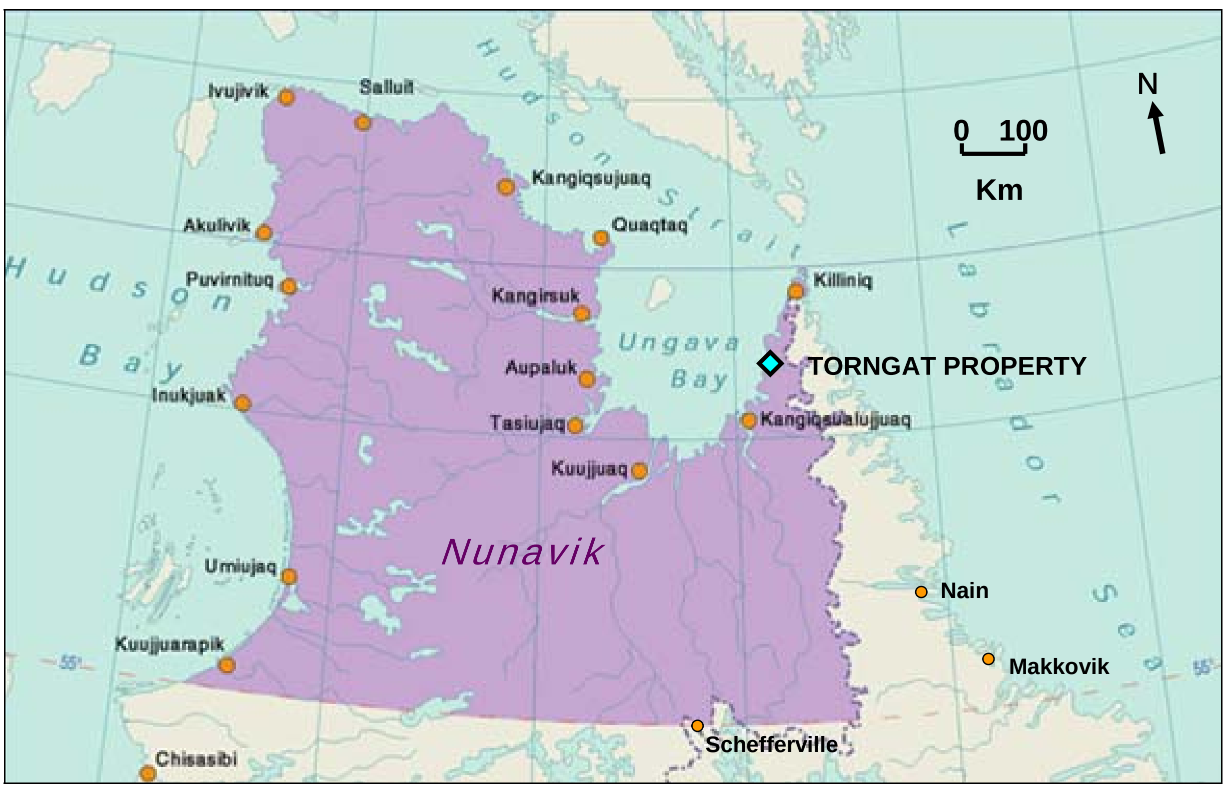


Figure 3-1: Location Map.

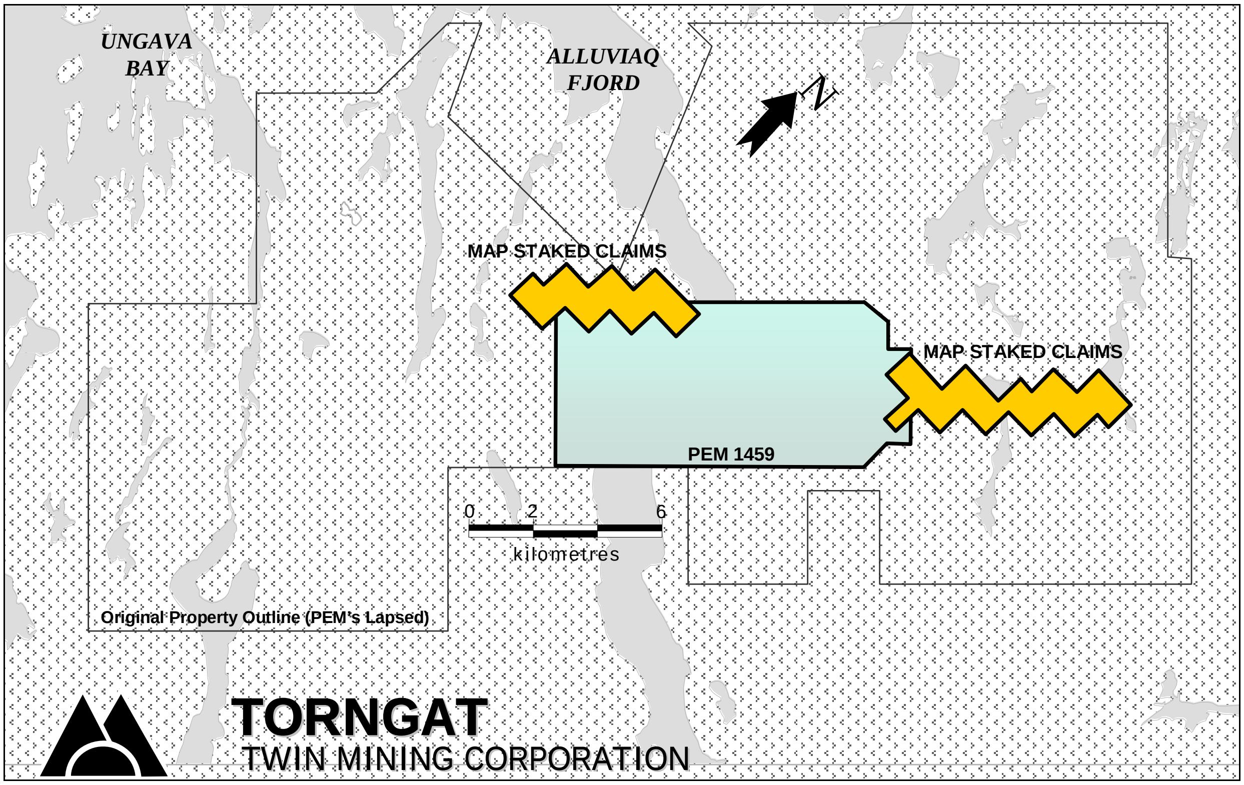


Figure 3-2: Claims Map.

Table 3-1: Torngat Diamond Property, List of Mining Rights

Permit Number	NTS Reference	Area (hectares)	Acquisition Date	Work Credits	Expiry Date
PEM 1459	24P/6, 11	5,000	July 21, 1999	$1,723,725.68	July 20, 2006
PEM Total	**1**	**5,000**			
Claim Number	**NTS Reference**	**Area (hectares)**	**Acquisition Date**	**Work Credits**	**Expiry Date**
0093109	24P6	43.88	Sept 23, 2005	$7,720.47	Sept 22, 2007
0093110	24P6	43.88	Sept 23, 2005	$7,720.47	Sept 22, 2007
0093111	24P6	36.63	Sept 23, 2005	$6,444.87	Sept 22, 2007
0093112	24P6	43.87	Sept 23, 2005	$7,718.71	Sept 22, 2007
0093113	24P6	42.57	Sept 23, 2005	$7,489.98	Sept 22, 2007
0093114	24P6	24.05	Sept 23, 2005	$4,231.48	Sept 22, 2007
0093115	24P6	3.07	Sept 23, 2005	$ 540.15	Sept 22, 2007
0093116	24P6	43.86	Sept 23, 2005	$7,716.95	Sept 22, 2007
0093117	24P6	40.96	Sept 23, 2005	$7,206.71	Sept 22, 2007
0093118	24P6	20.15	Sept 23, 2005	$3,545.29	Sept 22, 2007
0093119	24P6	1.42	Sept 23, 2005	$ 249.84	Sept 22, 2007
0093120	24P6	43.85	Sept 23, 2005	$7,715.29	Sept 22, 2007
0093121	24P6	38.72	Sept 23, 2005	$6,812.59	Sept 22, 2007
0093122	24P6	16.29	Sept 23, 2005	$2,866.20	Sept 22, 2007
0093123	24P6	0.40	Sept 23, 2005	$ 70.37	Sept 22, 2007
0093124	24P6	5.00	Sept 23, 2005	$1,174.53	Sept 22, 2007
0093125	24P6	6.42	Sept 23, 2005	$1,508.16	Sept 22, 2007
0093126	24P6	26.88	Sept 23, 2005	$6,314.36	Sept 22, 2007
0093127	24P6	42.81	Sept 23, 2005	$10,056.39	Sept 22, 2007

0093128	24P6	43.80	Sept 23, 2005	$10,288.95	Sept 22, 2007
0093129	24P6	43.80	Sept 23, 2005	$10,288.95	Sept 22, 2007
0093096	24P11	43.79	Sept 23, 2005	$10,286.60	Sept 22, 2007
0093097	24P11	43.79	Sept 23, 2005	$10,286.60	Sept 22, 2007
0093098	24P11	43.79	Sept 23, 2005	$10,286.60	Sept 22, 2007
0093099	24P11	43.79	Sept 23, 2005	$10,286.60	Sept 22, 2007
0093100	24P11	43.78	Sept 23, 2005	$10,284.25	Sept 22, 2007
0093101	24P11	43.78	Sept 23, 2005	$10,284.25	Sept 22, 2007
0093102	24P11	43.78	Sept 23, 2005	$10,284.25	Sept 22, 2007
0093103	24P11	43.77	Sept 23, 2005	$10,281.90	Sept 22, 2007
0093104	24P11	43.77	Sept 23, 2005	$10,281.90	Sept 22, 2007
0093105	24P11	43.77	Sept 23, 2005	$10,281.90	Sept 22, 2007
0093106	24P11	43.76	Sept 23, 2005	$10,279.55	Sept 22, 2007
0093107	24P11	43.76	Sept 23, 2005	$10,279.55	Sept 22, 2007
0093108	24P10	43.76	Sept 23, 2005	$10,279.55	Sept 22, 2007
Claims Total	**34**	**1,181.4**			

4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

Access to the Property is by boat (Skidoo), fixed-wing float (Ski-equipped) plane or helicopter from Kuujjuaq or Kangiqsualujjuaq, both of which have scheduled air service.

The Property is some 100 km north of the tree line. The climate is Arctic, characterized by short cool summers and long cold winters, with an average annual temperature between -5 and -7.5^{o}C. Summer day time high temperatures are usually in the 10 to 20^{o}C range with winter highs in the -25 to -35^{o}C range. The region receives about 400 to 500 mm of precipitation annually with about 45% of the total falling as snow. There are normally 20 to 40 frost free days annually.

The central part of the property is an undulating plateau ranging from about 400 to 600 metres above sea level and is part of a larger geographical entity, the George Plateau. The plateau is hummocky glaciated terrain typical of continental ice-sheet glaciation. The plateau is dissected by steep-sided U-shaped valleys, gorges and fjords that were excavated by mountain or valley glaciers. The largest fjord is Alluviaq Fjord that bisects the property and trends in a southeast-northwest direction. The sheer walls of the Alluviaq Fjord rise sharply from sea level to an elevation of over 400 metres in the vicinity of the diamondiferous dykes.

The Alluviaq Fjord area is remote wilderness with no mining related infrastructure. The nearest semi-permanent facility is a commercial fly-in wilderness camp operated by Torngat Mountains Outfitting Camp Inc. of Kangiqsualujjuaq, located at the head of the fjord (Photo 1).

Photo 1: Wilderness camp at Alluviaq Fjord.

5.0 HISTORY

The eastern sub-arctic region of Canada and the geologically equivalent areas across the Labrador Sea in west Greenland have been known for over 50 years to host alkaline mafic to ultramafic intrusions including kimberlite, carbonatite and lamprophyre dykes. With the discovery of diamondiferous kimberlite in the Lac de Gras region of the Northwest Territories in 1990 grass roots exploration for diamonds began in earnest in the region. While the most impressive discovery to date in this area remains the Voisey's Bay Nickel Deposit, Labrador by Diamondfields Resources, three significant diamond plays have evolved including; Sarfartoq, Greenland (Dia Met Minerals-Monopros and Hudson Resources Inc.), Sukkertoppen, Greenland (Platinova-Aurora Diamondfields) and Twin Mining's Torngat Project.

5.1. Regional Historical Account

Bounded by the rocky shores of the Labrador Sea and Ungava Bay, the inhospitable Torngat Mountains were largely bypassed by early explorers of North America. The first account of a European scientific expedition to the region was in 1811 by a couple of Moravian missionaries who explored the coast from Saglek, Labrador to what is now Kuujjuaq, Quebec (Kohlmeister & Kmoch, 1811).

In terms of diamond exploration in the Torngats and adjacent areas the region has been known for many years to contain alkaline mafic dykes (cf. Kranck, 1939; Ghandi et. al., 1969; Hawkins, 1976; Collerson & Malpas, 1976; Foley, 1982; Malpas et. al., 1986; Wardle et. al., 1994; and Digonnet, 1997). Hawkins (1976) was the first to classify material as kimberlite, and Digonnet (1997) found the first diamond, a 1.5 millimetre macrodiamond.

Farther afield in northern Labrador and west Greenland sporadic exploration for diamonds has been ongoing for some years, the latter area since the 1970's. The most advanced project is the Dia Met Minerals-Monopros joint venture in the Sarfartoq region at Sondre Stromfjord southwest of Kangerlussuaq where two microdiamonds were found in stream sediments by De Beers in 1974. In 1998, 493 microdiamonds and 5 macrodiamonds were recovered by De Beers from a total of 558 kilograms of material from outcropping kimberlite dykes and boulders. In 1999 three localities were selected for preliminary macrodiamond sampling and some 20 tonnes of kimberlite was collected. Processing results of this 20 tonne sample have not been made public by Dia Met.

Also in the Sarfartoq area, Hudson Resources Inc. have reported promising caustic dissolution results from kimberlite float including the largest known diamond recovered in west Greenland thus far, a colourless stone weighing 0.0703 carats (Hudson Resources, 2006)

5.2. Previous Work Torngat Property Area

The earliest systematic geological investigation including the current Property was a regional Geological Survey of Canada study covering an area of more than 168 000 km^2 including NTS map sheets 13O to 13M, 14C to 14F, 14L, 14M, 23P, 24A, 24B, 24G to 24J, 24P, and 25A

(Taylor, 1979). Mapping was completed along 6.4 km spaced traverses throughout the map area. Taylor's contribution to the understanding of the area includes principally the establishment of a relatively detailed group of units based on mineralogy and metamorphic facies. In addition, well over 100 samples were taken by Taylor for age determinations. A determination of 524 $^{+/-}$ 78 Ma (Cambrian) was obtained from a sub-ophitic, medium grained diabase dyke located approximately 60 km northwest of the Torngat 1, 2, and 3 dykes.

In 1990, Goulet and Cieselski completed geological investigations focused on the Abloviak Shear Zone. The ultramafic alkaline dykes currently known as the Torngat 1 and 2 areas (Photo 2) were identified and sampled during this program as well as a series of sulphide showings near the mouth of the Abloviak Fjord.

Photo 2: Alluviaq Fjord, looking north toward Torngat 1 and 2 areas (arrow).

In 1993, Falconbridge participated in a field trip organised by Goulet to evaluate the above noted sulphide showings, some of which were moderately anomalous in nickel. The Falconbridge field trip also included a visit to a late mafic dyke containing mica, olivine and garnet, located at 59°26'24" N and 65° 10' 73" W. Two samples (1.7 and 2.5 kg) were sent to Lakefield Research for analysis. Lakefield's results confirmed the kimberlitic affinity of the dyke, but all indicator minerals identified (garnet and chromites) plotted outside the field of diamondiferous kimberlites. The above co-ordinates given indicate a location southwest of the fjord, roughly halfway between Torngat 1, 2, and 3 and Torngat South.

The presence of kimberlitic dykes and diamonds was indicated on what is now the Torngat Property by Stephane Digonnet who completed a M.Sc. thesis in 1997 under the direction of the late Professor James Bourne at the University of Quebec in Montreal. Digonnet’s detailed work provided important new information regarding the dykes, including the finding of a 1.5mm gem quality diamond along with both G9 and G10 garnets (Digonnet, 1997).

Under an option agreement with Professor Bourne dated March 20, 1997, Fjordland Minerals Limited acquired a Mineral Exploration Permit on 400 square kilometres centered on Alluviaq Fjord in the Torngat Mountains of Quebec. In 1997 the company completed a limited till sampling program. Results from the 41 samples were below expectations and the agreement was terminated.

In June 1999 Twin Mining Corporation in liaison Professor Bourne acquired a 50 square kilometre Mineral Exploration Permit covering the known kimberlitic dykes at Alluviaq Fjord. The company collected samples from several outcropping dykes during its initial field evaluation. These contained both micro and macrodiamonds leading the company to acquire additional mineral land holdings for a cumulative total of 506.85 square kilometres at one point. Exploration work conducted on these holdings will be described in subsequent sections of this report.

6.0 GEOLOGICAL SETTING

The Torngat property is within the Torngat Orogen in the Southeastern Churchill Province near the northwestern margin of the ancient North Atlantic Craton. The east to northeasterly trending alkaline dykes of the kimberlite-lamprophyre clan that host the diamond occurrences are currently known to exist within a large triangular area with apices at Killinek Island, NWT in the north, at Baufremont River (Torngat South) on Ungava Bay, New Quebec in the west, and at Saglek Fjord on the Labrador coast. The Labrador portion of this immense prospective area lies within the proposed Torngat National Park.

6.1. Paleotectonic Setting & Temporal Range

The fragmented North Atlantic Craton is represented by the Nain Province (3800-2500 Ma) in Labrador and the Archean craton portion (3800-2600 Ma) of the Greenland Shield (Figure 6-1). The craton is bounded to the southeast by the Makkovik Province (2800-1800 Ma) in Labrador and the more extensive Keltidian Mobile Belt (1900-1600 Ma) in southern Greenland. The western boundary of the craton is with the Southeastern Churchill Province (2780-1740 Ma) comprising the reworked Archean Rae Province core zone with two flanking orogens, the New Quebec Orogen (Labrador Trough) in the west and the Torngat Orogen in the east. The eastern part of the Southeastern Churchill Province, the Torngat Orogen, is inferred to extend from northeastern Quebec and Labrador, through the southern tip of Baffin Island (Hoffman, 1989), and from there to the Nagssugtoqidian Mobile Belt (1750-2000 Ma) in west Greenland (Korstgaard, et. al., 1987).

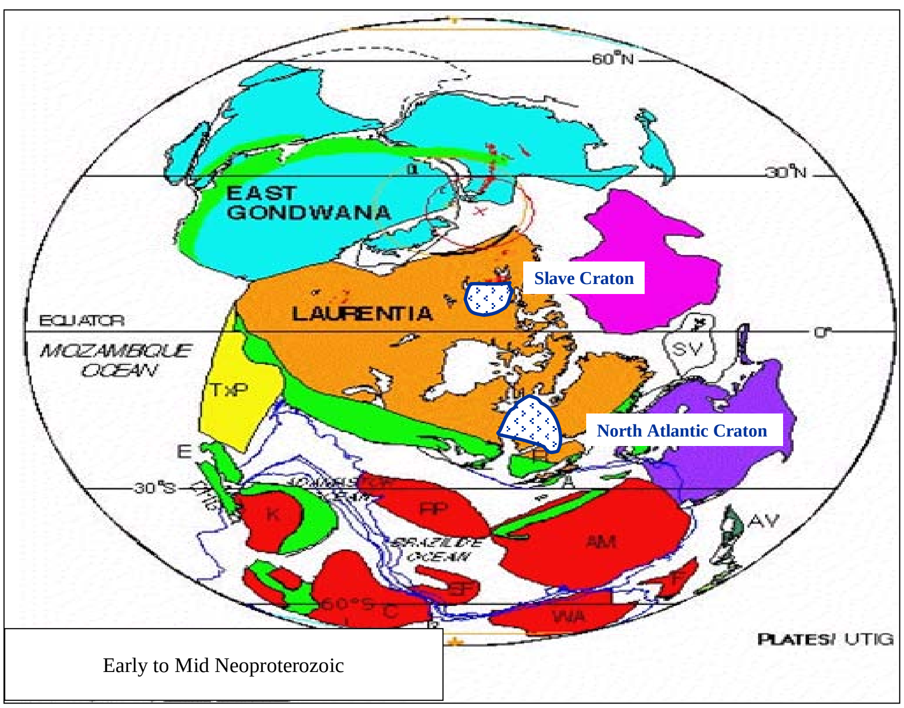


Figure 6-1: 725 Ma Continental Plate Reconstruction showing North Atlantic Craton (Modified from Dalziel, 1997)

The Torngat Orogen in northeastern Quebec and Labrador has seven tectonic divisions. Proceeding from east to west these are:

- the Four Peaks domain,
- the Komaktorvik shear zone,
- the Burwell domain,
- the Tasiuyak domain,
- the Abloviak (Alluviaq) shear zone,
- the Lac Lomier complex, and
- the Southeastern Churchill core zone (correlated with the reworked Archean Rae Province).

The Four Peaks Domain which represents the eastern foreland zone of the Torngats contains tectonically overprinted Nain Province rocks that have been Pb-Pb dated as early as 3,700 Ma (Wardle et al., 1993).

The Komaktorvik shear zone includes both Archean and Proterozoic rocks within a broad zone of ductile shearing which separates the Burwell domain from the Four Peaks domain.

The eastern part of the Burwell domain consists mainly of Early Proterozoic intermediate to felsic plutonic rocks U-Pb dated between 1910 and 1864 Ma (Scott et al., 1993) interspersed with belts of metasedimentary gneiss, while the western part is mainly metasedimentary gneiss (Goulet & Clesielski, 1990).

The Tasiuyak domain comprises Early Lower Proterozoic garnetiferous gneisses dated between approximately 2100 and 1800 Ma that form a north-northwesterly trending belt traceable from west of Voisey's Bay to north of Nachvak Fjord, Labrador before curving to the northwest to the Alluviaq Fjord area of Ungava Bay, a distance of about 500 kilometres. It is then further traceable by aeromagnetics across Hudson Strait into Baffin Island (Hoffman, 1990).

The Alluviaq (Abloviak) shear zone is approximately coincident with the Tasiuyak gneiss generally marking the Early Proterozoic (1860-1790 Ma) collision zone between the Rae Province in the west and the North Atlantic Craton (Nain Province) in the east. The collision zone is complicated in northern Labrador/east Ungava where the previously described Komaktorvik shear zone diverges from the Abloviak shear zone and isolates an intervening crustal wedge, the previously described Burwell domain (Wardle, et al.,1992).

The western margin of the Tasiuyak domain is intermittently intruded by granitoid plutons of the Early Proterozoic (1840-1810 Ma) Lac Lomier complex.

Finally the hinterland of the Torngat Orogen or the Southeastern Churchill core zone comprises reworked Archean gneisses of the Rae Province with infolded belts of Proterozoic metasedimentary gneisses, the Lake Harbour Group (Goulet & Clesielski, 1990).

Post tectonic alkaline dykes of the lamprophyre-kimberlite clan are widespread throughout the North Atlantic Craton and tens of kilometres beyond its margins into neighbouring rocks of the

Makkovik Province/Keltidian Mobile Belt and the Torngat Orogen/ Nagssugtoqidian Mobile Belt. The southern border region of the craton along the Makkovik/Keltidian trend has several carbonatite-kimberlite-lamprophyre dyke occurrences on the Aillik Peninsula, Labrador and in the Midternaes district of Greenland, with some microdiamonds being found in the latter area. Alkaline dykes are widespread along the Torngat/Nagssugtoqidian trend from the Abloviak (Alluviaq) Fjord region, Quebec (Torngat, Kakivuk, Torngat South), along the Labrador coast (Hebron Fjord, Saglek Fjord, Eclipse Harbour, Telliaosilik Fjord, Tunuissugjuak Inlet and Grenfell Sound), at Killinek Island, Northwest Territories, and at Holsteinsburg, Sarfartoq, and Sukertoppen, western Greenland. Macrodiamonds have been found at Alluviaq Fjord, Sarfartoq, and Sukkertoppen.

In terms of temporal range of the alkaline dykes, there is little in the way of age dating available for most of the above occurrences. The geological descriptions in all cases indicate that the dykes are post-tectonic. However, age dates are available for all of the known macrodiamond bearing dykes including Abloviak (Digonnet, 1997), Sukkertoppen and Safartoq as well as from dykes at Holsteinsburg, (Larsen et. al., 1983; Larsen & Rex, 1992). The Abloviak kimberlites are indicated to be Lower Cambrian to earliest Neoproterozoic III in age with K-Ar dates in the range of $579^{+/-}4$ to $549^{+/-}5$ Ma and with a Sm-Nd date at $550^{+/-}10$ Ma. The Holsteinsburg dykes are Lower Cambrian to Neoproterozoic III, with K-Ar dates of $607^{+/-}20$ to $583^{+/-}20$ Ma and with a Sm-Nd date at $587^{+/-}24$ Ma. Sukkertoppen and Safartoq are Lower Cambrian to Cryogenian, with K-Ar dates of $607^{+/-}20$ to $586^{+/-}20$ Ma and with Sm-Nd dates from $613^{+/-}24$ to $586^{+/-}26$ Ma.

The alkaline dyke emplacement corresponds generally with a major global tectonic event, the Lower Paleozoic separation of the Laurentia proto-continent (comprising proto-North America, Greenland and Iberia) from the South American porton of the Gondwana proto-continent (Figures 6-2 and 6-3). This corresponds with the opening of the proto-Atlantic or Iapetus Ocean in late Proterozoic to early Paleozoic times. The main manifestation of this tectonic event is the initial rifting in the St. Lawrence rift system (northwestern margin of the Appalachian Orogen) to the south. There is a distinct temporal and structural link between the St. Lawrence rift and the Lake Melville/Sandwich Bay half-graben rift system in the Grenville Province of eastern Labrador (mafic dykes ca. 615 Ma age), and lamprophyre dykes of ca. 570 Ma in the Makkovik Province, east-central Labrador (Figure 6-4). Continuing northward, similar sub-parallel alkaline dyke systems (including the Torngat dykes) are widespread throughout northeastern Quebec, Labrador, and the adjacent part of the NWT.

The Torngat property (Figure 6-5) lies astride the boundary between the Burwell domain crustal wedge in the northeast and the reworked Archean Rae Province in the southwest. The two crustal domains are separated by the Tasiuyak domain and the semi-coincident Alluviaq (Abloviak) shear zone. The northeast-southwesterly trending alkaline dykes crosscut the older units approximately at right angles. The kimberlitic dyke system has been traced across the property through all of the above lithological units by a combination of reconnaissance geological mapping and geophysical interpretation.

