

GM 61616

ASSESSMENT REPORT, DDI - 7 PROPERTY, TORNGAT MOUNTAINS

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Énergie et Ressources
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QUEBEC

ASSESSMENT REPORT

DIAMOND DISCOVERIES INTERNATIONAL

DDI - 7 PROPERTY

NTS 24 P/07

TORNGAT MOUNTAINS

Abloviak Region, Ungava Bay, Quebec

Latitude 59°11'

Longitude 64° 54'

Submitted to

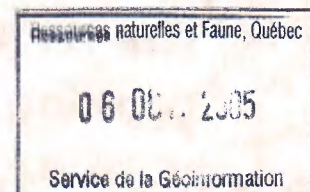
**QUEBEC MINISTRY OF NATURAL RESOURCES WILDLIFE AND
PARKS**

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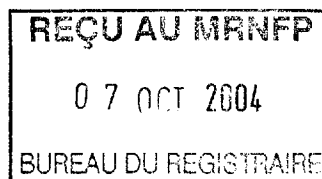
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EXECUTIVE SUMMARY

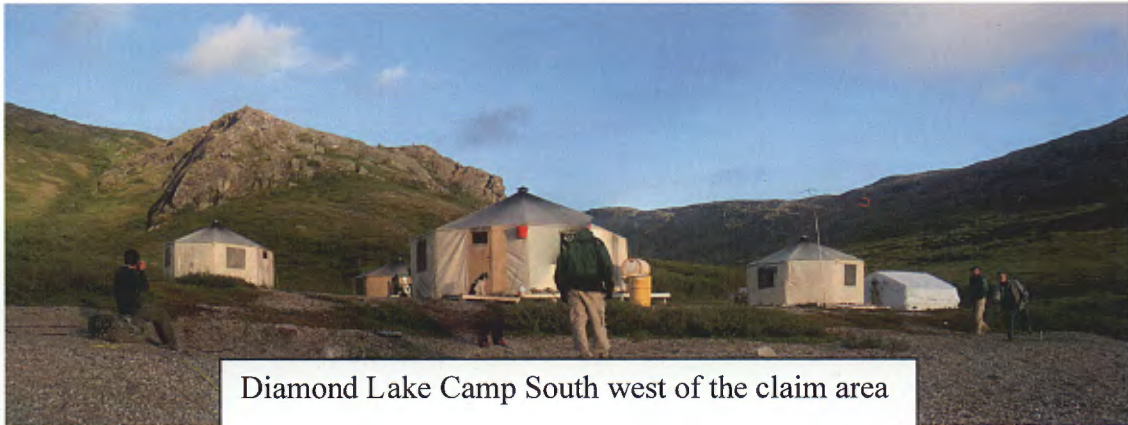
Geological, geophysical, geochemical surveys and extensive prospecting were carried out over Diamond Discoveries International's (DDI's) mineral exploration license number 0001482 in the Torngat Mountain region of Ungava Bay on NTS map sheets 24P/07, 24P/02 and 24P/10 during field seasons 2000, 2001, 2002 and 2003. Exploration defined and evaluated four loosely bounded belts containing more than 50 kimberlite dykes, two kimberlite pipes and several suspected pipes.

A macrodiamond measuring 1.25 mm in diameter, one of two macros, and 13 microdiamonds located in the A dyke were discovered in 2000. Diamonds were also reported in the F, G and B dyke in 2001. Rubies were reported from the D dyke, F dyke and the K dyke in 2001.

Diamond fragments have been reported by SGS Lakefield Research in 2003 from kimberlite/aillikite samples taken from the F, E, B, G, Yvon #2-K16, Champagne pipe, Peter Lake, P, U, Bella, at eight locales on the St. Pierre N dyke and at five locations along the MJR kimberlite dyke. These diamond fragments are in the process of being verified by testing at alternative laboratories. Subsequently in 2003 diamond fragments have been verified at Mount Jacques Rousseau. An analysis returned in August, 2003 from the A dyke indicated the tested sample assayed 10% rare earth bearing perovskite.

In January of 2004 microprobe results reported by C.F. Mineral Research Ltd. indicated forsterite olivines and clinopyroxenes with diamond inclusion compositions some of which form with large diamonds were noted in the Yvon#2-K16 and the St. Pierre South. These and other analyses contribute to a growing data base which defines the Ablviak dyke swarm as diamondiferous.

INTRODUCTION



A camp east of Weymouth Inlet, Ungava Bay located on 1:50,000 NTS sheet 21P/06 at a lake (Diamond Lake) along the Qijujjuujaq River (lat. 59 ° 17 N, long. 65° 07 W) was re-established in July 2003.

Three geologists, three prospectors, two technicians, one or more Inuit from George River and a cook were engaged by Prospecting Geophysics Ltd. on behalf of DDI to carry out follow up geological mapping, rock sampling, stream geochemistry, magnetometer surveys and prospecting during a 2 month field season using Helicopter and Beaver aircraft support.

Detailed geological mapping of the Champagne kimberlite dyke and diatreme complexes extended its known breccia zone several hundred meters to the north in 2003. Drill targets now can be spotted on the Champagne complex.

Geological maps incorporating sampling plans of the proposed kimberlite pipe at Round Lake and the recently discovered kimberlitic dykes named Holy Smoke (2002), Ned's dyke, the zone between the Yvon dyke and the Champagne system and the Henri South extension were completed in 2003. The Yvon # 2-K16, A, C, E, G and K were remapped and sampled. The N-Martina and H dyke area was extensively prospected and surveyed by magnetometer. Prospecting elsewhere located several new dykes including the Penina, Newfie, Passa, K25-South. Prospectors sampled observed previously unvisited dykes including an extensive breccia zone northeast of the Newfie dyke. These last dykes need further definition via geological mapping, sampling and petrology.

Rock samples collected from twenty olivine rich kimberlite/aillikite

dykes were submitted for analysis to identify dykes and pipes with high magnesium forsterite olivines as a means of developing priority drill targets.

A complementary suite of rock samples of approximately 50 kg each were taken from more than 20 kimberlite dykes for verification of diamond fragments reported by SGS Lakefield Research Laboratories.

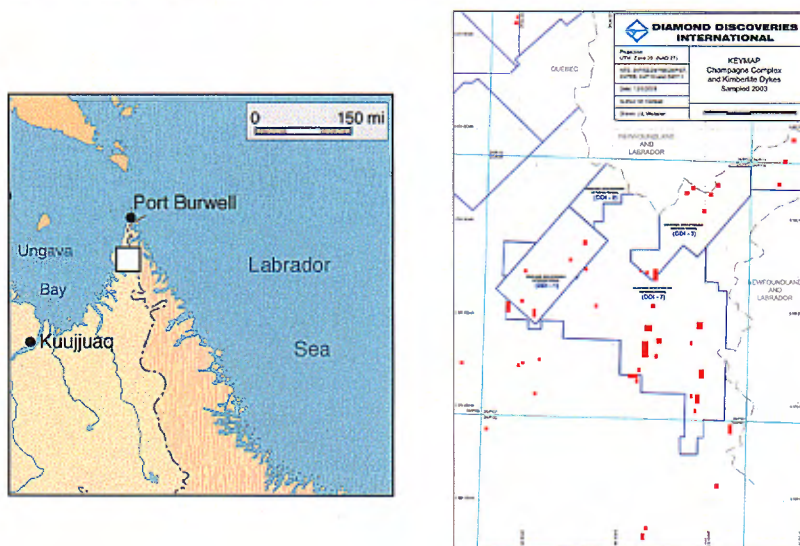
Thirty-one heavy mineral concentrates were collected, screened, panned and jigged at the base camp. Stream silt samples were taken from the heavy mineral collection points. Four test samples of glacial fluvial sands along the Abloviak Fiord were collected to determine if diamond indicator minerals and/or diamonds are present in outwash.

A greased sluice box was designed and built to accommodate de-slimed and screened disintegrated kimberlitic material taken from the St. Pierre North dyke.

Ground magnetics surveys utilising a Gem 19 proton precession magnetometer were carried out over several strategic zones to determine the presence and location of kimberlitic dykes and pipes.

LOCATION PLAN

LOCATION OF DDI-7 CLAIM LICENSES



Diamond Discoveries International's number seven claim group

(DDI-7 location plan) comprises an area of ~ 26991.6 hectares. The claim group located east of Ungava Bay in the Torngat Mountains straddles the Abloviak Fiord. It is partially bounded by the Labrador border along its north and east boundaries. The majority of claims in the block are located in 24P/07 with recent acquisitions extending south of the Alluviaq River into NTS 24 P/02. Claim acquisitions in 2003 were made on NTS map sheet 24P/02 to cover the Holy Smoke and Ned's kimberlite dykes and suspected pipe system (see Table 4, Appendix D).

PHYSIOGRAPHY

The Abloviak region lies on the western flanks of the Torngat Mountains which extend from Hebron Fjord to the tip of the Ungava Peninsula at Grenfell Sound. Maximum relief on DDI ground is greater than 1200 meters (4000 feet). A continental Wisconsin aged ice sheet covered the entire region leaving peaks rounded. Late stage alpine glaciation carved steep sided U shaped valleys into the remnant topography. Tributary glaciated valleys host lateral and valley floor recessional moraines and pavements of felsenmeer. Tills are well washed and composed of huge to cobble sized boulders, gravel and sand. In the central valleys of the Vent de L'Ouest, Alluviaq and Abloviak lateral and recessional moraines are common. There eskers, kames and minor pockets of ablation tills are found where ice movement was stalled. Nunataks, unglaciated angular peaks, are observed southeast of DDI properties. Lakes in the region are generally shallow and restricted to the highlands. The tidal range in the estuaries is greater than 10 meters. Vegetation in the form of sedges, muskeg, berries, willows, arctic birch, alder and rare Mountain Ash is restricted to elevations of less than 100 meters. The uplands have little or no till and vegetation where it exists is composed of moss, lichens and a variety of flowering plants.

DISCUSSION OF KIMBERLITES

An extensive and detailed discussion of the kimberlitic dykes over DDI's Abloviak claim blocks was submitted in the DDI-7 March 2003 report. Additional observations from 2003 field work at the Champagne complex and elsewhere are noted below.

The petrology, mineralogy and geochemistry of the Twin Mining

dykes in the Abloviak Fiord west of DDI's claims were established by Digonnet et al in 2000 to be aillikite dykes. These dykes are composed of macrocrysts of olivine and phlogopite featuring tetraferriphlogopitic rims that are included in a matrix consisting of fine grained phlogopite, olivine, spinel and interstitial carbonate. They are classified as carbonated ultramafic lamprophyres and plot near the group 2 kimberlite, orangeite border. The Twin Mining dykes are diamondiferous. DDI's diamondiferous 'A' dyke has affinities to the Twin Mining suite and is considered to be affiliated with that aillikite dyke swarm.

The DDI kimberlitic dykes are thought to be emplaced in regional tension gashes during the reactivation of major Paleoproterozoic structures associated with the opening of the Iapetus Ocean at 550 Ma (+/- 10). They intrude Tasiuyak gneisses situated along the extensive Abloviak shear zone. The Tasiuyak gneisses are a suite of Paleoproterozoic metasedimentary rocks which occupy the Torngat Orogen collision zone between the Rae Province and the Nain province. The dykes vary in attitude from north to north northeast trends near the hinge of the Abolviak Shear Zone adjacent to the Labrador Border to northeasterly near Ungava Bay on Twin Mining properties.

With the opening of the Atlantic and the Labrador sea at ~ 220 Ma the Abloviak dykes were separated from a kimberlite and aillikite dyke swarm covering an area of 270 x 100 km now located in the Holsteinsborg, Safartog and Sukkertoopen regions of Greenland. These Greenland dykes were emplaced between 586 and 656 Ma and were defined in 1981 to be hypabyssal phlogopite kimberlite dykes.

The 12 Twin Mining dykes studied by Digonnet et al are confined to an area of ~ 50 km². The more than 50 kimberlitic dykes on DDI claim blocks are located over a much larger area of more than 800 km². Field and microscopic observations of the matrix mineralogy of several DDI dykes including, Ned's, St. Pierre and Mount Jacques Rousseau dykes differs from the aillikites. These have been tentatively identified as Group 2 kimberlites. Ned's dyke and Dan's Un-09 dyke, just west of the K dyke adjacent to the Champagne complex, have been positively identified as kimberlite by R. Dillman (R. Dillman report, Nov. 27,03). Note: Criteria distinguishing aillikites from group 2 kimberlites and orangeites are subtle. DDI kimberlitic dykes all overlap or fall near or at the boundary of the three groups.

The Henri kimberlite dyke system which extends intermittently over a strike length of 15 km exhibits a variety of complex lateral facies changes within several 100's of meters. It is dominantly a micaceous aillikite that hosts zones of Group 2 kimberlite (phlogopite poor, calcitic, olivine rich zones containing G-9 garnets and chrome diopside). The Henri South extension dyke is identified as an aillikite (R. Dillman, Nov.27, 03). Near Peter Lake and on the Henri north grid kimberlite zones are identified (DDI Report, March 2003). This suggests multiple episodes taping magma from differing depths. All four of the loosely bounded DDI-7 kimberlitic dyke swarms (described in DDI march 2003 report) exhibit magma mixing, hybridization and mineralogical diversity.

The dykes are now suspected to range in composition from carbonated ultramafic lamprophyres and aillikites, similar to those identified on Twin Mining's claims, to kimberlitic carbonatites, orangeites and group 2 kimberlites.

Regardless of their nomenclature each type of dyke can act as a diamond transport mechanism as they have all passed through the diamond temperature-pressure window during their ascent to the surface and as visually determined by SGS Lakefield Research contain diamond fragments. Likewise most dykes host one or more of the following kimberlite indicator minerals: chrome diopside, G-9 (one G-11) garnets, magnetite, ilmenite, picroilmenite, perovskite, sphene, spinel and importantly forsterite olivine with Magnesium numbers between 90 and 94 several falling within the diamond composition range.

Microscopic analysis has also revealed rapid subtle facies changes along the E dyke which was identified broadly as an ultramafic lamprophyre and more definitely as an aillikite within a few hundred meters. Similarly the north dyke at Round Lake is identified as an aillikite while the south dyke falls less definitively under the broader ultramafic lamprophyre umbrella. More dramatically, sample MC-109 representing the en echeleon micaceous dyke at the St. Pierre North dyke, is defined as an aillikite while the St. Pierre North main dyke has the signature and field criteria of a Group 2 kimberlite. **St. Pierre North has yielded eight samples visually determined by SGS Lakefield Research to contain diamond fragments. These diamond fragments are now in the process of being verified.**

The DDI kimberlitic dykes deserve more adequate study by

microscope or probe and XRF to quantitatively and qualitatively determine their petrology, mineralogy, geochemistry and diamond potential.

To this end sixteen residues from digestions of kimberlite samples collected on Diamond Discoveries Torngat properties were examined by SGS Lakefield Research for the presence of diamonds, diamond fragments and mantle derived minerals including pyrope garnet and chrome diopside. SGS Lakefield Research **stated that no diamond crystals were present in the residues. SGS Lakefield Research, however, did recognize diamond fragments in these residues.**

To ensure and verify identification approximately 125 potential diamond fragments have been selected by R. Dillman from the residues and are being analyzed using an electron microprobe. Thirty-three suspected diamond fragments were selected from sample 105073 sent to R. Barnett and analyzed by electron microprobe. **All the compositions of the suspected diamond fragments were determined to be zircon suggesting there are no diamond fragments in sample 105073** (R. Dillman, Sept. 29, 2003 report).

C. Fipke Mineral Research Ltd (Robert Dillman, Oct. 14, 2003) reported electron microprobe analyses which showed diamond indicator minerals to be present in rock samples from the W, St. Pierre, Henri and H dykes. Their laboratory reported this suite of dykes to contain mantle nodules of forsterite olivine with magnesium # values >90 in the same range as olivine inclusions in diamonds. The presence of > 90 magnesium # values suggests diamond testing is warranted in these dykes. C. F. Mineral Research Ltd. classifications indicated an olivine nodule selected from the Henri dyke has a composition equivalent to forsterite olivine nodules similar to those found in kimberlite with "large diamonds". In addition to olivine, the St. Pierre dyke was found to contain mantle nodules with compositions akin to diamond inclusion chrome diopside and orthopyroxene.