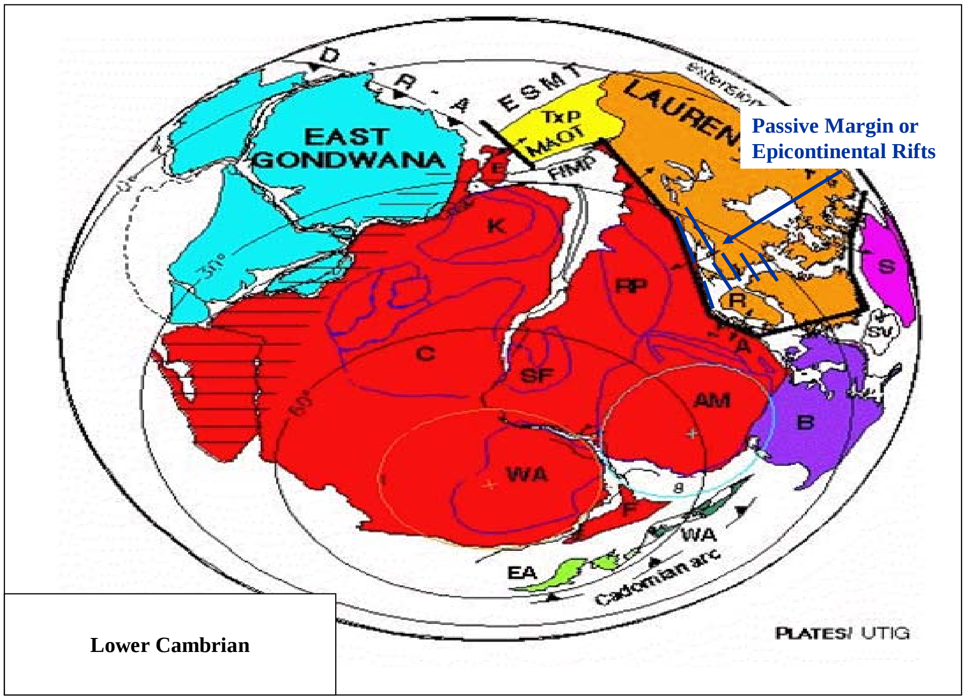


Figure 6-2: 545 Ma Continental Plate Reconstruction showing Laurentian Rifts (Modified from Dalziel, 1997)

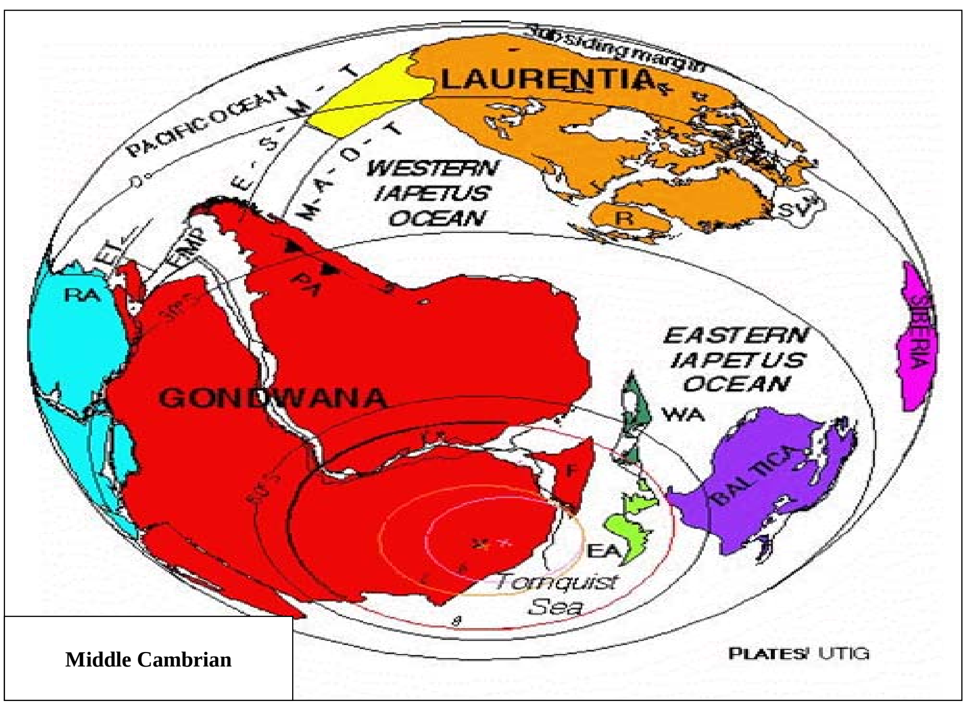
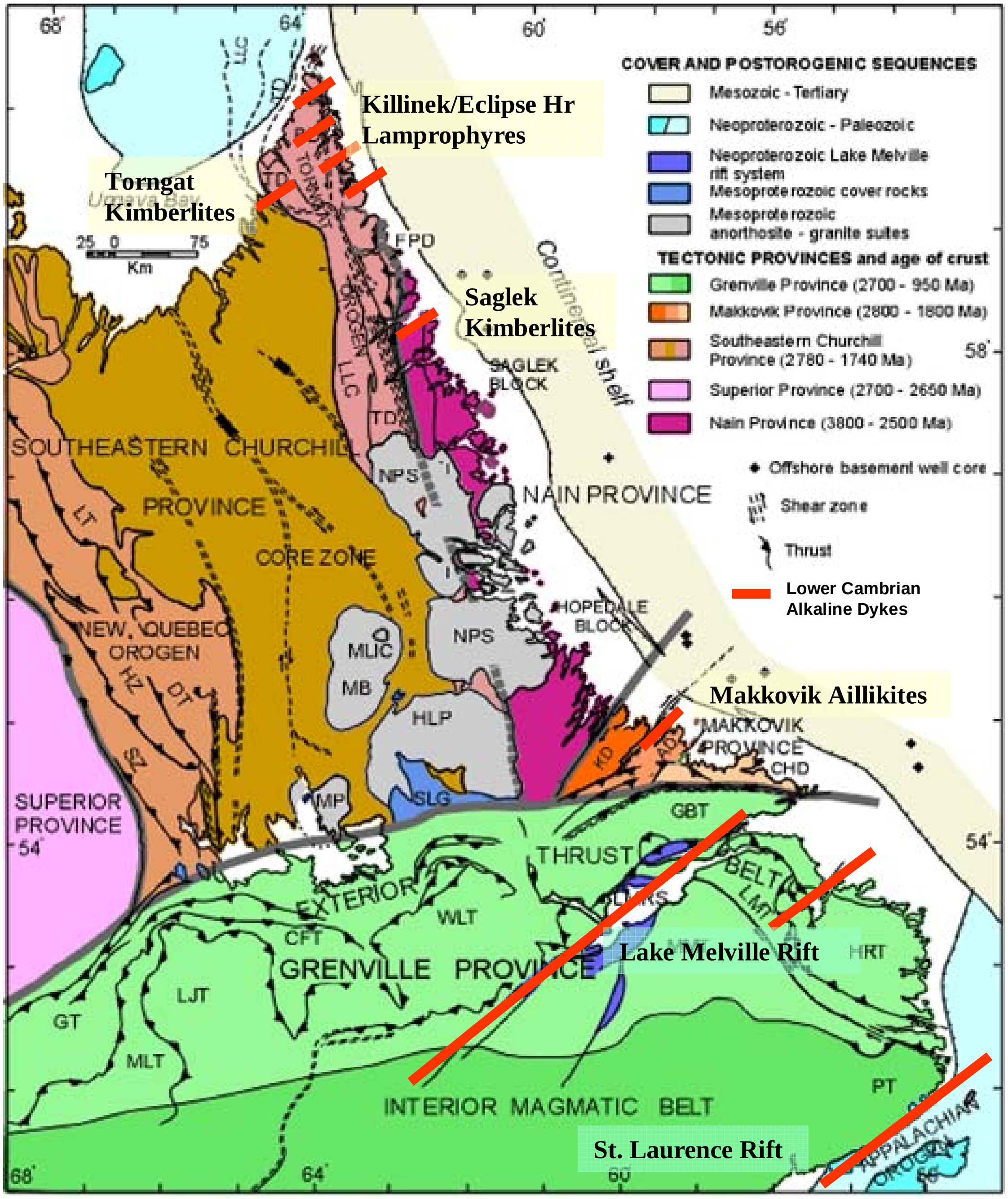


Figure 6-3: 515 Ma Continental Plate Reconstruction, the opening of Iapetus (Dalziel, 1997)



SZ = Schefferville zone; HZ = Howse zone; DT = Doublet terrane; LT = Laporte terrane; LLC = Lac Lomier complex; TD = Tasiuyak domain; BD = Burwell domain; FPD = Four Peaks domain
KD = Kaipokok domain; AD = Aillik domain; CHD = Cape Harrison domain
GBT = Groswater Bay terrane; LMT = Groswater Bay terrane; HRT = Hawke River terrane; MMT = Mealy Mountains terrane; WLT = Wilson Lake terrane; CFT = Churchill Falls terrane; MLT = Molson Lake terrane; LJT = Lac Joseph terrane; GT = Gagnon terrane, PT = Pinware terrane
LMRS = Lake Melville rift system; SLG = Seal Lake Group; NPS = Nain Plutonic Suite; MB = Mistastin batholith; HLP = Harp Lake pluton; MP = Michikamau pluton; MLIC = Mistastin Lake impact crater

(map from Internet website: www.geosurv.gov.nf.ca/ecsoot/ecsoot10.html, modified)

Figure 6-4: Tectonic Subdivisions of northeastern Quebec and Labrador, LITHOPROBE ECSOOT.

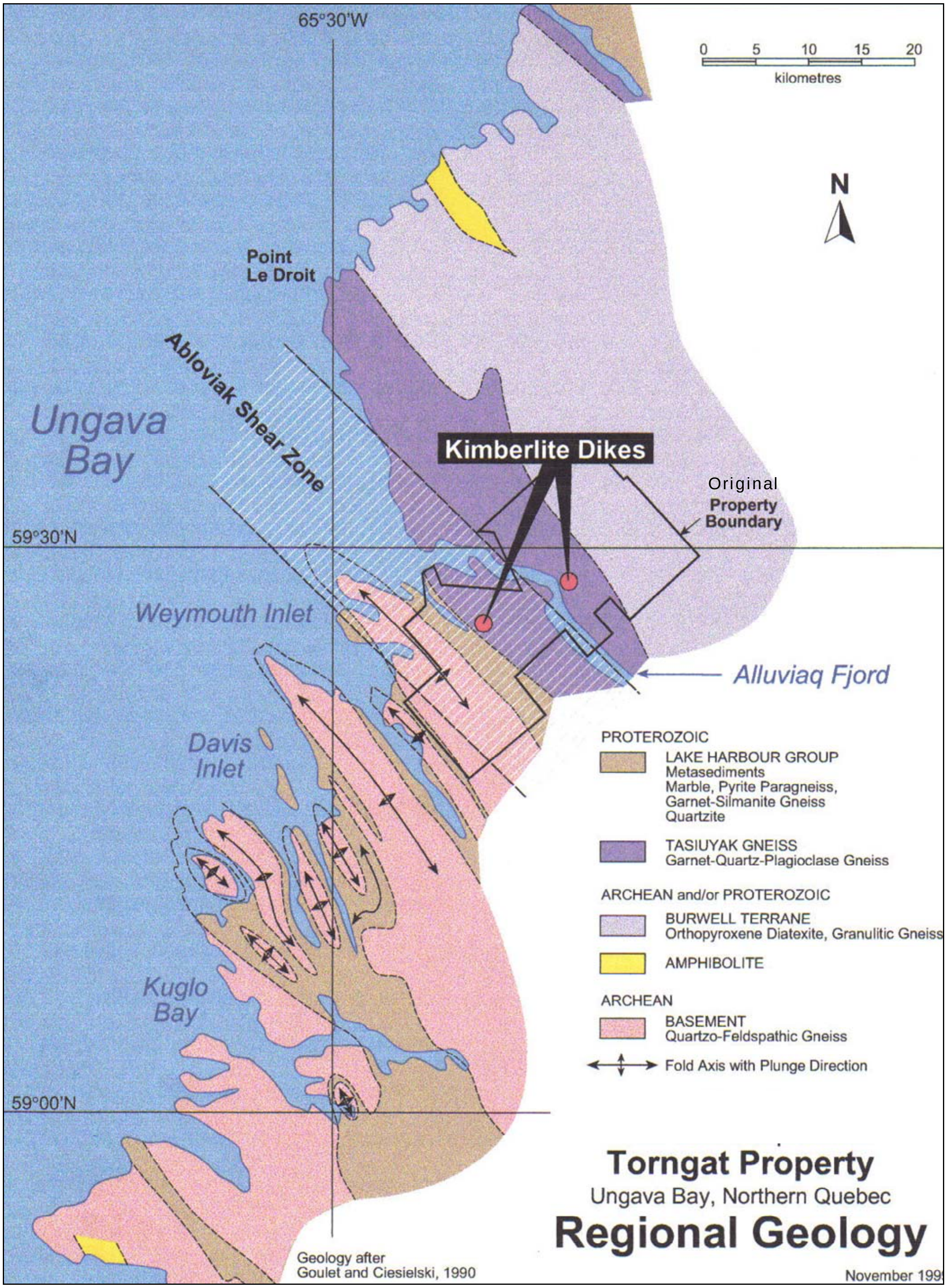


Figure 6-5: Regional Geology Map Alluviaq Fjord Area (source Roscoe Postle Associates)

6.2. The Torngat Dyke System

The following descriptions are based mainly on the work of Digonnet (1997) and Digonnet *et al* (1996 and 1999) together with empirical observations on lithological and structural features of the dyke system based on personal observations of current co-authors Sobie and Coates during a number of site visits. The Twin Mining field mapping crew, particularly Richard Roy, Stephane Digonnet and Berkhardt Dresler, provided much useful information during our tours of the property. Systematic detailed lithological/petrographic studies, kimberlite indicator mineral (KIM) oxide analysis, major and trace element geochemistry, radiogenic isotope studies, and microdiamond analyses have yet to be carried out, although the field program has provided an excellent set of samples that can be used for the above purposes as warranted.

6.2.1 Lithological Description

The dykes are described by Digonnet *et al* as locally serpentinized olivine and phlogopite phenocrysts and macrocrysts in a fine to coarse grained matrix of phlogopite, olivine, spinel (Ti-Mg chromite, Ti-Mg magnetite, Mg-Al chromite), perovskite, rutile, pyrite, apatite, diamond and interstitial carbonate. Calcite is present in all dykes, forming approximately 10-15% of the rock, while fine-grained magnetite is in relatively high abundance. Garnets including chrome pyrope and calcic pyrope almandine types are widespread as well as chrome diopside. Clinopyroxene is locally present within ultramafic xenoliths.

Digonnet *et al*.(1996) originally classified the Abloviak dykes as Group I hypabyssal phlogopite kimberlites, but have since revised the terminology to hypabyssal ultramafic lamprophyres or aillikite dykes (Digonnet *et al*.1999).

The various outcrops/frost heaved dyke material examined in the field by MPH Consulting Limited (Sobie, 2000) are all grossly similar, and may be described as uniform, massive, fine to medium grained, sparsely macrocrystic hypabyssal rocks of kimberlitic affinity. The rock shows visible affinities to Group II kimberlites, being phlogopite rich and ilmenite deficient, but more work is undoubtedly needed to further the classifications of Digonnet *et al*.

Comprehensive and systematic petrographical and mineralogical work is needed before a final term can be used, and it would not be at all unusual for a variety of rocks to be present. Rocks of lamprophyric affinity are present in some of the South African kimberlite dyke mining camps, most noteably Star and Helam, and can even be intermixed in single dykes. It should be noted that Group II kimberlites are the host of virtually every economic small kimberlite mine, dykes and pipes, in South Africa, including the Marsfontein Mine of Souther Era/De Beers and also the Snap Lake deposit of De Beers/Aber and hence it is by far the most attractive exploration target.

Two other variations to that described above were seen, one much more fine grained and phenocrystic, and obviously a later phase as it can be seen truncating textures and even individual mineral phases, and a second which is a medium grained phenocrystic rock with a “sugary” appearance. The macrocrystic (mottled in appearance) rock is of most interest, in that the large dark grains are altered/semi-altered olivine macrocrysts, which are the best indicator of diamonds. This appears to be the most volumetrically common rock, but in many areas can only be classified as sparsely macrocrystic (ie. <15% olivine macrocrysts, and in reality much less), rather than showing a larger abundance of mantle olivine, and therefore a high grade potential. The medium grained "sugary" rock is calcite rich (causing the crystalline appearance), and appears much more altered than do the other rocks, and may in fact be reflecting severe chemical weathering of the upper portions of the dykes in certain locales.

Olivine is the common constituent of all of the diamond-bearing host rocks (ie. lherzolitic peridotite, garnet and chromite harzburgitic peridotite and eclogite), and is therefore the best indicator for diamonds. It is also a primary constituent of the ultramafic magma, and therefore two generations of olivine should be present in a diamond-bearing rock, one rather fine grained euhedral phenocrysts representing the magmatic olivine, and the other coarser, anhedral macrocrysts or hopefully megacrysts (larger) representing mantle derivatives. We were able to see isolated rocks where megacrysts up to 4cm are evident, as well as isolated suspected lherzolite and peridotite nodules up to 3cm in diameter, and pyrope garnets to 2 cm in size.

It should be noted that where the dykes intrude the garnet schists, at least some of the garnet evident in the rocks may in fact be derived from the wall rocks, and therefore garnet content as an important constituent is rather problematical without analytical and petrographical work.

Good examples of a significant fine-grained chilled margin were noted in the AD-2 mini bulk sample trenches (Photo 3). There is a tendency for olivine macrocrysts to be concentrated in the centre of the dyke though, again a common feature, giving the appearance that the edges are finer grained. This relationship is mirrored by diamond content, with the coarser macrocrystic rock much higher grade than the sparsely macrocrystic or phenocrystic rock closer to the wallrocks. It may be that some of Twin Mining's early samples were of the olivine poor rock, or of the fine-grained phenocrystic rock, neither of which appears as promising as the more macrocrystic varieties.

Photo 3: AD North Trench showing gneiss (top) and chilled margin of Torngat 1 Dyke.

6.2.2 Structure

The sub-vertical Torngat lamprophyric dyke system lies for the most part inside a northeast-southwesterly trending rectangular area measuring approximately 20 kilometres in strike length by about five kilometres wide (Figure 8-1). Twenty-four individual dykes or dyke segments have been outlined in the main Torngat Dyke System during 1:20,000 scale geological mapping, although it is evident from areas already studied in detail that there are likely many more dyke lenses. Dyke widths vary from a few centimetres up to two metres or more where mapped in detail or exposed by trenching during the Twin Mining exploration programs.

Two additional alkaline dykes, termed the Miquello and SD dykes were located outside of the main Torngat System in the northwestern sector of the Twin Mining property and several more have been reported in neighbouring properties.

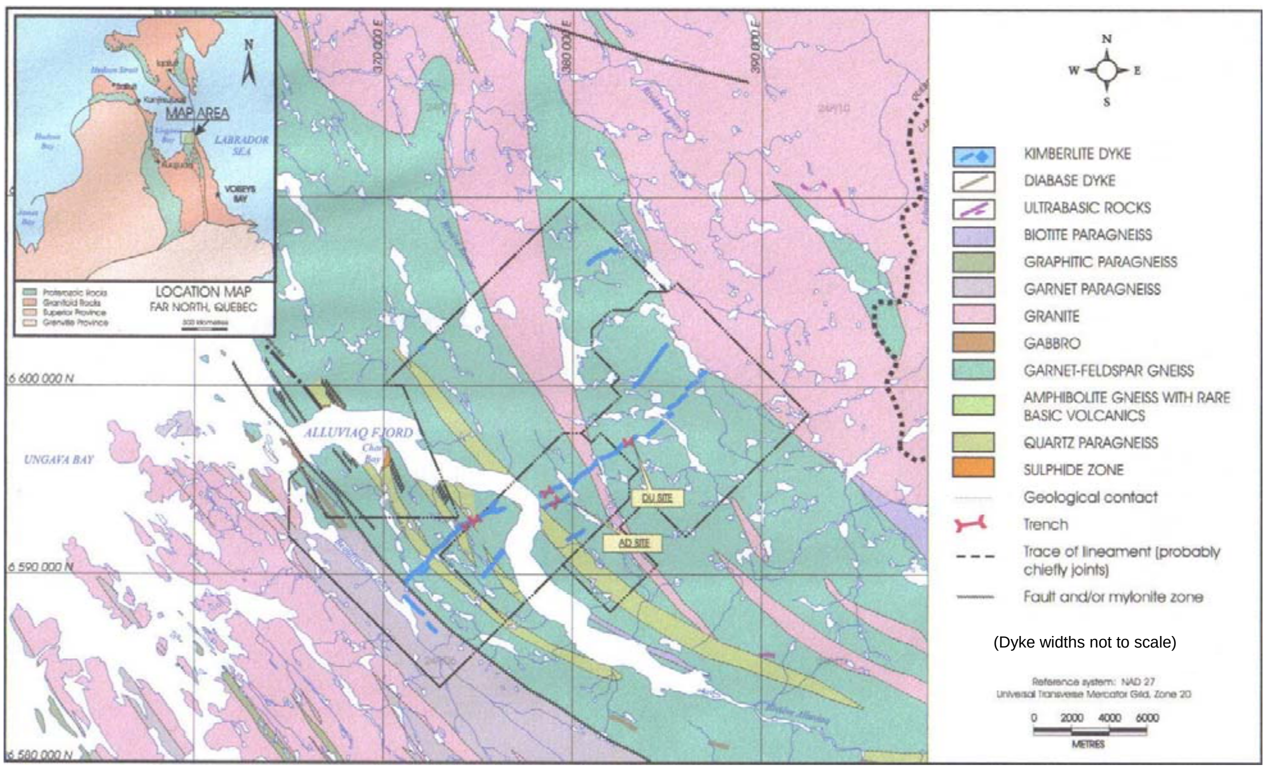


Figure 8-1: Geological Map showing Torngat dyke system (source Nordquest)

In total 27 dykes with a cumulative strike length of about 37 kilometres have been mapped throughout the Twin Mining property. Most of the dykes including Torngat #1 and #2, AD, Fantomas, Cyrano, Polak and the northern part of Kakuvuq are oriented in the range of 050^{O} to 065^{O} azimuth. A second group including Nut, the Three Musketeers and Kakivuq south strike between 035^{O} and 045^{O} while a third group including the Torngat South dykes and an unnamed carbonatite dyke strike approximately 135^{O}. All dykes mapped so far have sub-vertical dips. Individual dykes have been traced for distances ranging from a few hundred metres (Cyrano) to 5.5 kilometres (Kakuvuq), although there is some evidence in the area about 1 kilometre north of the GL-18 site that Kakivuq may pinch out and reappear.

Several blows have been identified along the alkaline dykes during the geological mapping and trenching work. South of Abloviak Fjord about half way along the Kakivuq dyke is a possible large blow indicated by a dramatic widening of the dyke from one to approximately three meters as it enters a drift covered area (Photo 4). A number of small blows have been located north of the fjord along the Torngat #1 and AD dykes. One of these, measuring about 10 metres in length and 2.5 to 3 metres in width, is located at the south end of the south trench at the AD-2 mini bulk sample site. No kimberlite pipes have been discovered to date.

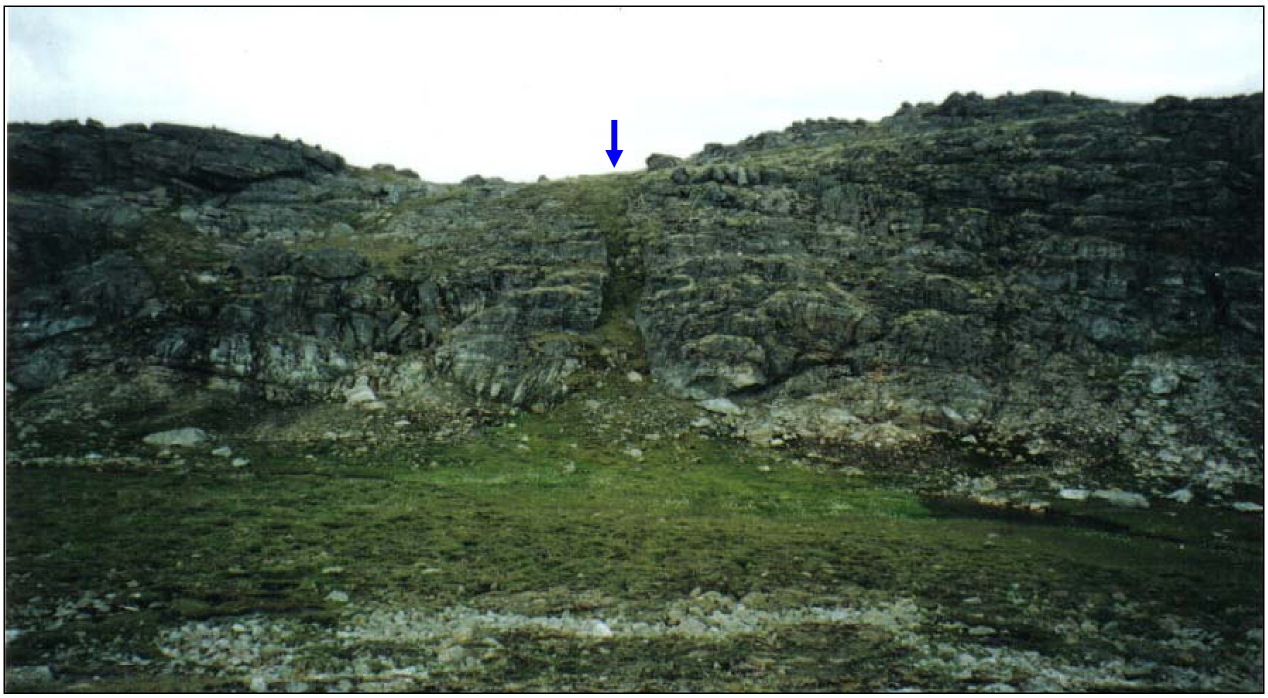


Photo 4: South Kakivuk blow, dyke on hillside (center) widens before entering drift covered area (foreground).

The northeast-southwesterly trending (except for Torngat South) alkaline dykes are hosted by northwest-southeasterly trending gneisses (Photos 5 and 6) and foliated granitoids. These host rocks and to some extent the dykes themselves are cut by a prominent sympathetic cleavage in proximity to the dykes. This cleavage which is quite evident within a few metres to some tens of metres of a typical dyke is very useful as a prospecting tool. Cleavage spacings vary from less than a centimetre (Photos 7, 8 and 9) up to 10 centimetres or more (Photo 10). The cleavage is also developed inside the dyke contacts at the AD bulk sample trench where it separates the chilled margin material from the coarser grained central portion of the dyke (Photo 11). The dykes and host rocks are also cut by a generally sub-horizontal set of widely spaced (10 cm or more) joints that are readily apparent in most geological photos contained herein that show vertical exposures.

Photo 5: Tasiuyak gneiss north of Beaufremont Inlet.

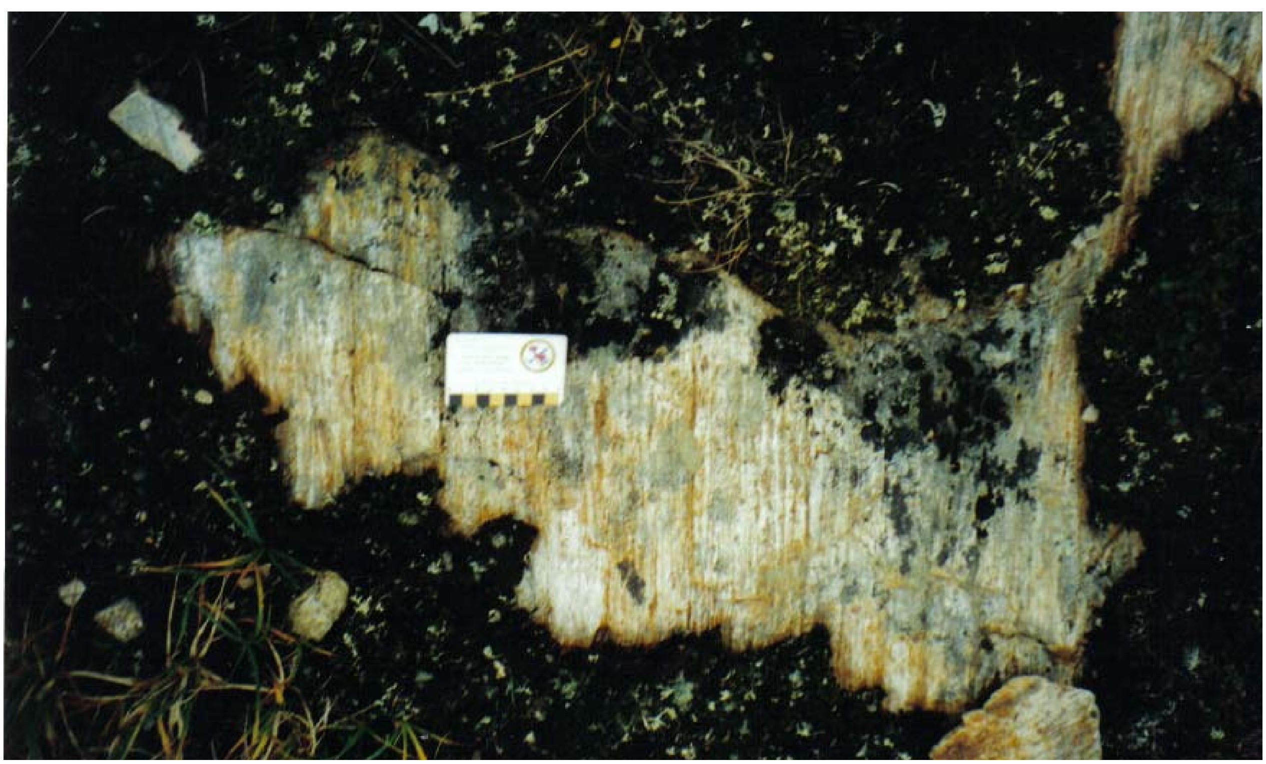


Photo 6: Mylonitized Tasiuyak gneiss inside the major Abloviak Shear Zone.

Photo 7: NE-SW Dyke sympathetic cleavage in Tasiuyak gneiss north of AD-2 site.

Photo 8: Tasiuyak gneisses showing sub-vertical cleavage and sub-horizontal joints.

Photo 9: Tasiuyak gneiss showing 'horsetailing' sympathetic cleavage.

Photo 10: Widely spaced sympathetic cleavage and joints from south Kakivuq area.

Photo 11: Cleavage separates fine grained dyke margin from coarse interior at AD-2 south trench

In many respects the Torngat Dyke System appears to be structurally similar to a number of much younger Lower Cretaceous to Middle Jurassic (156$^{+/-}$13 to 119$^{+/-}$3 Ma) commercially productive Group II kimberlite dyke systems located in South Africa (Gurney & Kirkley, 1996). Such dykes are actually groups of en echelon to anastomosing, interwoven disc-like lenses which pinch and swell along strike. These lenses are commonly separated by branching dykelets or 'horse tails' with offsets from a few metres to 100 metres or more. Dykes may bifurcate or split at changes in host rock lithology. The pinching and swelling is clearly indicated throughout the system especially at the AD-2 and DD trenches and lens truncation, branching and offsets were noted in the DU and north and south Kakivuq areas.

Economic kimberlite dykes in South Africa typically average between 60–80 cm in width although sometimes with strike lengths in excess of 5 kilometres. These dyke systems have no direct associations with major pipes or crater facies kimberlite deposits although small pipes and blows commonly occur. Dykes can maintain their size and grade with depth in contrast to diatremes (Gurney & Kirkley, 1996).

Parts of the Torngat Dyke System, including AD, Torngat #1 and the Kakivuq zone, appears to have significantly better tonnage potential than the typical hypabyssal dyke system. The average horizontal width over the approximately 65 metres opened up by trenching for the AD mini bulk samples is about 1.2 metres. At Kakivuq based on geological mapping, airborne and ground magnetics, and two surface trenches (RRR-2 & 4) this dyke has a width of 2 to 3 metres over several kilometres of strike length.

6.2.3 Kimberlite Assessment

Standard kimberlite assessment techniques include field mapping, lithological / petrographic studies, kimberlite indicator mineral (KIM) oxide analysis, major and trace element geochemistry, radiogenic isotope studies, and microdiamond analyses. All of these techniques have been applied to a limited extent during Digonnet's thesis work and Twin Mining's field investigations. The modest amount of laboratory work completed to date provides more enigmas than answers to the questions regarding rock nomenclature and commercial diamond potential. However the raw materials and tools are now available to begin answering some of the key questions, which are as follows:

- How should the Torngat Dyke System be classified in terms of alkaline rock nomenclature? Are they kimberlites, lamproites, aillikites, alnoites, or melilitites or some combination of these? If any kimberlite varieties are present are they Group I or Group II as defined by Smith *et al* (1985)?
- What range of mantle rocks were sampled by the Torngat dykes? The identification of various types of mantle-derived xenoliths and xenocrysts can assist with estimation of depth and temperature of the dykes *vis a vis* the diamond stability field. KIM mineralogy/barometry is also highly useful in this regard.
- Based on these studies the first geological models should be created. Are some dykes or dyke segments more prospective for commercial diamond deposits than others?

Alkaline Dyke Classification

In terms of dyke classification there has been reference to both Group I and Group II kimberlite characteristics and the more recent use of the term aillikite to describe the Torngat dykes. According to the widely used terminology of Smith (1983) and Smith *et al* (1985) the Group I/Group II distinction is by definition "an isotopic one in which Group I kimberlites have lower $^{87}Sr/^{86}Sr$ ratios and higher $^{143}Nd/^{144}Nd$ ratios relative to Group II kimberlites". So far the radiogenic isotope data for the Torngat dykes is restricted to $^{40}Ar/^{39}Ar$ radiometric age dating and two $^{143}Nd/^{144}Nd$ ratios (Digonnet, 1997). The two $^{143}Nd/^{144}Nd$ ratios, 0.512306 and 0.512454, respectively plot on the edge of the Group II and the edge of the Group I fields.

Mineralogically the dykes are typified by a phlogopite-rich groundmass and phlogopite macrocrysts. They are perovskite poor and devoid of zircon and illmenite. Such mineralogy is diagnostic of Group II kimberlites as well as lamproites.

Major and trace element geochemistry has been done on seven samples of the Torngat dyke material (Digonnet, 1997). Various plots of the major element data provide enigmatic results. On the basis of Al_2O_3-MgO-FeO_T ternary plots (Digonnet et al, 1999) the Torngat dykes are mostly in the compositional field for kimberlites, with some values in the partially overlapping aillikite field and two values in the overlapping fields between aillikites, alnoites and melilitites. SiO_2 vs Mg# plots show six samples in the Group I and one sample in the Group II kimberlite fields. K_2O vs Mg# shows the exact opposite with six Group II and one Group I points, while TiO_2 vs Mg# registers in the Group I field. Relatively high to strongly enriched Rb, Ba, LREE and HREE are indicative of Group II kimberlites while relatively high Ce and Nb typify non-micaceous Group I kimberlites.

It is clearly evident from the preceding few paragraphs that a great deal of comprehensive and systematic work will need to be done, including petrographic and mineralogical studies, major and trace element geochemistry and some radiogenic isotope work. As the Digonnet data indicates to some degree and like many diamondiferous systems elsewhere, the Torngat dykes may contain a variety of kimberlite and lamprophyre rock units. The Group I vs Group II question, according to the strict definition, can only be answered through the use of $^{87}Sr/^{86}Sr$ and $^{143}Nd/^{144}Nd$ ratios.

Mantle-derived Material

At this time there is little laboratory data regarding mantle-derived materials such as xenoliths, nodules, xenocrysts and minerals. KIM studies are restricted to a few garnet analyses reported by Digonnet (1997). These are described as belonging to two distinct families including pyrope macrocrysts and Ti-andradite in the matrix of some dykes. Chrome-pyrope (Group 9 of Dawson and Stephens, 1975) is the predominant type of garnet in the first group together with rare chromian pyrope (Group 10) and calcic pyrope-almandine (Group 5). G-9 and G-10 garnets are typically derived from lherzolites and G-5 garnets from eclogites. The second type of garnet, Ti-andradite, is commonly present in ultramafic lamprophyre and infrequently occurs in Group II kimberlite where it is associated with carbonate.

It is noted that where the dykes intrude the garnetiferous Tasiuyuk Gneisses at least some of the garnet present in the alkaline dykes may in fact be derived from the wall rocks.

A variety of additional xenoliths, nodules, minerals etc. are known such as peridotitic and possible eclogitic material and minerals including olivine, chrome diopside, spinel, zircon, phlogopite etc. Expert petrographic and chemical studies are required to determine the significance of these as indicators of depth and temperature of kimberlitic dykes that are known by their diamond content to have sampled the diamond stability field.

6.2.4 Radiometric Age Dates

The Abloviak kimberlites are indicated to be Lower Cambrian to earliest Neoproterozoic III in age with K-Ar dates in the range of $579^{+/-}4$ to $549^{+/-}5$ Ma and with a Sm-Nd date at $550^{+/-}10$ Ma.

7.0 DEPOSIT TYPES

The morphology of any individual kimberlite deposit is dependent upon the near surface conditions of its emplacement, with all manner of hypabyssal dykes, sills and plugs possible with no explosive volcanism, and pipes forming when the magma interacts with groundwater and gases to form true volcanic eruptive diatremes that are the equivalent of tuffs and are known as tuffisitic kimberlite (+/- breccias). These can form craters deposits when subjected to later in-filling processes within the tuff cone, and in the classic Southern African model, a kimberlite will grade from hypabyssal root zones at depth into an outward tapering diatreme zone and be capped by crater facies sediments, over vertical distances of ~1,000m or more. In Canada, there are numerous examples of pipes that are exclusively pyroclastic or volcaniclastic kimberlites formed by lava-fountain types of eruptions, and others that are resedimented volcaniclastic kimberlites, with the highest grading pipes generally the resedimented (RVK) types found around Lac de Gras.

The Torngat occurrences are classified as lamprophyric to kimberlitic dyke-hosted diamond deposits. The fundamental characteristics of the known mineral deposits are summarized as follows:

- **Temporal Range:** The lamprophyric dykes are indicated to be Lower Cambrian to earliest Neoproterozoic III in age with K-Ar dates in the range of $579^{+/-}4$ to $549^{+/-}5$ Ma and with a Sm-Nd date at $550^{+/-}10$ Ma.
- **Rock Types:** Hypabyssal ultramafic lamprophyres or aillikite dykes.
- **Depositional Environment:** Lamprophyric bodies intruded from the mantle under high pressure with rapid quenching.
- **Paleotectonic Setting:** The Torngat dykes intrude the Early Proterozoic (1860-1790 Ma) collision zone between the Rae Province in the west and the North Atlantic Craton (Nain Province) in the east.
- **Structure:** The alkaline dyke emplacement corresponds generally with rifting associated with a major global tectonic event, the Lower Paleozoic separation of the Laurentia proto-continent from the South American porton of the Gondwana proto-continent.
- **Associated Deposits:** None known.
- **Primary Ore Mineralogy:** Diamond.
- **Mineralization Texture/Structure:** Diamonds occur as sparsely disseminated discrete grains of xenocrystic origin
- **Gangue Mineralogy/Texture:** Locally serpentinized olivine and phlogopite phenocrysts and macrocrysts in a fine to coarse grained matrix of phlogopite, olivine, spinel (Ti-Mg chromite, Ti-Mg magnetite, Mg-Al chromite), perovskite, rutile, pyrite, apatite, diamond and interstitial carbonate. Garnets including chrome pyrope and calcic pyrope almandine types are widespread as well as chrome diopside. Clinopyroxene is locally present within ultramafic xenoliths.
- **Weathering:** Dykes weather more rapidly than host rocks to form topographic depressions.

Twin Mining's exploration target at Torngat is economic diamondiferous pipes or dykes, of which Canada in now well-represented in that viable mines have been established some 1300km to the W of the Torngat property at Ekati (BHP-Billiton 80% majority owner) and Diavik (RTZ 60% - Aber 40%) exploiting multiple closely oriented small pipes. Three other Canadian diamond projects are in development, namely Jericho of Tahera Diamond Corporation in Nunavut, Snap Lake of De Beers in the NWT, and Victor of De Beers in Northern Ontario.

The Snap Lake mine is the closest analogy to Torngat in that narrow kimberlite dyke material is the ore. De Beers Canada Inc. on their website supply the project facts for Snap Lake as:

Impact Area	<500 hectares
Mineable Resource	18.3 million tonnes
Mineable Grade	1.46 carats per tonne (146cpht)
Value	US$144 per carat
Production Rate	3,150tpd
	1,134,000tpy
	1,508,220 carats per year
Capital Costs	C$636 million
Operating Costs	C$147/tonne

Snap Lake though is not typical of the dyke diamond mines in Southern and Western Africa, which are vertical in orientation whereas the Snap Lake orebody dips gently at 10 to 12^{o} and therefore is being planned as a large tonnage, modified room and pillar mining operation. The dyke mines elsewhere produce at 250-500tpd from shafts, and therefore are more closely analogous to Canada's narrow stope lode gold mines. Two such mines are listed in the 2006 issue of the Canadian Mining Journal's Mining Sourcebook:

1) Cambior's Sleeping Giant Mine in Val d'Or with mining costs of C$124.61/t for shrinkage stoping at 900tpd with 350tpd of waste.
2) Barrick's Eskay Creek Mine in Smithers, BC with mining costs of C$141.40/t for drift and fill mining at 700tpd with 340tpd of waste.

All evidence therefore suggests that Twin Mining's target revenue/tonne at Torngat must exceed C$200/tonne to support underground mining in such a remote setting. The site does have extremely good access with tidewater that would drastically reduce capital cost requirements, however the underground mining costs will be significant.

Twin Mining's closest analogy for Torngat in an exploration sense may be Hudson Resources Inc. with their Garnet Lake project in Western Greenland. Similarly targeting diamondiferous alkaline dykes, Hudson has reported modestly encouraging microdiamond results and plans an aggressive program to delineate the deposit by drilling and minibulk sampling and to carry out a scoping study.

8.0 MINERALIZATION

The Torngat lamprophyric dyke system lies inside a northeast-southwesterly trending rectangular area measuring approximately 20 kilometres in strike length by about five kilometres wide. Twin Mining has identified, mapped and sampled 27 dykes or dyke segments with a cumulative strike length of approximately 36.5 kilometres. A number of small to moderate sized blows were found along the dykes but no classical pipes.

Dyke sets are found along 5 different trends. These dyke systems are summarized as follows:

- The Main System: includes the Pita dykes, all the Pita branches (K-A, to K-G), the Torngat 1 and the Torngat 2 dykes, total collective strike length of all these dykes is 23.2 kilometres.
- The West System: includes the West Dyke and the SD Dyke total strike length ~ 2.5 kilometres.
- The Dallas System: the Dallas Dyke, length 3.0 km.
- The East System: includes all the NG dykes, and the Richard dykes, total strike length is 4.9 kilometres.
- The South System: includes 2 dykes, the Torngat South 1 and 2, total strike length of 2.4 kilometres.

The dykes are sub-vertical and vary in thickness from a few centimetres up to two metres or more. Over three field seasons Twin Mining has carried out a variety of surface sampling programs on the five dyke systems.

8.1. Main Dyke System

Of the five dyke sets, the Main Dyke system is the most thoroughly investigated. The system has been sampled in five stages including:

- 1999 Due Diligence Microdiamond Sampling.
- April-May 2000 10 tonne Mini-bulk Sampling
- Summer 2000 systematic Microdiamond Sampling
- August-September 2000 342 tonne Mini-bulk Sample
- September 2001, follow-up Microdiamond sampling

The Microdiamond results for the programs are presented in the following sub-sections.

8.1.1 Microdiamond Results from1999 Due Diligence Microdiamond Sampling

Diamond recoveries by caustic dissolution methods at the SGS-Lakefield facility in Lakefield, Ontario from the 1999 due diligence and trench sampling programs are presented in Table 8.1.

The due diligence samples were collected from surface exposures mainly from the Torngat 1 and 2/3 dykes. Sample locations are shown in Figure 8-1. The accumulated samples, totalling 968.14 kilograms, yielded 475 small diamonds, totalling 0.1664 carats. The majority exhibited 62.5% -75% preservation, white colour and transparent to translucent clarity.

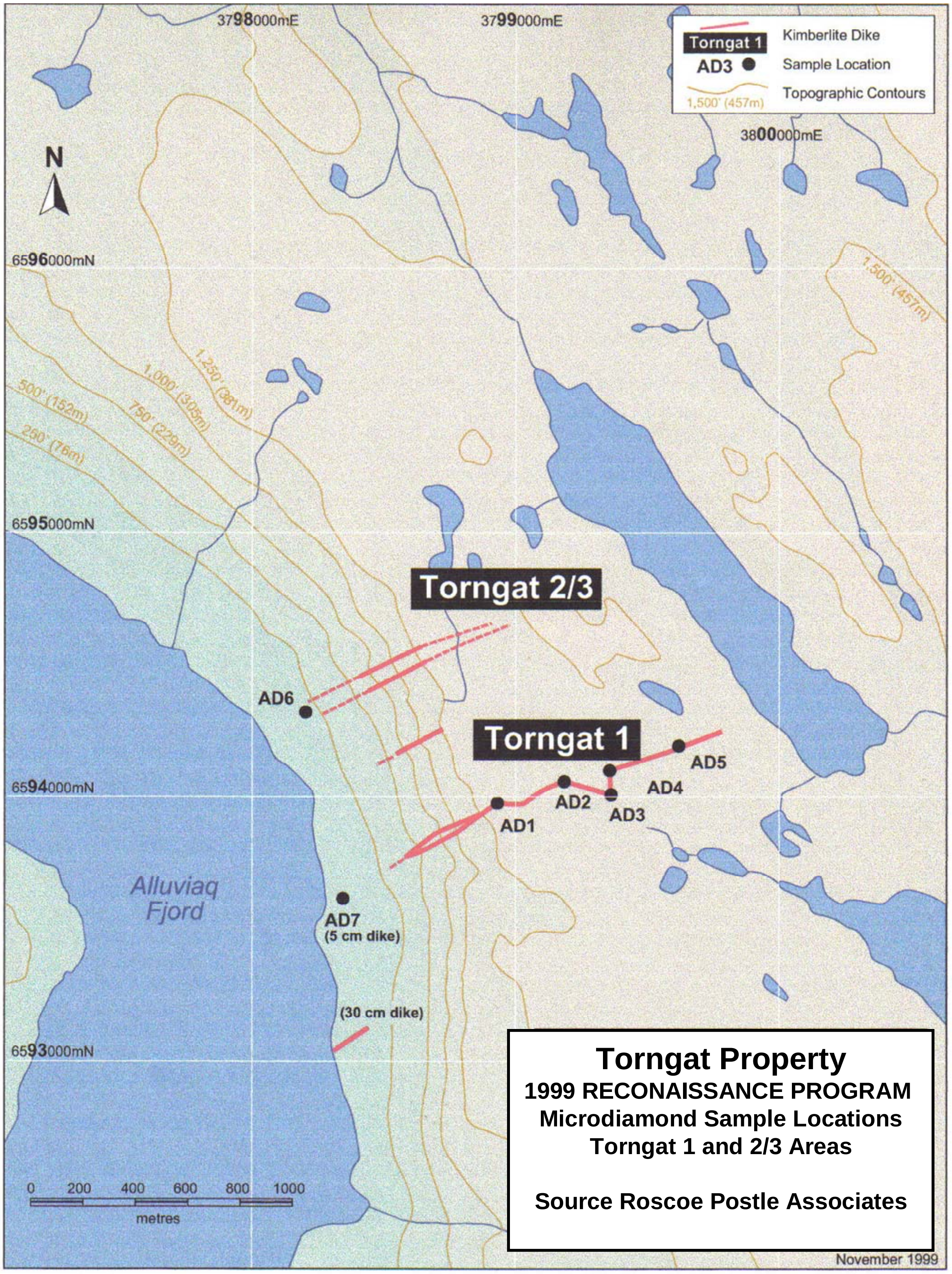


Figure 8-1: Torngat 1 and 2/3 Areas, 1999 Microdiamond sample locations.

Table 8-1: Diamond Recoveries from 1999 Due Diligence Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
TORNGAT 1 DYKE												
AD-1 Coarse	109.750	214	77	71	27	21	9	7	2	0	0.0765	69.7
AD-1 Fine	244.760	17	8	5	3	1	0	0	0	0	0.0009	0.4
AD-2	129.690	59	22	19	7	8	2	1	0	0	0.0139	10.7
AD-2	39.610	62	24	22	9	5	2	0	0	0	0.0068	17.2
AD-1	61.800	24	9	4	7	2	0	1	1	0	0.0189	30.6
AD1-08	23.550	0	0	0	0	0	0	0	0	0	0	0.0
AD-1 Coarse	13.030	12	7	1	3	0	1	0	0	0	0.0014	10.7
AD-1 Fine	34.500	0	0	0	0	0	0	0	0	0	0	0.0
AD-3	94.260	20	8	6	2	3	0	1	0	0	0.0053	5.6
AD-3	17.200	3	2	1	0	0	0	0	0	0	0.0003	1.7
AD-4	25.030	0	0	0	0	0	0	0	0	0	0	0.0
AD4-12-08	16.100	8	2	1	2	1	2	0	0	0	0.0032	19.9
AD-5	7.230	0	0	0	0	0	0	0	0	0	0	0.0
AD-5	79.770	4	1	1	2	0	0	0	0	0	0.0009	1.1
AD-7	0.000	0	0	0	0	0	0	0	0	0	0	0.0
AD08-14	6.571	3	1	2	0	0	0	0	0	0	0.0002	3.0
Sub Total	**902.851**	**426**	**161**	**133**	**62**	**41**	**16**	**10**	**3**	**0**	**0.1283**	**14.2**
TORNGAT 2 DYKE												
AD06-14	10.864	26	9	8	4	3	2	0	0	0	0.0063	58.0
AD-6	26.940	16	7	2	2	1	2	1	1	0	0.0314	116.6
Sub Total	**37.804**	**42**	**16**	**10**	**6**	**4**	**4**	**1**	**1**	**0**	**0.0377**	**99.7**
TORNGAT SOUTH												
AD-10	27.480	7	4	2	1	0	0	0	0	0	0.0004	1.5
Sub Total	**27.480**	**7**	**4**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0.0004**	**1.5**
TOTAL	**968.135**	**475**	**181**	**145**	**69**	**45**	**20**	**11**	**4**	**0**	**0.1664**	**17.2**

8.1.2 Results fromApril-May 2000 Mini-Bulk Sampling Program

Diamond recoveries by caustic dissolution methods from jig plant concentrates by the Saskatchewan Research Council (“SRC”) located in Saskatoon, Saskatchewan of five approximately 10 tonne mini-bulk samples are presented in Table 8-2.

The mini-bulk samples were collected from surface exposures mainly from the Torngat 1, Torngat 2 and Kakivuq (Pita) dykes (Figure 8-2). In total 42.84 dry tonnes of kimberlite was processed recovering 242 (>0.85 mm) macro diamonds for a cumulative total of 3.46 carats, with the largest stone measuring 3.8 x 3.6 x 3.2 mm and weighing 0.2010 carats. Only a few macrodiamonds recovered had discernable crystal structures. The majority exhibited irregular shape, white colour and transparent to translucent clarity.

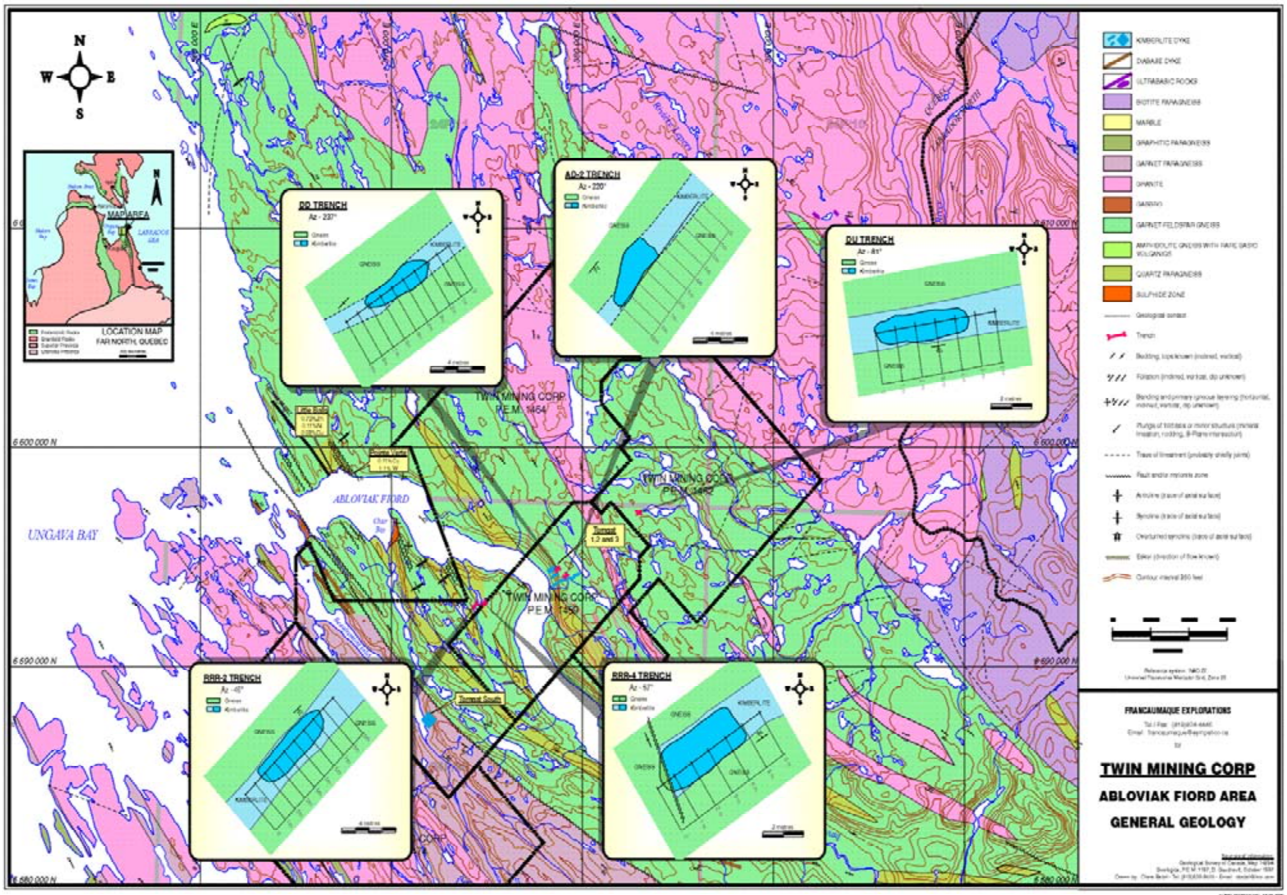


Figure 8-2: Spring 2000 Macrodiamond Scoping Sample Locations (Source Francamaque Explorations)

Table 8-2. 2000 SRC Mini-bulk Sample Results

SAMPLE SITE	WEIGHT Dry tonnes	MACRO DIAMONDS (>0.85 mm)			LARGEST STONE		
		Number	Carats	Grade (CPHT)	L mm	W mm	H mm
AD-2	8.700	77	1.3265	15.2	3.8	3.6	3.2
DU	8.740	99	1.3721	15.7	2.9	2.5	1.8
DD	9.242	24	0.335	3.6	2.2	2.0	1.7
RRR-2	8.432	23	0.2080	2.5	2.4	1.6	1.4
RRR-4	7.726	19	0.2170	2.8	2.2	2.0	1.2
TOTAL	**42.840**	**242**	**3.4586**				

During the processing at SRC it was realized that finely divided magnetite disseminated throughout the Torngat samples was having a detrimental impact on diamond recoveries using the SRC jig plant process. Because of the importance of obtaining very high diamond recoveries for small process test samples tailings from the scoping samples were shipped to the SGS-Lakefield laboratory in Lakefield, Ontario and reprocessed using a 1 tonne/hr Bateman Industries dense media separation ("DMS") plant. Additional diamonds were recovered from all five samples. Total diamond recoveries increased significantly after processing the tailings for three of the samples, DD (46%), RRR-4 (24%) and RRR-2 (12%). The combined SRC and SGS Lakefield results are presented in Table 8-3.

Table 8-3: 2000 SRC and SGS-Lakefield Mini-bulk Sample Results

SAMPLE SITE	WEIGHT (Dry tonnes)	DIAMOND RECOVERY FEED (Carats)	ADDITIONAL DIAMONDS IN TAILINGS	DIAMOND RECOVERY TAILINGS (Cts)	TOTAL WEIGHT (Carats)	% INCREASE	ADJUSTED +0.85mm GRADE (Cpht)
AD-2	8.700	1.3265	3	0.082	1.409	6.2	16.2
DU	8.740	1.3721	3	0.042	1.414	3.1	16.2
DD	9.242	0.335	2	0.154	0.489	46.0	5.3
RRR-2	8.432	0.2080	2	0.025	0.233	12.0	2.8
RRR-4	7.726	0.2170	10	0.053	0.270	24.4	3.5
TOTAL	**42.840**	**3.4586**	**20**	**0.356**	**3.815**		

MRDI concluded that the most prospective results were from the AD-2 and DU samples, with AD-2 yielding a coarser diamond size distribution, including two diamonds in excess of 3 mm.

MPH notes that Twin Mining's flow sheet for theses samples included final recovery through caustic fusion methods which should normally approach 100% of all contained diamonds. Diamond recoveries are therefore better than would be expected from traditional pilot plants for bulk samples, and for commercial diamond process plants.

8.1.3 Results from Summer 2000 Microdiamond Sampling Program

A total of ninety 50 kilogram samples and twenty-seven 300 kilogram sample were acquired throughout the Main Dyke System. Eighty-nine of the samples were tested by caustic fusion methodology. Some of the various sample locations are shown in Figure 8-3 and results are presented in Table 8-4. Detailed maps, showing all sample locations, are presented at the rear of this report.

The samples were collected from widespread surface exposures throughout the entire Main Dyke System. The accumulated samples, totalling 2593.61 kilograms, yielded 817 small diamonds, totalling 0.309 carats. The majority exhibited 62.5% -75% preservation, white colour and transparent to translucent clarity.