Twenty seven samples from DDI kimberlitic dykes were cut at the University of New Brunswick to produce thin sections. The polished sections will be probed by a scanning electron microscope to define their petrology and diamond potential. Whole rock geochemistry will be carried out on samples from several dykes. The results generated from the DDI kimberlitic dyke swarm together with signatures from the Twin Mining, Labrador and the Greenland diamondiferous ultramafic lamprophyres,

kimberlites and orangeites should **determine if the entire suite is related to a common magmatic event which constitutes a diamondiferous alkaline province located in northeastern North America and southwestern Greenland.**

GEOCHEMISTRY

Stream Sampling Program - Heavy Mineral Concentrates (HMC)

Thirty two gravel and sand samples were collected from first and second order streams on DDI properties on the 24 P/07, 24 P/02 and 24P/10 NTS sheets. At each site more than 80 litres of coarse sand and gravels were passed through a 6 mm opening screen into 20 litre pails to collect a minimum 20 kg (or ~ 4 litres) of material. The samples were hand jigged through a 1 mm screen at camp. The eyes of the coarse portions remaining on the screen were set aside in vials for reference. The less than 1 mm fine fractions were mechanically jigged on 80 mesh (0.032 mm) Tyler screens.

Note: If chrome diopside and garnets were found by the field crew during jigging they were selected and reserved in vials. These were added to the corresponding fine fraction jigged concentrate.

The resulting grain size range examined varies from .032 to 0.97mm. All recovered heavy minerals were forwarded to Robert Dillman of Arjadee Prospecting, Mount Brydges, Ontario for analysis, selection of diamonds and indicator minerals. Selected minerals from all samples were forwarded to R. L. Barnett Geological, of Lambeth, Ont. for microprobe analysis.

Thirtyone silt samples were collected at the HMC locations in paper envelopes, dried, sieved through a 180 mesh Tyler screen and analyzed for Be, Ce, Cr, Ni, Sr, Ba, Zr and Co at SGS Lakefield Research. These elements if present in high enough levels are geochemical indicators of kimberlite (see DDI 2003 report for discussion).

Results of DDI-7 2002 heavy mineral concentrates are appended.

HEAVY MINERAL CONCENTRATE DISCUSSION (HMC'S)

Specific Gravities and jigger comments:

Minerals associated with kimberlite intrusions and used as indicators in the search for kimberlite dykes and pipes are given below along with their specific gravities and chemical formulas in descending order of density. Regular garnets are included in the list.

Mineral	Specific Gravity	Chemical Formula	3
Magnetite	5.2	Fe_3O_4	
Ilmenite	4.5 - 5	FeTiO_2	
Chromite	4.5 - 4.8	$(\text{MgFe})\text{Cr}_2\text{O}_4$	
Almandine garnet	4.32	$\text{FeAl}_2(\text{SiO}_4)_2$	
Spessartine garnet	4.19	$\text{Mn}_2\text{Al}_2(\text{SiO}_4)_2$	
Perovskite	4	CaTiO_2	
Spinel	3.5 - 4.1	MgAl_2O_4	
Uvarovite	3.8	$\text{Ca}_3\text{Cr}_2(\text{SiO}_4)_2$	
Grossularite garnet	3.59	$\text{Ca}_2\text{Al}_2(\text{SiO}_4)_2$	
Titanite (Sphene)	3.4 - 3.6	CaTiSiO_5	
Pyrope garnet	3.56	$\text{Mg}_2\text{Al}_2(\text{SiO}_4)_2$	
Diamond	3.50	C	
Chrome Diopside	3.3 - 3.4	$\text{CaMgCr}(\text{Si}_2\text{O}_6)$	
Olivine	3.27 - 3.6	$(\text{MgFe})_2\text{SiO}_4$	

In previous years the stream sediments collected from the field were passed through a 1 mm diamond screen. If the residue was large the field personnel would reduce it by panning. It is clear from the densities table above that important indicators and diamonds would be lost if panning stopped at the first sign of garnets. For example; if spessartine, perovskite or grossularite predominate, statistically the lighter pyropes, sphenes, diamonds and chrome diopsides are lost.

On the basis of these densities no panning of <1mm material was applied to samples collected in 2002. The fine HMC material collected from all samples in 2002 was processed by the mechanical jigger. The same caution still applies to the coarse HMC fraction (>1mm to <2mm). Diamonds along with the lighter portion of the indicator minerals will not appear in the coarse fraction if sufficient care is not taken. This is particularly true when sediments contain very large volumes of common

garnets, as is often the case on DDI-7 properties where the streams drain garnet rich gneissic rocks. Garnets can make up to 40-60% of the HMC sample. In such cases where samples contain large garnet populations any mineral having a specific gravity lower than 3.6 may be lost and not reach the grain selection process.

THE MECHANICAL JIGGING PROCESS

The HMC samples containing large garnet populations create a situation where the chances of recovering the majority of light indicator minerals and diamonds is greatly reduced. The “eye” includes heavy magnetite, and ilmenite in the bottom half of the “cake” made up of common garnets. Diamonds and the lighter indicator minerals are in the middle of the cake. There is the chance that the abundant heavier garnets that are not indicators have displaced the lighter desirable minerals from the position under the “eye” proper. Caution must be exercised to select the material with the appropriate specific gravity. A curved screen may help but a properly equipped laboratory would better process the samples.

The following table lists locates the 31 silt and 32 HMC samples:

<u>silt sample no</u>	<u>no of bags</u>	<u>HMC number</u>	<u>UTM -E</u>	<u>UTM-N</u>	<u>NTS</u>
PGL-HS-01-03	1	01-03	403214	6555729	24P/02
PGL-HS-02-03	1	02-03	403162	6555872	24P/02
PGL-HS-03-03	1	03-03	403335	6555657	24P/02
PGL-HS-04-03	1	04-03	403564	6556871	24P/02
PGL-HS-05-03	2	05-03	403385	6557591	24P/02
PGL-HS-06-03	1	06-03	403385	6557591	24P/02
PGL-HS-07-03	2	07-03	402991	6577167	24P/02
PGL-08-03	1	08-03	403239	6577358	24P/07
PGL-09-03	1	09-03	403077	6577888	24P/07
PGL-10-03	2	10-03	402788	6577857	24P/07
PGL-11-03	1	11-03	397349	6581540	24P/07
PGL-12-03	1	12-03	395787	6580314	24P/07
PGL-13-03	1	13-03	396132	6579460	24P/07
PGL-14-03	1	14-03	397017	6579359	24P/07
PGL-15-03	1	15-03	398508	6580180	24P/07
PGL-16-03	1	16-03	397587	6579372	24P/07
PGL-17-03	1	17-03	398133	6579226	24P/07
PGL-18-03	2	18-03	398571	6583824	24P/07
PGL-19-03	1	19-03	397575	6584583	24P/07
PGL-20-03	1	20-03	396124	6585593	24p/07
PGL-21-03	1	21-03	398579	6585255	24P/07
PGL-22-03	1	22-03	401296	6579039	24P/07

PGL-23-03	1	23-03	404336	6580975	24P/07
PGL-24-03	no sample	24-03	394428	6588806	24P/07
PGL-25-03	2	25-03	392005	6587557	24P/07
PGL-26-03	2	26-03	398020	6584432	24P/07
PGL-27-03	2	27-03	412290	6567953	24P/07
PGL-28-03	2	28-03	412455	6567499	24P/07
PGL-29-03	1	29-03	412565	6567582	24P/07
PGL-30-03	2	30-03	412886	6566431	24P/07
PGL-31-03	2	31-03	412834	6566496	24P/07
PGL-32-03	2	32-03	412261	6566065	24P/07

Silt samples are located on figure 2 in Appendix A. Analytical results are appended in Appendix C.

GLACIAL – FLUVIAL SAND SAMPLING PROJECT

Four samples of glacial-fluvial garnetiferous sands were collected from eskers, and lateral moraines reworked by fluvial processes. Evidence from roche moutonee east of the Alluviaq River and striae indicated an early ice flow from west to east. Post Pleistocene glacial rebound left several stranded benches of poorly sorted lateral moraine along the flanks of the Abloviak and redirected the flow of ice and the rivers westward toward Ungava Bay.

Samples were collected from strategic points from the Vente de Ouest River down stream from the Henri dyke system (near HMC 20), at the mouth of the Alluviaq and a few kilometers down stream on the north and south banks of the Abloviak River. The samples were selected from sands with a high garnet component on point bars and lags. The density range of the garnet group brackets and is slightly higher than that of diamonds. Garnets derived from paragneisses may overwhelm and dilute pyropes, diamond indicator minerals and diamonds. Heavy liquid separation would obtain optimum results. Multi tonne samples would further increase the odds of obtaining diamonds from the Abloviak sands. Samples taken are described below as:

- 090934 RM-143-03 403050E 6578706N 3 bags weighing 65 kg (143 lb) of 80 % sand, 15% silt and 5% coarse fraction, most pebbles were winnowed out, moderately garnetiferous.
- 090933 RM-144-03 399692E 6576681N 3 bags weighing 55 kg (120lb) of 70% sand 20% silt, 10% coarse; pebbles and

occasional cobbles which were winnowed out. Taken from the west bank of Alluviaq at its mouth.

- 090931 RM-145-03 396923E 6578190N 3 bags weighing 61.3 kg (135 lb) of 95% sand 5% silt on south side of Abloviak where the river cuts a small glacial lake deposit (ablation end or recessional moraine) of stratified sands and muds. The lowest and uppermost beds are sand. The bank is 15 m high.
- 090932 RM-146-03 396701E 6578891N 3 bags weighing 52 kg (105 lb) of highly garnetiferous sands with a few winnowed pebbles taken from the upstream point. The embankment is 10 m high.

HMC's and the Alluvial Sands results are unavailable at the time of writing.

GREASED SLUICE BOX

The St. Pierre North group 2 kimberlite dyke yielded 8 samples containing suspected diamond fragments, chrome diopsides, clear high magnesium forsterite olivines and G-9 garnets. At 2+80N on the St. Pierre North 2002 grid near the south end of a 3-4 m wide en echelon dyke of micaceous friable and decomposed kimberlite or aillikite which resembles the A dyke (R. Dillman, 2003). It contains chrome diopsides, clear olivines, magnetite and perovskite. A 300 kg sample of micaceous earth and subcrop was excavated, bagged and flown to the base camp at Diamond Lake where it was de-slimes and screened through a 1 mm diamond screen. The sample is numbered MC-109-03. It tests a composite of the outcrop at the MC-02-02 St. Pierre trench and ground ~ 10 m to its north.



Working the sluice box

A sluice box was constructed with three catchment tables measuring 24" x 18". These catchment tables were lined with plastic and greased with lard. Diamonds have an affinity for grease. The screened and de-slimed samples were brought to room temperature in a shed. A heated water supply from the shower was brought to room temperature. The screened sample material was washed down the table with this water at a slope of twenty degrees. Grains attached to the greased plastic were captured by submersing the greased plastic catchment sheets in boiling water in a stainless steel container. Detergent was used to eliminate the lard. Several grains suspected to be diamonds were set aside for inspection by R. Dillman. R. Dillman has noted abundant chrome diopside, clear and yellow olivines, perovskite and a general mineral assemblage resembling the diamond bearing "A" dyke. R. Dillman forwarded 31 grains to C. F. Mineral Research Ltd. for microprobe work.

Results revealed chromite, high titanium magnetite, forsterite olivine, olivine with diamond inclusion composition that overlaps with olivine from non-diamondiferous sources, picrolimenite, K richterite and clinopyroxene with diamond inclusion composition which forms with large diamonds that overlap with the composition of clinopyroxene that classify from non diamond inclusion sources (C.F. Mineral Research, Jan. 21, 2004). No diamonds were found by either researcher from the grease table sample. Field personnel observed numerous clear translucent crystals ranging up to 1 mm in the captured grains. These grains were not identified to be zircons or diamond fragments. **Eight separate samples taken from the adjacent St. Pierre North kimberlite dykes were reported by SGS Lakefield Research to contain diamond fragments.**

The low grassy 3-4 m wide zone of weathered kimberlite which MC-109-03 samples is either an enechelon aillikite dyke paralleling the St. Pierre North Group 2 kimberlite system located a few meters away or a separate, but nearly contemporaneous magmatic event along the same structural weakness. A significant circular magnetic anomaly which lies several 100 meters along strike to the north could represent a root zone of a pipe. It must be tested.

CHAMPAGNE SYSTEM

INTRODUCTION



Champagne complex looking North

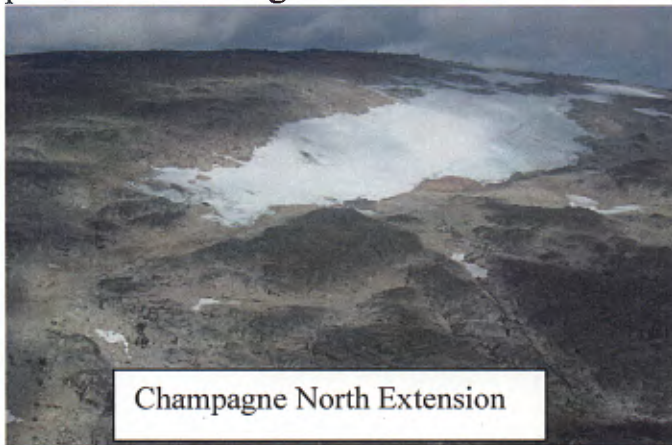
The Champagne system is a north-northeast trending complex of kimberlite diatreme and dykes, part of which was identified during field work in 2001 as the locus of a possible kimberlite vent. It lies along strike and is a component of the Henri kimberlite dyke system described above as a 15 kilometer long dyke system hosting several chonoliths and suspected root systems including the Peter Lake, Henri North and Yvon with several lateral facies changes from phlogopitic kimberlite/aillikite to nodular mica poor clinopyroxene kimberlite suggesting multiple near contemporaneous intrusives tapping heterogenous sources. Geological mapping was carried out at 1:1000-scale during August, 2003 over a re-established grid, mainly to describe and interpret the three dimensional distribution of prospective kimberlite bodies. Reconnaissance magnetic work carried out in 2003 along strike to the north of the mapped grid, identified kimberlite/aillikite dykes. Follow-up geological investigation outlined an extensive continuation of the diatreme complex north of the gridded area. Preliminary mapping was conducted over this new zone. Kimberlitic samples of up to 60 kg were collected from both the main gridded zone and the northern extension to process for diamond indicator minerals and diamonds.

PREVIOUS WORK

The Champagne diatreme system was located by prospector Yvon Champagne when carrying out a systematic heavy mineral concentrate sampling of streams in 2001. The main zone was identified, sampled, and a grid established over which a magnetic survey was carried out in 2001. Geological mapping was attempted in both 2001 and 2002, identifying three diatremes - the triangular blow, the Peter blow and the Johnny blow - before being discontinued in both field seasons due to adverse weather. The magnetic survey revealed several elongated highs which could represent multiple dykes. Sampling revealed chrome diopsides in several locales (see DDI reports 2002 and March 2003). A large 8cm by 4cm bottle green crystal of what field observers identified as a chrome diopside located in the Peter blow diatreme was later revealed to be an unknown chrome carbonate (?) as yet an unidentified mineral. It is to be identified at the Royal Ontario Museum. Diamond fragments were identified by SGS Lakefield Research at the triangular diatreme and at a point along the stream 200 m south.