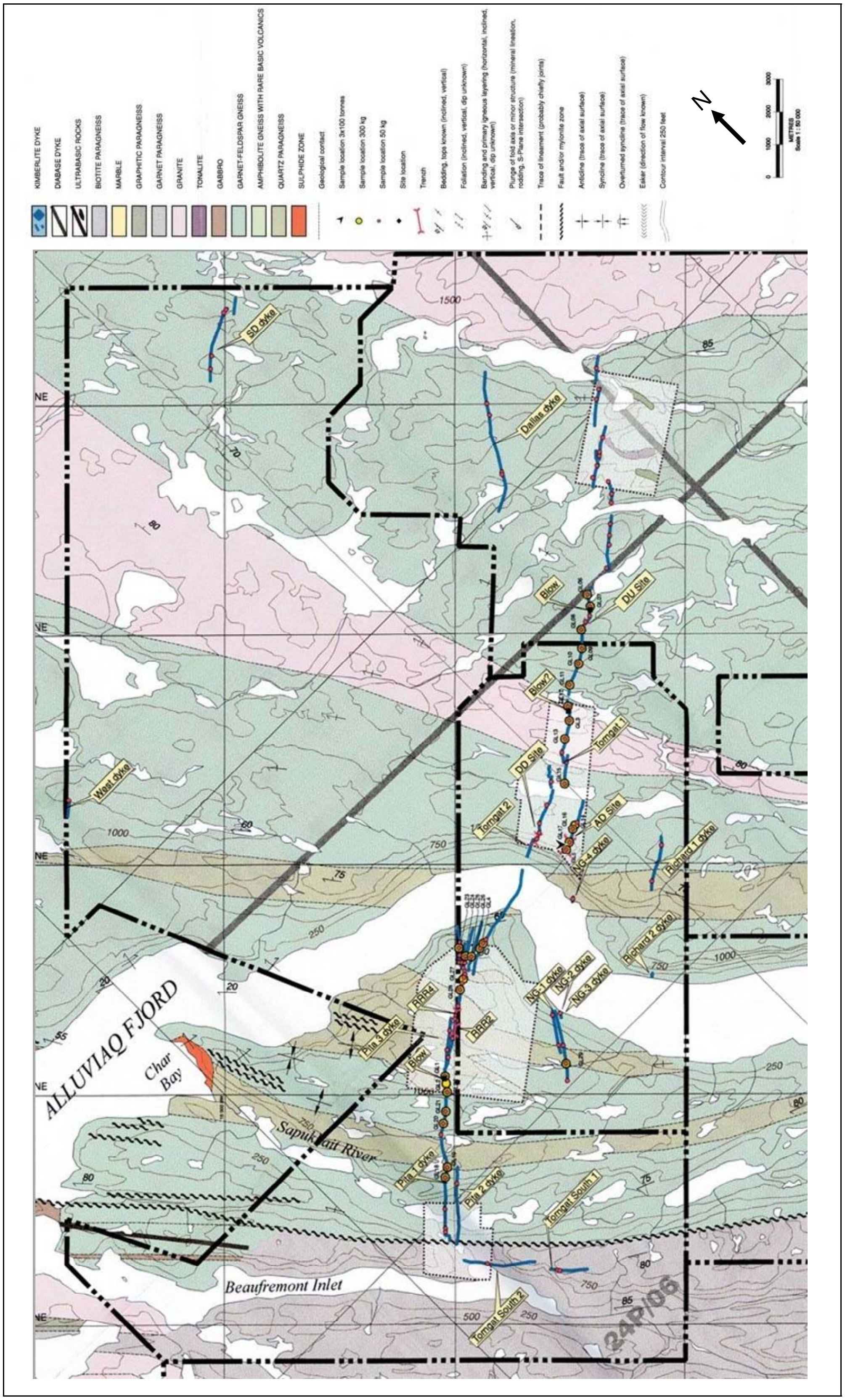


Figure 8-3: Summer 2000 Microdiamond Sample Locations.

Table 8-4: Diamond Recoveries from 2000 Microdiamond Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 Mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
Torngat North-DU												
DU-North	22.51	13	4	5	3	1	0	0	0	0	0.004	17.8
888466	48.57	45	16	18	9	1	0	0	1	0	0.009	18.5
GL-06	100.96	49	17	13	12	2	3	2	0	0	0.016	15.8
887586	50.55	5	0	0	2	3	0	0	0	0	0.002	4.0
887572	24.0	5	2	2	1	0	0	0	0	0	0.000	0.0
GL-11	0.0											
887573	24.0	32	10	10	9	2	1	0	0	0	0.006	25.0
GL-10	101.8	99	36	30	12	14	5	2	0	0	0.027	26.5
887574	24.0	14	1	6	5	2	0	0	0	0	0.002	8.3
GL-09	72.52	47	15	9	11	3	7	1	1	0	0.030	41.4
887575	24.0	2	1	1	0	0	0	0	0	0	0.000	0.0
GL-08	81.25	20	0	5	5	4	3	2	1	0	0.032	39.4
887587	24.0	15	3	5	2	1	2	1	1	0	0.021	87.5
887588	24.0	1	0	0	0	0	0	1	0	0	0.003	12.5
GL-07	84.0	29	6	8	2	4	4	4	1	0	0.042	50.0
887588	25.6	7	1	4	2	0	0	0	0	0	0.001	3.9
Sub-total	**731.8**	**383**	**112**	**116**	**75**	**37**	**25**	**13**	**5**	**0**	**0.195**	**26.6**
Torngat North-DU North												
887635	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887636	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887634	24.0	3	2	1	0	0	0	0	0	0	0.000	0.0
887633	53.9	15	6	4	2	1	2	0	0	0	0.005	9.3
887632	24.0	1	0	1	0	0	0	0	0	0	0.000	0.0
887656	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887592	24.0	5	1	3	0	0	0	1	0	0	0.003	12.5
887593	24.0	8	3	3	0	2	0	0	0	0	0.001	4.2
887630	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887631	24.0	5	1	1	3	0	0	0	0	0	0.001	4.2
887589	24.0	3	1	0	0	1	1	0	0	0	0.001	4.2
887590	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887591	24.0	7	3	2	1	0	1	0	0	0	0.002	8.3
887655	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887654	24.0	2	0	0	1	1	0	0	0	0	0.001	4.2
Sub-total	**389.9**	**49**	**17**	**15**	**7**	**5**	**4**	**1**	**0**	**0**	**0.014**	**3.6**
Torngat 2-DD												
DD-North	23.44	0	0	0	0	0	0	0	0	0	0	0.0
887558	24.0	1	0	1	0	0	0	0	0	0	0.000	0.0
887561	24.0	4	1	0	1	2	0	0	0	0	0.001	4.2
887559	0.0	0									0	0
887560	0.0	0									0	0
887637	0.0	0									0	0
Sub-total	**71.4**	**5**	**1**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0.001**	**1.4**

Torngat 1-AD North												
887570	52.48	7	3	2	1	0	1	0	0	0	0.002	3.8
GL-03	0											
888469	24.0	7	5	1	0	0	1	0	0	0	0.001	4.2
GL-13	0											
887567	24.0	0	0	0	0	0	0	0	0	0	0	0.0
GL-15	0											
887568	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887569	24.0	1	1	0	0	0	0	0	0	0	0.000	0.0
887571	24.0	13	1	6	2	2	1	0	1	0	0.014	58.3
GL-12	102.51	30	10	10	5	3	2	0	0	0	0.004	3.9
Sub-total	**275.0**	**58**	**20**	**19**	**8**	**5**	**5**	**0**	**1**	**0**	**0.021**	**7.6**
Torngat 1- AD Site												
887564	24.0	14	4	5	1	2	2	0	0	0	0.014	58.3
GL-05	0											
887562	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887563	24.0	1	0	1	0	0	0	0	0	0	0.000	0.0
GL-17	0.0											
887566	24.0	0	0	0	0	0	0	0	0	0	0	0.0
GL-16	0.0											
GL-14	0	0										
888401	24.0	20	10	6	1	2	0	1	0	0	0.008	33.3
888402	24.0	20	7	5	4	3	1	0	0	0	0.004	16.7
888403	24.0	15	4	6	2	1	2	0	0	0	0.004	16.7
888404	24.0	10	4	3	1	1	1	0	0	0	0.003	12.5
888472	24.0	7	4	1	1	1	0	0	0	0	0.001	4.2
888473	24.0	3	0	2	1	0	0	0	0	0	0.000	0.0
888474	24.0	18	5	3	3	6	1	0	0	0	0.006	25.0
888475	24.0	38	14	9	10	3	2	0	0	0	0.009	37.5
888476	24.0	27	10	6	5	3	1	2	0	0	0.011	45.8
Sub-total	**312.0**	**173**	**62**	**47**	**29**	**22**	**10**	**3**	**0**	**0**	**0.06**	**19.2**
Pita 1 Dyke												
RRR-2	17.35	0	0	0	0	0	0	0	0	0	0	0.0
RRR-4	18.71	5	2	2	0	0	0	1	0	0	0.005	26.7
887627	57.46	20	13	4	3	0	0	0	0	0	0.003	5.2
GL-21	0											
887611	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887612	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887613	24.0	2	1	1	0	0	0	0	0	0	0.000	0.0
887585	24.0	7	3	2	2	0	0	0	0	0	0.001	4.2
GL-27	0.0											
887624	24.0	4	1	1	1	1	0	0	0	0	0.001	4.2
887626	24.0	0	0	0	0	0	0	0	0	0	0	0.0
GL-28	0.0											
887576	24.0	7	5	1	0	0	1	0	0	0	0.001	4.2
GL-18	0.0											
887625	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887628	24.0	3	0	2	1	0	0	0	0	0	0.000	0.0
GL-20	0.0											
887629	24.0	9	5	1	3	0	0	0	0	0	0.001	4.2

887651	24.0	9	6	3	0	0	0	0	0	0	0.000	0.0
887653	24.0	6	4	1	1	0	0	0	0	0	0.000	0.0
887652	24.0	10	3	6	1	0	0	0	0	0	0.001	4.2
887577	24.0	7	3	0	4	0	0	0	0	0	0.001	4.2
GL-19	0.0											
887578	24.0	3	1	0	0	1	1	0	0	0	0.001	4.2
GL-22	0.0											
887580	24.0	3	3	0	0	0	0	0	0	0	0.000	0.0
887584	24.0	3	2	1	0	0	0	0	0	0	0.000	0.0
887582	24.0	8	3	1	4	0	0	0	0	0	0.001	4.2
887579	0.0	0									0	
GL-01, 02	0.0	0									0	
Sub-total	**525.52**	**106**	**55**	**26**	**20**	**2**	**2**	**0**	**0**	**0**	**0.016**	**3.0**
Pita 2 Dyke												
888470	24.0	11	5	6	0	0	0	0	0	0	0.001	4.2
Sub-total	**24.0**	**11**	**5**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0.001**	**4.2**
Pita 3 Dyke												
887583	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887581	0.0	0										
Sub-total	**24.0**	**0**									**0**	**0.0**
Pita North Branches												
887616	24.0	4	0	4	0	0	0	0	0	0	0.000	0.0
GL-26	0											
887619	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887638	24.0	17	8	5	3	1	0	0	0	0	0.001	4.2
887623	24.0	2	1	1	0	0	0	0	0	0	0.000	0.0
GL-24	0.0											
887614	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887615	24.0	0	0	0	0	0	0	0	0	0	0	0.0
GL-25	0.0											
887617	24.0	0	0	0	0	0	0	0	0	0	0	0.0
887618	24.0	7	5	2	0	0	0	0	0	0	0.000	0.0
887621	24.0	2	2	0	0	0	0	0	0	0	0.000	0.0
887622	24.0	0	0	0	0	0	0	0	0	0	0	0.0
GL-23	0.0										0	
887620	0.0	0									0	
GL-04	0.0	0									0	
Sub-total	**240.0**	**32**	**16**	**12**	**3**	**1**	**0**	**0**	**0**	**0**	**0.001**	**0.4**
TOTAL	**2593.61**	**817**	**288**	**242**	**143**	**74**	**47**	**17**	**6**	**0**	**0.309**	**11.9**

8.1.4 Results from August-September 2000 Mini-bulk Sampling Program

The AD-2 sample location is as follow
Site AD-2, Torngat #1 Dyke, UTM-NAD-27 coordinates, Zone 20, 6594029m.N; 379165m.E; elevation 396.2m.ASL.
Plan and section views of the excavated site are presented in Figure 8-4.

Results were recorded by SGS-Lakefield in Certificates of Analysis. A Certificate of Analysis was generated for diamonds recovered in concentrates produced during a 1st Pass and subsequent Recycle pass of DMS concentrate over the grease table. As a result, the total number of diamonds recovered for a particular bulk sample is the sum of diamonds recorded on Certificates of Analysis labelled 1st Pass and Recycle (Table 8-5). In the case of Sample No Name (designated NN), four concentrates were generated (two 1st Pass and two Recycle) as a consequence of the separation of sample bags delivered by a truck (NN Truck 6) that arrived with the security seal removed while in transit by the driver.

A summary of diamond recoveries from a single sample of DMS plant tailings generated from Sample A is given in Table 8-6. The sample was processed to determine whether a major loss of diamonds to the tailing fraction had occurred during initial sample processing. This result indicates that the DMS plant tailings contain a low, but significant diamond content.

The process plant bottom cut-off screen was a 1mm slotted wedge wire screen. AMEC notes that the results reported by Lakefield include a significant number of diamonds smaller than the bottom cut-off size which were recovered from caustic fusion of the hand sorting rejects (Lindsay, 2001).

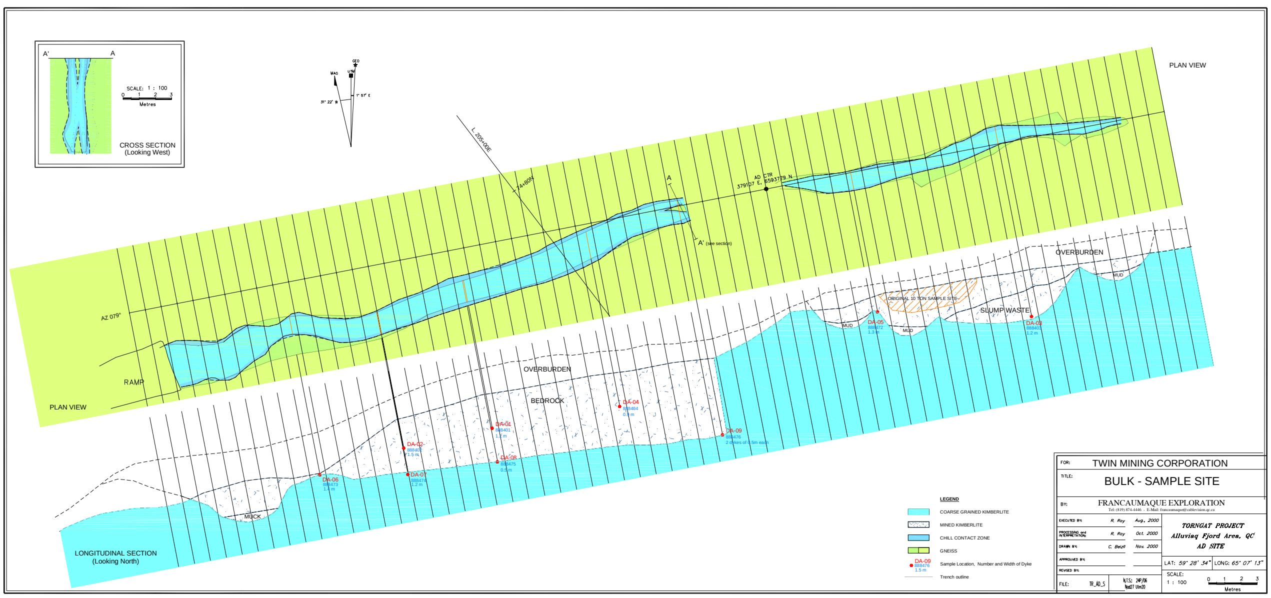


Figure 8-4: AD-2 Mini Bulk Sample Site Plan and Sections.

Table 8-5: Mini Bulk Sample Summary of Sample Weight and Diamond Recoveries

Sample	Sample Wt. Tonnes	# of Diamonds (+1.0mm)	Carat Weight
"A"			
1st Pass	n.a.	226	4.411
Recycle	n.a.	14	0.333
Total Sample A	**90.7**	**240**	**4.744 (5.23cpht)**
"C"			
1st Pass	n.a.	152	1.995
Recycle	n.a.	160	0.410
Total Sample C	**57.7**	**312**	**2.405 (4.17cpht)**
No Name (NN)			
1st Pass	n.a.	848	4.932
Recycle	n.a.	63	0.397
Total Sample NN	**158.3**	**916**	**5.329**
NN Truck 6			
1st Pass	n.a.	68	0.438
Recycle	n.a.	7	0.112
Total Sample NN Truck 6	**34.9**	**75**	**0.550**
Grand Total Sample NN	**193.2**	**991**	**5.876 (3.04cpht)**
Grand Total AD-2	**341.6**	**1,543**	**13.025 (3.81cpht)**

(Source SGS-Lakefield)

MPH notes in Section 11.3 that the above sample designations do not correspond precisely to sites on Fig. 8-4, but to some extent, Sample “A” corresponds to the North Trench (with some material from the north end of the South Trench), Sample “NN” corresponds to the top 2m of the South Trench, and Sample “C” the bottom 3m of the South Trench.

Table 8-6: Summary of Sample Weight and Diamond Recoveries, Sample A, 10 tonnes of DMS Plant Tailings

Sample	Sample Wt. Tonnes	# of Diamonds	Carat Weight
Sample "A" – DMS Plant Tailings			
1st Pass	n.a.	3	0.033
Recycle	n.a.	7	0.059
Total	**10**	**10**	**0.092**

(Source SGS-Lakefield)

MRDI, a division of AMEC (“MRDI”), Twin Mining’s processing consultants, constructed diamond grade-size plots for each sample as well as the combined results. The stages involved in creating these plots are as follows:

- The number of stones per sieve class was divided by the sample weight to give a stone density in stones per tonne (SPT) for each sieve class.
- Because the logarithmic interval between each sieve class is uneven, the stone density is divided by the logarithmic interval in order to normalise each class width. The stones per tonne variable is now expressed as stones per tonne per unit interval.
- The grades of each sieve class are plotted on a logarithmic scale with SPT/UI on the Y axis and stone size, expressed as carats per stone, on the X axis.

Figure 8-5 shows the diamond grade-size plot for each sample, as well as the combined results. Only diamonds retained by a #1 diamond screen (approximately equivalent to a 0.82mm square mesh screen have been plotted.

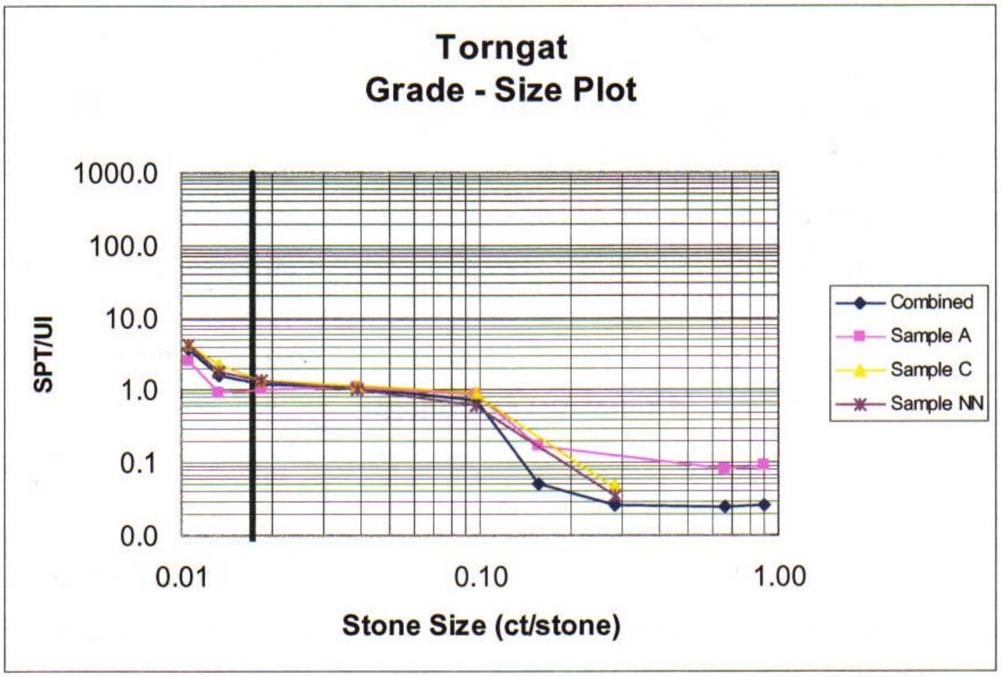


Figure 8-5: Mini Bulk Samples Diamond Grade-Size Plot (Source MRDI)

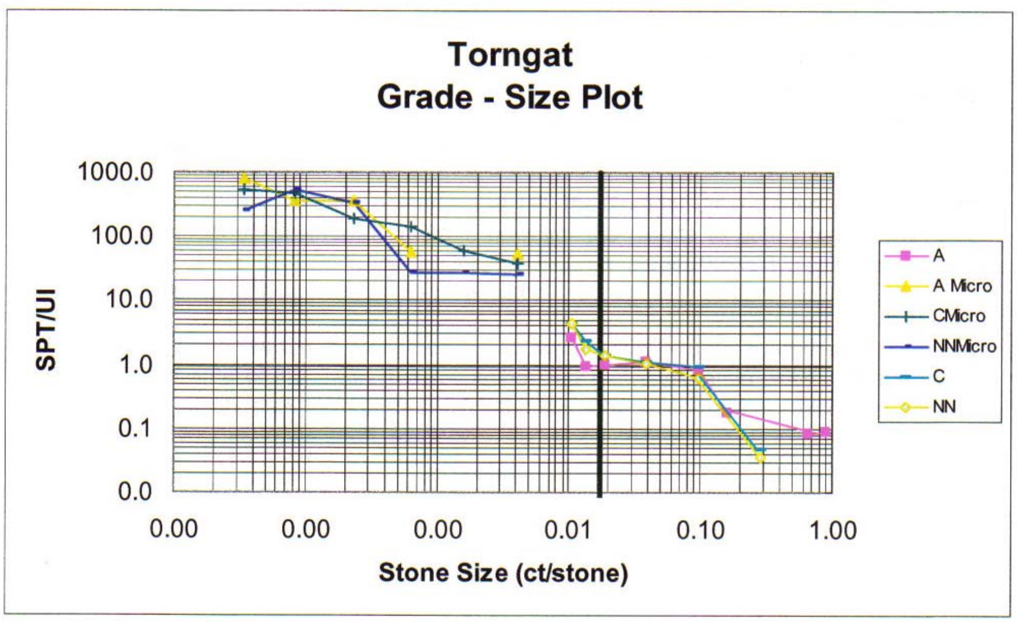


Figure 8-6: Mini Bulk Samples and Microdiamond Samples Diamond Grade-Size Plot (Source MRDI)

Figure 8-6 shows the diamond grade-size plots for the diamonds recovered from the bulk samples, as well as the micro-diamonds recovered from caustic fusion of the sample headfeed character splits.

MRDI concludes that the processing was conducted to acceptable industry standards however they note that:

a) There was an apparent loss of fine diamonds around the cut-off size for Sample A which should be investigated by Lakefield. MPH notes that this was also the only sample for which a tailings audit was performed, and which recovered 10 additional small diamonds from 10t of DMS tails – confirming to some extent the losses. Normal practise would be to carry out at least representative audits of all samples, and to factorize grades upwards based on the recovered diamonds in the
b) The results for Samples C and NN do not indicate significant fine diamond losses, however the flat nature of the grade-size curve is somewhat anomalous. MPH notes that normally these curves trend downwards as would be expected with a lognormal population of diamonds.
c) The macrodiamond results are supported by the microdiamond headfeed character split recoveries, but recommend that a 0.5mm cut-off be utilized in the future to better define this relationship.

The microdiamond results for the character samples are provided below, in Table 8-7:

Table 8-7: Diamond Recoveries from 2000 Headfeed Character Microdiamond Samples

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions								Total Weight (Carats)	Grade CPHT
			-150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 mm	- 1.70 / +1.18 mm		
"A"	86.21	57	26	14	13	2	0	2	0	0	0.015535	18.02
"C"	123.0	73	25	26	10	7	3	2	0	0	0.019520	15.87
"NN"	92.15	47	9	22	13	1	1	1	0	0	0.012495	13.56
TOTAL	**301.36**	**177**	**60**	**62**	**36**	**10**	**4**	**5**	**0**	**0**	**0.047550**	**15.78**

8.1.5 Results From September 2001 Microdiamond Sampling Program

A total of nine 300 kilogram samples were acquired in the vicinity of the earlier Torngat North DU sample site. One hundred kilogram portions of each of the samples were tested by caustic disolution. The 2001 results are presented in Table 8-8.

Table 8-8: Diamond Recoveries from 2001 Main Dyke System Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
Torngat North-DU Area												
DB-1	100.0	63	24	15	11	7	3	2	1	0	0.030	30.0
DB-2	100.0	17	13	3	0	1	0	0	0	0	0.001	1.0
DB-3	100.0	43	16	14	7	2	2	2	0	0	0.015	15.0
DB-4	100.0	36	12	8	6	4	3	3	0	0	0.022	22.0
DB-5	100.0	45	17	17	5	6	0	0	0	0	0.013	13.0
DB-6	100.0	53	16	14	17	3	2	1	0	0	0.011	11.0
DB-7	100.0	37	7	13	11	5	1	0	0	0	0.007	7.0
DB-8	100.0	37	17	12	6	0	2	0	0	0	0.006	6.0
DB-9	100.0	60	20	15	13	5	7	0	0	0	0.018	18.0
Total	**900**	**391**	**142**	**111**	**76**	**33**	**20**	**8**	**1**	**0**	**0.123**	**13.7**

Sample locations for the Torngat North DU Area including earlier samples are shown in Figure 8-7.

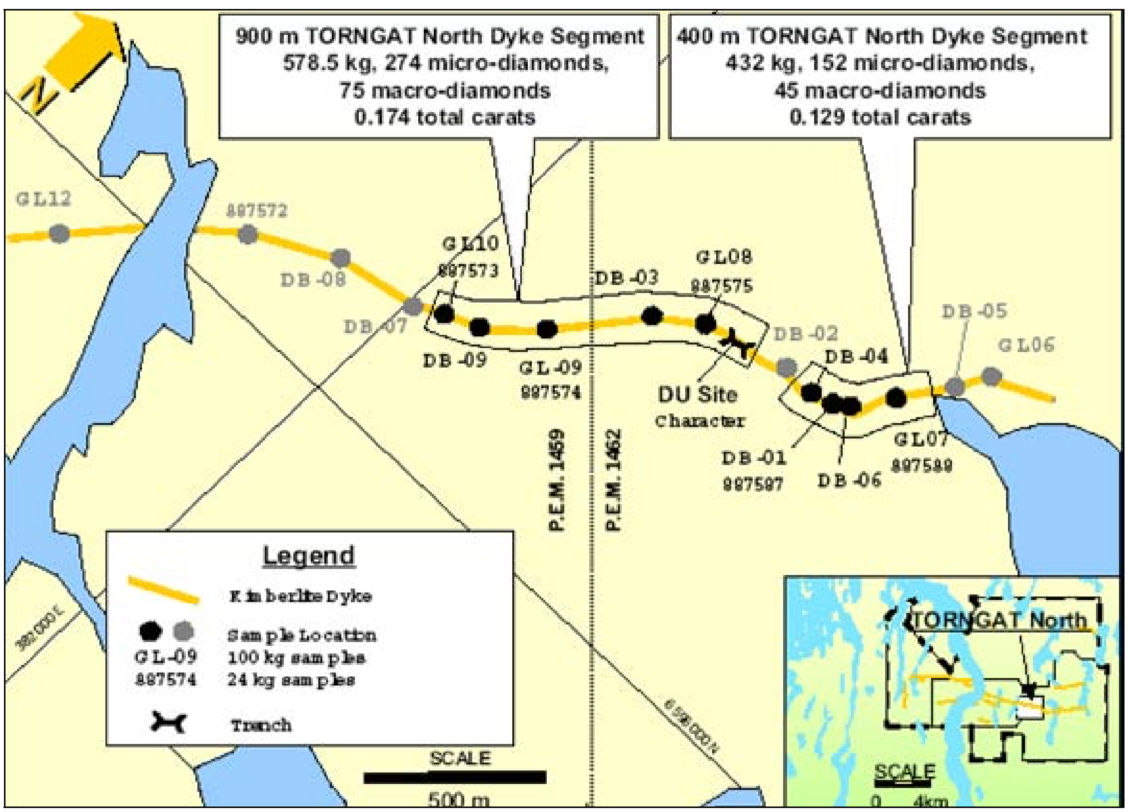


Figure 8-7: Torngat North DU Area Sample Locations (source Nordquest).

8.2. West Dyke System

A total of five 50 kilogram samples were acquired in the West Dyke System including 1 sample at the West Dyke and 4 samples along the SD Dyke. The West Dyke sample and two of the SD Dyke samples were tested by caustic fusion methodology. The results are presented in Table 8-9. See Figure 8-3 above for sample locations.

Table 8-9: Diamond Recoveries from 2000 West Dyke System Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
WEST DYKE												
888459	12.54	5	2	1	1	1	9	0	0	0	0.001	8.0
SD DYKE												
888460	24.0	0	0	0	0	0	0	0	0	0	0	0
888461	0	-	-	-	-	-	-	-	-	-	-	-
888462	0	-	-	-	-	-	-	-	-	-	-	-
888463	24.0	0	0	0	0	0	0	0	0	0	0	0

8.3. Dallas Dyke System

A total of four 50 kilogram samples were acquired along the Dallas Dyke. See Figure 8-3 above for sample locations. Two 24 kilogram sub-samples were tested by caustic fusion methodology. No diamonds were recovered.

8.4. East Dyke System

A total of ten 50 kilogram samples and one 300 kilogram sample were acquired in the East Dyke System including 2 sample at the NG-1, 4 samples along the NG-2, 1 sample at NG-3, 1 sample at NG-4, 2 samples at Richard 1 and 1 sample at Richard 2. Seven of the samples were tested by caustic fusion methodology. The results are presented in Table 8-10. See Figure 8-3 above for sample locations.

Table 8-10: Diamond Recoveries from 2000 East Dyke System Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
NG 1 DYKE												
887598	24.0	4	1	1	0	1	1	0	0	0	0.002	8.3
888452	0.0	-	-	-	-	-	-	-	-	-	-	-
Sub-total	**24.0**	**4**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0.002**	**8.3**
NG 2 DYKE												
887596	24.0	5	3	0	1	1	0	0	0	0	0.001	4.2
887597	24.0	0	0	0	0	0	0	0	0	0	0	0.0
GL-29	0.0	-	-	-	-	-	-	-	-	-	-	-
Sub-total	**48.0**	**5**	**3**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0.001**	**2.1**
NG-3 DYKE												
888451	24.0	17	8	6	0	1	1	0	0	1	0.044	183.3
Sub-total	**24.0**	**17**	**8**	**6**	**0**	**1**	**1**	**0**	**0**	**1**	**0.044**	**183.3**
NG-4 DYKE												
887565	24.0	1	0	0	1	0	0	0	0	0	0.000	1.4
Sub-total	**24.0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0.000**	**1.4**
NG TOTAL	**120.0**	**27**	**12**	**7**	**2**	**3**	**2**	**0**	**0**	**1**	**.047**	**39.2**
Richard-1 DYKE												
888467	0.0	-	-	-	-	-	-	-	-	-	-	-
888468	24.0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**24.0**	**4**									**0**	**0**
Richard-2 DYKE												
888471	24.0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**24.0**	**0**									**0**	**0**

8.5. South Dyke System

A total of three 50 kilogram samples were acquired in the South Dyke System including 2 samples on the Torngat South-1 dyke and one sample at the Torngat South-2 dyke. One of the Torngat South-1 samples was tested by caustic fusion methodology. The results are presented in Table 8-11. See Figure 8-3 above for sample locations.

Table 8-11: Diamond Recoveries from 2000 East Dyke System Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
TORNGAT SOUTH-1 DYKE												
888453	0	-	-	-	-	-	-	-	-	-	-	-
888454	24.0	10	0	7	2	1	0	0	0	0	0.000	1.6
TORNGAT SOUTH-2 Dyke												
888455	0	-	-	-	-	-	-	-	-	-	-	-

8.6. First Quebec Faceted Diamond

The Torngat Property has the distinction of being the first site in Quebec to produce a diamond that has been faceted. The rough stone measuring 4.97mm x 3.87mm x 3.40mm and weighing 0.566 carats was processed to obtain heptagonal, step cut jewel weighing 0.212 carats. The jeweller's certificate is reproduced as Figure 8-1.


Papillon Gemme
Butterfly Gem

Certificat de classification de diamant
Diamond Grading Certificate

Numéro inscrit au laser : / Laser inscription registry : A : PAPILLON GEMME NO 1; B : QUEBEC; C : TWIN MINING 21.06.2001

LGA

Report n° / Certificat n° : 0108018.P37

Cutting style / Taille : Heptagone à degrés / heptagonal, step cut

Weight / Poids : 0,212 carat
Measurements / Dimensions : 4,11 x 3,38 x 2,16 mm

Clarity grade / Pureté : SI_1

Colour grade / Couleur : E
Fluorescence / Fluorescence : Prononcée, bleue / strong, blue

Proportions / Proportions
Height-width ratio / Rapport hauteur-largeur : s.o. / n/a
Depth % / % de la profondeur : 63,9 %
Table % / % de la table : s.o. / n/a
Girdle / Rondiste : Poli, moyen / polish, medium

Finish / Fini
Polish / Poli : Moyen / medium
Symmetry / Symétrie : Bonne / good

Commentaires : Ce diamant est réputé être le premier diamant extrait du sol québécois et facetté.
Comments : This diamond is known to be the first diamond mined in Québec and faceted.

Les symboles marqués en rouge indiquent des caractéristiques internes et ceux marqués en vert ou en noir indiquent des caractéristiques externes. Les symboles marqués montrent la nature, la position et la dimension approximative des caractéristiques indiquées. Les caractéristiques de la pureté ne sont pas nécessairement toutes marquées.

Red symbols denote internal characteristics. Green or black symbols denote external characteristics. Symbols indicate the nature, position and relative size of characteristics. All clarity characteristics may not be shown.

Légende des symboles / key to symbols

Figure 8-1: Jeweller's Certificate First Quebec Diamond

9.0 EXPLORATION

Twin Mining undertook exploration work on the Torngat Property intermittently between 1999 and 2001. The work phases and project milestones listed as follows will be described below:

- Summer 1999: Initial property acquisition, site visit, reconnaissance geological investigations and due diligence microdiamond sampling.
- Winter 1999-2000: Fixed-wing High Resolution Airborne Magnetometer ("HRAM") survey completed over 444 km^2 area.
- April-May 2000: Collection of five approximately 10 tonne macrodiamond mini-bulk samples.
- Summer 2000: HRAM survey follow-up, mapping, prospecting and collection of 111 (including 9 from the AD-2 trenches) 50 kg microdiamond samples. Duplicate 300 kg samples were collected at twenty-nine of the microdiamond sample sites.
- August-September 2000: Excavation of a planned 500 tonne mini-bulk sample from the Torngat 1 dyke.
- September 2000: Saskatchewan Research Council ("SRC") report issued regarding processing of the 10 tonne macrodiamond mini-bulk samples.
- February-March 2001: SGS-Lakefield Research ("Lakefield") and MRDI reports issued regarding Torngat 1 mini-bulk sample.
- May 2001: Lakefield reports issued regarding microdiamond and SRC tailings samples.
- September 2001: Collection of 9 approximately 300 kilogram microdiamond follow-up samples in the DU Area.
- June 2002: Lakefield reports issued regarding microdiamond samples from DU Area.

9.1. Summer 1999 Reconnaissance Program

In 1999 Twin Mining Corporation acquired a 444 square kilometre area under Mineral Exploration Permits covering the known alkaline dykes. The company collected samples from several outcropping kimberlitic dykes during its field evaluations. The accumulated samples, totalling 968.14 kilograms, yielded 475 small diamonds, including 68 macrodiamonds. Macrodiamonds are defined as stones measuring more than 0.5 mm in one dimension. This work was completed under the supervision of Mr. Dallas Davis, P.Eng., who is a geologist and Twin Mining's Director of Diamond Mining.

Geological mapping was undertaken to outline the dimensions of the Torngat 1, 2 and 3 dikes. The results of this mapping were shown previously in Figure 8-1, which also shows the various sample locations. A number of samples were taken for testing for diamonds from the various sample sites and combined for reporting. After an initial period of testing, it became apparent that there were a number of phases of kimberlitic material at least in the Torngat 1 dike. Further testing has shown that the fine-grained marginal phase of the Torngat 1 dike has a low diamond content while the coarser-grained darker phase contains a higher diamond content.

As field work progressed, it was also apparent that all of the dyke material weathered recessively and that the coarser-grained phase weathered more recessively than the finer-grained marginal phase. This lack of recognition of the two dyke phases resulted in poor results because weakly mineralized fine-grained kimberlitic material was diluting the diamond contents in the coarser-grained material. Later sampling was carried out to obtain separate samples of the two phases. The results of this later testing are summarized in Table 9-1. The earlier samples also contained diamonds. Some of these samples are comparatively small while others contain mixtures of fine- and coarse-grained kimberlite. Detailed caustic dissolution results by size fraction were presented earlier in Table 8-1. It is apparent in the results reported in Table 9-1 that the coarse-grained, megacrystic kimberlitic material contains a significant number of diamonds, while the fine-grained selvage contains very few diamonds in the localities sampled.

Table 9-1: 1999 Microdiamond Sample Descriptions

Sample I.D. Number	Description	SGS Lakefield Certificate Number	Sample Processed (Kg)	Number of Diamonds	Total Weight (Carats)	CPHT
AD-1 Coarse	Torngat 1, grab samples across coarse grained core of dyke	8901-221-Oct0004.R99	109.750	214	0.0765	69.7
AD-1 Fine	Torngat 1, grab samples from fine grained kimberlitic selvages (15 cm) enclosing dike.	8901-221-Oct0004.R99	244.760	17	0.0009	0.4
AD-2	Torngat 1, grab sample of medium to coarse grained resistant dike material, jutting through overburden cover.	8901-221-Oct0005.R99	129.690	59	0.0139	10.7
AD-2		8901-221-Sep0011.R99	39.610	62	0.0068	17.2
AD-1	Torngat 1, grab samples of float across entire width of dike (1.35 m) with disproportionate amounts of resistant fine grained selvages.	8901-221-Sep0004.R99	61.800	24	0.0189	30.6
AD1-08	Torngat 1, grab samples from a single block of resistant float.	8901-221-Sep0007.R99	23.550	0	0	0.0
AD-1 Coarse	Torngat 1, grab samples across coarse grained core of dike	8901-221-Sep0010.R99	13.030	12	0.0014	10.7
AD-1 Fine	Torngat 1, grab samples from fine grained kimberlitic selvages (15 cm) enclosing dike.	8901-221-Sep0010.R99	34.500	0	0	0.0
AD-3	Torngat 1. grab samples of resistant float and dike material in partially overburden covered dike.	8901-221-Oct0006.R99	94.260	20	0.0053	5.6
AD-3		8901-221-Sep0012.R99	17.200	3	0.0003	1.7
AD-4		8901-221-Oct0007.R99	25.030	0	0	0.0
AD4-12-08	Torngat 1, grab samples of resistant dike material jutting through overburden.	8901-221-Sep0009.R99	16.100	8	0.0032	19.9
AD-5		8901-221-Sep0013.R99	7.230	0	0	0.0
AD-5	Torngat 1, grab samples of resistant dike material jutting through overburden.	8901-221-Oct0008.R99	79.770	4	0.0009	1.1
AD-7	Torngat 1, 5 cm. sample, entire dike, sample not submitted for analysis.	not processed	0.000	0	0	0.0
AD08-14	Torngat 1, collection of small grab samples from along length of dike.	8901-221-Sep0006.R99	6.571	3	0.0002	3.0
AD06-14	Torngat 2/3, collection of coarse kimberlite float at two separate locations from toe to talus slope below two dikes visible in upper cliff overlooking Alluviaq Fjord.	8901-221-Aug0008.R99	10.864	26	0.0063	58.0
AD-6	Torngat 2/3, collection of coarse kimberlite float at two separate locations from toe to talus slope below two dikes visible in upper cliff overlooking Alluviaq Fjord.	8901-221-Aug0009.R99	26.940	16	0.0314	116.6
AD-10	Torngat South, grab samples of fine grained dike float collected from a linear depression above weathered dike at top of bluff overlooking Baufremont River estuary.	8901-221-Oct0010.R99	27.480	7	0.0004	1.5
19	**TOTAL**		**968.135**	**475**	**0.1664**	**17.2**

All microdiamond samples collected during the 1999 program from the Torngat property were delivered to the testing facilities of SGS-Lakefield in Lakefield, Ontario. The samples were tested for diamond content using the caustic dissolution protocol described in Section 13 below.

9.2. Winter 1999-2000 Airborne Magnetic Survey

Between December, 1999 and January, 2000 Twin Mining contracted SIAL Geosciences Inc. ("SIAL") of Montreal, Quebec to conduct an airborne magnetic survey over their Torngat Diamond Property. MPH Consulting Limited ("MPH") was retained in June 2000 to undertake a detailed interpretation of the geophysical survey to augment the general exploration target pre-selection process for the summer field season, which consisted of the application of various magnetic data filtering and modeling techniques. MPH has verified the origin and authenticity of this airborne magnetic database.

At that time, MPH conducted a magnetic anomaly screening exercise using general geophysical modeling parameters for known dykes, pipes and blows, together with geological and geomorphological features. Due to the remoteness of the area no screening for cultural features was undertaken.

The original property, which extended to the airborne survey boundary, contained twenty-nine northeast-southwesterly trending linear to en echelon magnetic anomalies, including four that have been identified, so far, as having diamondiferous alkaline dyke causative sources (Figure 9-1). Additionally the original property contained approximately forty roughly circular to eliptical magnetic anomalies that may be typically associated with kimberlite pipes and blows. These were prioritized for field testing on the original property.

Although the Sial fixed-wing aeromagnetic survey has proven quite effective in identifying alkaline dikes on the Twin Mining property, the small size of the probable dike targets dictates that the original survey design was sub-optimal. Should it be determined that the project priority is to identify dike targets in large numbers, to support a larger-tonnage scenario, then a lower-altitude highly detailed airborne geophysical survey should be considered. Further, an examination of alkaline dike occurrences should be made to determine if conductive weathered zones exist at the sub-cropping interface or along emplacement structures for these dikes.

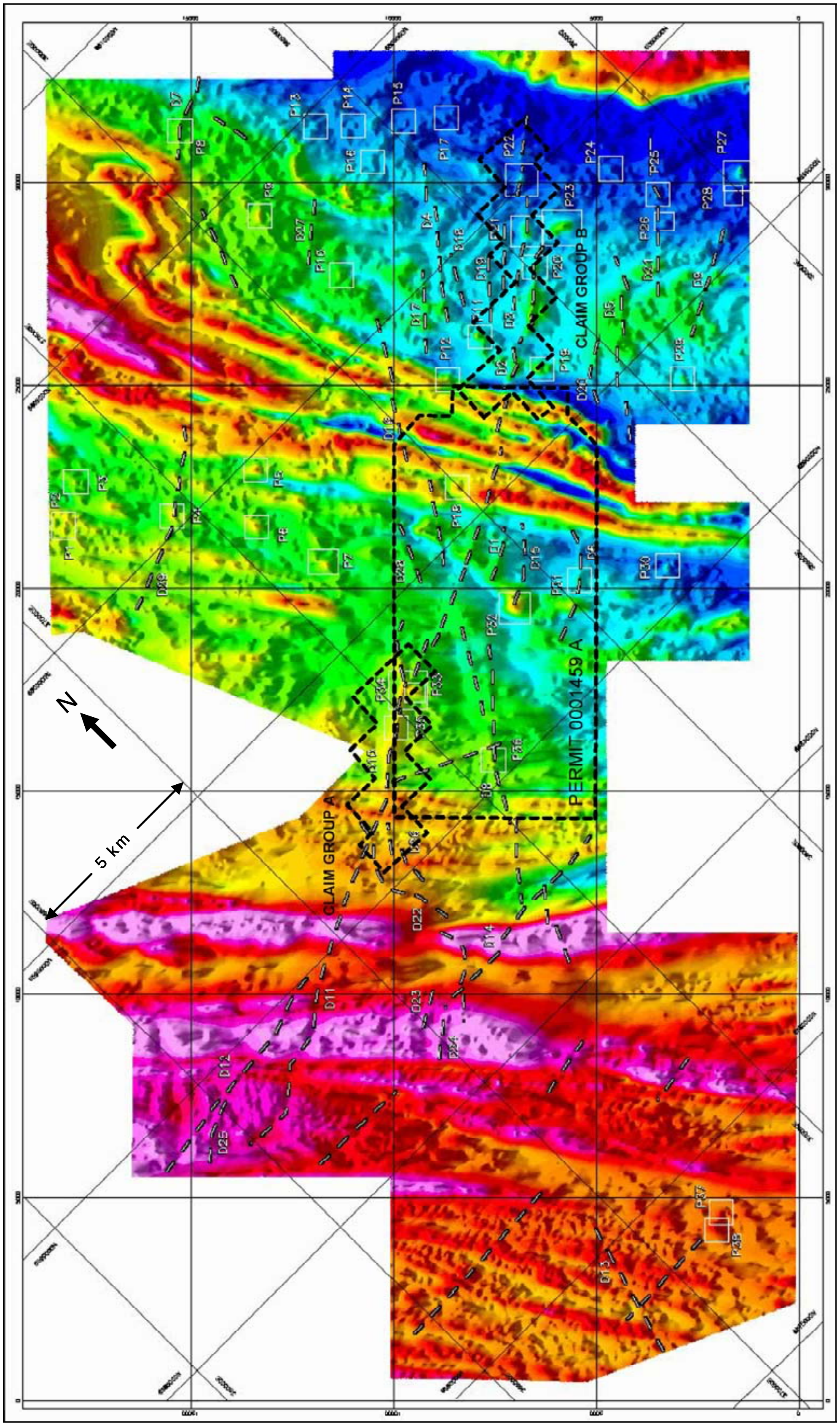


Figure 9-1: Airborne Geophysical Survey, Total Magnetic Intensity.

9.3. Spring 2000 Macrodiamond Mini-Bulk Sampling Program

In the Spring of 2000 Twin Mining Corporation conducted a first pass macrodiamond sampling program as an initial small test of a number of outcropping dykes that were found during previous reconnaissance in 1999 to contain a significant number of microdiamonds and small macrodiamonds. It collected, transported and processed five approximately 10 tonne mini-bulk samples. The purpose of the program was to recover macrodiamonds and gain a preliminary view of the diamond potential of the dykes. The field program was carried out during the month of April and the first half of May, 2000.

Five approximately 10 tonne samples were extracted along an approximately 20 kilometer strike length of the kimberlitic dyke system. Sample locations are as follows:
- Site AD-2, Torngat #1 Dyke, UTM-NAD-27 coordinates, Zone 20, 6594029m.N; 379165m.E; elevation 396.2 m. ASL.
- Site DD, Torngat #2-3 Dyke, UTM coordinates, Zone 20, 6594341m.N; 378722m.E; elevation 381 m. ASL.
- Site DU, Torngat #1 Dyke northern extension, UTM coordinates, Zone 20, 6596860m.N; 382775m.E; elevation 457.2 m. ASL.
- Site RRR-2, Kakivuq Dyke, UTM coordinates, Zone 20, 6592650m.N; 374570m.E; elevation 259.1 m. ASL.
- Site RRR-4, Kakivuq Dyke, UTM coordinates, Zone 20, 6592805m.N; 374876m.E; elevation 243.4 m. ASL.

MPH Consulting Limited visited the property on two occasions during the sampling program. The first visit was timed to coincide with the start of the blasting and sample collection process at the initial site, AD-2 at the Torngat #1 dyke. The second trip was timed to coincide with the collection of the fifth and final sample of the program.

The samples were processed under the supervision of MRDI Canada (MRDI, 2000) at the Saskatchewan Research Council's ("SRC") facility in Saskatoon, using jigs to concentrate the heavy minerals. The >0.85 mm heavy concentrate was dried and further concentrated using high intensity magnetic separation and the non-magnetic material, including diamonds, was treated with molten caustic soda which dissolves all non-diamond material leaving the diamonds intact. During routine monitoring of the magnetic separator tailings it was noted that some diamonds were being misplaced to the magnetic tailings fraction. As a consequence the sample processing strategy was modified and the entire jig concentrate for three of the samples (AD-2, DD and DU) was subjected to caustic fusion. The remaining two samples (RRR-2 and RRR-4) had all the non-magnetic jig concentrate processed but only a very small portion of the magnetic fraction.

In total 42.84 dry tonnes of kimberlite was processed recovering 242 (>0.85 mm) macro diamonds for a cumulative total of 3.46 carats, with the largest stone measuring 3.8 x 3.6 x 3.2 mm and weighing 0.2010 carats. Figure 8-2 shows trench maps and locations while Table 8-2 both in Section 8 above summarizes the results of the individual samples. Full diamond descriptions including; weight, colour, clarity, shape, dimensions and surface characteristics for the individual samples are presented in Appendix 2.

9.4. Summer 2000 General Exploration Program

In 2000 Twin Mining Corporation completed its first full field season of systematic exploration work on the Torngat diamond property. The helicopter supported program had the following principal objectives:

- To locate, map and sample all outcropping and subcropping alkaline dykes throughout the project area using a combination of geological reconnaissance and prospecting together with airborne and ground magnetics.
- To check for the existence of possible kimberlite pipes or blows using the same methodology as above.
- To systematically collect a series of approximately 50 kilogram samples throughout the property for petrography, kimberlite indicator mineral (KIM) oxide analysis, KIM trace element analysis and microdiamond analysis.

The summer of 2000 presented the first sustained opportunity for Twin Mining to conduct systematic multidisciplinary exploration throughout the large Torngat property. The three main aspects of this, namely geological mapping and prospecting, geophysics, and petrography, geochemistry and microdiamond analysis are discussed in the following sub-sections.

9.4.1 Geological Mapping and Prospecting

Geological mapping and prospecting activities were carried out between mid July and the end of August, 2000 by four helicopter supported two-man field crews. These crews ran reconnaissance traverses throughout the property crossing a group of airborne magnetic targets that may be caused, among other things, by kimberlite dykes, pipes or blows. Alkaline dykes found during this work were further delineated along strike. No kimberlite pipes were found, while many anomalies with pipe-like geophysical signatures were determined to be caused by concentrations of magnetic minerals in the Tasiuyak gneiss. The results of this work were presented at a scale of 1:20,000.

More detailed geological mapping at a scale of 1:2500 was conducted on four geophysical grids, the SW, Kakivuq, AD-DD and North grids, which cumulatively cover approximately 18 square kilometres. This work concentrated mainly on the alkaline dykes, some related blows and structural features in the adjacent wall rocks. Detailed mapping at 1:25 scale was done at the AD-2 mini bulk sample site.

9.4.2 Ground Geophysical Surveys

Ground magnetometer surveys using GSM-19 magnetometers from GEM Systems, including a mobile unit with a fixed base station, were conducted by Geola Ltd. over the above mentioned grids. The four picket grids with 25 metre pegs along 50 to 200 metre spaced lines are described as follows:

- SW Grid: 11.6 line kilometres. Approximate area covered 1.44 square kilometres Purpose to provide a possible link between southernmost Kakivuq dyke exposures and the NW-SE trending Torngat South dykes.

- Kakivuq Grid: 88.6 line kilometres. Approximate area covered 7.2 square kilometres. Purpose to delineate the northern sector of the Kakivuq dykes.
- AD-DD Grid: 37.6 line kilometres. Approximate area covered 3.7 square kilometres. Purpose to delineate Torngat #1, #2 and #3 dykes north of Abloviak Fjord.
- North DU Grid: 39.87 line kilometres. Approximate area covered 5.6 square kilometres. Purpose to delineate the northern sector of the main Torngat Dyke System.

Magnetometer readings were taken at 12.5 metre nominal spacings along the lines, with closer infill in anomalous areas. Magnetic mapping was completed using total field and vertical gradient measurements. All maps were produced using a desk top computer and a colour plotter. No detailed interpretation or magnetic modeling was done in connection with the surveys.

Ground magnetometer profiling of the airborne geophysical targets was not routinely carried out during the property wide follow-up. Nor were magnetic susceptibility measurements taken from bedrock exposures in these target areas. As a consequence many of the original geophysical targets (MPH, 2000C) visited by the geological crews were not adequately explained.

9.4.3 Diamond Assessment Program on Torngat Dykes

A major part of the work of the geological crews was to systematically collect sample material from all known dykes that may be used for these combined purposes prior to the beginning of the 2001 field season. All of the alkaline dykes, with the exception of the small Cyrano dyke on the north shore of Alluviaq Fjord, were sampled in as much detail as exposures and frost heave float would allow.

During the summer field season Twin Mining field crews were successful in identifying, mapping and sampling additional alkaline dykes bringing the overall total to a minimum of 27 with a cumulative strike length of approximately 36.5 kilometres. A number of small to moderate sized blows were found along the dykes but no classical pipes. Twin Mining collected a total of 111 approximately 50 kg microdiamond /petrographic samples, including 9 from AD-2 mini-bulk sample trenches. In addition a total of 29 approximately 300 kg larger microdiamond samples were collected from a selection of the previously sampled smaller microdiamond sample sites. Processing of the microdiamond samples was done at the Caustic Dissolution facilities of SGS-Lakefield Research Limited in Lakefield, Ontario.

The prospecting program located dyke sets along 5 different trends. These dyke systems are summarized as follows:

- The West System: includes the West Dyke and the SD Dyke and follows the northwest property boundary. Both dykes together total approximately 2.5 kilometres.
- The Dallas System: includes only the Dallas Dyke which has been traced for 3.0 km.
- The Main System: is the most significant system on the property. It includes the Pita dykes, all the Pita branches (K-A, to K-G), the Torngat 1 and the Torngat 2 dykes. alkaline dykes were found to outcrop consistently along the 20 kilometres of strike

length of the corridor. The total collective strike length of all these dykes is 23.2 kilometres. Both ends of the system end inside the property boundary and are characterized by intense en-echelon features in the north and a crosscutting structural regime in the south.

- The East System: includes all the NG dykes, and the Richard dykes. The total strike length of all the dykes is 4.9 kilometres. This system is somewhat oblique to the other systems, striking approximately 040° azimuth as opposed to ~060° for the Main, West and Dallas systems.
- The South System: is very different from the four other systems, as it strikes perpendicular to them and parallel to the gneissocity. It includes 2 dykes, the Torngat South 1 and 2, which were traced over a total strike length of 2.4 kilometres. The northwest end of the dyke system corresponds to the southwest end of the Pita 1 dyke of the Main system.

The microdiamond sample locations were shown previously in Figure 8-3 and the microdiamond analytical results are summarized in Table 9-3. More detailed microdiamond results were presented in Section 8 above.