PHYSIOGRAPHY

The immediate area of the Champagne complex is a glacially carved, southward-draining valley having high relief ranging from 750 m elevation in the south to 1300 meters on the northern extension. The Champagne diatreme complex has an exposed relief of 335 meters over a strike length of 1700 meters. Its northern limits, however, are not precisely defined as it strikes under unmelted ice. Drainage is good. Numerous small streams locally cascade over bare rock, converging on Champagne lake. The major stream that drains the lake toward the south, flows along the surface glacial deposits for 300 m before cutting deeply into bedrock creating an unpassable gorge where the grade steepens, merging with the head of the adjacent valley which flows 2 kms southeastward to the wide, flat valley of Riviere du Vent d' Ouest. Outcrop exposure in the steeper parts of the valleys approaches 100%; flatter areas are commonly felsenmeer-covered. In the shallower parts of the valleys, angular glacial cobbles and boulders predominate along with some talus boulders, though isolated patches of



moss and grass reflect some local finer-grained components. Maximum depth of the glacial deposits here is uncertain, possibly up to a few meters locally. It appears that most of the outcropping diatreme in the north-most extension of the complex, is rarely exposed even during annual glacial

meltback. These areas of rare meltback are unusually clear of any lichen and provide excellent exposure for geological investigation. Floors of continuous flat blocks referred to as 'glacial pavement' are locally present in the North Extension.

GEOLOGICAL MAPPING

Geological mapping was carried out on two adjacent zones along the strike of the Champagne diatreme complex in August and early September of 2003. These are referred to as the Champagne Main Zone and the Champagne North Extension. Detailed mapping over a grid at 1:1000 scale was carried out by Sheila Watters and David Lister on the Main Zone (Fig.

2.10). A metric grid was established using two previously picketed baselines for control. Cross-lines were variably run at 25 and 50 meter spacing and picketed or flagged at 25 m intervals to cover the inferred lateral extent of the diatreme. The extent and geology of the kimberlitic diatreme in the North Extension was mapped by Sheila Watters using, for control, a combination of GPS and pace and compass (Fig. 2.11).

GEOLOGICAL UNITS

The two main suites of rocks mapped on the Champagne complex are the Ordovician kimberlitic intrusion-related rocks and the Paleoproterozoic gneisses (Tasiuyak Gneiss) that host the intrusive diatreme. The host rock gneisses include both paragneiss and orthogneiss. See maps, Fig. 2.10 and 2.11. Gneisses are southeast striking and dip steeply to the southwest (range of strike 116-135 degrees, dip 73-90 southwest). Foliation is parallel to the observed contacts between layers in the gneisses.

The garnet-rich paragneisses underlie the southern half of the Main Zone; orthogneiss underlies the North Extension. The gneiss package between these two is interpreted as orthogneiss but is compositionally more variable than the clearly defined orthogneiss in the North Extension and includes fine- to medium-grained felsic gneisses (k-spar-quartz+/-biotite) up to about 60 meters thick within the dominant medium- to coarse-grained plagioclase-quartz+/-hornblende+/-biotite gneisses. Orthogneisses in the north extension are generally coarse-grained, fairly uniform in composition, more weakly foliated than in the Main Zone and contain abundant xenoliths. The contact between the orthogneisses in the Main Zone and those in the North Extension was not observed. A variety of phaneritic felsic dykes, some pegmatitic, cut the gneisses. Most are sub-parallel with foliation and exhibit some foliation parallel with that in the gneisses. In the North Extension, moderately north-dipping, unfoliated, aphanitic intermediate to felsic dykes up to 1 metre wide, cut across the gneissic foliation. They post-date the gneisses but pre-date the kimberlite diatreme complex as evidenced by local incorporation as fragments in the breccias.

Kimberlite and associated intrusion-related breccias make up the extensive, 1.7 km-long mapped portion of a sub-vertical diatreme complex trending north to north-northeast (Fig. 2.10 and 2.11). Most of the complex varies in width between 50 and 150 metres and comprises a variety of types

of kimberlite dykes and breccias. The north end of the complex extends under a glacial ice cap but the complex does not appear to continue into the area of the topographic saddle to the north of the ice cap. To the south, the along-strike projection of the complex is expressed solely by subvertical kimberlitic dykes in the northeast-facing cliff. Therefore, the complex appears to potentially extend to a length of a little more than 2 km. Topographic relief over the mapped extent of the complex is about 335 metres. No apparent offset of the gneisses has taken place across the diatreme, based on the strike continuity of gneissic units across the complex (Fig. 2.10).

The complex consists of kimberlite dykes and a variety of intrusive-related breccias containing fragments of the host gneisses (see Legend, Fig. 2.10, 2.11). Wide portions of the breccias (up to about 150 metres) have been referred to as “blows” in the field. Homogeneous kimberlite (6k) occurs as dykes that are mostly a few centimetres to about 5 metres wide. They are generally concentrated along the north-south-trending boundaries of the complex on both the east and west margins. They commonly follow subvertical, planar, close-spaced north to north-northeast and north-northwest striking fractures. However, the widest dykes (or at least the widest fully exposed dykes) occur in the south-most portion of the Main Zone grid and here they trend variably northeast, southeast and northerly. One dyke of minimum 50 cm width, strikes 105 degrees along the south edge of Champagne Lake in the middle of the Main Zone grid. The lake itself might reflect a concentration of more easily eroded kimberlite where this east-west dyke meets the boundary dykes on the east side of the complex.

Homogeneous kimberlite dykes are commonly coarse-grained (several mm mineral grains) and predominantly composed of a brownish black mica tentatively identified as phlogopite plus diopside and olivine as phenocrysts and/or groundmass as well as carbonate and an unidentified magnetic mineral in the groundmass. Narrow dykes and the outer margins of wider ones tend to be fine-grained to aphanitic. Some dykes have distinct mm to cm-scale layers, locally defined by variation of orientation of phlogopite grains from one layer to the next. Large (>1m), highly nodular float of coarse-grained kimberlite found in the main stream draining the Champagne Lake, hosted a nodule containing Cr-diopside.

The vast majority of the complex consists of breccias (6Bx) which are categorized on the basis of size of fragments and percentage of matrix (<25%). Breccia fragments are almost entirely the same as the gneissic

wall rocks to the diatreme. Rare fragments are inferred to be kimberlitic. The matrix is aphanitic and inferred to be kimberlitic based partly on the fact that local fine-grained margins of the coarse, phlogopite kimberlite dykes (6kc) have the same pale green colour that the matrix commonly exhibits. Contacts between breccia types are generally gradational and arbitrarily chosen. “Boulder breccias” are identified in the North Extension (Fig. 2.11) to distinguish areas of breccia characterized predominantly by large, up to several meters diameter, highly rounded gneiss “boulders” set in a finer-grained breccia (6Bxc,f and/or i).

The breccias probably also grade into the several areas of outcrop that are kimberlite-rich, containing less than 50% xenoliths (6kx). Xenolith composition, though still predominantly wall rock gneiss, is somewhat more variable in this unit, including a few inferred kimberlite fragments.

These zones (pipe-like?) are probable focuses of kimberlite emplacement along the diatreme complex as a whole. The largest of these features outlined to date (about 70 meters in diameter) lies just west of baseline 1+00W between 275 and 350 North, and might continue under the snow cover on its north side. Another, south of the Lake, lies immediately west of the main stream between lines 50 and 75 South. A similar small outcrop occurs adjacent to the south end of the glacier cap in the North Extension. Near the south end of the complex, a concentration of fine-grained kimberlitic float and/or subcrop in an area of poor exposure near L 450 South just east of baseline 0+25 E might reflect another of these features (referred to as the Johnny Blow? by previous workers).



Thin-sections have been made of the main variety of rock-types in

the diatreme complex and are presently being described petrographically.

MAGNETIC PROPERTIES

Based on hand-magnet measurements made during mapping, coarse-grained kimberlite dykes and most fine-grained and aphanitic ones are moderately to strongly magnetic. The kimberlite in Units 6kx and 6kxx, however, is commonly weakly magnetic, at least locally. Wall rock gneisses have variable magnetic response. Orthogneisses in the North Extension are characteristically strongly magnetic. Paragneisses and orthogneiss in the Main Zone are quite variable but all less magnetic than those in the North Extension. Given the wide range of magnetic susceptibility in both host rock gneisses and in kimberlitic units, magnetic highs and/or lows could possibly reflect kimberlite in different parts of the map area.

INTERPRETATION

TIMING OF KIMBERLITE-RELATED INTRUSIVE EVENTS

At least three phases of kimberlitic emplacement are indicated. Fragments inferred to be fine-grained kimberlite in breccias and as xenoliths in the 6kx unit indicate the existence of a kimberlitic intrusive phase predating formation of these two rock types. These two which make up the majority of the complex are interpreted to be the products of the main explosive kimberlite intrusive phase, with the areas of the kimberlite-rich unit, 6kx, representing pipe-like zones of focused flow. Coarse-grained kimberlite dykes observed locally to cross-cut both unit 6kx and breccias, are interpreted to represent later, more passive emplacement of kimberlite.

CHEMICAL ALTERATION ACCOMPANYING DYKE EMPLACEMENT

Evidence of thermal and chemical alteration during emplacement of the dyke swarms and diatreme complex are restricted to xenoliths and the immediately bounding wall rocks. Pink-coloured alteration of xenolith and breccia fragment surfaces and along wall rock surfaces is typical and is

speculated to be mainly the result of K-Ca exchange between K-rich kimberlite magma and Ca in plagioclase in the gneisses producing pink-orange-coloured K-spar and releasing both Ca and Na. Calcium then combines with excess CO₂ in the magma to produce carbonate. Pink soft effervescent carbonate is commonly observed on altered surfaces of wall rocks and xenoliths in conjunction with a more profound fenitization-like process, whereby the release of the sodium-content of plagioclases permits formation of aegirine in the gneiss. Dissolution of quartz from gneisses by the Si-poor kimberlite is also locally evident at contacts. This process has been observed on bounding walls of dykes and in xenoliths of the 6Kx unit and locally results in an igneous-looking border phase as at the boundary of the east-west kimberlite dyke on the south side of Champagne Lake. This process is also suspected at many other kimberlite dykes on DDI ground (eg Mount Jacques Rousseau, Ned's dyke and St.Pierre).

PHYSICAL PROCESSES ACCOMPANYING DYKE EMPLACEMENT

Dykes and the diatreme complex are interpreted to have been emplaced along previously existing regional structures. However, close-spaced, cm- and even mm-scale fracturing is inferred to have been the product of explosive emplacement of kimberlite, resulting in curved fractures, and accounting for the highly rounded shapes of gneissic boulders and blocks up to 30 metres across as at the south end of the North Extension. More passive emplacement of kimberlitic dykes followed, along fractures some of which cut the earlier explosive breccias.

ROCK SAMPLE DESCRIPTIONS

SW-071-03 404701 6585012 6Kf - small sample 1cm kimberlite plus wallrock. Phlogopite, 5% olivine(?), + dark mineral, strongly magnetic, no fizz with HCl, less than 1mm pale green contact

SW-072-03 404698 6585094 6K layered parallel to wall-rock contact 155, 70NE. Phlog 90%, olivine and serpentinized ol. 10%, magnetic mineral and rare white carbonate and pyrite in <mm concentration

SW-073-03 404635 6585010 6K and 6Mbx - green matrix much like south edge of lake, some 6K is finer grained, with 1-3 mm white

weathering spherical(?) ovoid shapes, all samples good fizz, noderaqte to strongly magnetic. 70% mm-scale phlogopite, 5% olivine, 5% diopside?, carbonate rest?. White orbs contain euhedral black mineral.

SW-074-04 404690 6584988

SW-075-04 404678 6584990

SW-076-04

SW-201

SW-202 3 rice bags of disintegrated 6Kc -
about 150 lbs

SW-203

SW-204

SW-205 6Kc, nodular. 1.5mX1mX1m,
sample in flowing stream, small samples nodular kimberlite dyke
and numerous nodule fragments - good Cr diopside in one olivine-
rich nodular

SW-206

SW-209

SW-LMK070-03 404685 6585080

90935DR-050-03 404846 6585634 6Bx 50-60% matrix

90939Y-123-03 404719 6585428 Massive, cpx, minor phlog, 6a

RS-101-03 6Bx 20-30% matrix

RS-102-03 6a

SW-200-03 404618 6584564 6Kf plog-50%, calcs-20%,
diop/oliv-40%? 1mm macrocrysts. strong to mod mag, strong "fiz"

SW-221-03	404705	6585357	Crystal Breccia
ST-054-03			1 rice bag - 6k massive kimberlite, local nodules along 14, 50,25,37
ST-057-03			1 rice bag
SW-209-03	404873	6585564	6K WITH QTZ recrystalization
SW-210-03	404674	6585282	6Kc
SW-212-03	404810	6585635	Brecciated 6K
SW-213-03	404853	6585634	6K
SW-220-03			1 rice bag
90901	ST-057-03 404699	6584526	(6K) dyke, serp,nods,pink garnet
90907	DD-005-03		(6K) below triangular blow,nods
90909	DD-004-03 404684	6585071	(6Kx) 80% matix,xenoliths gneiss
90910	DD-003-03 404968	6586112	(6a) phlog, nod,EsidedBx zone

CONCLUSIONS AND RECOMMENDATIONS

Morphology of the diatreme complex including the abundance of vertical dykes, the sub-vertical sides and irregular shapes of kimberlite bodies, is indicative of a deep level, a root-zone, of a kimberlite diatreme. The large amount of material that had to have been eroded off the complex to expose the root zone attests to the potential for alluvial diamond deposits somewhere in the lower drainage basin(s). Several phases of kimberlite emplacement are interpreted and each phase which can be identified should be assessed separately for diamond potential. Based on exposed target size and potential for continuity, the xenolith-bearing, fine-grained kimberlite

pipe(?) on the Main Grid 150 m north of Champagne lake would be prospective. The other three areas of 6kx are also potential targets. The lake itself is the site of a potential drill target, being a possible source of the large nodular kimberlite float containing Cr-diopside found 300 m south of the lake. The wider coarse kimberlite dykes, especially north-striking ones in the south part of the complex appear to have potential for strike continuity. Breccias with kimberlitic matrix, although extensive, are probably too diluted by gneiss fragments to be viable targets.

HENRI KIMBERLITE / AILLIKITE DYKE SYSTEM

The Henri kimberlite/aillikite dyke system has been traced intermittently for 14 km. It extends from UTM zone 20 402600E 6572500N at its southerly limit on the east bank of the Alluviaq River to the northern end of the Champagne diatreme complex at 404800E 6585600N.

Two new zones south of Peter Lake area named the Henri South Extension on the north and south Olympic Ridge streams were located by Prospectors Yvon Champagne and Tommie Assavek, sampled and geologically mapped (see Olympic Ridge discussion below).

A third and critical area between a cirque north of the Yvon dyke and the Champagne complex located by helicopter reconnaissance was mapped and sampled by Dave Lister.

HENRI SOUTH EXTENSION – NORTH OLYMPIC RIDGE STREAM

The Henri kimberlite/aillikite dyke was described in 2002 to intrude Paleoproterozoic Tasiuyak paragneiss composed of feldspar, quartz, garnet gneisses, quartzofeldspathic meta-pelites, minor quartzites and pyritic rusty Tasiuyak gneisses which frequently host gossanous zones. Its trace, defined by geological mapping and magnetometry including the Champagne system, now extends 14 kilometers along a general strike of 010 degrees. A detailed view of the Henri geology and sampling data was reported in Assessment Report DDI-7-March-2003. Included below for reference purposes is a description of Olympic Ridge and an accompanying geological sketch (fig. 2.12).

OLYMPIC AREA (DDI-MARCH 2003 REPORT)

A magnetometer survey carried out in conjunction with prospecting on September 5th, 2002 located three dykes on a ridge south of the Henri Peter Lake kimberlite dyke system. The ridge is called Olympic Ridge (see fig.2.12). A calcitic, low mica, kimberlite dyke 170 cm wide trending 020° was located on the western extremity of the ridge at 401862E and 6573606N. It was sampled. It is magnetic and gives a response of 1400 nT with the MF-2 fluxgate magnetometer. Twin Mining named it the Olympic dyke.

A minor 10 to 15 cm wide nodular diopside, calcite kimberlite dyke was located in a cliff 400 m along strike to the northeast and is undoubtedly an extension of the Olympic dyke.

Thirdly a 150 cm wide micaceous non calcitic kimberlite dyke (lettered MMU-11 on old flagging) was located at 4+00E by prospecting over micaceous soil. It has a magnetic response of 1200 nT's. This dyke is considered to be a western en echelon southerly extension of the Henri dyke cluster. Its co-ordinates are 402224E and 6573503N.