Table 9-3: Summer 2000 Microdiamond Sample Locations and Results Summary

UTM Location			50 Kg Sample Number	300 Kg Sample Number	SGS Lakefield Certificate Number	Sample Processed (Kg)	Number of Diamonds	Number of Macro-diamonds	Total Weight (Carats)
Northing (m)	Easting (m)	Elevation (m)							
			DU-North		8901-221-AUG0011	22.51	13	0	0.004
			DD-North			23.44	0	0	0
			RRR-2		8901-221-SEP0004	17.35	0	0	0
			RRR-4			18.71	5	1	0.005
6591515	373176	277	887627	GL-21	8901-221-SEP0005	57.46	20	0	0.003
6597289	383296	380	888466	GL-06		48.57	45	2	0.009
6607251	382048	448	888460			51.52	7	0	0.001
6596905	382842	449	887586			50.55	5	2	0.002
6595632	381042	445	887570	GL-03		52.48	7	1	0.002
6595026	380325	440	888469	GL-13	8901-221-SEP0011	24.0	7	1	0.001
6593731	378944	403	887564	GL-05		24.0	14	3	0.014
6594792	380036	404	887567	GL-15		24.0	0	0	0
6595265	380470	473	887568			24.0	0	0	0
6599153	385608	468	887635			24.0	0	0	0
6599246	385670	511	887636			24.0	0	0	0
6598984	385406	439	887634			24.0	3	0	0.000
6598832	385168	370	887633			53.9	15	2	0.005
6598539	385355	394	887632			24.0	1	0	0.000
6599469	385939	445	887656			24.0	0	0	0
6597842	384544	475	887592		8901-221-SEP0012	24.0	5	1	0.003
6598018	384733	432	887593			24.0	8	2	0.001
6598329	385060	390	887630			24.0	0	0	0
6598464	385205	372	887631			24.0	5	0	0.001
6593339	375574	309	887611			24.0	0	0	0
6593372	375604	301	887612			24.0	0	0	0

6593393	375607	250	887613			24.0	2	0	0.000
6593483	376244	224	887616	GL-26		24.0	4	0	0.000
6593482	375758	253	887619			24.0	0	0	0
6593548	376412	172	887638			24.0	17	0	0.001
6593623	375863	248	887623	GL-24	8901-221-SEP0013	24.0	2	0	0.000
6593321	375506	306	887585	GL-27		24.0	7	0	0.001
6593253	375381	306	887624			24.0	4	1	0.001
6593155	375244	278	887626	GL-28		24.0	0	0	0
6590403	375746	266	887597	GL-29		24.0	0	0	0
6593999	379617	436	887562			24.0	0	0	0
6593840	379274	401	887563	GL-17		24.0	1	0	0.000
6593731	379461	403	887566	GL-16		24.0	0	0	0
6595393	380670	472	887569		8901-221-SEP0014	24.0	1	0	0.000
6595898	381257	447	887571	GL-12		24.0	13	4	0.014
6596183	381612	463	887572	GL-11		24.0	5	0	0.000
6596362	382064	439	887573	GL-10		24.0	32	2	0.006
6596546	382364	462	887574	GL-09		24.0	14	1	0.002
6596867	382657	425	887575	GL-08		24.0	2	0	0.000
6596921	382996	438	887587			24.0	15	4	0.021
6597062	383151	423	887588	GL-07		24.0	1	1	0.003
6597396	383988	419	887589			24.0	3	1	0.001
6600635	386906	429	887590			24.0	0	0	0
6597715	384396	470	887591		8901-221-SEP0015	24.0	7	1	0.002
6600100	386364	431	887655			24.0	0	0	0
6600216	386554	418	887654			24.0	2	1	0.001
6590511	372150	227	887576	GL-18		24.0	7	1	0.001
6592955	374978	290	887625			24.0	0	0	0
6591367	372962	245	887628	GL-20		24.0	3	0	0.000
6591232	372739	221	887629			24.0	9	0	0.001
6590055	371685	65	887651			24.0	9	0	0.000
6589679	371269	60	887653			24.0	6	0	0.000
6589747	371335	27	887652			24.0	10	0	0.001
6590631	372334	214	887577	GL-19	8901-221-SEP0016	24.0	7	0	0.001
6591756	373412	307	887578	GL-22		24.0	3	2	0.001
6592335	374016	301	887580			24.0	3	0	0.000
6592777	374746	295	887584			24.0	3	0	0.000
6593582	375673	250	887614			24.0	0	0	0
6593507	375965	269	887615	GL-25		24.0	0	0	0
6593665	375757	252	887617			24.0	0	0	0
6593531	375717	247	887618			24.0	7	0	0.000
6593906	375975	235	887621			24.0	2	0	0.000
6593788	375886	253	887622	GL-23		24.0	0	0	0
6590781	375955	201	887598		8901-221-SEP0017	24.0	4	2	0.002
6591339	376340	4	888451			24.0	17	3	0.044
6590355	378373	2	888471			24.0	0	0	0
6592827	378378	0	887565			24.0	1	1	0.000
6592284	380558	382	888468			24.0	0	0	0
6594356	378717	381	887558			24.0	1	0	0.000
6594707	379433	452	887561			24.0	4	0	0.001

6587344	372429	327	888454		8901-221-SEP0018	24.0	10	0	0.000
6590112	375495	283	887596			24.0	5	0	0.001
6602314	372039	314	888459			12.54	5	1	0.001
6590234	372234	201	888470			24.0	11	0	0.001
6588528	371457	0	888456			24.0	3	0	0.000
6600478	383849	437	888465		8901-221-SEP0019	24.0	0	0	0
6601554	384469	469	887594			24.0	0	0	0
6573622	401888	492	888458			24.0	0	0	0
6592568	374376	282	887582			24.0	8	0	0.001
6592737	374498	282	887583			24.0	0	0	0
6607251	382048	448	888460			24.0	0	0	0
6606585	380970	469	888463			24.0	0	0	0
AD Mini Bulk Sample Site			888401		8901-221-DEC0001	24.0	20	1	0.008
AD Mini Bulk Sample Site			888402			24.0	20	3	0.004
AD Mini Bulk Sample Site			888403			24.0	15	2	0.004
AD Mini Bulk Sample Site			888404			24.0	10	2	0.003
AD Mini Bulk Sample Site			888472			24.0	7	0	0.001
AD Mini Bulk Sample Site			888473			24.0	3	0	0.000
AD Mini Bulk Sample Site			888474			24.0	18	7	0.006
AD Mini Bulk Sample Site			888475			24.0	38	7	0.009
AD Mini Bulk Sample Site			888476			24.0	27	4	0.011
6594392	378848	385	887559		Not Processed				
6594556	379005	439	887560						
6594991	379834	418	887637						
6592076	373639	305	887579	GL-01, 02					
6593520	376348	200	887620	GL-04					
6592469	374107	308	887581						
6591358	376375	6	888452						
6590720	375981	197	887599						
6601758	384670	503	887595						
6600450	383828	434	888464						
6607260	382131	471	888461						
6606785	381178	454	888462						
6591889	379868	382	888467						
6587307	372448	325	888453						
6588528	371457	0	888455						
6573572	401874	512	888457						
6593721	379466	403		GL-14					
Total			**111**	**29**		**2425.03**	**588**	**67**	**0.206**

9.5. August-September 2000 Mini-bulk Sample

MRDI concluded that the most prospective results from the Spring 2000 macrodiamond sampling program were from the AD-2 and DU samples, with AD-2 yielding a coarser diamond size distribution, including two diamonds in excess of 3 mm. Based on this information MRDI recommended that Twin Mining proceed with the excavation of a 500 tonne sample at the AD-2 site (Lindsay, 2000). In August 2000, Twin Mining collected, approximately 360 gross wet tonnes of unweathered kimberlitic dyke material from AD-2. Processing of the mini-bulk macrodiamond samples was conducted at the Dense Media Separation ("DMS") facilities of SGS-Lakefield Research Limited in Lakefield, Ontario.

The Qualified Person for the sampling program was geologist Mr. Richard Roy, FGAC, of Francaumaque Explorations Inc. Mr. Roy was present on the Torngat Property for most of the sample collection program. Another geologist in the employ of Francaumaque, Mr. Stephane Digonnet, supervised the work during Mr. Roy's absence in early September.

The sample site was prioritized from the five original sites, by MRDI Canada (Lindsay, 2000). The MRDI report states, "….. the most prospective results were obtained from [+/- 10 tonne] samples AD2 and DU which both yielded similar diamond counts and recovered grades." It goes on to state, "…. it is clear that sample AD2 yielded a coarser diamond size distribution than sample DU, including the recovery of two diamonds in excess of 3mm. It is therefore recommended that Twin Mining proceed with the excavation of a larger 500 tonne sample and that this be taken from the same area as the AD2 mini-bulk sample."

Geological observations were made during the course of the trenching program. Overall site maps on plan and longitudinal section were drawn at a scale of 1:100 (see Figure 8-4 above). A suite of nine 50 kilogram microdiamond samples were collected during the trenching program for comparison with the general property exploration samples described earlier.

Weathered decomposed kimberlitic material which typically occurs in the top few metres of the outcropping dykes was included in the scoping samples collected during the winter but was excluded from this mini-bulk sample. This relatively light-weight material comprises various clay by-products of unstable mafic minerals such as olivine, serpentine, etc., in combination with resistant dyke minerals such as magnetite, garnet, phlogopite, rutile, spinel and diamond. It is possible that minor organic and wall rock material such as xenoliths, inclusions or overbreak may have found its way into some samples although this type of material was routinely discarded. This weathered material because of its relatively low bulk density would likely result in overstatement of typical solid bedrock grades per unit of weight such as carats/tonne or CPHT. The fresh kimberlitic samples are believed to be more representative in terms of a possible underground mining scenario.

The results of this sampling program were presented in Section 8.0 Mineralization.

9.6. 2001 Mineral Chemistry Sample Assessment Program

Twin Mining commissioned Bruce Jago of SGS-Lakefield to process, extract kimberlitic indicator minerals, microprobe, interpret and report upon their chemistry, and in particular their relationship with macrodiamond grade for 10kg. samples from the eight mini-bulk sample sites. These were namely:

- AD2 in Spring 2000, followed by the A, C and NN Fall 2000 samples from the Torngat 1 Dyke
- DD and DU in Spring 2000 from the Torngat 2 Dyke
- RRR2 and RRR4 in Spring 2000 from the Pita 1 Dyke

Some preliminary conclusions presented by Jago, in reports dated April 24, 2001 and November 7, 2001 include:

- Only garnet is present in sufficient amounts to allow for ratings of sites, with sites RRR4 (68%) and DU (57%) far more enriched in G10's than the other sites with <15%. It is useful to note that the Torngat 1 Sites had values of AD2 (10.6%), A (14.1%), C (4.0%) and NN (3.0%)
- Potentially diamond-associated eclogitic garnet was present at Site DU to 21.8% of the garnets, whereas DD had 6.4% and all others les than 3.0%.
- Pressures and temperatures plotted from clinopyroxene grains suggest a geotherm of 40mW/m2, which in turn suggests sampling of diamond-bearing mantle, but the clinopyroxene method is less exact than other geothermometry methods.

These observations clearly suggest that the DU site is of higher interest than AD2, or any of the others, simply in terms of mineral chemistry. Jago further compared these empirical observations with recovered grade data from the mini-bulk samples, and with normalized 100kg. microdiamond samples from these sites, and concluded that a moderate to strong positive correlation exists between:

- Expected diamond grade and proportion of G-10 and high-pressure eclogitic garnets
- Expected diamond grade and number of diamonds >0.425mm screen
- Expected diamond grade and total numbers, and weights, of microdiamonds and macrodiamonds

Jago recommended that combining indicator and microdiamond work was the best method of prospecting the individual segments of the Torngat dyke system.

9.7. September 2001 Microdiamond Sampling Follow-up Program

In September 2001 Twin Mining contracted NordQuest Inc. to collect a series of ~300 kilogram microdiamond infill samples along a 2.5 kilometre section of the Torngat Dyke System known as the DU area. The initial DU sample site is located approximately 6 kilometres northeast of Abloviak Fjord at UTM-NAD 27 coordinates, Zone 20, 6596869m.N; 382775m.E; elevation 457.2m. ASL. After a property wide microdiamond sampling program in 2000 this area was determined to be the most promising, consistently diamondiferous prospect.

The DU site was initially sampled in April 2000 as part of an initial macrodiamond scoping sampling program which tested 5 widespread sites around the Torngat Property. The DU sample weighing 8.74 dry tonnes yielded 99 >0.85mm macrodiamonds weighing a total of 1.3721 carats for a grade of 0.157 carats per tonne. The largest diamond at the site was a clear and transparent stone measuring 2.9mm x 2.5mm x 1.8mm.

In the summer of 2000 microdiamond samples weighing ~50 kilograms and/or ~300 kilograms were collected from 8 additional sites along the above mentioned 2.5 kilometre dyke section. All of these samples yielded diamonds when subjected to caustic dissolution.

Twin Mining conducted a follow-up microdiamond sampling program in the DU area over a 4 day period from September 16th to 19th, 2001. A total of 9 samples each weighing about 300 kilograms were obtained including 7 samples from new sites and 2 where 50 kilogram samples were previously collected. The alkaline dyke samples were submitted to Lakefield Research Limited where diamonds were recovered by caustic dissolution.

The sampling program was managed by Richard Roy of NordQuest Inc. who was on site for the entire program. Denis Bergeron of G. L. Geoservices assisted in the sampling work. Men and equipment were mobilized from Val d' Or to Kangiqsualujjuaq by a Douglas DC-3 aircraft chartered from Aviation Boreal and from there to the site by an Astar 350-B light helicopter supplied by Nunavut Rotors Inc. The DC-3 remained at Kangiqsualujjuaq for the duration of the field work.

The Qualified Person involved in the sampling program was geologist, Mr. Richard Roy, a member of the Association Professional Geologues et Geophsicts du Quebec ("APGGQ") of NordQuest who was present at all times during collection of the samples.

The sample sites were selected to provide as many new infill sites as possible along the previously sampled 2.5 kilometre dyke section. The various sample sites were shown previously in Figure 8-7.

The sample identification numbers and gross shipping weights as indicated by the helicopter external load slinging scale for the individual sites are as follows:

- DB-01: 300 kilograms.
- DB-02: 282 kilograms.
- DB-03: 318 kilograms.
- DB-04: 286 kilograms.
- DB-05: 305 kilograms.
- DB-06: 273 kilograms.
- DB-07: 255 kilograms.
- DB-08: 227 kilograms.
- DB-09: 345 kilograms.

A total of 2,591 gross kilograms of dyke material was collected.

The sampling sites were located/relocated by topographic features and UTM coordinates using GPS methodology.

A total of 900 kilograms of alkaline dyke material was processed recovering a total of 391 small diamonds weighing 0.1223 carats, including 60 macrodiamonds. The sample locations and partial caustic dissolution results of the nine samples as reported by SGS-Lakefield are summarized in Table 9-4. Detailed caustic dissolution results were presented previously in Section 8 above.

It is concluded that the microdiamond sampling program conducted by Twin Mining as described by NordQuest was efficiently performed in terms of the sampling. However Twin was remiss in not spiking samples or using an umpire facility for duplicates, nor in having the residues checked by a separate facility, all industry best-practise standards. Also, Twin has discarded all residues from microdiamond samples, as well as all tails and concentrates from the mini-bulk sampling programs, meaning it is not possible to check the veracity of their work and all results as reported herein must be considered final.

Table 9-4: September 2001 Microdiamond Sample Locations and Partial Results

UTM Location			50 Kg Sample Number	300 Kg Sample Number	SGS Lakefield Certificate Number	Sample Processed (Kg)	Number of Diamonds	Number of Macro-diamonds	Total Weight (Carats)
Northing (m)	Easting (m)	Elevation (m)							
6596921	382996	438	887587	DB-1		100.0	63	12	0.0300
				DB-2		100.0	17	1	0.0011
				DB-3		100.0	43	9	0.0150
				DB-4		100.0	36	7	0.0216
				DB-5		100.0	45	4	0.0128
				DB-6		100.0	53	9	0.0115
				DB-7		100.0	37	6	0.0070
				DB-8		100.0	37	2	0.0057
				DB-9		100.0	60	10	0.0176
Total			**1**	**9**		**900.0**	**391**	**60**	**0.1223**

10.0 DRILLING

No drilling has been done on the Torngat Property. The dykes have widespread exposure on surface and Twin Mining's general exploration efforts have been focused to date on evaluating the dykes by surface sampling and manual/Pionjar trenching.

11.0 SAMPLING METHOD AND APPROACH

Three types of samples have been acquired in connection with Twin Mining's exploration programs:

- Approximately 10 tonne macrodiamond scoping samples
- Approximately 50 kilogram and approximately 300 kilogram microdiamond samples
- An approximately 360 tonne mini-bulk sample

Sampling methodology and approach for each sample category is described in the following sub-sections.

11.1. Spring 2000, 10 Tonne Macrodiamond Scoping Samples

The Spring 2000 sampling program was carried out during the month of April and the first half of May, 2000. The prime focus of the program was to acquire and secure as much kimberlitic dyke material as possible during the limited field work period. Snow and blowing snow prevented all but cursory geological investigations.

The Qualified Persons involved in the sampling program were economic geologist Mr. Dallas Davis, P.Eng., Director Diamond Mining, Twin Mining Corporation and economic geologist Mr. Richard Roy, FGAC, of Francaumaque Explorations Inc. Together these persons have in excess of 40 years of exploration/mining industry related experience. At least one (for the most part both) of these persons was present at all times during the collection of the samples.

The sample sites were selected to coincide with the earlier microdiamond grab sample locations as well as along a prominent magnetic anomaly south of Alluviaq Fjord between the original Torngat 1, 2 & 3 and the Torngat South dykes. Subcropping dyke material was uncovered along the magnetic anomaly during the current field program and was subsequently found by simple panning and microscopic examination to be diamondiferous. The latter showing has been named the Kakivuq zone. Five approximately 10 tonne samples were extracted along an approximately 20 kilometre strike length of the kimberlitic dyke system. Sample locations are as follows:

- Site AD-2, Torngat #1 Dyke, UTM-NAD-27 coordinates, Zone 20, 6594029m.N; 379165m.E; elevation 396.2 m. ASL.
- Site DD, Torngat #2-3 Dyke, UTM coordinates, Zone 20, 6594341m.N; 378722m.E; elevation 381 m. ASL.
- Site DU, Torngat #1 Dyke northern extension, UTM coordinates, Zone 20, 6596860m.N; 382775m.E; elevation 457.2 m. ASL.
- Site RRR-2, Kakivuq Dyke, UTM coordinates, Zone 20, 6592650m.N; 374570m.E; elevation 259.1 m. ASL.
- Site RRR-4, Kakivuq Dyke, UTM coordinates, Zone 20, 6592805m.N; 374876m.E; elevation 243.4 m. ASL.

The sampling sites were located/relocated by topographic features, UTM coordinates using GPS methodology and were confirmed by magnetometer readings. The dykes usually occupy linear features because they are recessive weathering and are therefore easy to spot. Also in spite of the late winter conditions bedrock exposure was quite good, due in no small part to the regular gale force winds on the Torngats uplands plateau (Photo 12). Thus it was relatively easy, when the weather cooperated, to locate suitable sampling sites.

Photo 12: Geological reconnaissance April 2000.

Interim geological observations as previously mentioned were cursory in nature. The dykes away from cliff-side exposures were found to have a surficial layer of weathered and decomposed dyke material ranging from a few tens of centimetres to over a metre in thickness. This material obscures the dyke contacts making it difficult to measure dyke widths and attitude. Snow and freezing conditions made it virtually impossible to clean the trenches and make accurate systematic measurements. A suite of representative and special (eg. showing inclusions) geological specimens were collected at each site.

In terms of sample representivity the problems mentioned in the preceeding paragraph on geological observations precluded the acquisition of sample material across the full width of the dyke in most places. While overbreak into the adjacent gneisses was routinely discarded from the broken muck it was not always possible to ensure that the dyke material was fragmented all the way to the contacts, thus the samples do not as a rule represent the entire width of the dyke. The samples generally contain a mixture of olive green weathered material and dark green to almost black fresh kimberlitic material. The decomposed material is typically physically enriched in resistant minerals including diamonds and as such would tend to overstate grade in terms of carats per unit weight for fresh dyke. The diminished weight per unit volume in the weathered material on the other hand allows for a greater in situ volume of material to be tested for macrodiamonds in a given ten tonne sample. Since the fundamental objective is to recover as many macrodiamonds as possible it is acceptable and beneficial to include weathered kimberlitic material in the samples. Except for a small amount of material retained for petrographic work etc. virtually all of the broken rock was collected for macrodiamond work.

Rubber mats and sandbags were used initially to keep sample rounds intact. Fly rock was a minor problem at the first site for the first few blasts although most fragments were easy to find and recover on the hard packed snow. Once the blasting crew determined optimum explosives charge and placement criteria, the fly rock problem was eliminated to the extent that the use of mats and sand bags was discontinued.

Sample containers were five gallon plastic buckets with self-locking lids as specified in the QA/QC manual. Usually wet sample weights per bucket ranged between 25 and 35 kilograms. The buckets were quite robust even under low temperature conditions commonly in the -20^{o} to -25^{o} C range (Photo 13). The lids are difficult to dislodge under normal handling but may be pried off or dislodged during rough handling. Between the sampling sites and the Val d' Or shipping area there were no known instances of sample loss due to open or ruptured containers.

Photo 13: Twin Mining personnel preparing scoping sample pails for shipment.

The on site packaging sealing and sample numbering procedures were generally as set out in the manual. Two security seals were affixed through drilled holes through the lid and sample bucket making it difficult to gain easy access to the sample material. Some problems were encountered with the numbered tag part of the security seal during normal handling and while slinging by helicopter, especially in cold weather. The seals themselves stayed intact so the lids remained tight in these instances. Loss of one or even both of the number tags during supervised shipping/handling, as long as the actual seal remained intact, was not considered reason to discard a particular sub-sample. The official sub-sample numbers are those of the consecutively numbered three-tag sample books together with two security seal tag numbers. Two of the three sample book tags were placed inside the appropriate bucket while the third was retained by the QP. The sub-sample buckets were marked on the lids with a spot of fluorescent spray paint using a different colour for each sample site so that each 10 tonne sample is clearly identifiable during shipping, handling and at the lab (Photo 14).

Photo 14: Colour coded sealed sample pails from DD site macrodiamond scoping sample.

Sample site descriptions, sub-sample registers and shipping manifests were prepared in accordance to the QA/QC manual.

The sample shipping and handling process, as organized by Twin Mining Corporation, was quite complex due to the remote location and the long distance to the nearest suitable process facility. The transportation route began by the delivery of sub-sample batches from the sample collection sites to Kangiqsualujjuaq airport by light helicopter. From there the samples were delivered to the LG-2 Airport at La Grande, James Bay in approximately 5 tonne batches using an Air Inuit HS-478 cargo aircraft on regularly scheduled twice weekly flights (Photo 15). From LG-2 the individual approximately 10 tonne macrodiamond samples were transported by Kepa Transport truck to Val d'Or where they were transferred to a Papineau Transport truck for shipment to the Saskatchewan Research Council laboratory in Saskatoon.

Photo 15: Loading scoping sample pails into Air Inuit HS-478 at Kangiqsualujjuaq airport.

11.2. Summer 2000, 50 kg and 300 kg Microdiamond Samples

In total 97 approximately fifty kilogram dyke assessment samples were collected at intervals ranging from several tens to several hundred metres throughout the system. In addition 9 similar samples were collected from the AD-2 mini bulk sample site.

Sample site records were prepared for each site indicating the site name, UTM coordinates, date sampled, sample number, sampler(s) as well as detailed field lithological, mineralogical and structural descriptions. Efforts were made to determine empirical percentages of key minerals, phenocrysts, nodules, xenoliths etc. for comparison with subsequent laboratory data.

The sampling sites were located/relocated by a combination of topographic features, UTM coordinates using GPS methodology and locally by geophysical grid coordinates. The dykes usually occupy linear features because they are recessive weathering and are therefore easy to spot. Sample containers were five gallon plastic buckets with self-locking lids as specified in the previous QA/QC manual (Photo 16). Usually wet sample weights per bucket ranged between 20 and 30 kilograms. The inclusion of weathered kimberlitic material was avoided. The buckets were quite robust under all types of winter and summer field conditions. The lids are difficult to dislodge under normal handling but may be pried off or dislodged during rough handling. Between the sampling sites and the Lakefield laboratory there were no known instances of sample loss due to open or ruptured containers.

The on site packaging sealing and sample numbering procedures were similar to those followed during the Spring 2000 sampling program. Three security seals were affixed through drilled holes through the lid and sample bucket making it difficult to gain easy access to the sample material. The official sample numbers are those of consecutively numbered three-tag sample books. Two five gallon buckets were required for each 50 kilogram sample. One of the three sample tags was placed inside each of the appropriate buckets while the third was retained by the project manager. The sample number was also inscribed on the lid of each bucket using a permanent marker.

Photo 16: 50 kilogram microdiamond samples at AD-2 site.

MPH Consulting Limited previously recommended (MPH, 2000D) that 25 kilograms from each 50 kilogram sample should be submitted for caustic dissolution in the first pass. The remaining 25 kilograms can be used for duplicate / check sample purposes as warranted.

In addition to the above, a total of 29 approximately 350 kilogram samples were collected by 'Plugger' drilling and blasting (Photo 17) at a selection of the 50 kilogram sites. These samples were collected because the opportunity was there to ship such samples south by barge at very low incremental cost. This material can be used as required for additional microdiamond analyses as warranted by the results obtained from the 50 kilogram samples. In the case of samples with promising first and second pass microdiamond results up to 350 kilograms of additional dyke material might be submitted for caustic dissolution to construct a representative diamond curve.

The sampling sites were drilled and blasted to obtain approximately 350 kilograms of unweathered dyke material. This material was collected manually using 5 gallon plastic buckets which were dumped into previously used BL-3000 plastic fibre bulk bags manufactured by FIB-PAK Inc. of Hawkesbury, Ontario. The bags, used previously for concrete cement, have a maximum load capacity of 1500 kilograms, well in excess of the currently required capability. These mid range samples were identified by the prefix GL followed by consecutive numbers from 1 to 29. The individual numbers were inscribed on a sheet of paper inside a plastic sample bag that was placed with the sample inside the bulk bag. In addition the number was marked on the outside of each bulk bag using fast-drying yellow spray paint. The bottom pouring spout and the top of each bulk bag was secured by woven fiber ties affixed by the manufacturer for this purpose. No bands, security seals etc. were fixed to these bags or considered necessary because the bags were continuously under the control of Francaumaque.

Photo 17: Plugger drilling in progress at 300 kg microdiamond sample site GL-18.

The sample shipping and handling process, as organized by Twin Mining Corporation, was relatively straight forward in spite of the remote location and long distance to the process facility at Lakefield. The transportation route began by the delivery of the various types of samples from the collection sites to the open sample storage area on the north shore of Alluviaq Fjord below the AD-2 mini bulk sample site. All but 9 of the 106 sealed 50 kilogram microdiamond samples were flown by light aircraft to Kangiqsualujjuaq or Kuujjuaq accompanied by Twin Mining personnel and then sent by air freight to Lakefield Laboratories. The remaining 9 50 kilogram microdiamond samples, and the 29 300 kilogram microdiamond samples were shipped by barge from Alluviaq Fjord to the port of Portneuf, Quebec where they were stored under guard until shipped to Lakefield by Papineau Transport trucks.

11.3. August-September 2000, 360 Tonne Mini Bulk Sample

The prime focus of the mini-bulk sampling program was to acquire and secure approximately 500 dry tonnes of unweathered kimberlitic dyke material. The material was acquired by surface trenching along an approximately 65 metre section of the Torngat #1 dyke near the earlier AD-2 sample site.

The mini bulk sampling work was conducted by a six-man crew including; two men on drilling and blasting, one mini-backhoe operator for mucking, two field technicians for hand sorting / waste removal during sampling and a supervising geologist. Mechanical equipment included two small diesel powered 'Sullair' air compressors (Photo 18) with 'jackleg' blast hole drilling equipment and a 'Kubota' mini-backhoe (Photo 19) for overburden removal and mucking. Men, equipment and supplies were transported to the site by a Bell 206L 'Long Ranger' or an Aerospatial AS 350 'Astar' light helicopter which was also used for transportation of the mini-bulk sample material from AD-2 to the barge loading area near the north shore of the fjord.

Photo 18: Two diesel powered compressors used to run 'Jack-leg' drills.

Photo 19: Kubota mini backhoe used for overburden removal and mucking

Two active work sites or trenches located several metres apart were maintained if available to facilitate the work. One site was usually being drilled and loaded while the other was in the mucking/sorting/slinging phase. A typical round in alkaline dyke material measured 4 metres in length and 1.2 metres in width and was drilled to a depth of 2.5 metres thus representing 12 cubic metres or 30 to 35 tonnes of unweathered dyke material. A V-pattern blasthole setup was used to optimize dyke fragmentation and minimize wall rock dilution. In the mucking cycle the Kubota was used to place dyke material into used (for cement) 1500 kg capacity FIB-PAK BL-3000 woven plastic fiber bulk bags. Approximately 550 wet kilograms (assumed approximately 500 dry kilograms) of material or the maximum sling load for the helicopters was placed in each bag. A total of 737 bulk bags of dyke material were collected to make up an approximate gross wet shipping weight (includes bags, pallets and moisture) of 360 tonnes.

Once filled the bulk bags were tied and left beside the trenches until the available storage space was used up, usually after 10 or so bags per site. The helicopter then transported the bags to a temporary storage area on the north shore of Alluviaq Fjord below the AD-2 site. The heli-mucking cycle averaged about 4 minutes per round trip not including refueling or downtime.

Two trenches, AD North and AD South, were completed, separated by a 6 metre section of very narrow dyke. The smaller and shallower AD North trench measuring about 23 metres in length and averaging about 3 metres deep was abandoned due to hanging wall caving. The 33 metre long and up to 6 metre deep AD South trench supplied the bulk of the sample material. The latter trench's walls held up very well for the duration of the sampling operation. In fact a large proportion of the lower grade chilled margin adhered to the trench walls as well. In order to provide information on diamond grade distribution and to allow for processing flexibility, the 500 kilogram samples were separated into three batches as follows:

- Batch #1, 185 bulk bags, Gross shipping weight = 95.9 tonnes, Includes everything from the AD North trench and some material from the north top end of the AD South trench, Distinguished by the letter 'A' inscribed on the outside of each bulk bag with black spray paint.
- Batch #2, 427 bulk bags, Gross shipping weight = 209.1 tonnes, Includes roughly everything from the top two metres of the AD South trench, No distinguishing marking on outside of bulk bags.
- Batch #3, 125 bulk bags, Gross shipping weight = 57.6 tonnes, Includes everything from the bottom three metres of the AD South trench, Distinguished by the letter 'C' inscribed on the outside of each bulk bag with dark blue spray paint.

It is noted that Batches #2 and #3 are not representative of the full width of the dyke because most of the presumed low-grade chilled margin material is excluded from the samples. Thus approximately 20 centimeters of the approximately 1.2 metre average thickness is missing from these batches.

At the end of the sampling program the trenches were back-filled with blasted hanging wall gneiss material which was then covered by overburden and weathered dyke topsoil that was removed prior to sampling and set aside for this purpose. The trenching site was left in clean and tidy condition.

The approximately 360 tonnes of macrodiamond sample material were shipped by barge from Abloviak Fjord to the port of Portneuf, Quebec (Photos 20 and 21) where they were stored under guard until shipped to Lakefield by Papineau Transport trucks.

Photo 20: Tug 'Florence McKeil' approaching dock at Portneuf, Quebec.

Photo 21: Barge with Torngat samples is secured at Portneuf, October 20, 2000.

11.4. September 2001, 300 Kilogram Microdiamond Samples

The 9 samples taken in 2001 were collected by a two man crew using a Pionjar drill, scaling bars and shovels for the most part. Only one blast was required. The alkaline dyke material was placed into 1500 kilogram capacity BL-3000 plastic fibre bulk bags manufactured by FIB-PAK Inc. of Hawkesbury Ontario. The samples were individually bagged with the sample number painted on the outside and duplicated on a sheet inside a plastic bag inside the bulk bag. Once filled the bags were tied and left at the site until they could be transported to Kangiqsualujjuaq by helicopter.

The transportation route began by the delivery of individual samples from the sample collection sites to Kangiqsualujjuaq airport by light helicopter. From there all the samples were placed in an Aviation Boreal DC-3 aircraft and flown to Val d'Or. From Val d'Or they were transferred to a single Cabano Kingsway transport truck for shipment to the Lakefield Research laboratory in Lakefield, Ontario.

The chain of control of the samples as described by Richard Roy of NordQuest is outlined as follows:

- The individual samples were placed in tied bulk bags by NordQuest personnel and were left unattended at the individual remote sample sites until they could be transported to Kangiqsualujjuaq utilizing an Astar 350-B light helicopter supplied by Nunavik Rotors. The process of transporting the bags to Kangiqsualujjuaq was accomplished quickly and smoothly.
- No particular security measures were put in place at the sample sites. These sites are so remote and inaccessible that the possibility of tampering or vandalism by outsiders is extremely unlikely
- Once delivered to Kangsualujjuaq by Nunavik Rotors the samples were placed inside the DC-3 aircraft parked inside the fenced tarmac area at the airport. Access to this area is restricted to authorized persons during normal working hours and the gate is locked at night. No secure storage space is available at the airport. The samples were checked regularly by NordQuest crew who operated the program from a temporary base in Kangsualujjuaq.
- Once the sampling program was completed the samples, along with the NordQuest men and equipment were transported in the Aviation Boreal DC-3 to Val d'Or airport.
- At Val d'Or airport the samples were transferred to the Aviation Boreal cargo area and placed individually on pallets. From there they were loaded into a single Cabano Kingsway truck under the direct supervision of NordQuest. Once loaded the consignment was sealed and forwarded to Lakefield.

The samples were under the control of NordQuest at all times from collection in the field until placement into the sealed truck for delivery to Lakefield.

Lakefield advised Twin Mining that the security seal was intact upon arrival and that the sample bags were in excellent condition. The Torngat samples were examined by MPH in the Lakefield secure storage area and were confirmed to be in excellent condition. No material was reported spilled. The sample material was accepted by the laboratory in its entirety and none of the shipment was discarded.

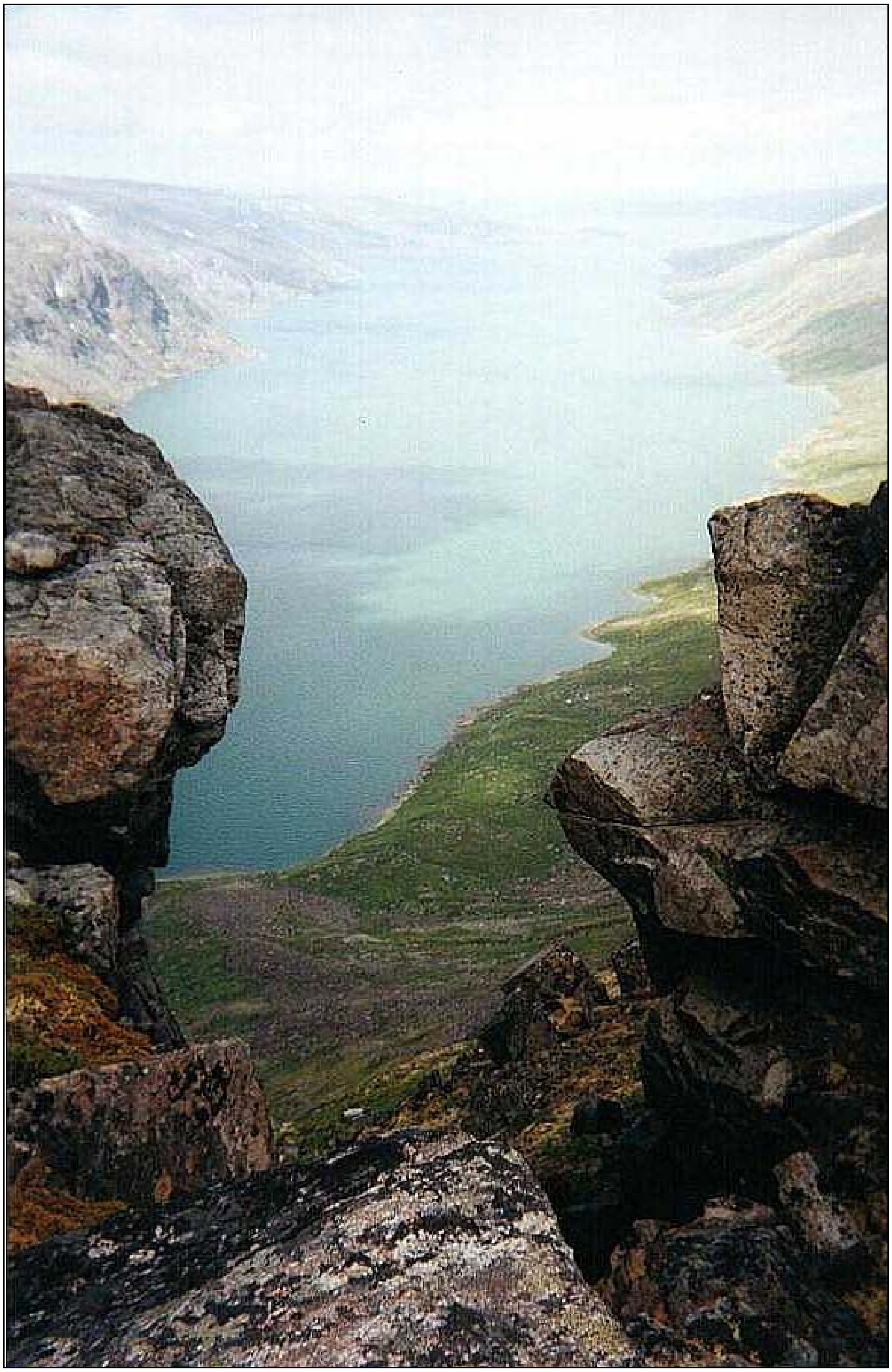


Photo 22: Alluviaq Fjord viewed from Torngat 1 Dyke area.

12.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

Sample preparation and analyses were conducted at two facilities, utilizing three methodologies for three types of samples. The Saskatchewan Research Council ("SRC") jig plant facility in Saskatoon, Saskatchewan was utilized to process the 10 tonne scoping samples while the caustic dissolution and dense media separation ("DMS") facilities of SGS-Lakefield located in Lakefield, Ontario were used for the microdiamond and mini-bulk samples respectively. The Lakefield DMS plant was also used to retreat the scoping sample tailings from SRC. The SRC and SGS-Lakefield laboratories are both formally accredited by the Standards Council of Canada under ISO/IEC Guide 17025.

12.1. SRC Jig Plant Sample Preparation, Analyses and Security

Dyke material from Torngat was shipped to SRC in white 5 gal plastic pails with two security wire crimp seals on each lid. Pails were shipped on pallets, 24 pails per pallet covered in shrink wrap(stacked two high).

The seals were not cut until the material was to be processed. All seals and pails were inspected for tampering. No samples showed signs of tampering. Once the seals were removed, the material was transported under the supervision of SRC employees to a gravel crushing site where the material was crushed to -12mm and placed in 1 m^3 fabric bags. Samples were under constant scrutiny during transport and crushing. The crushed material was transferred to the SGS laboratory where it remained under constant supervision or locked in a secure restricted area.

The sample flow sheet is shown in Figure 13-1 and described as follows. Samples are initially crushed to minus 12 mm. They are then trommel washed and wet screened at ±8mm, ±4mm, ±2mm and ±0.85mm. +8mm material is re-crushed to -8mm. The screen fractions 8-4mm, 4-2mm and 2-0.85mm are fed into surge bins that in turn feed into 3 separate jigs each tuned for that particular size fraction. Jigs 1 and 2 are circular 24 inch diameter Goldfields while Jig 3 is a typical 18" Goldfield Pan American duplex jig.

Typical efficiencies for these jigs are listed below:

- Jigl 0.85-2 mm 91%
- Jig 2 2-4 mm 97%
- Jig 3 4-8 mm 100%

Heavy minerals with SG >3.2 are retained by the jigs for magnetic separation. Jig tails (lights) are returned to 1m^3 fabric bags. The undersize is also returned to 1m^3 fabric bags. Jig hutch fines are retained separately. Should a hutch screen tear or develop a hole, the material can be recovered for further processing. The fabric bags act as dewatering screens. Material >0.1mm is retained in the bags while the slimes <0.1mm are lost during processing. The heavy mineral concentrates from the jigs are dried at 105°C and taken for high intensity magnetic separation.

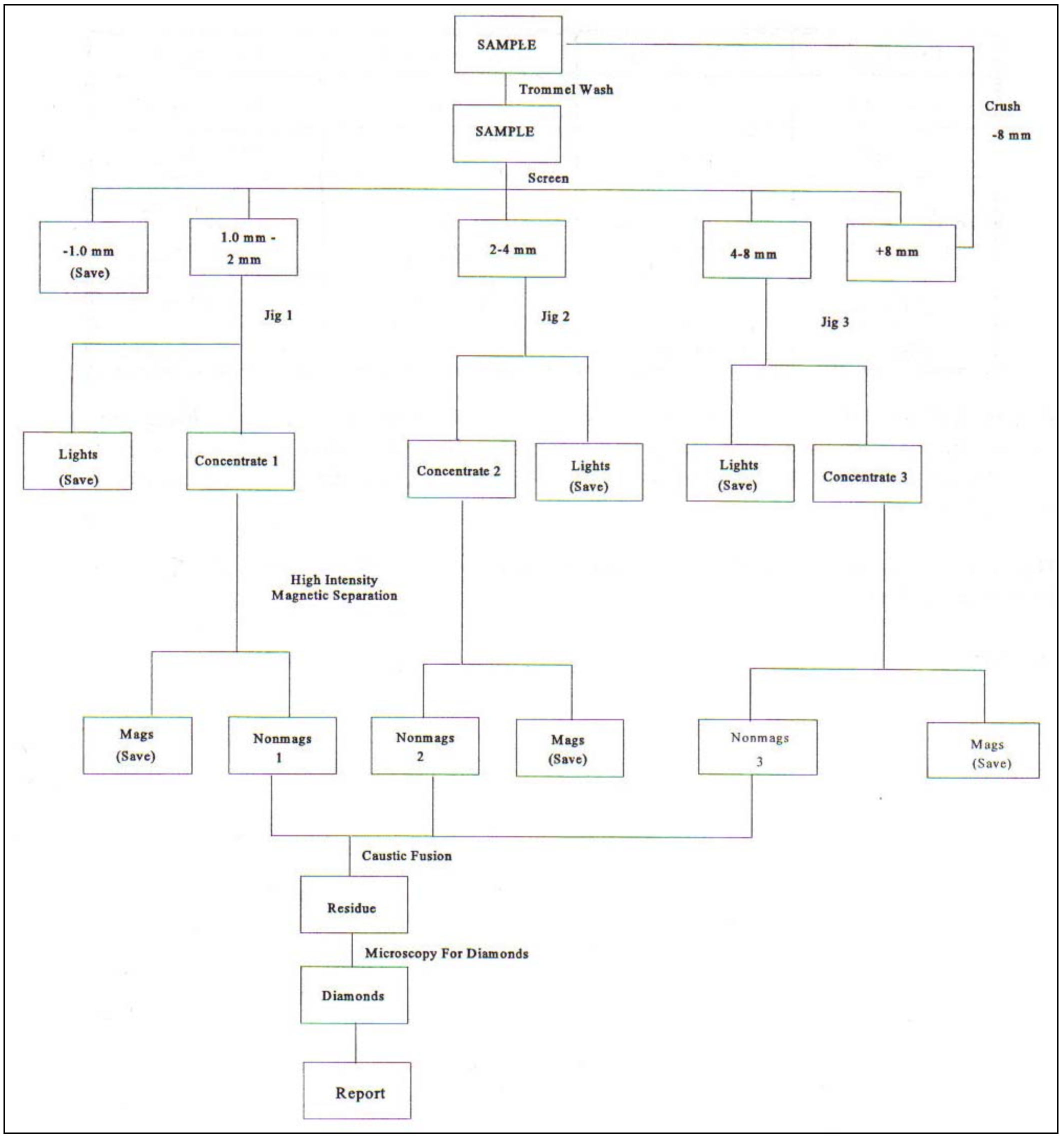


Figure 13-1: SRC Jig Plant Flow Sheet for Diamond Recovery.

The magnetic fractions from each jig concentate are retained as tails. The non-mag fractions from each jig are combined and sent for caustic fusion. The fusion melt is screened through a 0.600 mm screen. All +0.600 mm material is retained and sent for storage under lock and key to await chemical treatment. Samples are chemically treated with concentrated HCI and HF acids to remove all traces of caustic, iron and other non diamond material. The diamonds are returned for observation. The diamonds recovered are weighed and described as follows:

Parameter	**Units**
Weight	±0.01 mg
Weight	±0.00005 carat
Dimensions	±0.02 mm, maximum length, width and height
Broken crystal	Yes or no
Crystal structure	octahedron, dodecahedron, cube, macle, complex aggregate, nondiscernable crystal structure
Inclusions	Yes or no

Diamonds, jig concentrates, non magnetic jig concentrates and caustic residues are kept under lock and key in secure restricted areas at all times.

12.2. SGS-Lakefield Caustic Fusion Facility Sample Preparation, Analyses and Security

Caustic dissolution of exploration samples efficiently produces a concentrate from which diamonds can readily be extracted during microscopic examination. The process uses diamond's property of high resistance to caustic soda (NaOH) and eliminates diamond size reduction and losses that often occur during extraction procedures that rely on crushing and attrition milling.
Procedure

The samples are processed according to the flowsheet shown in Figure 13-2. Very few minerals survive the harsh attack; therefore weight reductions commonly exceed 99% of the initial sample weight

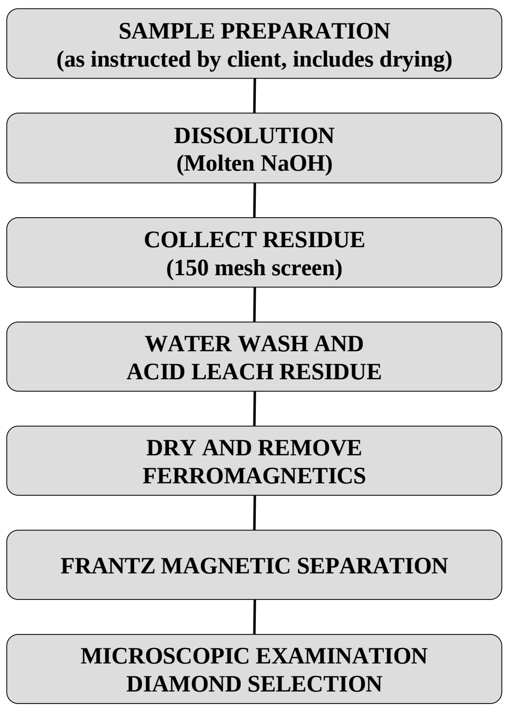


Figure 13-2: SGS-Lakefield Caustic Fusion Processing Flow Sheet for Microdiamonds

As-received samples are divided into equally sized charges of less than 8 kg. Smaller charge sizes are necessary if the sample contains a high proportion of carbonate minerals that are vigorously reactive with NaOH (evaluated by an acid test completed prior to charge preparation). If a high proportion of the sample is composed of fragments larger than 8 cm, simple breakage, crushing or attrition milling may be required, or the length of the dissolution process increased. Client consultation and approval is necessary before any size reduction of the sample is initiated.

After digestion in molten caustic soda, the sample is poured onto a large diameter ISO mesh screen. The + ISO mesh residue is liberated from the NaOH by washing the sample in a series of water and acid leach (HCl) baths. Once all of the NaOH is dissolved and removed, the concentrate is dried and screened on a 6 mesh screen to remove undigested material. The undigested material is examined microscopically by a mineralogist. If the + 6 mesh material is significant or consists of possible diamondiferous rock fragments, further digestion may be required. If the undigested material is of insignificant size or not considered as a possible source of diamonds, the - 6 mesh residue is further processed by a two (possibly three if the residue is large) stage magnetic separation procedure utilising a permanent magnet and a Frantz Barrier Magnetic Separator.

The magnetically characterised residue is then submitted for microscopic examination and diamond selection. (In addition to diamonds, the residue may contain partially undigested indicator minerals, colourless to opaque spinel, garnet, ilmenite, graphite, moissanite, zircon and kyanite.) Each of the magnetic fractions is examined at a magnification of 40x using a binocular microscope. Grains of questionable mineralogy are examined using a scanning electron microscope equipped with an energy dispersive spectral (“SEM-EDS”) analyser. Although each magnetically characterised fraction is examined, particular emphasis is given to the diamagnetic portion.

The X, Y and Z dimensions of selected microdiamonds are measured in millimetres. Macrodiamonds are weighed individually while microdiamonds are weighed in groups of 20 or 30 and the milligram weight, in each case, converted to carats. The colour, clarity and morphology of each diamond are determined and all observations reported in a Certificate of Analysis.

Customized flowsheets for sample processing utilising caustic dissolution and other sample preparation techniques (magnetic, gravity, flotation, acid leaching, etc.) can be developed, in consultation with the client, to meet specialised requirements.

Lakefield Research Limited is not responsible for the determination of the origin, quality or valuation of any diamonds recovered unless otherwise instructed by the client.

Upon arrival at the SGS Lakefield plant site, samples are received only by authorised personnel who note, in writing, and in a computer database the name of the company that shipped the sample, the transporting company, the number and type of pieces and whether the shipping containers have been received in good order without signs of tampering.

Shipping documents are immediately sent to Mineralogy Sample Tracking whereupon the Project Manager is notified and arrangements are made to inventory the samples. Inventorying of the samples includes noting number and type of pieces and identification and condition of security seals. This information forms the basis for the generation of a Work Order using LIMS (Laboratory Information Management System).

Work Orders, which map the sample processing history of the sample, identify ownership of the samples by company-specific project number (e.g. 8901-221) and LIMS# (MI0009-JAN03), the latter identifying the general type of work that will be performed on the sample as well as the month and year that the sample was logged into LIMS. Access to LIMS is password protected and not all employees have access to LIMS.

Paper copies of Work Orders generated by LIMS may or may not identify ownership of the samples, in the case of potentially diamond-bearing samples being processed by caustic dissolution, sample ownership is identified only by Project Number.

Containers secured with security seals that are part of sample shipments received for microdiamond analysis are opened only on an as-needed basis. Residues resulting from the processing of such samples are identified only by Project Number. Once processing has been completed, residues are stored in a locked storage cabinet during the course of mineral selection and prior to return to the client by secure transport, if requested by the client.

Paper copies of reports resulting from microdiamond analysis are retained in locked storage while electronic copies are password restricted.

All employees engaged by SGS Lakefield Research sign confidentiality agreements with severe penalties for security breaches.

12.3. SGS-Lakefield DMS Plant Sample Preparation, Analyses and Security

Samples were processed at the SGS-Lakefield mineral processing facility using dense medium separation (DMS) technology to concentrate the heavy minerals (Lindsay, 2001). To prepare the dyke material for DMS, the samples were crushed to 100 percent passing 6 mm and fed to a rotary scrubber where water was added to create a slurry at approximately 50 percent solids by weight. Scrubbed kimberlitic material was screened to removed all minus 1 mm material before treatment through the DMS unit.

The DMS system used by Lakefield was a 1 tonne per hour standard module, designed and fabricated by Bateman Minerals and Industrial Limited of South Africa. DMS is a well-established technique for diamond recovery, with many similar units in operation worldwide.

The SGS-Lakefield process flowsheet for diamond recovery is shown in Figure 16-1..

Processing of the sample resulted in the generation of potentially diamond-bearing concentrates which comprised a variety of dense mineral grains, including chromite, ilmenite, garnet and diamond and rock particles comprising host rock and included or attached dense mineral grains. Initially, these mixed concentrates were passed over a grease table for primary diamond recovery with secondary diamond recovery on the grease table occurring after attrition milling. Due to the hydrophobic nature of diamonds, they are not wetted by water and hence adhere to the grease layer when passed over a surface of specially prepared grease. Grease table tailings from the first pass of DMS concentrates over the grease table were collected and recycled through a ball mill, screened at 1 mm and all plus 1 mm material again passed over the grease table. The milling process was designed to remove, by attrition, any surface coatings on the diamonds which would have rendered them refractory to grease recovery on the first pass over the grease table. Grease table tails were continuously recycled through the mill and grease table until all the material was less than 1 mm and was discarded to rejects.

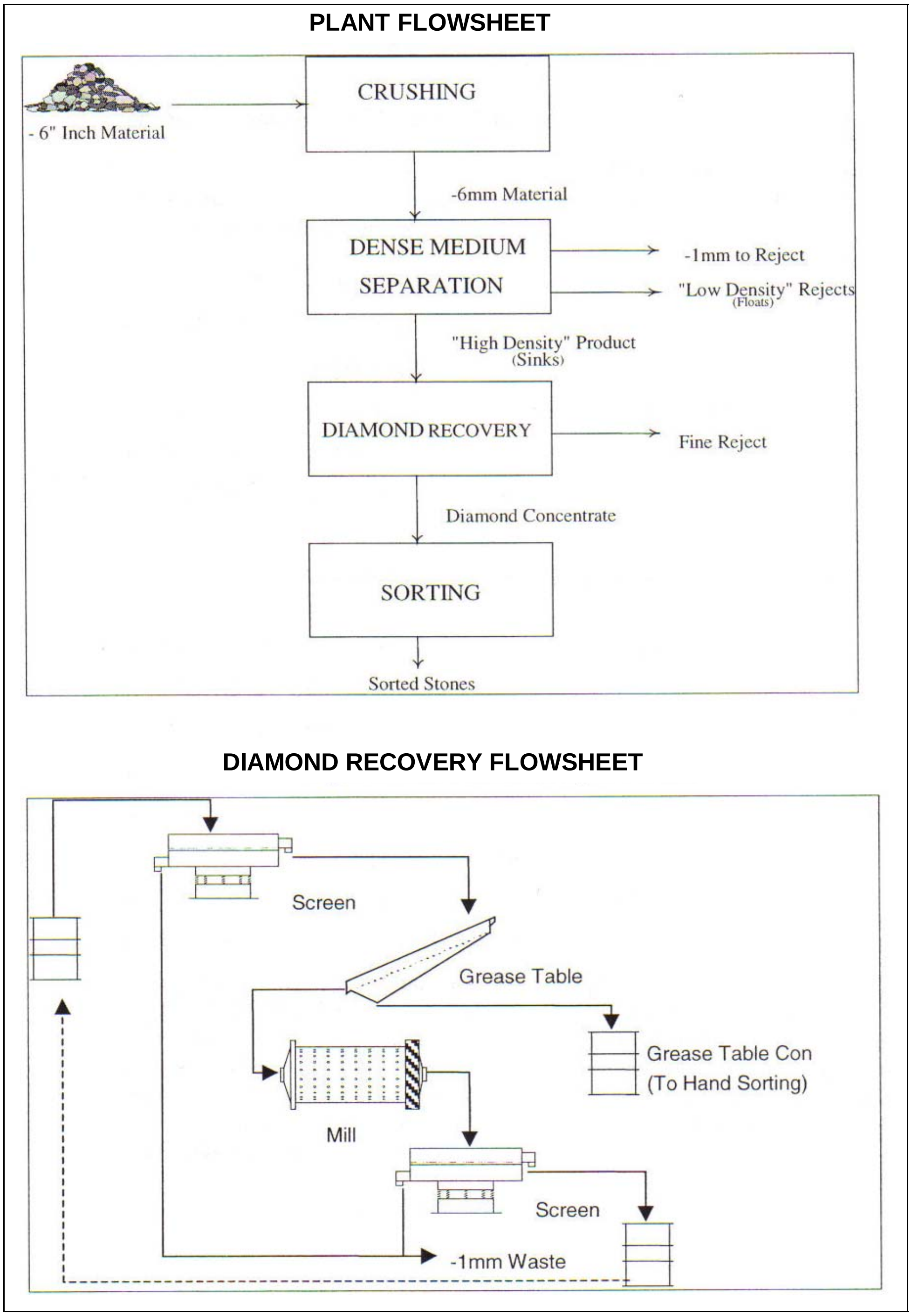


Figure 16-1: SGS-Lakefield DMS System Flowsheet.

All grease table concentrates were subjected to caustic dissolution to liberate diamonds partially included in rock particles and to clean the surface of diamonds of small attachments of the host rock which were not removed during attrition milling.

Diamond selection was performed using a binocular microscope. Diamonds were sieved with a Fritsch, analysette 3 PRO mechanical shaking device and a sieve stack comprising the following screen sizes: 4.75mm, 3.35mm, 2.36mm, 1.70mm, 1.18mm, 0.85mm, 600µm, 425µm, 300µm, 212µm, 150µm, l00µm. Diamonds resting on each sieve were counted and described. Diamond weights were measured with a Sartorius, MC5 balance. Individual diamond weights were recorded for diamonds larger than the 0.425 µm sieve; diamonds resting on finer screen sizes were weighed by size fraction.

Composite samples of feed to the plant were taken and subject to caustic fusion for recovery of micro-diamonds which are required to determine the relationship between the micro and macro diamond populations.

13.0 DATA VERIFICATION

The data verification aspects include the confirmation of existence of work sites such as survey grids, property boundaries, microdiamond sample sites and scoping sample and mini-bulk sample trenches by MPH and audits of the sample processing phases by MRDI Canada.

Prior to proceeding with the 2000 sampling programs Twin Mining retained MPH and MRDI to prepare QA/QC manuals, respectively for the sampling and processing areas.

In-laboratory data verification is a normal part of SRC and SGS-Lakefield QA/QC protocol. All process efficiencies are monitored by spiking samples with known natural and synthetic diamonds. No abnormalities were found with the Torngat analytical results. Twin Mining did not implement any intra-laboratory data verification procedures.

13.1. MPH Consulting QA/QC Manual and Audits for 2000 Sampling Programs

Early in 2000 MPH prepared a manual which covered the following topics (MPH, 2000A):

- Qualified person, field program.
- Topographic control, sample locations.
- Geological field observations.
- Representivity.
- Sample integrity.
- Sample containers.
- Packaging, sealing procedures.
- Sample identification.
- Documentation and forms.

MPH has considerable experience in diamond project evaluations, including management and design of programs as well as consulting and auditing assignments for major and junior diamond companies. The manual described the system and procedures to be followed to ensure the integrity of the sampling program of some of the Torngat kimberlite dykes, from collection in the field through to acceptance of the samples at the contracted process facility at the Saskatchewan Research Council. Another consulting firm, MRDI oversaw and audited the processing end.

Implementation of strict and rigorous rules for documentation and description of samples, security measures, chain of custody controls and related activities are vital to all exploration/evaluation programs, but are especially important for diamonds. The controls and methodologies established from the outset a transparent and formal database and system that can be added to and built upon. The procedures were designed ensure compliance with National Instrument 43-101, and allowed for results to be reported in a manner consistent with guidelines issued by the Toronto Stock Exchange.

The confirmation of existence of work sites investigations and technical observations were done by Mr. Paul Sobie and Mr. Howard Coates of MPH during the five 2000 site visits. In essence all of the work sites and technical observations reported by Twin Mining and checked by MPH are properly recorded and accurate within acceptable limits.

The various sampling programs were generally carried out in accordance with the suggested protocols.

13.2. MRDI Quality Control/Quality Assurance Manual and Audits of Microdiamond and Macrodiamond Sample Processing

In May 2002 MRDI Canada, a division of AMEC, prepared a manual which covered the following topics (MRDI, 2000A):

- Quality Assurance/Quality Control
- Processing
- Data handling

The laboratory work in the programs was conducted under the supervision of MRDI. All work in the SRC jig plant and SGS-Lakefield caustic dissolution and diamond recovery facilities was conducted in accordance with a comprehensive series of detailed written operational procedures, which have been reviewed and audited by MRDI. During the course of the various sample treatment programmes, MRDI made several visits to SRC and SGS-Lakefield to witness the work, and to audit compliance with operational procedures (Roy and Lindsay, 2003).

No abnormalities were found with the Torngat analytical procedures or results.

13.3. QA/QC Procedures at the SRC Jig Plant.

All process efficiencies are monitored by spiking samples with bright orange SG 3.51 synthetic tracers of various sizes. These tracers have the same SG as diamonds, are hydrophobic and are also non magnetic. Their physical properties are very similar to diamond except for hardness. SRC have determined that the recovery of spiked tracers and spiked diamonds in a barren sample are identical. Tracers added to each tonne of material are listed in Table 14-1 (Holsten, 2000):

Table 14-1: SRC Synthetic Tracers per Tonne of Sample

Jig	Size	Quantity spiked	Typical Recoveries
Jig 1	1 mm	20	90%
	2 mm	10	93%
Jig 2	3 mm	20	95%
	4 mm	10	100%
Jig 3	6 mm	10	100%
	Total	**70**	**94.7%**

In order for each tonne of material to pass Quality Control, 90% or more of the tracers must be recovered otherwise the sample is reprocessed until QC is attained. SRC experience has shown that approximately 90% of samples meet initial QC and 10% meet QC on the first reprocessing.