THE HENRI SOUTH – OLYMPIC STREAM NORTH AILLIKITE DYKE

This dyke is blue grey medium to coarse grained, carbonaceous, massive, weakly magnetic micaceous kimberlitic rock defined as an aillikite (R. Dillman report, Nov. 23, 03). It is composed of 30 to 60% phlogopite with crystals ranging up to 5mm in diameter. Pale green to blue green serpentine is found in the groundmass. Rare pyrite crystals were noted. It is laminated due to streaming of micaceous fine-grained and clinopyroxene rich zones. These zones alternatively could represent discrete near contemporaneous separate pulses (up to 7cm wide) of bands of volatile upwelling kimberlitic magma. Sample RG-103-03, a nodular kimberlite float with cpx pellets and olivine nodules to 4cm, indicates that rapid vertical and lateral facies changes occur along the Henri system.



The dyke is up to 150 cm wide. It stopped walls into arcuate lensoid shapes which became weakly potassic altered. Outcrops and float can be traced 700 m along a fractured zone up to 30 m wide. At its most southerly exposure it bifurcates into a chonolith with both the easterly and westerly dykes ranging to 100 cm wide. A floating reef separates the two dykes in a 14 m wide gap. The dykes are contained by arcuate steeply dipping gneissic walls (See figure 2.13).

ROCK SAMPLE DESCRIPTIONS:

- RG- 100-03 402937E 6574482N serpentine rich, blue grey, magnetic, moderately micaceous slightly displaced kimberlitic outcrop 100 cm wide, very fractured and blocky wall rocks. (Slide occurred and missed us by 3 meters)
- 092234 RG-101-03 402948E 6574573N magnetic, weakly nodular, phlogopitic kimberlite > 1 meter wide, two large boulders of similar material upslope 160 and 170 meters. Peter Lake lies 800 m north along strike from these boulders.
- RG-103-03 402926E 6574444 Small float of nodular cpx kimberlite with abundant olivines (sent to Bob Dillman) – indicates rapid facies changes from phlogopitic aillikite to cpx kimberlite with cpx pellets to 0.5 cm.
- 092235 RG-104-03 402904E 6574357N > 150 cm wide blue grey, mg – cg, serpentinized, phlogopitic kimberlite/aillikite (6a) outcrop in stream with 10 m high arcuate east wall steeply dipping toward dyke. It is non reactive and magnetic.
- 092236 RG-105-03 402859E 6574307N mg – cg, non-reactive, magnetic micaceous blue grey kimberlite/aillikite (6a) in area of blow on east wall with another ~ 100 cm wide dyke on west wall separated by a floating reef of gneissic country rock which exhibits weak potassic alteration. The walls are steep and arcuate. (see geological sampling plan figure ?)
- 090911 DD-002-03 402866E 6574291N weakly nodular, magnetic, massive, phlogopitic kimberlite/aillikite (6a) 3 bags weighing 59kg (130lb)

A 50 cm wide kimberlitic dyke was located in the streambed 400 m west of the Henri South - North Olympic Ridge Stream dyke. This clinopyroxene rich, carbonate rich kimberlite is the most northerly extension of the Olympic dyke located to date (see Olympic Ridge sampling plan fig. 2.12). It should be more thoroughly prospected upslope and north to the area along the ridge west of Peter Lake.

092210 YT-034-03 402233E 6574275N (6c) peletal cpx, calcitic kimberlite with abundant olivine and serpentine, magnetic

HENRI SOUTH EXTENSION – SOUTH OLYMPIC STREAM AILLIKITE DYKE

Henri South Extension kimberlite dykes outcrop along the Olympic Ridge South stream in five separate closely spaced intervals occupying an intense fracture zone 35 m wide. They are approximately 1 km south of the North Olympic Ridge Stream outcrops described above. The widest dyke is 184 cm wide and the narrowest is 7cm wide. The wide dyke, however is accompanied by several thin en echelon paralleling kimberlitic dykes occupying fractures less than 2 cm wide up to 30 cm from the central dyke. The phlogopitic kimberlite (aillikite) is blue grey, m. g. to c. g. massive, weakly carbonated and magnetic. It contains a few splashes of euhedral pyrite. The dykes can be traced upslope 400 m northwards where it disappears under felsenmeer. On this north slope several bulbous shaped minor chonoliths up to 3 m wide were observed (see photo). Similarly a train of kimberlite/aillikite boulders was traced up the southern bank for 500 m.

The magnetic signature of the Henri kimberlites/aillikites extends under glacial debris a further 100 m south toward the Alluviaq. The dyke is thought to underlie ground west of the 2003 magnetic survey. Northwards the magnetic signature extends the dyke across the Olympic Ridge to the Olympic North chonolith described above. A geological sketch, sampling plan (fig. 2.14) and magnetic map (fig. 3.14) are located in appendix A and B.

ROCK SAMPLE DESCRIPTIONS:

RG-093-03 402725E 6572988N 2 meter wide zone of blue grey, massive, weakly calcitic, magnetic phlogopitic kimberlite/aillikite (6a). It is accompanied by several thin en

echelon dykelets in paralleling fractures up to 50 cm away. The kimberlite contains a few euhedral pyrite crystals.

- 092232 RG-094-03 402602E 6573100N 3.5 kg sample, large 2 m diameter boulders and subcrop on south bank - blue grey phlogopitic magnetic kimberlite/aillikite (6a).
- 092233 RG-095-03 402633E 6573242N 2.5 – 4kg from 3.0 m wide outcrop on north bank in suspected chonolith of blue grey magnetic mg phlogopitic kimberlite/aillikite (6a). It displays zones of streaming creating an irregular banded weathered surface.

A kimberlite/aillikite dyke less than 50 cm wide was reported ~ 500 m down stream southwest of the Henri South – South Olympic Stream showings by prospectors. It was not visited by geologists. This should be the along strike extension of the MMU dyke located on Olympic Ridge (see figure 2.12)

Note: The magnetic survey utilized a Gem 19 proton precession magnetometer. It was carried out on the Olympic Ridge between the Henri north and south streams and south of the south stream over aprons of felsenmeer and glacial drift under which the dyke system disappears. The magnetometer is capable of reading to < 1 nanotesla and obtaining GPS co-ordinates of the data as it is surveyed. The instrument can precisely define dyke positions and locate zones of widening due to blows or pipes given that the encasing gneisses have a differing magnetic signature. The survey joins the Henri South kimberlite/aillikites north and south of Olympic ridge with a continuous magnetic feature and extends the Henri system to the Alluviaq River (see Magnetometer Report).

NED'S DYKE

A kimberlite dyke (R. Dillman Nov., 2003), traced for more than 1.8 km, was found by Yvon Champagne and Ned Unatweenuk on the northeast corner of the Lac Malchelosse NTS sheet (24 P/02) in late August. It was sampled and mapped (fig. 2.15). The dyke trends approximately north from 412603E and 6567433N in the south to 412987E 6569134N at its most northerly exposure. It is cut by a cross dyke of micaceous kimberlite/aillikite originating at 412840E 6568595N that trends

southeastwardly to the Labrador border where it is terminated by a small lake cut by a 090 degree trending 50 m wide diabase dyke.

The north trending Ned's kimberlite dyke is a nodular, carbonate rich (~10%), diopside kimberlite (6c) with olivine both as nodules and fine grained groundmass. It contains wine red garnets, suspected to be pyrope, in many locations. The garnets are abundant at a pond at 412738E 6567764N (MC-113-03) and at 412771E 6568288N (MC-114-03) where respectively 25 kg and 16 kg samples were collected. The Ned's kimberlite dyke intersect and cut diabase dykes at four locales. Ned's dyke contains minor phlogopite and resembles the Mount Jacques Rousseau kimberlites. It differs from MJR in that it contains relatively more abundant garnets and clear olivines but no visible chrome diopsides. **It's petrological similarity to the MJR and the St. Pierre diamondiferous dykes designates it as a kimberlite.**

Pink carbonate and potassic alteration of feldspars on wall rocks occurs abundantly at it's most southerly exposure. Here, boulders of diabase exhibit a similar potassic 'fentization' to that found along the Champagne diatreme complex and on dyke walls at Mount Jacques Rousseau. Potassic aleration is observed sporadically on wallrocks along the entire length of the Ned dyke.

The area was staked in September 2003 from the Labrador border west to the eastern bondary of the Mount Jacques Rousseau block.

ROCK DESCRIPTIONS:

MC-112-03 412603E 6567433N A series of more than 10 nodular cpx (6c) kimberlite boulders with dark olive green weathered surfaces. The rock has up to 5% phlogopite ranging to 1 mm. Nodules of cpx and olivine range from 0.5 cm to 10 cm. Several boulders resemble root zone facies with xenoliths of angular gneiss occassionally comprising 80% of the rock. The groundmass is weakly carbonated with abundant fine cpx and olivine and accompanying green serpentine throughout, one pyrope was observed to be 2 mm in diameter. No Cr diopside was observed. Adjacent is a very coarse grained diabassic textured gabbro with most plagioclase crystals altered to pink potash feldspar and pink carbonate due to 'fentization-like' processes at the time of emplacement.

Along strike the encasing gneiss displays moderate fracturing paralleling the strike of the dyke up to 10 m from the dyke on both sides.

Note: this sample was retrieved late in the field season and is retained at Diamond Lake base camp.

092226 MC-113-03 412738E 6567764N on N side of pond – nodular calcitic, olivine rich and serpentized, cpx kimberlite (6c). Olivine rich nodules with occasional lavender to wine red garnets (G-9's, possibly G-10's), abundant olivine nodules to 3 cm diameter but average much less, serpentized xenocrysts to 5 mm, magnetic, the dyke is 80 cm wide contains abundant nodules of gneissic wall rock and clinopyroxene to 10 cm, red pyrochlore (?) in fine filaments and tiny nodules. Sample of 25 kg

092227 MC-114-03 412771E 6568033N Outcrop located at south end of 1 Ha pond. 20 kg sample of highly nodular, clinopyroxene, olivine rich and serpentized kimberlite (6c) with clear to amber olivine crystals to 1 cm, nodules of wall rock range up to 15 cm. It contains a few violet garnets (Dawson describes G-10's as violet) possibly andradite, abundant peletal clinopyroxene and serpentine, minor phlogopite and rare kinoshitalite, no chrome diopside. The outcrop in the lake is 1 m wide grey green and intrudes an eastward trending diabase dyke.

092231 MC-115-03 412786E 6568288N East of 16 Ha lake; dark grey green calcareous clinopyroxene kimberlite (6c) with abundant yellow brown buckshot to large crystals of olivine, magnetic, rare thin veins of carbonate (calcite?), nodules to 8 cm commonly 5mm of carbonate, fg peletal diopside, random scattered violet to lilac and burgundy garnets, probable G-9's, often with kelyphite reaction rims. They are occasionally in olivine nodules.

YC-116-03 412984E 6569134N micaceous kimberlite (6a) in edge of fracture zone north of mapped area.

TA-117-03 412931E 6568944N Calcareous nodular kimberlite (6b) possibly a carbonatite phase, similar to MC-113-03, ~ 35% carbonate, nodules to 4 cm, large pyrope garnets (G-9's?) clusters to 1 cm, peletal "tears" of clinopyroxene, abundant yellow brown olivine.

092228 YC-118-03 412900 6568570N Cross Dyke - micaceous (phlogopite) kimberlite (6a) similar to Champagne phlogopitic dykes, abundant carbonate, nodular with nodules up to 5 cm but average 0.5 cm, shark's fins indicating streaming, peletal cpx bands adjacent to micaceous bands, coarse zone of serpentine nodules to 8cm, this cross dyke is 120 cm wide contained perma frost in its central zone.

ROUND LAKE



Round Lake was first described by G. Mazerolle in the DDI-7 March 2003 report (pg.48). It is located at 397150E 6585140N on 24P/07. The lake was suspected to be the locus of a kimberlite or lamprophyre pipe.

Consequently Round Lake was mapped and sampled in August 2003 at a scale of 1:1000 (fig. 2.16). Mapping revealed 3 kimberlitic dykes, later defined as ultramafic lamprophyres and aillikites and two zones of micaceous kimberlitic soil in gaps paralleling the dykes along its south shore. The dykes were 5 cm, 9 cm and 30 to 50 cm wide. Only the wider dyke extended for more than a few meters from the shore. The wider micaceous ultramafic lamprophyre dyke was traced for 200 m to the south where it is terminated by a north-west trending valley. The valley is a presumed post kimberlite emplacement fault paralleling gneissosity but not related to the timing of the Paleoproterozoic Abloviak Shear Zone. The dyke bifurcates at several places and was sampled at two points (MC-091-

03 and RM-128-03). The micaceous zones extend 5 m and 10 m respectively from the shore.

A dyke on the north shore of Round Lake narrows rapidly away from the lake and can be traced for 70 m. It is a micaceous, nodular kimberlite dyke that ranges up to 80 cm wide. It is situated in a 20 m wide fracture zone, has local bifurcations and displays bands of harder clinopyroxene rich streams up to 6 cm wide. It was not traced under the felsenmeer by a magnetic survey (see magnetic map, fig. 3.16).

Weak potassic alteration was noted on the gneissic wall rocks (1c, 1f) of the micaceous zones. Weaker domains of potassic alteration are found along the west shore of the lake and on the walls of the north dyke exiting the lake.

Fracturing parallel to the west shore of the lake is associated with the north dyke. It is also found in several areas around the lake ranging from 7 to 20 joints per meter and up to 10 m wide. Dominant jointing patterns, as described by G. Mazerolle, parallel the arcuate lake shore and dip steeply toward the lake.

A magnetic survey proposed to be carried out over ice in late winter to determine the presence of a kimberlite pipe was not completed. Several 2 to 3 m wide bands of magnetic amphibolite are interbedded with the paragneiss which strike northwest - southeast across the lake. These bands are more intensely magnetic than the kimberlite dykes. The predominantly white weathered feldspar quartz paragneiss yields a very weak magnetic field undetectable by a hand magnet. The kimberlite/aillikite should contrast positively with the quartz paragneiss and negatively with the amphibolite.

The location of fracture zones and several thin dykes which dissipate and disappear away from the lake re-enforces criteria which led G. Mazerolle to suspect the lake to be a kimberlitic pipe.

ROCK SAMPLE DESCRIPTIONS:

MC-087-03 397288E 6585257N mg – cg phlogopitic kimberlitic aillikite (6a), moderately magnetic, weakly carbonaceous, xenocrysts of clinopyroxene to 3mm (Av. 1.5 mm), chalcedony (?) xenolith to 5 cm long, pyrite rims cpx

and occurs as blebs to 2 mm in diameter. Located adjacent to floating reef of paragneiss, 70 cm of micaceous soil on one side 50 cm on the other, aillikite becomes a series of narrow dykes ~ 10 cm wide a few m further away from the lake.

MC-088-03 397248E 6585286N xenolith rich phlogopitic kimberlite to aillikite (6a), yellow brown weathered surface, bluish interior, abundant gneissic liths to 4 cm; patch 1 m wide of disintegrated kimberlite boulder. The zone has many thin cracks with dykes trending 020 degrees True that vary from 1 cm to 8cm wide; at the sample site a zone of gneissic scree overlays the dykes.

MC-091-03 397181E 6580077N Y br nodular, phlogopite rich ultramafic lamprophyre (6a) with abundant carbonate and clinopyroxene breaks into several thin adjacent dykes (see figure ?) , streaming with minor shark's fins 50 cm wide, 4 kg sample

MC-91A-03 along south shore 8 m east 2 y br weathered micaceous ultramafic lamprophyre dykelets - lucky drink find, one thin dyke is 9cm wide while the other is 5 cm. They do not extend from the shore for more than a few meters.

092238 RM-128-03 397219E 6585041N South end of the lake 25 kg sample taken from 50 cm wide dyke described by MC-091-03

092239 RM-129-03 397229E 6585254N North end of Round Lake 20 kg of sample taken at the bifurcated dyke as described by MC-87-03 Potassic alteration on walls.