A complete system clean out is done before each sample is processed. Clean cuts include:

- flushing the wash trommel
- cleaning screens
- flushing the slurry system :
- cleaning the jigs

After clean out, the plant is run for 5 minutes without any sample. To pass the test the surge bin output to the jigs must be nil.

The efficiency of the screens is checked to ensure the proper sizing of material. Kimberlite is very soft and breaks down during processing and therefore a certain amount of fines will be present in coarser fractions. SRC does not tolerate coarser material appearing in the finer fractions. This indicates that material is getting by the screens. A portion of the tails from each jig, jig hutch fines and the undersize is screened and observed for potential screening problems. Screens are inspected between samples for tears or holes. Screens included are 8mm, 4mm, 2mm, 0.85mm and also jig bed screens (Table 14-2).

Table 14-2: SRC Audit Screen Protocol

Fraction	Size Range	Audit Screen Size	Pass Audit
Jig 1 lights	0.85-2mm	2mm	95% -2mm
Jig 2 lights	2-4mm	4mm	95% -4mm
Jig 3 lights	4-8mm	8mm	95% -8mm
Undersize	-0.85mm	0.85mm	95% -0.85mm
Jig Hutch	-	0.85mm	95% -0.85mm
Slimes	-0.10mm	0.106mm	95% -0.1 06mm

Caustic fusion crucibles are cleaned with concentrated HCI between samples and inspected for any residues. Caustic screens are inspected before and after each fusion for tears or holes. All -0.600mm caustic melt is retained. Should a screen tear occur, the caustic can be refused and screened again.

13.4. QA/QC Procedures at the SGS-Lakefield Caustic Disolution Facility

Routine quality control tests are utilised to evaluate the efficiency of the caustic dissolution processing technique by running blank samples spiked with "Congo Rounds". The chance of diamond or indicator mineral contamination is evaluated by running caustic soda blanks between client's samples and examining the residue for microdiamonds and indicator minerals. Recovery of the diamond spikes typically ranges from 97 to 100%. 2002 statistics showed that, on average, 1.18 indicator mineral grains (73% of which were oxides, 27% silicates) were carried over into the caustic soda blanks run between different client's samples.

Each residue is picked twice by separate diamond pickers. Questionable grains are examined by SEM-EDS for verification.

Every effort is made at each stage of sample handling during caustic dissolution, residue preparation and diamond picking to eliminate the possibility of contamination. These steps include:

- A rigorous sample tracking procedure.
- Dedicated screens and equipment for each sample during sample processing.
- Replacement of screens between each sample after pouring caustic soda.

- Thorough washing and scrubbing of all sample containers.
- Thorough cleaning of equipment used to prepare caustic residues between each processed sample.
- Sandblasting of each kiln pot once a month to remove any scale build-up that might entrap microdiamonds or indicator minerals.

In MRDI's opinion, the caustic dissolution work conducted by SGS-Lakefield for the Torngat project during 2000 and 2001 was in accordance with accepted industry standards (Roy and Lindsay, 2003).

13.5. QA/QC Procedures at the SGS-Lakefield DMS Plant

Prior to commencing the sample processing, MRDI reviewed the standard operating procedures that had been formulated by SGS-Lakefield. The following topics are covered by individual standard operating procedures:

- Sample Receipt
- Sample Storage
- Sample Crushing
- Operation of Scrubbing and Feed Preparation
- Operation of DMS Section
- Coarse Tailings Storage
- Fine Tailings Disposal
- Transport of Diamonds Between Plant Area and Diamond Picking Lab
- Degreasing and Cleaning of Grease Table Concentrate
- Storage of Sorted Stones
- Plant Access
- Access to Diamond Picking Lab
- Glove Box Security
- Full Efficiency Tests for DMS
- Abbreviated HMS Plant Efficiency Test
- Grease Table Efficiency Test

During 8 site visits to Lakefield between October 18th, 2000 and January 17th, 2001, MRDI audited compliance with each of these standard operating procedures (Lindsay, 2001). The results of MRDI's audits are detailed in trip reports. In summary, MRDI found some minor deviations to the procedures, but that all the key quality control related activities were adhered to during plant operations. These key activities include access control and security, tracer efficiency testing of the DMS, efficiency testing of the grease table and monitoring of the size distribution of the plant effluent.

As a quality assurance measure, 10 tonnes of DMS tailings from sample A was re-processed through the plant in the following manner:

- Re-processing through the DMS as per the original conditions and concentrate from this first DMS pass processed over the grease table (this would indicate whether diamonds were lost due to low recovery efficiencies during the original sample treatment)

- The tailings from the first-pass through the DMS were reprocessed through the DMS at a lower medium density (this would indicate whether diamond losses occurred as a result of an excessive cut-point)
- The tailings from the second-pass through the DMS was milled in a ball mill and re-passed through the DMS plant. This process was repeated until the entire sample passed through a 1 mm screen (this would indicate whether diamonds were not recovered during the original sample processing due to diamonds not being liberated in the crushing circuit)
- The concentrate from each pass through the DMS was passed over the grease table

During processing, one truck containing samples reported to Lakefield with damaged security seals. To ensure the integrity of the sampling process, this material, designated "Truck 6" was processed separately and the results reported separately. See Section 8.1.4 above.

13.6. Twin Mining Verification Samples

During the sampling programs there was no set procedure in place for Twin Mining to run its own blanks, spiked samples and field duplicates with batches of samples sent to the laboratory. However, there is an inherent capacity in the microdiamond sampling program to evaluate the diamond content of field duplicate samples, and also the performance of the laboratory itself. This capacity exists because only 24 kg of the approximately 50 kg small microdiamond samples was routinely processed in the first pass. Furthermore there are a substantial number of 50 kg sample sites with corresponding 300 kg samples.

A number of sites (6 in total) have microdiamond data that may be considered, to some extent, as field duplicate sampling in that subsequent samples were taken from the same approximate location, a year later. Comparative microdiamond results from these sites are presented in Table 14-3 and illustrated in Figure 14-1. Not surprisingly these sample sets show a pattern indicative of extreme nugget effect and/or processing inconsistencies.

MPH notes that it is critical to understand that these results were generated by the same facility rather than an umpire facility, and no auditing of the residues at a separate independent and accredited facility took place. This is one of MPH's key recommendations in Section 19.

Table 14-3: Field Duplicate Samples, Comparative Microdiamond Results

UTM Location		Sample	Sample	Number	Diamond Sieve Size Fractions							Total	
Northing	Easting	Number	Processed	Of	-150 / +100	-212 / +150	-300 / +212	-425 / +300	-600 / +425	-850 / +600	-1.18 / +0.85	Weight	cpht
M	M		(Kg)	Diamonds	mm	Mm	mm	Mm	Mm	mm	Mm	(Carats)	
6597289	383296	888466	48.57	45	16	18	9	1	0	0	1	0.009	18.5
		GL-06	100.96	49	17	13	12	2	3	2	0	0.016	15.8
6595898	381257	887571	24.0	13	1	6	2	2	1	0	1	0.014	58.3
		GL-12	102.51	30	10	10	5	3	2	0	0	0.004	3.9
6596362	382064	887573	24.0	32	10	10	9	2	1	0	0	0.006	25.0
		GL-10	101.8	99	36	30	12	14	5	2	0	0.027	26.5
6596546	382364	887574	24.0	14	1	6	5	2	0	0	0	0.002	8.3
		GL-09	72.52	47	15	9	11	3	7	1	1	0.030	41.4

6596867	382657	887575	24.0	2	1	1	0	0	0	0	0	0.000	0.0
		GL-08	81.25	20	0	5	5	4	3	2	1	0.032	39.4
6597062	383151	887588	24.0	1	0	0	0	0	0	1	0	0.003	12.5
		887588	25.6	7	1	4	2	0	0	0	0	0.001	3.9
		GL-07	84.0	29	6	8	2	4	4	4	1	0.042	50.0

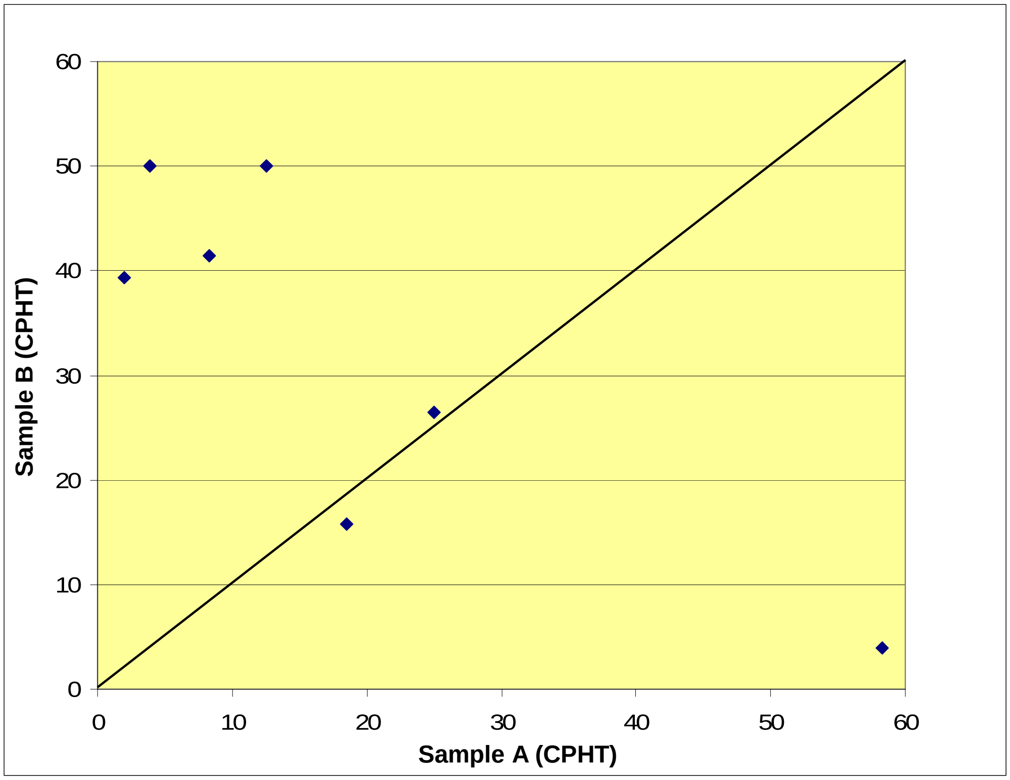


Figure 14-1: Twin Mining Field Duplicate Microdiamond Results.

MPH notes that a the left over 50 kg and 300 kg microdiamond sample material remains in secure storage at SGS-Lakefield. This material is available for future in-lab and inter-lab verification purposes.

13.7. Independent Verification Samples

During the April 2000 site visit a small grab sample (<0.5 kg) of decomposed and comminuted lamprophyre was collected by H. Coates from the RRR-1 site at the Kakivuq (Pita) zone (UTM coordinates 6592430m.N; 374180m.E) on April 9th, 2000. This material was subsequently panned by the writer on Saturday April 15th, 2000 and the heavy concentrate (several grams) was examined under a binocular microscope on April 17th. A microdiamond, approximately 0.4 mm in size was identified in the concentrate.

The sample was collected from a previously blasted location on the Kakivuq zone during the above site reconnaissance visit. The blast had exposed a combination of decomposed and fresh kimberlite. Small samples of both were collected by the undersigned. As grab samples the material is not necessarily representative of the dyke as a whole and due to the weathering the decomposed material is likely enriched in resistant minerals such as diamonds.

The microdiamond was positively identified on the basis of general subhedral shape, its distinctive cleavage, and adamantine luster. The concentrate was submitted to Lakefield Research Limited for confirmatory mineralogical examination and diamond measurement. The concentrate was spiked with a single yellow synthetic macrodiamond to test the process. The panned concentrate weighed in at 5.60 grams and the diamond and check syndite were recovered by caustic dissolution. The microdiamond was described as a 75% preserved fragment with crystal faces, white and transparent in colour and clarity respectively, and measuring 0.46mm by 0.37mm by 0.26 mm.

14.0 ADJACENT PROPERTIES

Following Twin Mining's claim staking activities and announcements in 1999 several junior exploration companies obtained mineral rights in the Alluviaq Fjord area. Although attention in the area has decreased considerably since then, a few claims adjacent to the original Twin Mining holdings remain in good standing. These properties have little significance in terms of the Twin Mining holdings.

15.0 MINERAL PROCESSING AND METALLURGICAL TESTING

To the knowledge of MPH Consulting Limited no mineral processing studies or metallurgical testing has been undertaken for the current property.

16.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

To the knowledge of MPH Consulting Limited no mineral resource or mineral reserve estimates have been undertaken for the current property.

17.0 OTHER RELEVANT DATA AND INFORMATION

To the knowledge of MPH Consulting Limited there is no other relevant data and information concerning the current property.

18.0 INTERPRETATION AND CONCLUSIONS

Exploration work to date at Torngat to date has been confined to the prospecting, mapping and sampling of surface exposures of the diamondiferous kimberlite/lamprophyre dyke systems. During this work Twin Mining has collected microdiamond and other types of bedrock samples at over one hundred different sites.

The work has been carried out in a rather unorthodox fashion though, in that two phases of mini-bulk sampling preceded systematic prospecting and sampling of the dyke system, with the unfortunate result that the larger mini-bulk sample has been poorly sited. This in turn, reflects badly on the economic potential of the project. Industry standard sampling methods have been followed for the most part.

MPH is of the opinion that there have been some very important accomplishments namely:

- Mineral chemistry work on character samples taken from the five mini-bulk sample sites, as well as three further samples from the 2nd AD-2 bulk sample, are demonstrating conclusively that the dyke at these localities has sampled diamond-bearing mantle, and most critically in MPH's opinion, that mineral chemistry is an effective tool for prioritizing areas of the dyke system with better grade potential.

- The dyke system has been traced along surface, and fairly comprehensively sampled wherever it outcrops, with small microdiamond samples of nominally 24kg. splits from larger samples that are presently stored at SGS Lakefield.

- In most places the surface morphology suggests that reasonable mining widths are present, ie. consistently in excess of 1m, for this style of deposit.

- Five small mini-bulk samples were collected in 2000 from sites offering easy access with little substantiating exploration beforehand, with two of the sites, namely AD-2 on the short (~1.2km) Torngat 1 Dyke and the DU site on the northern portion of the Main Dyke, returning modestly encouraging +0.85mm grades of ~16cpht.

- The larger 341t sample at the AD-2 site carried out later in 2000 was disappointing in returning only ~13 carats for a recovered grade of <4cpht. MPH was not in favour of this program at the time, thinking it premature as it preceded the prospecting/sampling program. MPH now has serious reservations with respect to the veracity of the grade result, based on the limited audit conducted by MRDI/SGS Lakefield and believes that more audit work should have beeen carried out on the DMS tailings, and that grade factorization calculations were warranted. All that being said however, this site offers no economic potential within the area sampled, and further costs in terms of auditing are only justified in an ore-dressing study, and full diamond recovery context.

- The 341t sample did however deliver some 1,543 small macrodiamonds and a relatively flat size-frequency distribution curve, with the largest weighing 0.685 carat and was therefore of some value in demonstrating that commercial diamonds are present at Torngat and larger stones can be expected.

- Microdiamond character samples were collected from the five mini-bulk sampled sites, and when compared with those taken regionally along the ~35km of dyke strike extent, results in isolating zones with superior fine diamond content to those mini-bulk sampled.

- The microdiamond work however needs to be optimized in MPH's opinion, by processing the 2nd half of sample splits at a separate facility, and as well by re-processing the residues from the first pass samples, in order that 100% confidence in the results is obtained before any firm conclusions are drawn. This is MPH's standard procedure on all projects, and Twin has been remiss in this regard, with no sample spiking, duplicate sample processing at an umpire facility, or residue auditing of samples having been carried out.

- There is some suggestion of a general drop-off in recoveries with time, evident from samples taken from the same area as per Table 18-1 below. A total audit of all results is needed including examination of all residues, and tabulation and modeling of all statistics.

Table 18-1: Comparison of Diamond Recoveries from 2000 and 2001 DU North Sampling

Sample I.D.	Sample Processed (Kg)	Number of Diamonds	Diamond Sieve Size Fractions -150 / +100 µm	-212 / +150 µm	-300 / +212 µm	-425 / +300 µm	-600 / +425 µm	-850 / +600 µm	-1.18 / +0.85 Mm	- 1.70 / +1.18 mm	Total Weight (Carats)	Grade CPHT
Torngat North-DU Year 2000												
16 samples												
Total	**731.8**	**383**	**112**	**116**	**75**	**37**	**25**	**13**	**5**	**0**	**0.195**	**26.6**
Torngat North-DU Area Year 2001												
9 samples												
Total	**900**	**391**	**142**	**111**	**76**	**33**	**20**	**8**	**1**	**0**	**0.123**	**13.7**

The above results are somewhat disconcerting in terms of the drop-off in diamonds in the larger sieve classes, particularly +0.6 and +0.85mm. While it is possible that the above is simply a function of the distribution within the dykes, it is instructive to remember that the DU mini-bulk sample recovered 102 +0.85mm diamonds from 8.74 tonnes of material, ie. approximately 11.7 such stones/tonne. (AD-2 had ~9 stones/tonne with the other sites much less).

It is reasonable to conclude that their may have been recovery issues in especially 2001, which MPH has found from time to time at all facilities, with the cause generally found to be inefficient digestion and/or large concentrates. In the first instance diamonds are locked-up in kimberlite fragments that are still present in the residue, and in the second, diamonds are missed by the pickers. A total audit of all results is needed including examination of all residues, and tabulation and modeling of all statistics.

Twin was remiss in not spiking samples or using an umpire facility for duplicates, nor in having the residues checked by a separate facility, all industry best-practise standards. Also, Twin has since discarded all residues from microdiamond samples, as well as all tails and concentrates from the mini-bulk sampling programs, meaning it is not possible to check the veracity of their work and all results as reported herein must be considered final.

- The airborne geophysical work carried out by Twin has demonstrated that this is an effective tool for locating this system of intrusives at outcrop, however was not optimal in that low-level, high-resolution equipment is needed to locate more of the dykes, and any associated blows, in areas of overburden coverage.

The Target Economic Threshold of a Torngat Mine:

Thus far exploration to date has been limited to surface along the Torngat dykes, which are demonstrating similar, or better tonnage potential than most diamond-bearing vertical dyke systems worldwide. These are in production in two areas of Africa, namely South Africa and Sierra Leone, and where minng costs are considerably less than in Canada. Recent independent reports on the dyke mines of London-listed Petra Diamonds, namely Helam, Messina, Star and Dancarl of which MPH has much experience with the latter three mines, peg 2005 operating costs at ~US$30/tonne (Snowdon, 2005) for these mature operations located in the heart of diamond mining areas. A recent 43-101 report filed by TSX-listed Energem Resources Inc. (Valmyn Rand, 2005) provides the economic parameters for the Koidu 1 pipe in Sierra Leone, which is a small blow with an approximate area of 0.25ha and a dyke system with numerous enlargements. These deposits are being mined by a combination of vertical mine methods and traditional narrow stope methods, and operating costs are ~US$55/tonne.

As Section 7 relates though, operating costs for a similar operation in Canada would expect to have operating costs of at least C$150/tonne. This in turn implies that revenue/tonne for a mine at Torngat will have to exceed this amount and that a target threshold is likely C$200/tonne, or in general terms, a grade of >100cpht with diamond values of ~US$170/carat. While theoretically the grade could be lower and revenue/carat higher to arrive at the target revenue per tonne threshold, Twin should be focused on locating the highest grading zone at Torngat in any case for further evaluations.

Run-of-mine production with value in excess of US$170/carat is relatively rare amongst diamond mines worldwide, but does include most of the dyke mines mentioned above with the exception of Helam. There is some evidence from the very small parcel collected thus far that the Torngat diamonds may be of high quality, therefore the target threshold does seem realistic provided a high grade zone can be located.

Thus far the work at Torngat is suggesting that perhaps five areas within the known dykes may have the potential to meet target revenue/tonne thresholds. These are:

1) The DU Zone where multiple microdiamond samples, some promising indicator mineral chemistry, and the best of the small mini-bulk samples are all present within an approximately 1.5km extent of the Main Dyke, which exhibits good widths where exposed.

2) The DU North Zone, which lies across a small lake and is somewhat offset from DU, and which has three adjacent moderately anomalous microdiamond samples over ~1.5km.

3) The DU South Zone, which similarly lies across a small lake from the DU Zone dyke, and has returned three moderately anomalous samples representing a further strike extent of interest of ~2km.

4) The NG1-3 Dykes, which although narrower have returned the best single microdiamond sample result on the property at Dyke NG-3, including the only +1.18mm diamond recovered from these 24kg. samples. These three closely spaced dykes may have some real high-grade promise which needs to be investigated

5) Sample AD-2, which was a single microdiamond sample collected from near the bottom of the exposed 300m vertical extent of the Torngat 2 Main Dyke, which in-turn was mini-bulk sampled on top of the scarp at site DD (5.3cpht). This sample is likely sourced from a far higher grading deeper portion of the dyke, which is however exposed within the face of the fjord to result in this piece of fallrock.

The RRR#4 Site Area is of lesser interest having paradoxically returned the low macrodiamond grade of 3.4cpht from the mini-bulk sample, yet has the best garnet chemistry of the present dataset. Tonnage potential here also seems favourable with blows located, and this area needs to be better understood at a later date, with some further encouragement from the priority sites.

19.0 RECOMMENDATIONS

MPH has concluded that several areas thus far identified by Twin Mining show indications of being significantly better in terms of grade, then those sites mini-bulk sampled thus far by the company. The large existing sample material database allows for these zones to be better understood with further analytical studies, prior to fieldwork.

Phase 1 – Pre-field Analytical Studies

A priority in MPH's opinion is to immediately examine any microdiamond residues that have not been discarded, for signs of inefficient dissolution, and construct the statistical database that will allow for better interpretation of the results to date, and all on-going microdiamond work. All should be reprocessed by a 2nd facility.

MPH recommends that the following be initiated with specific respect to the DU Zone:

- Two further samples be utilized for KIM liberation, analysis and interpretation to compare with the existing sample at the DU mini-bulk site, and the other Torngat samples. These should be 10kg. samples extracted from existing microdiamond samples 887587 and 887584, representing the northern and southern limbs of the zone.
- Petrographic examinations and interpretations should be carried out on the same material.
- This zone, as portrayed in Figure 8-7 from sample DB-07 on the west to GL-06 on the east, should have the second split of the microdiamond samples from all sample sites processed at the umpire facility.
- Geostatistical modeling of the micro-macrodiamond database be carried out to provide an overall estimate of potential macrodiamond grade.

For DU North and DU South, similarly characterize these with firstly a KIM/petrographical sample from the best microdiamond site, namely, sample 887592 for DU North, and 887571 for DU South. Also process the sample split of the three anomalous microdiamond samples from each, as per above.

For the NG Dykes, MPH recommends:

- KIM samples be processed from each of the three dykes, including the NG3 sample site that returned the +1.18mm diamond.
- Petrographic examinations and interpretations also be carried out on the same material.
- All existing microdiamond samples from these dykes have the remaining sample material processed at the 2nd facility.

A few other microdiamond samples returned anomalous results that warrant a first step of preparing KIM interpretations for these sites, namely 887576 and 578 on Pita 1, and 887633 on the extreme north end of exposed Torngat 1 dyke, but offset from the overall DU North dyke. Each of these should have a KIM/petrographical sample processed and interpreted for comparative purposes, and to have the rest of the microdiamond split processed, again at a second analytical facility.

Finally, each of the other dykes on the property, ie. The South Dykes, Dallas Dyke, Richard Dykes etc., and each splay of the Main Dyke, should have a KIM/petrographic sample processed and interpreted from the best microdiamond site. This will a) complete the KIM assessment of each known dyke and b) allow for better petrologic conclusions as to the entire Torngat intrusive system, and c) may show some thus-far not recognized potential for these dykes.

Completion of all of the above will allow for concise comparisons of all areas, and ultimately a definitive ranking of the best interval for further exploration work.

Table 19-1: Phase 1 Budget Estimate

DESCRIPTION		ESTIMATE	TOTAL
Staffing			**$ 15,000**
	Supervision & Consulting	10,000	
	Data processing / CAD	5,000	
KIM/Petrographic/Microdiamond Samples			**$ 257,000**
	KIM Samples, probing, interpretion etc.	50,000	
	Petrography	5,000	
	Freight	2,000	
	Caustic Disolution costs (~2000 kg @ $100)	200,000	
Report Costs			**$ 10,000**
	Technical,weekly, monthly reports,	10,000	
Management Fee			**$ 25,000**
	10% of expenses	~30,000	
	Sub-Total		**$ 307,000**
Contingency @ 10%			**$ 30,000**
	Sub-Total		**$ 337,000**
GST @7%	(May be wholly or partially refundable)		**$ 25,600**
	TOTAL *		**$ ~360,000**

* Exploration expense rebates may be available from the Quebec Government

Phase 2 – Field Exploration

Assuming continued success above with Phase 1, which should be pragmatically defined as expert independent grade estimates of >50cpht based on the combined KIM / petrographic / microdiamond data for each zone, MPH anticipates that several zones may be deemed of high interest, and therefore warrant further exploration. This should comprise three main functions namely:

- Mini-bulk sampling each with small 10t samples for comparative purposes with the present database of sites, with the 2006 samples taken from the absolute best microdiamond site in each zone.

- Low level, high-resolution geophysics to ascertain whether any parallel dykes are nearby, and whether blows etc. exist particularly at some of the offset locations which is common with these deposits.

- A limited core drilling program of say 1,000m per zone to test for depth continuity to -200m and with sampling, grade variations and KIM changes, with depth. Also 500m of coring should be reserved for testing airborne targets with short holes. It would be very useful as well if this program encompasses sampling and mapping of the exposure of Torngat 1 dyke on the fjord face, from site DD to the AD-6 high-grade microdiamond sample. This can be accomplished with proper equipment by lowering men from the top.

Table 19-2: Phase 2 Budget Estimate

DESCRIPTION	ESTIMATE	TOTAL
Mob/ Demob		**$ 100,000**
	$ 100,000	
Staffing		**$ 100,000**
Support Costs		**$ 250,000**
Core Drilling/Trenching / Microdiamond Samples		**$ 575,000**
Supplies & equipment	25,000	
Contract trenching, blasting ~ 3 x 10t samples	30,000	
Core Drilling ~3,500m	400,000	
Caustic Disolution costs (200 kg @ $100)	20,000	
Freight	100,000	
Geophysics		**$ 150,000**
Airborne Magnetics	150,000	
Report Costs		**$ 50,000**
Technical,weekly, monthly reports,	50,000	
Management Fee		**$ 100,000**
10% of expenses	100,000	
Sub-Total		**$ 1,325,000**
Contingency @ 10%		**$ 130,000**
Sub-Total		**$ 1,455,000**
GST @7% (May be wholly or partially refundable)		**$ 102,000**
TOTAL *		**$ ~1,550,000**

* Exploration expense rebates may be available from the Quebec Government

This program should be definitive in terms of better establishing the economic potential of the Torngat dyke system, and in establishing the best possible site for further work which would include delineation drilling and larger bulk samples in order to construct the first resource estimate(s).

A total budget of approximately $1,800,000, excluding GST is estimated for the exploration program.

20.0 DATE AND SIGNATURE PAGE

The undersigned, Howard J. Coates, prepared all or portions of Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 of this Technical report, titled Technical Report on the Torngat Diamond Property, Nunavik Region, Quebec with an effective date of April 5, 2006, in support of the public disclosure of technical aspects of the Torngat Property. The format and content of the report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

(Signed*) Howard Coates*

Howard J. Coates April 18, 2006

The undersigned, Jeremy S. Brett, prepared all or portions of Sections 1, 9, 18, 19 and 20 of this technical report, titled Technical Report on the Torngat Diamond Property, Nunavik Region, Quebec with an effective date of April 5, 2006, in support of the public disclosure of the technical aspects of the Jackson Inlet Property. The format and content of the report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

(Signed) *Jeremy Brett*
Jeremy, S. Brett, P. Geo. April 18, 2006

The undersigned, Paul A. Sobie, prepared all or portions of Sections 1, 2, 7, 8, 9,13, 18, 19 and 20 of this technical report, titled Technical Report on the Torngat Diamond Property, Nunavik Region, Quebec with an effective date of April 5, 2006, in support of the public disclosure of technical aspects of the Jackson Inlet Property. The format and content of the report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

(Signed) *Paul Sobie*

Paul A. Sobie, P.Geo April 18, 2006

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