YVON # 2 – K16 DYKE

The Yvon # 2-K16 kimberlite dyke is located 1.6 kms north of the junction of the Alluviaq and Abloviak Rivers west of two small lakes, one at 398500E and 6580500N and the other at 398500E and 6581200N. The two lakes are bounded on the east and west by kimberlite dykes K-17 and K-16 respectively.

The K-17 kimberlite dyke which bounds the east side of the

southerly lake was described by Mazerolle (DDI-7 March, 2003), to be micaceous, calcite rich and 1.5 m wide. It was traced for 700 m. The K-17 dyke disappears south of the lake on the north bank of the Abloviak Fiord. It is an echelon to and/or a bifurcation of the Yvon #2-K16 dyke.

Note: A circular lake 100 m in diameter, one km to the west of the K-16,17 lake was observed from the air to have arcuate jointing in the gneisses surrounding its shores. It was not explored.

The Yvon #2-K16 kimberlite dyke on the west side of the lake was traced for 1.5 km along a north-south fractured zone (see fig. 2.17). The gap it occupies varies from 40 cm to 5 m but the dyke was never observed in outcrop more than 1 m wide. It could intermittently extend another two km along a north trending valley floor where it could be truncated by an intersecting NW-SE trending valley that is suspected to be a post kimberlite-emplacment fault. This proposed fault bounds and terminates the southerly dyke described above at Round Lake. However, the stream along the north trending valley's floor was sampled by two HMC's. They returned no kimberlite indicator minerals. At its southern exposure the Yvon #2-K16 dyke disappears under scree on the north bank of the Abloviak Fiord..

The Yvon # 2-K16 kimberlite dyke petrologically resembles the MJR and the St. Pierre kimberlite dykes. The dyke is dominantly a nodular diopside, calcitic, olivine kimberlite (6c). It is magnetic and contains infrequent chrome diopsides and garnets identified in 2002 as G-9's. It hosts occasional large phlogopite crystals ranging up to 2 cm. The yellowish olivines are frequently serpentized.

The Yvon #2-K16 dyke intrudes a package of east west striking Paleoproterozoic rusty Tasiuyak paragneisses along a 20 to 30 m wide north trending fracture zone. The gneisses are frequently garnetiferous. The kimberlite was sampled and partially mapped in September 2002 (sample 105095). **Chrome diopside, G-9 pyrope garnets and diamond fragments were visually identified at the 2002 sampled site.** The diamond fragments identified by SGS Lakefield Research have not been verified by microprobe. Consequently, the kimberlite dyke was revisited in 2003 for verification and follow-up sampling. The dyke was mapped and sampled at three places. Microprobe work by C.F. Mineral Research Ltd. reported in February 2004 support the diamondiferous nature of this dyke.

Results from electron microprobe analysis carried out by C.F. Mineral Research on samples 90927 and 90930 in Feb. 2004 were as follows:

- 090927 grains with forsterite olivine with diamond inclusion composition, grains of forsterite olivine with diamond inclusion composition which overlaps with composition of olivine from non-diamondiferous sources. grains of microilmenite, two G-9 pyrope garnets, 2 G-11's and 1 G11-1 (Gurney 1 score category of G-11 Garnet).
- 090930 1 grain of microilmenite

ROCK SAMPLE DESCRIPTIONS

- 105095 MC-110-02 398322E 6580758N nodular diopside kimberlite with xenocrysts of olivine exhibiting kelyphite rims to 1.5 mm, 10% carbonate, in groundmass, highly magnetic. It is approximately 60 cm wide and strikes grid north where sampled. SGS Lakefield Research analysis visually identified diamond fragments
- 090927 BM-138-03 398319E 6580760N nodular diopside, calcitic, magnetic kimberlite (6c). The dyke contains buckshot olivine, occasional chrome diopside, garnet crystals and large phlogopite crystals – 1 to 2 cm, 50 kg sample taken; due to proximity to sample 105095 it could contain diamonds or fragments of diamonds.
- 090929 BM-139-03 398393E 6580951N nodular diopside rich, calcitic, magnetic kimberlite (6c) rare tiny chrome diopsides, no garnets, 16 kg sample.
- 090930 BM-142-03 398388E 6581114N nodular, diopside rich, abundant olivine and serpentinized, calcitic, magnetic kimberlite adjacent to a pond and west of a lenticular E-W trending lake, float 75 cm in diameter. The dyke is offset 15 m.

K-DYKE

The K kimberlite/aillikite dyke is located approximately one kilometer west of the lower section of the Champagne grid. A two hundred and fifty meter zone was mapped at a scale of 1:1000. A detailed magnetometer survey is proposed for the 2004 field season to determine if the dyke intersects the Champagne North Extension. Airborne reconnaissance of joint sets suggests this to be the case. Mapping was initiated at the most southerly kimberlite/aillikite float, 403764E, 6584671N, tracing the dyke at a 035 degree trend NE to 403925E 6584860N. Exposure of kimberlite is limited to float and micaceous soil.

Rubies were discovered at the K dyke in 2001.

The width of the dyke varies from several cm's to three m's, with relatively parallel and vertical contact walls. The dyke's trends 035deg but veers to 015deg along the northern section of the map. Parallel fracturing associated with the intrusive event is limited to one or two meters from the dyke's walls.

The K-Dyke intrudes non-magnetic garnet-quartz-feldspar gneiss. The kimberlite/aillikite is course grained, phlogopite rich, and weakly calcareous. The kimberlite emplacement effected minor brecciation and fracturing on the host rocks, suggesting that the dyke propagated at a high speed in a zone with limited resistance.

C DYKE

The C aillikite/kimberlite dyke is located south of the Abloviak fjord, west of Twin Mining's camp and the A Dyke. Its' northern limit is located at 388807E 6581671N, and it southern limit is at 388778E 6579945N. Previous workers differentiated the southern limit of this dyke from the K-6 dyke. It is now evident that the two dykes are one and the same. No en echelon dykes were found adjacent to the mapped area. The K-21 dyke 1.5 km to the south is a probable further extension.

Exposure of the dyke is limited to the south slope of the fjord and is found on rock shelves, cliff faces in micaceous pits and on ridges. The dyke bifurcates into two parallel lineaments at four locations (see map 2.2.1). These locations coincide with sinistral displacements. The width of the

dyke varies from several cm's to as much as 4 m's. The disjointed trend of the dyke varies from 020deg to 330deg.

The C-Dyke intrudes Paleoproterozoic Tasiuyak paragneiss composed primarily of plagioclase, quartz and garnet. The dyke is comprised of nodular, banded, magnetic and calcareous kimberlite/aillikite. Parallel fractures are prevalent in the walls adjacent to the intrusive. The kimberlite dyke intrudes and cuts a diabase dyke at 388807E 6580831N. The southern termination of the C dyke shows no evidence of being faulted off, nor do its displacements exhibit any post emplacement deformation. Continuous exposure at 388796E 6581020N reveals a gradual sinistral refraction of the western dyke into the eastern dyke, with no evidence of deformation.



Microprobe results suggest the C dyke to be prospective for diamonds.

Results of microprobe analysis from C.F. Mineral Research Ltd. (Feb. 05, 2004) were as follows:

090924 2 orthopyroxene grains.

090926 3 grains of forsterite olivine with diamond inclusion composition,

ROCK SAMPLE DESCRIPTIONS

- 090926 DY 037-03 388809E 6581661N 68 kg (6c) dark magnetic nodular clinopyroxene kimberlite with phlogopite
- 090925 DY 038-03 388747E 6581419N 73 kg (6a) phlogopite rich, nodular clinopyroxene and ocelli of calcite
- 090948 DY 042-03 388814E 6581253N Hand Specimen kimberlite breccia

- 090938 YD 114-03 388819E 6581211N 43 kg (6c?) massive magnetic, cpx rich
- 090924 DL 046-03 388839E 6580677N 43 kg (6c) massive aillikite massive nodular cpx rich, magnetic
- DL 048-03 388784E 6580374N Nodular Kimberlite

HOLY SMOKE DYKE

The Holy Smoke kimberlite dyke is located on 24P/02 ~ 15 km south southwest of MJR S, and 5kms southwest of the Alluviaq River. Geological mapping and sampling extended from 403079E 6556112N to 403764E 6557313N. The dyke trends 030deg for approximately 1.2 kilometers. It varies in width from several centimeters to a maximum width of 2 meters. Exposure is limited to pits of micaceous soil and rare kimberlite float. Contact walls are relatively planar, with paralleling fractures penetrating into the host rocks. The dyke appears to follow regional joint sets (see fig. 2.18).

The kimberlite detritus found along the trend of the dyke varies in composition from micaceous, slightly calcitic, and moderately magnetic, to olivine rich nodular massive rock. Steeply dipping regional fracture cleavages on either side of the dyke ranged from 023, to 035 degrees. The Holy Smoke intrusive propagated through this line of weakness.

The dyke terminates on the southwest side of a lake and re-emerges on the northeast side at 403596E 6557163N. It is offset to the west several hundred meters. No sign of faulting was found. At the point of its re-emergence on the north shore of the lake kimberlite was found containing wall rock fragments (what were their dimensions?). Here, mm to cm wide anastomizing fractures filled with medium blue/green, soft chloritized kimberlite was noted (photo?) and suggests that the lake may represent the site of a blow.

- 090950 SW-010-03 403596E 6557163N 11.35 kg (25lb) micaceous soil
- 092351 SW-012-03 403764E 6557313N 1kg (2lb) micaceous soil

HOLY SMOKE DYKE AREA – REGIONAL PROSPECTING

The trend to the northeast of the Holy Smoke micaceous kimberlitic dyke was prospected and reconnoitred from the discovery area to the Alluviaq River (mapped and sampled above by S. Watters and D. Lister, fig. 2.18). No kimberlite occurrences were found.

Southwest of the Holy Smoke mapped zone the dyke was traced for 2 km (Azimuth 215) identified by zones of micaceous kimberlitic soil and two yellow brown micaceous kimberlite outcrops 30 and 50 cm wide respectively. These outcrops were sampled and are retained at Diamond Lake.

A-DYKE

The A aillikite dyke is located on the south side of the Abloviak Fiord 1.2 km east of the C dyke and 1.5 km west of the E dyke on the south side of the Abloviak at 390300E 6581500N. It was described and sampled in 2000 by A. O'Connor. 13 microdiamonds and 2 macrodiamonds were found in two of his samples (see photo). Subsequently the dyke was resampled in 2003 to assess the forsterite olivine number by electron microprobe work.

The points sampled were at three locations: between the diamond bearing outcrops, at a diamond bearing pit and adjacent to the fiord at 390350E 6582150N where a large float was taken. The A dyke's continuation on the north bank of the fiord is named the F dyke.



**Results from microprobe work by C. F. Mineral research Ltd.
on grains taken from sample DD-006-03 (90908) revealed forsterite
olivine with a diamond inclusion composition.**

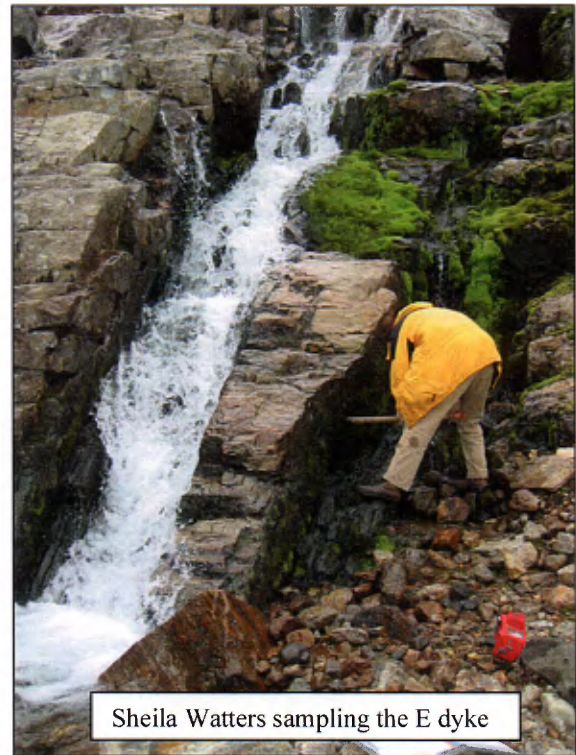
ROCK SAMPLE DESCRIPTIONS

<u>Dyke</u>	<u>Field #</u>	<u>Probe#</u>	<u>Description</u>
A	MC-80-03	AD	2 phase kimberlite, micaceous younger phase surrounding older coarse serpentized olivine mica kimberlite, older phase contains abundant fresh yellow olivine and darker serpentized nodules, nodules have rusty orange reaction rims. Composition of grains to be analysed: 1-7 fresh clear olivine. Field Description 390193E 6581694N nodular phlogopitic cpx kimberlite with olivine in groundmass, purple sheen to mica, dark blue fresh surface, green brown weathered surface, nodules to 4 mm Av. 3mm 2 samples: 1, upper dominantly micaceous kimberlite and 2, 50 m below - micaceous kimberlite with cpx, olivine. The pits where A O'Connor discovered diamonds in 2000 are both upslope and downslope.
A	MC-80-03	AD-B	Coarse phlogopite serpentized olivine kimberlite with abundant "dirty" yellow serpentized olivine nodules some with black metallic inclusions of magnetite or perovskite. Composition of grains to be analyzed: 1-8 metallic oxide + olivine composites.
A	MC-80-03	AD-C	Coarse phlogopite serpentine kimberlite, abundant dirty yellow serpentized olivine perovskite nodules in Twin Mining diamond kimberlite sample. Composition of grains to be analyzed: 1-5 matrix fragments containing serpentine mica perovskite
	90908 DD-006-03 (6a)		aillikite, phlogopite rich, Cr Diopside, magnetic
	90936 DD-006B-03 (6a)		weakly calcitic, magnetic phlogopitic aillikite
	92205 YT-040-03 (6a)		coarse grained phlogopitic olivine rich aillikite

E-DYKE

The E kimberlite/aillikite dyke is located on the south bank of the Abloviak fiord at 391623E 6580133N near Twin Mining's camp. Previous sampling revealed a diamond fragment in the dyke (SGS Lakefield Research Ltd.). The dyke was traced for 700 m by geological mapping and a GEM-19 proton precession magnetometer. It is suspected to extend intermittently by way of the K-23 and Passa dykes 15 km to the south. Its trace has not been located on the north bank of the Abloviak Fiord. Further prospecting could reveal both northerly and southerly extensions.

The E-Dyke intrudes Paleoproterozoic Tasiuyak paragneiss composed primarily of plagioclase, quartz and garnet gneiss. Calc-silicate units are found south of the map area (fig. 2.19). The dyke was emplaced along regional stress fields. This is evidenced by its sinuous trend (see Photo DL-016-03) and frequent terminations and re-emergences. It trends between 000 and 010 degrees. Parallel fractures associated with the E dyke are curvilinear. In detail it consists of multiple, parallel dykes, ranging from 1 cm to 1.5 m wide (Photo DL-012-03), (Photo DL-018-03).



Sheila Watters sampling the E dyke

Geological mapping located outcrops, micaceous soil, kimberlitic float, and flora which preferentially grow over kimberlite or ultramafic lamprophyre dykes (Photo DL-014-03) along its trend. Mapping was terminated at a blanket of glacial till that obscured the dyke's southerly trend. A magnetometer survey was carried out over this till blanket to determine its location (See figure 3.19).

At locales where walls of the dyke can be observed they are often bulbous; indicating that the dyke undulates in thickness both vertically and horizontally as it propagates upwards.

The kimberlite/aillikite is predominantly homogeneous; fine-grained in the north and coarse grained in the south. It is phlogopite rich with minor calcite and magnetite. Chilled margins margins of fine grained kimberlite/aillikite are present. Thin < 1cm wide veins of kimberlite/aillikite are consistently fine grained.

ROCK SAMPLE DESCRIPTIONS

92242 DL 020-03 391680E 6580491N Phlogopite rich, fine-grained and magnetic soil and rock sample. Collected from a dug pit within the kimberlite dyke.

92245 DL 014-03 391727E 6580847N Phlogopite rich, fine-grained and magnetic kimberlite rock sample.

92244 DL-015-03 391717E 6580758N (?)

92241 DL-016-03 391697E 6580562N (?)

G KIMBERLITE DYKE

The G kimberlite dyke is located 3 km north of Round Lake on 24P/07 at 397100E 6588100N. It was sampled and mapped in 2000 by A. O'Connor (DDI-1); samples H2Rx-24 (20 kg) and H2Rx-25 (220 kg) were collected. **A diamond fragment was reported from H2Rx-24.** It was revisited in 2003 and re-mapped (fig.2.20). H2Rx-24 was re-sampled and numbered 090928 (RM-138-03). Fifty kg of material was taken.

The dyke trends 010 degrees. It can be traced by micaceous soil and a persistent 30 m wide fracture zone for 800 m. The fracture zone and a projected strike through a walled opening 3 to 5 m wide extends another 500 m southwards across a felsenmeer filled stream bed. There a 1 m³ calcsilicate boulder with pyroxene crystals to 10 cm was located along the kimberlite trend. This boulder could be a highly calcareous kimberlite, carbonatite or calcsilicate altered marble (see figure 2.20).

The two pits sampled by O'Connor are described as follows:

H2RX-025 397138E 6588184N friable micaceous kimberlite

(6a) in a 88 cm wide pit filled with “blue ground”, magnetic but no solid outcrop observed to 1.5 m depth. This site was not re-sampled.

090928 H2RX-024 RM-138-03 397058E 6587898N 50 kg Grey green, nodular, calcitic and phlogopitic with diopside xenocrysts and serpentinized olivine and a few wine red garnets (G-9's?); probably a kimberlite. This second more southerly pit was re-sampled by DDI 2003 personnel.

H AILLIKITE/KIMBERLITE DYKE AREA: N-MARTINA, PENINA and NEWFIE DYKES

The H kimberlite dyke area is located on map sheet 24P/07 9 kms north-north-east of the Champagne diatreme complex. It is bounded by the Labrador-Newfoundland border on the north at 408850E 6593800N. The H dyke, described and sampled in 2001, extends southwards from the border 500 m where it disappears under felsenmeer. The valley which drains the H dyke hosts the N-Martina dyke 1 km to the southwest. A tributary stream 2.5 kms to the east of the N-Martina dyke is the locus of the Penina dyke, the Newfie dyke and a potassic altered breccia zone thought to be a prospective root zone.

The H micaceous kimberlite/aillikite dyke is cut by a diabase dyke and a diabase sill. All of the kimberlite and diabase dykes and sills intrude major north-south and northeast trending tectonically disturbed zones. These zones extend southwardly to the Vent D'Ouest River and probably beyond. They could represent a north trending arm of the regional Abloviak Shear Zone.

Prospecting in 2000 and 2001 revealed diamond indicator minerals in heavy mineral concentrates throughout these drainages particularly near the H kimberlite/aillikite dyke. Consequently an intensive prospecting campaign supported by magnetometer surveys was mounted in 2003. No new dykes were found in the north trending valley hosting the H dyke and N-Martina dyke. The discovery of the Penina dyke, Newfie dyke and an extensive potassic altered breccia zone resembling the Champagne north extension breccia in a tributary valley 2 kms to the east resulted from this work.

Along strike 2.5 km south of the H dyke a small circular lake 100 m in diameter was prospected for kimberlite, breccia or other criteria indicating **that it could represent a pipe**. The lake is drained by a stream anomalous in diamond indicator minerals. A boulder 50 cm in diameter of possible eclogite was located on its southeastern shore. The lake is deep and surrounded by extraordinarily tectonically disrupted gneisses.

YC-110-03 408973E 6590922N green diopside rich, calcite rich, **possible eclogite** no visible pyropes, small boulder ~ 50 cm in diameter.

N-MARTINA DYKE

The N-Martina kimberlite dyke was sampled by G. Mazerolle in 2001 and resampled in 2003. Only a few kg of micaceous, carbonate clinopyroxene kimberlite was obtained. The lake to the west of the dyke is suspected by Mazerolle to be a pipe (see photo DDI March, 2003 report). It is located at 408100E 6593175N 1 km southwest of the H dyke. It has a maximum width of 30 cm and extends only a few meters away from the lake before it disappears. The lake is deep. It is bounded on the west by a steep glaciated valley wall in which the gneisses are dramatically folded and sheared.

The kimberlite sample of 3 kg is retained at Diamond Lake.

PENINA

The Penina dyke was located at 409906E 6591165N by following a train of kimberlite pebbles and cobbles up a stream which hosted eight samples of heavy mineral concentrates hosting diamond indicator minerals. The north trending micaceous aillikite/kimberlite Penina dyke varies in thickness from 30 cm to 2 m. It can be traced for ~ 400 m upstream. It intrudes an intensively sheared zone of folded paragneisses.



The walls of the dyke and the narrow valley exhibit restricted potassic alteration. The micaceous dyke was sampled but not mapped. The along strike trace to the north was inadequately prospected due to rugged terrain. The dyke is suspected to extend another 600 m north toward a small lake on a mountain top. The Penina dyke exhibits lateral facies changes to hard nodular, calcitic kimberlite.

- 092214 YT-094-03 410028E 6591542N narrow 5 cm wide yellow brown micaceous aillikite/kimberlite dyke 75 m east of Penina dyke, hand specimen
- 092215 YT-pen-03 409936E 6591386N 2 m wide outcrop of phlogopite kimberlite, magnetic, carbonate, 9 m upstream from discovery adjacent to wall, 1 kg hand specimen
- 092216 YT-095-03 409984E 6591527N hard, nodular, olivine rich, calcitic kimberlite olivine nodules to 5 cm, the dyke is 1.5 m wide and is exposed along strike for 30 m
- 092221 Pen-122-03 409906E 6591165N 15.4 kg (34lb) yellow brown weathered, ~ 60% micaceous, phlogopite rich, magnetic, weakly carbonaceous aillikite/kimberlite, located in extensive shear zone (photo).

NEWFIE DYKE

The Newfie dyke was discovered as a consequence of follow up prospecting upstream and along the trend of the Penina dyke. It was found 2 km north of the Penina Dyke at 410734E 6592953N. It strikes 010 and was traced into Labrador 400 m. It outcrops intermittently for 600 m inside Quebec and is up to 2 m wide. It is a yellow brown, micaceous, magnetic weakly carbonaceous kimberlite/aillikite. A 50 kg sample was taken near the Quebec border.

- 090903 MC-130-03 410810E 6593446N dark blue, phlogopitic, magnetic, carbonated kimberlite/aillikite 50 kg (110lb)
- 092218 YT-100-03 410820E 6593467N kimberlite/aillikite blue grey, massive, phlog, mag, weakly carb, 1.5 m wide, 10kg

BRECCIA ZONE

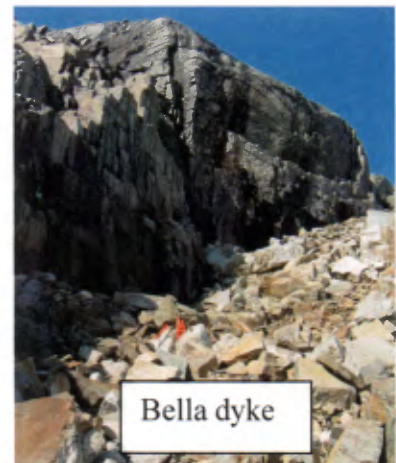
An extensive potassic altered breccia zone was located by Yvon Champagne 2km northeast of the Newfie Dyke near a heavy mineral concentrate sample anomalous in diamond indicator minerals. It is located at 411415E 6594000N. It is 20 m wide by a minimum of 300m long. Flagging was found marked 200S-500E at 412415E 6595571N. The area could have been gridded. A float of breccia on the Labrador boundary is located at 413676E 6596348N and an outcrop 200m south of the border was found at 413397E 6596226N. The area was re-visited by Dave Lister who determined that the zone is a tectonic breccia. An explanation for the indicator minerals remains unresolved.

RECONNAISSANCE PROSPECTING

Reconnaissance prospecting was carried out by Yvon Champagne and assisted by Tommie Assevak, Tommie Arntuk, Ned, Jobie and Bobbie Anantak. They investigated lineaments, lakes, extensions of known dykes and structural features with potential to host kimberlitic intrusions and grassy zones in favourable settings.

BELLA DYKE SOUTH TO THE MJRS SINUOUS DYKE:

The Bella dyke was traced south 5.5 km from the 2002 mapped and sampled zone via several outcrops occurring along its strike length to its intersection with the sinuous dyke. Specimens were obtained from locales at 408500E 6571350N and a nearby en echelon dyke 15 m to the east, and 408500E 6570850N. The micaceous kimberlitic/aillikite dyke passes through a lateral facies change at the sinuous dyke (MJRS) where it becomes a nodular clinopyroxene rich kimberlite hosting chrome diopsides and G-9 garnets. The Bella dyke system now extends 8 kms from MJRS north (see 090917 description below) to the Q dykes described by Mazerolle in 2002.



- 092211 YT-Bella-03408613E 6571234N 5kg hand specimen, yellow brown, phlogopitic, magnetic 60 cm wide micaceous kimberlite
- 090917 MD-137-03 408848E 6569824N 105067 GV-085-02 nodular diopside calcite kimberlite dyke in arcuate jointed crevasse, hydraulic stoping of wall, stikes 020 and rises 40 degrees upslope, bifurcates into 70 cm and 20 cm dykes, abundant nodules of pyroxene and olivine, some olivine crystals are > 2.5cm, chrome diopside in tiny crystals, abundant ocelli of calcite, and 1-2% yellow megacrysts of kinoshitalite (hydrophlogopite), wine red to brownish garnets, xenoliths of possible eclogite with olivine, kelyphite reaction rims...good diamond possibility, magnetic

SOUTHEAST CORNER OF MAP SHEET 24P/07:

An area of 60 km² in the southeast corner of 24P/07 was prospected from the Alluviaq River to the Labrador border.

ST. PIERRE SOUTH EXTENSION DYKE

The St. Pierre south extension grid was mapped in 2002 at 1:2500 (see March, 2003 report). There, several dykes hosting abundant chrome diopside and olivine nodules were mapped and sampled adjacent to a small ice field. **In 2003 the ice field had melted back exposing a section of nodular kimberlite containing chrome diopsides, forsterite olivine with a diamond inclusion composition, forsterite olivine with diamond inclusion composition which forms large diamonds, several chromite grains, one picroilmenite grain and serpentine (C.F. Mineral Research Ltd. Feb 5, 2004). Garnets were observed in abundance in the field but not probed.** The three samples were described as follows:

- 090904 PF-132-03 404721E 6575623N (6c) 24kg (53lb) 120 cm wide nodular, calcitic, mica poor kimberlite with clear to yellow amber olivines, several clots of chrome diopside and occassional garnets in eclogite nodules.

O90905 PF-131-03 404774E 6575623N (6c) 50 kg (110lb) peletal cpx, nodular, calcitic, mica poor, chrome diopside, garnets, olivines.

090906 MC-131-03 as above (6c) 18kg (40lb) (6c) peletal cpx, nodular, calcitic, mica poor, chrome diopside garnets and abundant clear olivines.



Boulders of clinopyroxene, carbonate rich and mica poor kimberlite (6c) similar to and a probable extension of the St. Pierre south extension system were traced to the Olympic North Stream 800 m south of the St. Pierre South 1:2500 grid. A few cobble sized kimberlite boulders were located by R.Grenier on the steep south bank of the stream.

A magnetometer survey carried out by Dan Headrick in late September 2003, to define the trace of the kimberlite dyke continuing south under a thick blanket of glacial debris located a nodular boulder of carbonated kimberlite, similar to those in the stream, on a bench at 404862E 6574522N. The sample is described as follows:

090941 Dan-StPS-03 404862E 6574522N (6c) 64kg (140lb) nodular, mass, cpx, calcite, magnetic

The sample was crushed by R. Dillman and selected grains sent to C.F. Mineral Research Ltd for microprobe analysis. **Results yielded:**

Forsterite olivine with diamond inclusion compositions,

forsterite olivine with diamond inclusion compositions which forms with large diamonds, forsterite olivine with diamond inclusion compositions that overlaps with compositions of olivines from non-diamondiferous sources and clinopyroxene with diamond inclusion composition which forms large diamonds that overlaps the composition of clinopyroxene that classify from non diamond inclusion sources.

The entire explored 3 km extent of the St. Pierre System from north to south hosts diamond indicator minerals and reported eight locations hosting diamond fragments (SGS Lakefield Research Ltd. - not verified by referee laboratories).

NORTHEAST CORNER OF MAP SHEET 24P/02:

An area of 54 km² on the northeast corner of the Lac Malchelosse Map sheet 24P/02 was reconnoitered for kimberlite dykes. The area is roughly bounded by the Alluviaq River on the west, the Labrador border on the east and the south boundary of the Mount Jacques Rousseau map sheet 24P/07 on the north. The Ned's dyke was located as a result of this work (see above) and a chrome amphibole (smaragdite) showing, originally thought to be chrome diopside (it could contain both). The showing was revisited and sampled by S. Watters.

SMARAGDITE SHOWING

An occurrence of apparent smaragdite was found in a coarse-grained pegmatitic amphibolite gneiss outcrop 3.5 meters wide by 6 meters along strike, situated in the nose of a regional fold. It is located on the northeast corner of NTS mapsheet 24P/02 at 411207E 6561626N. The potential extent of the pod under an adjacent shallow till covered valley is up to 100 meters along strike and 30 meters across strike. Numerous large bottle green translucent crystals are up to 1 cm long, with 124 degree cleavages that define the green crystals as an amphibole. The hosting amphibole megacrysts are muddy brown. The outcrop has a weak foliation sub parallel to the host gneisses. The green mineral, smaragdite (a chrome-bearing actinolite amphibole), is very clear but fractured. Its potential value as a gem should be assessed. A sampling sketch is retained in 2003 files.

092219 Yt-086-03 411207E 6561626N cg pegmatitic amphibolite, brown to brown black amphiboles to several cm, a few biotite crystals up to 7mm. Clear, fractured green crystals of smaragdite composing 3% of the rock. The smaragdite crystals are up to 1 cm long but average 5-7 mm. Possible gem quality.



HOLY SMOKE DYKE AREA

The trend to the northeast of the Holy Smoke micaceous kimberlitic dyke was prospected and reconnoitred from the discovery area to the Alluviaq River (mapped and sampled by S. Watters and D. Lister, see fig. 2.18). No kimberlite occurrences were found.

Southwest of the Holy Smoke mapped zone the dyke was traced for 2 km by zones of micaceous kimberlitic soil and two yellow brown micaceous kimberlite outcrops 30 and 50 cm wide respectively. These outcrops were sampled and are retained at Diamond Lake (see Holy Smoke geology report above).

J, I, L KIMBERLITE/LAMPROPHYRE DYKES

The J, I and L kimberlitic dykes were described, geologically mapped, prospected and sampled in 2001 (G. Mazerolle 2001, DDI-4 report fig. 4). Two days of detailed follow-up prospecting was carried out in 2003. Three samples were taken from the I dyke an area between the I and J dykes and the L dyke. The I, J and L kimberlitic dykes could represent discontinuous exposures of a single intrusive event with discreet lateral facies changes. Geologists did not visit these dykes in 2003.

090918 YT-108-03 418019E 6594015N **L dyke (6a)** 52kg (115lb)

blue grey, massive, phlogopitic, magnetic nodular and calcitic, hand specimen retained, float and outcrop traced over 100 m

090919 YT-107-03 419581E 6598765N **Between I and J dyke** south of J; 34 kg (75lb) (6a) yellow brown large 2 cm nodules of phlogopite, finer mica in groundmass, non reactive, moderately magnetic and a very rugose weathered surface.

090920 YR-111-03 418630E 6596538N **I dyke**: 43 kg (95lb) (6a) blue grey phlogopitic macrocrysts to 1.5 cm, carbonaceous, magnetic

* Analysis of grains from 090919 by C.F. Mineral Research Ltd. (Feb. 5, 2004) yielded olivine, orthopyroxene and clinopyroxene grains

PREVIOUSLY UNVISITED KIMBERLITE/AILLIKITE DYKES

Several kimberlitic dykes were visited late in the field season when conditions and schedules permitted. These dykes had been observed from the air in previous field seasons but remained unvisited. They are predominantly situated south of the DDI-7 claim block on the southwest corner of 1:50,000 map sheet 24P/07 and the adjacent sheets 24P/05, 24P/02 and 24P/03.

PASSA DYKE

The Passa micaceous kimberlite/aillikite dyke was located by reconnaissance prospecting along the Qijujjuac River on foul weather days. The Diamond Lake base camp is situated several kms downstream from the dyke. The Passa dyke is on the north bank of the Qijujjuac River on NTS map sheet 24P/02 at 386475E 6567801N. It was traced along a trend of 010 degrees for ~ three kms.

The dyke, where sampled is 80 cm wide, micaceous and yellow brown. It is magnetic, weakly carbonaceous, soft and friable. It was traced by following micaceous soil and its attendant bloom of verdant grasses. The Passa dyke, K-23 and the E dyke may represent discontinuous outcroppings of a persistent dyke system extending for 15 km to the south

bank of the Abloviak Fiord. Its trace can be followed another 2 km south of the Qijujuac River to UN-7 (Unvisited -7) which has not been prospected.

092223 Passa-092-03 386475E 6567801N 16kg (35lb) yellow brown, phlogopitic, carbonaceous, weakly magnetic and friable.

ROAD HOME DYKE

An aillikite dyke 2.0 m wide was sampled on the southwest wall of a gorge used as a helicopter transport passage to access Diamond Lake during low ceiling conditions. It is located on NTS map sheet 24P/06 at 383827E and 6574735N. The dyke is yellow brown to olive grey, micaceous magnetic and has streaming (shark's fins). It was not explored along strike but could be the possible northern extension of the K-11 dyke.

092222 RH-123-03 383827E 6574735N 16kg (36lb) Micaceous yellow brown, friable, carbonaceous kimberlite/aillikite, streaming with bands of harder material from 5 to 10 cm wide.

K-25 DYKE

note: K-25S can be traced south across the Qijujuac River 1.5 kms to UN-6 which has not been visited

A traverse was conducted along the K-25 dyke, from ~ 392700E 6574450N to 391670E 6571593N. Kimberlite exposure was limited to rare outcrops of dyke wall rock, micaceous soils and float. The kimberlite is dark, (6c) nodular, magnetic, phlogopite and clinopyroxene rich.

An 18 kg sample (# 90942) was crushed by R. Dillman and grains forwarded to C.F. Mineral Research Ltd. for microprobe analysis which returned a forsterite olivine grain with a diamond inclusion composition.



K-25, helicopter for scale

Photo DL-052-03, looking north, with helicopter for scale, shows a twinned dyke marked by verdant grasses. The trend of kimberlite varies from 0 to 010. Its maximum width is 3 meters. Mapping terminated at the south at a small lake at 391670E 6571593N (photo DL-051-03, looking north). Further prospecting is needed to determine if the dyke continues along strike, south of the lake.

A possible extension 2.8 km to the south of the K-25 kimberlite dyke was located by Helicopter and called the K-25S. It was a massive phlogopite rich olive brown kimberlite/aillikite ranging from 2.5 m to 3 m wide. It was sampled and photographed but not mapped (sample YD-063-03 at 391590E 6568933N, Photo DL-054-03). Photo DL-053-03, looking east, shows a lineament extending south across the Qiqujjujac River toward UN-6. UN-6 is 5 km from K-25S. This lineament will be prospected in the 2004 field season.

UN-1 DYKE

The UN-1 (unvisited – 1) kimberlite/aillikite micaceous dyke was prospected, sampled but not mapped. It is located at 390316E 6574813N. 34 kg (75 lbs) of nodular, carbonate poor, magnetic, yellow brown kimberlite was collected. The nodules were predominantly phlogopite which ranged to 3 cm in diameter.

Ten grains of picroilmenite were reported from microprobe work on the sample by C.F. Mineral Research Ltd (Feb. 5, 2004).

UN-11 DYKE

The UN-11 (unvisited-11) kimberlite is a nodular, magnetic, clinopyroxene and phlogopite rich (6a). Only 10 kg of sample was collected. It is located at 392133E 6575256N. It was not mapped.

K-23 DYKE

The K-23 massive carbonate and olivine rich clinopyroxene kimberlite (6c) dyke was sampled at 389878E 6574605N. 18 Kg (40 lbs) of rock was collected (Y-128-03 – 90944). It was not mapped.

OLIVINE SAMPLING PROJECT

Several dykes were visited to collect olivines for forsterite analysis to determine magnesium numbers as an aid in defining dykes with the highest diamond bearing potential.

Eighteen samples were collected from 16 kimberlite and aillikite dykes and one pipe on DDI Abloviak properties to analyse forsterite olivines for Mg#'s. A further nine samples were added to the series tested. The magnesium # and chrome index are analytical tools used to determine which kimberlite or aillikite dykes or pipes have the highest potential to host diamonds.

Research has identified mineral inclusions inside diamond crystals collected from various world wide occurrences in kimberlites. The inclusions are sub-calcic pyrope garnet (G-10), chrome rich chromite and olivine. Olivine is the second most abundant mineral occurring as inclusions in diamonds. It has been determined that mineral inclusions crystallize at the same time as the host diamond and the composition of the inclusion represents specific mantle conditions occurring at the time of crystallization of the diamond. Mantle conditions during diamond crystallization are best represented by the composition of mantle derived macrocrysts. When mantle derived minerals occur in kimberlite which have similar compositions to those known to occur as inclusions in diamond, the potential for the kimberlite to contain diamonds is elevated. Hence Mg #'s which plot in the 90 to 94 range fall within the window of pressure and temperature conditions for the formation of diamonds. Cr₂O₃ in olivines collected from the Abloviak kimberlites and aillikites ranges from 0.02 wt % to 0.08 wt %. These values also fall within the diamond pressure temperature window and are comparable to southern African and Russian diamond bearing kimberlites (R. Dillman report, C.F. Minerals Research Ltd.).

The twenty two following samples were collected, described by field personnel and sent to R Dillman who crushed and reviewed them under binocular microscope. After he described them selected grains were forwarded to be microprobed by R. Barnett. Field descriptions by field personnel and binocular microscope descriptions by R. Dillman are presented below. Microprobe results will follow.

Dyke	Field #	Probe#	Description
X dyke	JM-14-02	XD	Marble sized rounded breccia fragments of fine phlogopite-biotite-serpentine material in fine phlogopite-serpentine matrix. No nodules. Composition of grains to be analyzed 1-2 brown serpentine? Field Description not located
Yvon	105054	Y-D	Strongly serpentinized marble sized nodules and dark grey crustal fragments? In fine grained serpentine brown mica matrix, composition of grains to analyzed: 1 – 4 grains from crustal fragments, 5 – 6 dark serpentine nodules. Field Description: Located at south end of 4.5 m wide Yvon Dyke. Micaceous kimberlite (aillikite ? 6a) calcitic, magnetic, 50% rounded xenoliths of gneissic wall rocks and lesser dunite (olivine rich liths) that often have kelyphite rims, arcuate wall rocks with vertical striae and no thermal alteration but have minor chlorite and pink potassic altered splotches, traces of pyrite and chalcopyrite, occasional chrome diopside and rare tiny wine red garnets.
Henri	MC-040-02	HEN	Abundant clear colourless to clear yellow olivine nodules in fine serpentinized matrix. Composition of grains to be analyzed: 1-6 clear and yellow olivines. Field Description: 20 cm wide fine grained nodular diopside kimberlite dyke parallels Henri dyke.
St.Pierre	GV-082-02	SP-4	Fine grained serpentinized matrix with abundant clear, clear-yellow and green olivine nodules, 3 cm large round clear and yellow olivine nodule with chrome diopside inclusions. Composition of grains to be analyzed: 1-5 large olivine nodule, 6-8 chrome diopside inclusions, 9-17 various colours of olivine nodules. Field Description: Diamond fragments observed – SGS Lakefield Research – not verified. Micaceous olivine rich kimberlite dyke, 150 cm wide outcrop, nodular bands of cpx rich mica poor zones, chrome diopside, garnets, wall rocks highly jointed and fractured parallel to strike of dyke. Chip sampled with irregular chips and blocks. Nearby kimberlite stopes into wall rocks.
St.Pierre	TA-02-02	SP-5	Fine grained serpentinized matrix with abundant clear, clear yellow and green olivine nodules, 3 cm large round clear yellow olivine nodule with chrome diopside inclusions. Composition of grains to be analyzed: 1-5 large olivine nodule, 6-8 chrome diopside inclusions, 9-17 various colours of olivine nodules. Field Description: Tommy Anruk (2) kimberlite clinopyroxene, calcitic, mica poor, olivines and chrome diopside. Lakefield Research determined diamond fragments. Not verified.
St. Pierre Jct	BL	SP-6	Abundant mantle nodules of pyrope garnet, chrome diopside, metallic oxides, olivine and mica. Composition of grains to be analyzed: 1-3 clear olivine with metallic oxide intergrowths, 4-5 chrome diopside,

			<p>6-7 clear olivine, 1.5 cm nodule, 8-9 G-9 pyrope + olivine nodule, 10-12 chrome diopside in garnet olivine nodule, 13-15 black opaque oxide + olivine, 16-17 orange eclogite garnet + olivine.</p> <p>Field Description: Mica poor garnetiferous and chrome diopside bearing calcitic nodular kimberlite float in felsenmeer south of junction of 1:1000 and 1:2500 base lines good clear olivines.</p>
Mount Jacques Rousseau	MC-55-02	MJR	<p>Autolithic breccia, various dark fragments similar to matrix, serpentized olivine nodule and black metallic oxide nodules, small black mica nodules and large silvery green phlogopite nodules in fine grained carbonate serpentine matrix. Composition of grains to be analyzed 1-3 autolithic fragments, 4-8 black metallic oxides, 9-11 clear olivine ?, 12 dark serpentine, 13 clear olivine.</p> <p>Field Description: South of pass at discovery – diopside kimberlite, 30% calcite, buckshot olivine in groundmass, nodules are predominantly cpx with lesser olivine, magnetic, minor kinoshitalite, a few 1-2mm chrome diopsides.</p>
	105048 ▲	MJRN	<p>Diamond inclusion nodule in forsterite olivine north of col</p>
Mount Jacques Rousseau	Sinuous	MJRS	<p>Autolithic breccia, some fragments are kimberlitic nodules of serpentized and clear olivine, black metallic opaques which did not survive crushing. Composition of grains to be analyzed: 1-3 large clear olivines, 4 small clear olivine nodules, 5 dark serpentized olivine nodules, 6-7 clear olivine nodules, 8 dark serpentized olivine nodules.</p> <p>Field Description: GV-085-02 nodular diopside calcite kimberlite dyke in arcuate jointed crevasse, hydraulic stoping of walls, strikes 020 and rises 40 degrees upslope, bifurcates into 70 cm and 20 cm dykes, abundant nodules of pyroxene and olivine, some olivine crystals are > 2.5cm, chrome diopside in tiny crystals, abundant ocelli of calcite, and 1-2% yellow megacrysts of kinoshitalite (hydrophlogopite ?), wine red to brownish garnets, xenoliths of possible eclogite with olivine, kelyphite reaction rims...good diamond possibility, magnetic.</p>
U	JM-10-02	UD	<p>Micaceous phase, fine interstitial mica serpentine matrix with possible small perovskite and magnetite, no mantle nodules. Composition of grains to be analyzed: 1-6 small black opaque oxides.</p> <p>Field Description: Hill top location several frost heaved float of nodular, phlogopitic diopside kimberlite, 120 cm wide pit dug to retrieve 30 lbs; probably JM-10-02 was taken from south slope where 3 small 5 – 10 cm wide micaceous banded kimberlite dykes are attached to gneissic wall rocks.</p>
A	MC-80-03	AD	<p>2 phase kimberlite, micaceous younger phase surrounding older coarse serpentized olivine mica kimberlite, older phase contains abundant fresh yellow olivine and darker serpentized nodules, nodules have rusty orange reaction rims. Composition of grains</p>

			<p>to be analysed: 1-7 fresh clear olivine.</p> <p>Field Description: 390193E 6581694N nodular phlogopitic cpx kimberlite with olivine in groundmass, purple sheen to mica, dark blue fresh surface, green brown weathered surface, nodules to 4 mm Av. 3mm 2 samples: 1, upper dominantly micaceous kimberlite and 2, 50 m below - micaceous kimberlite with cpx, olivine. The pits where A O'Connor discovered diamonds in 2000 are both upslope and downslope.</p>
A	MC-80-03	AD-B	<p>Coarse phlogopite serpentized olivine kimberlite with abundant "dirty" yellow serpentized olivine nodules some with black metallic inclusions of magnetite or perovskite. Composition of grains to be analyzed: 1-8 metallic oxide + olivine composites</p>
A	MC-80-03	AD-C	<p>Coarse phlogopite serpentine kimberlite, abundant dirty yellow serpentized olivine perovskite nodules in Twin Mining diamond kimberlite sample. Composition of grains to be analyzed: 1-5 matrix fragments containing serpentine, mica, perovskite.</p>
F	MC-82-03	F-D	<p>Fine phlogopite serpentine matrix with nodules of fresh clear yellow olivine and brown black mica. Composition of grains to be analyzed: 1 – 8 clear yellow olivine nodules.</p> <p>Field Description: 390521E 6584281N 20% - 30% micaceous phlogopite kimberlite with phenocrysts of cpx to 5mm , F dyke is weakly magnetic and carbonaceous. 1 m wide in south facing slot.</p>
N	MC-84-03	N-D	<p>Fine matrix of serpentine with coarse megacrysts of brown black mica, some in euhedral crystals. Composition of grains to be analyzed: 1-2 matrix fragments.</p> <p>Field Description: 408019E 6593176N near lake (Martina) considered to be a possible pipe, greenish grey weathered and bluish grey fresh phlogopitic kimberlite which is highly calcitic and contains lesser cpx, very fine grained olivine, possible stope from lake as it disappears inland.</p>
B	MC-85-03	B-D	<p>Fine hypabyssal kimberlite with phlogopite serpentine matrix, no nodules. Composition of grains to be analyzed: 1-5 matrix fragments.</p> <p>Field Description: B dyke 395577E 6585966N north end of lake weakly nodular cpx, yellow brown micaceous (6a/6c) non reactive to acid, magnetic, kimberlite dyke ranges from 35 cm to 45 cm in pit has abundant phlogopite – rock is hard, nodules to 1 cm, olivine is yellow brown fine buckshot, no serpentine, H2Rx-23 was taken here. This sample is on the northerly extension of the B dyke and is not the diamond discovery sample.</p>
Round Lake	MC-87-03	RL	<p>Fine matrix of serpentine with small black mica nodules, no olivine nodules, possible perovskite and magnetite, most nodules are black and unidentifiable. Composition of grains to be analyzed: 1 serpentine, 2 olivine, 3-6 opaques.</p> <p>Field Description: MC-087-03 397288E 6585257N mg – cg phlogopitic kimberlitic aillikite (6a), moderately magnetic, weakly carbonaceous,</p>

			xenocrysts of clinopyroxene to 3mm Av. 1.5 mm, chalcedony (?) xenolith to 5 cm long, pyrite rims cpx and occurs as blebs to 2 mm in diameter. Located adjacent to floating reef of paragneiss, 70 cm of micaceous soil on one side 50 cm on the other, aillikite becomes a series of narrow dykes ~ 10 cm wide a few m further away from the lake.
Sheila's Dyke	MC-83-03	83-3	<p>2 phase kimberlite micaceous material of fine calcite serpentine matrix with some inclusions (?) of calcite and rutile + yellow euhedral crystals of sphene. Non micaceous material has abundant olvine green olivine nodules in calcite phlogopite serpentine matrix. Composition of grains to be analyzed: 1-5 mica section calcite, olivine? Sphene. 6-8 non micaceous section: olivine macrocrysts.</p> <p>Field Description: 404621E 6583993N Sheila's Dyke – 2-4 m wide micaceous kimberlite dyke cuts highly brecciated root zone of an eroded diatrema and is cut at right angles by a 20 to 50 cm wide kimberlitic dyke. Only weakly carbonated in tiny lenticles to 2 mm long which effervesce – minor ocelli of calcite, differentiated bands of cpx richer zones, olivine in fine grains in groundmass and occasional larger crystals which are possible xenoliths, moderate to strongly magnetic, possible picroilmenite, perovskite and magnetite.</p>
Champagne Pipe	YC-112-02	CP-2	<p>Coarse brown mica nodules in calcite phlogopite matrix no olivine : composition of grains to be analyzed: 1-3 matrix fragments.</p> <p>Field Description: 2002 mapping project in north east corner of Champagne complex see G. mazerolle report for detail.</p>
Champagne Pipe	404787E 6585551N	CP-3	<p>North Extension; fine grained aphanitic calcite serpentine matrix, calcite nodules, some alteration, pinkish orange calcite. Composition of grains to be analyzed: A matrix material, 2 pinkish orange calcite, 3 metallic(?) oxide.</p>
St. Pierre South	YT-001-03	YT-1-3	<p>Carbonate matrix with pea to marble sized eclogite nodules of green cpx + calcite / brown zircon, green cpx? green olivine? One nodule with orange eclogite garnet. Composition of grains to be analyzed: 1-6 green cpx or olivine, 7-9 orange eclogite garnet. 10-11 brown zircon? 12-14 green cpx or olivine.</p> <p>Field Description: 404860E 6574967N Cpx, carbonate kimberlite with ~ 5% phlogopite found one chrome diopside, nodular, cpx nodules to 5 mm, olivines in groundmass.</p>
Henri South Ext	RG-093-03	HDS	<p>Fine grained serpentine matrix with abundant yellow green to brown serpentinized olivine nodules. Composition of grains to be analyzed: 1-7 olivines.</p> <p>Field Description: 402725E 6572988N 2 meter wide zone of blue grey, massive, weakly calcitic, magnetic phlogopitic kimberlite/aillikite (6a). It is accompanied by several thin en echelon dykelets in paralleling fractures up to 50 cm away. The kimberlite contains a few euhedral pyrite crystals.</p>
Henri S Ext	YT-2-03	YT-2-3	<p>Fine grained serpentinized mica matrix, slightly gneissic, serpentinized nodules. Composition</p>

			of grains to be analyzed: 1-3 serpentine nodules.
Round Lake South	MC-91-03	RLS	<p>Fine serpentized matrix with abundant brown mica nodules, possible perovskite in matrix: Composition of grains to be analyzed: 1-5 matrix fragments.</p> <p>Field Description: MC-091-03 397181E 6580077N Yellow brown nodular, phlogopite rich ultramafic lamprophyre (6a) with abundant carbonate and clinopyroxene breaks into several thin adjacent dykes (see figure ?) , streaming with minor shark's fins 50 cm wide, 4 kg sample.</p>
H		HD	<p>Fine clear olivine nodules and kelyphite nodules (?) in fine magnetite perovskite serpentine mica matrix. Composition of grains to analyzed: 1-7 olivine nodules, 8-11 opaques.</p> <p>Field Description: Pit + 2 m deep of yellow brown micaceous kimberlite.</p>
MJRS	GV-085-02	105067	<p>Fine olivine rich matrix with green olivine and G9 pyrope nodules. Composition of grains to be analysed: 1-3 green olivine, 4-6 G9 pyrope garnets.</p> <p>Field Description: nodular diopside calcite kimberlite dyke in arcuate jointed crevasse, hydraulic stoping of wall, stikes 020 and rises 40 degrees upslope, bifurcates into 70 cm and 20 cm dykes, abundant nodules of pyroxene and olivine, some olivine crystals are > 2.5cm, chrome diopside in tiny crystals, abundant ocelli of calcite, and 1-2% yellow megacrysts of kinoshitalite (hydrophlogopite), wine red to brownish garnets, xenoliths of possible eclogite with olivine, kelyphite reaction rims...good diamond possiblility, magnetic.</p>
Yvon	MC-94-03	105054	<p>Fine mica serpentine matrix with brown mica nodules, some with pyrite reaction rims and clots, no olivine nodules. Composition of grains to be analyzed: 1-2 matix material with yellow olivine, 3 clear apatite?</p> <p>Field Description: Micaceous kimberlite (6a) calcitic, magnetic, 50% rounded xenoliths of gneissic wall rock and lesser dunite (predominantly olivine) that often have kelyphite rims, arcuate wall rocks with vertical striae and no thermal alteration but have minor chlorite and pink potassic altered splotches, traces of pyrite and chalcopyrite and rare tiny wine red garnets. Located at south end of 4.5 m wide north trending hydraulically stoped zone of chonoliths (blows) ~50 m long that intersects the northwest trending kimberlite.</p>
W		105081	<p>Olivine calcite matrix kimberlite with abundant olivine nodules, brown mica and metallic oxide nodules, Composition of grains to be analyzed; 1-5 opaque nodules, 6-11 olivine nodules, 12 chrome diopsides.</p>

KIMBERLITE / AILLIKITE ROCK SAMPLING PROJECT

SGS Lakefield Research laboratories visually identified diamond fragments in 15 kimberlite and aillikite dykes on DDI-7 and DDI-5

properties. At the time of writing, diamond fragments were only verified at the "A" and Mount Jacques Rousseau aillikite and kimberlite dykes respectively by microprobe (RL Barnett, R Dillman). A verification sampling project was devised to extract ~ 45 kg (~100lb) from all dykes containing diamonds visually identified by SGS Lakefield Research. Strategic points at several promising but untested dykes and pipes were also sampled. The precise locale of the samples that yielded SGS Lakefield Research's unverified visual diamond identification was not always known; consequently a few sample locations may vary from a few to more than 100 meters from the original test site. In total 59, samples varying from 10 kg to 70 kg were collected and shipped to Val D'Or from there they are to be sent to a laboratory for crushing, caustic fusion and analysis. Samples were predominantly from NTS mapsheet 24P/07. If they were located in other mapsheets a note is made in the descriptions.

The fifty-nine samples are enumerated and briefly described as follows:

Lab No	Field No.	Dyke	Location	Weight	Description
090935	DR-050-03	Chmp-NE	404846E	6585634N	57kg,125lb (6bx) chip sample in breccia
090936	RD-057-03	UN-1	390316E	6574813N	34kg,75lb (6a) aillikite phlog XlIs to 3cm
090937	DD-006B	A	390347E	6582149N	68kg,150lb (6a) aillikite phlog., Magnetic
090938	YD-114-03	C	388819E	6581211N	43kg,95lb (6c) Mass, mag., cpx, carb.
090939	Y-123-03	Chmp-NE	404719E	6585428N	34kg,75lb (6c) mag., minor phlog.,carb
090940	Y-116-03	C	388787E	6579985N	18kg,40lb (6c) nod. Red pyrochlore(?)
090941	Dan-000	St.PierSE	404862E	6574522N	64kg,140lb (6c) kimber, nod.,mag,Cpx,Carb
090942	YD-126-03	K-25	392104E	6572675N	18kg,40lb (6c) massive, mag., carb
090943	YD-124-03	K-25	392419E	6573461N	21kg,45lb (6c) masive, mag.
090944	YDR12303	K-23	389978E	6575660N	18kg,40lb (6c) cpx, carb, oliv, mag, mass
090946	YD-063-03	K-25	391590E	6568933N	43kg,95lb (6a) aillikite (?) magnetic
090947	Y-095-03	Penina	409994E	6551500N	39kg,85lb (6a) aillikite (?) mag, mass, phlog
090950	SW-010-03	HolySm	403596E	6557163N	4.5kg,10lb (6a) aillikite (?) micaceous soil
092352	DL-002-03	HolySm	403097E	6593446N	5kg,10lb (6a) phlog,some oliv, mag, carb
092238	RM-128-03	RoundLks	397219E	6585041N	18kg,40lb (6a) aillikite phlog. Mag., carb
092239	RM-129-03	RndLkN	397229E	6585254N	16kg,35lb (6a) aillikite, mag, nod, carb,cpx
092240	DL-033-03	YvonNf	404296E	6583693N	18kg,40lb (6a) phlog,mass, mag, no carb
092241	DL-016-03	E	391717E	6580758N	28kg,62lb (6a) aillikite (?) phlog, mag, carb
092242	DL-020-03	E	391680E	6580491N	8kg,17lb (6a) aillikite (?)fg phlog,mass,mag
092243	DL-028-03	YvonSf	404146E	6582714N	12kg,27lb (6a) aillikite (?) mass
092244	DL-015-03	E	391717E	6580758N	10kg,22lb (6a) mass,phlog, some carb
092245	DL-014-03	E	391727E	6580847N	25kg,55lb (6a) fg,mass,phlog,mag
092246	SW-202-03	Chmp-S			80kg,178lb (6Kx) 7+00S S end Strm.Phlog
092247	SW-220-03	Chmp-N	404790E	6585390N	16kg,36lb (6Kx) low gneiss xenoliths
092249	RS-101-03	Chmp-N			35kg,77lb (6Kbx) large otc. Bx at ice cap
092248	RS-102-03	Chmp-N			30kg,66lb (6K) original discovery
092250	ST-054-03	Chmp-N			21kg,44lb (6K) dyke, sampled along strike
090901	ST-057-03	Chmp-N			30kg,65lb (6K) dyke, serp,nods,pink gamet
090903	MC-130-03	Newfie	410810E	6593446N	50kg,110lb (6a) phlog,oliv nod,mag,carb
090904	PF-132-03	StPierreS	404721E	6575623N	24kg,53lb (6c) nod,cpx,oliv,carb,minor mica
090905	PF-131-03	StPierreS	404774E	6575745N	50kg,110lb (6c) Crdiopside,G-9's,nod eclogite
090906	MC-131-03	StPierreS	404774E	6575745N	18kg,40lb (6c) sample same area as above
090907	DD-005-03	Chmppipe	404699E	6584526N	18kg,40lb (6K) below triangular blow,nods
090908	DD-006-03	A	390197E	6581716N	52kg,115lb (6a) aillikite phlog, Cr diop,mag
090909	DD-004-03	Chmppipe	404684E	6585071N	50kg,110lb (6Kx) 80% matix,xenoliths gneiss
090910	DD-003-03	Chp-Nex	404968E	6586112N	52kg,112lb (6a) phlog, nod,EsidedBx zone
090911	DD-002-03	HSOImpN	402866E	6574291N	59kg,130lb (6a) nod,phlog,mag,carb,massive
090912	DD-001-03	StPExOIN	404866E	6574989N	68kg,150lb (6c) nod,cpx,carb,mag

090913	MD-133-03	StPrNBLO	404986E 6577003N	45kg,100lb	(6c) nod,Cr diop,G-9 garnets,eclg
090914	MD-134-03	U hilltop	409295E 6578657N	14kg,30lb	(6a) micaceous, nod,carb,mag
090915	MD-135-03	U S slope	409324E 6578526N	32kg,70lb	(6a) banded attached gneiss walls
090916	MD-136-03	MJR discv	409640E 6572060N	45kg,100lb	(6c) nod,carb,oliv,Crdiop,garnet
090917	MD-137-03	MJRS sinu	408848E 6569824N	48kg,105lb	(6c) nod,carb,cpx,oliv,Crdiop,G-9
090918	YT-108-03	L	418019E 6594015N	52kg,115lb	(6a) phlog,mass,mag,carb,nod
090919	YT-107-03	I-J	419581E 6598765N	34kg,75lb	(6a) 2cm nod, rugose surface
090920	YR-111-03	I	418630E 6596538N	43kg,95lb	(6a) Phlog macrocrysts,mag,carb
090924	DL-046-03	C	388839E 6580677N	43kg,95lb	(6c) aillikite nod,cpx,mag,mass
090925	DY-038-03	C	388747E 6581419N	73kg,160lb	(6a) phlog,cpx,ocelli calc,nod
090926	DY-037-03	C	388809E 6581661N	68kg,150lb	(6c) cpx,phlog,nod,mag,dark
090927	BM-138-03	Yv2K-16	398319E 6580762N	48kg,105lb	(6c) nod,cpx,Crdiop,G-9,carb
090928	RM-138-03	G	397058E 6587898N	23Kg,50lb	(6C) nod,cpx,mag,carb,Crdiop
090929	BM-139-03	Yv#2K-16	398395E 6580950N	16kg,35lb	(6c) nod,phlog,mass,mag,carb
090930	BM-142-03	Yv#2K-16	398387E 6581113N	48kg,105lb	(6c) nod.calc,mag,fracture zone
092221	PEN122-03	Penina	409906E 6591165N	15kg,34lb	(6a) 60%phlog,mag,minor carb
092222	RH-123-03	RoadHm	383827E 6574735N	14kg,32lb	(6a) 24P/06, mica shark's fins
092223	YT-092-03	Passa	386477E 6567802N	16kg,36lb	(6a) 24P/02, mica,ybr weathered
092226	MC-113-03	Ned's	412748E 6567767N	23kg,50lb	(6c) 24P/02 nod,cpx,oliv,gar,carb
092227	MC-114-03	Ned's	412767E 6568030N	21kg,45lb	(6c) 24P/02 nod,cpx,oliv,gar,carb
092228	YC-118-03	NedCross	412900E 6568570N	21kg,45lb	(6a) 24P/02 phlog,mag,carb,serp

ROCK SAMPLE DESCRIPTIONS ARE LOCATED IN APPENDIX C

CONCLUSIONS and RECOMMENDATIONS

CONCLUSIONS:

Diamond Discoveries properties host an ultramafic lamprophyre and kimberlite dyke swarm in the Torngat region of northeastern Quebec. They are located in the midst of a wider regional swarm of diamondiferous dykes which include the Twin Mining dykes, Labrador and Greenland dykes.

Discoveries of more than 50 kimberlitic or ultramafic lamprophyre dykes, two kimberlitic pipes, eight suspected pipes and numerous chonoliths (blows) and root zones on Diamond Discoveries International's Abloviak claim block encouraged Diamond Discoveries International to carry out detailed mapping of the Champagne kimberlite diatreme complex, olivine analysis, rock sampling, further prospecting and geological mapping in preparation for a drill program in 2004.

DDI's A dyke, F dyke, B, and Mount Jacques Rousseau dykes all host diamonds.

Rubies were reported on the A, D and F dyke in 2001.

High levels of rare earth elements were reported at the A dyke in association with perovskite (CaTiO₃) in 2003.

Diamond fragments were reported by SGS Lakefield Research in 15 DDI dykes and the Champagne diatreme complex in 2003. These analyses are in the process of being verified by ongoing sampling programs.

Chrome diopside, G-9 garnet, microilmnite, forsterite olivine and other diamond indicator minerals are found in the Champagne Complex, Henri south Henri north, Peter lake dyke swarm, St. Pierre, Mount Jacques Rousseau, A, F, B, G, H, Hygins, Holy Smoke, Ned's, P and U dykes as well as in heavy mineral concentrates in streams draining the areas hosting these dykes.

Exploration in 2003 discovered several promising dykes including the Ned's kimberlite dyke, Passa, Penina, K-25 South and assessed a number of dykes previously observed from the air but not visited.

A smaragdite (chrome amphibole) showing with gem potential was located on map sheet 24P/02.

RECOMMENDATIONS:

It is recommended to carry out magnetic surveys over lakes suspected to be pipes at Mount Jacques Rousseau, Round Lake, Ned's cross dyke and other targets in April and May 2004 over ice.

It is recommended to further assess the Champagne Diatreme Complex by a diamond drill program to test zones at the Peter Blow and the triangular blow.

It is recommended to test the proposed pipe at Round Lake with two diamond drill holes.

It is recommended to test proposed pipes at the Mount Jacques Rousseau lakes with no less than four diamond drill holes.

It is recommended to test the St. Pierre North dyke, the St. Pierre South dyke, The St. Pierre magnetic anomaly, Ned's dyke and the Peter Lake dyke swarm by drilling and bulk sampling programs.

It is recommended to prospect, map and bulk sample where deemed necessary all observed but unvisited dykes and potential proposed pipes designated in 2001, 2002 and 2003 exploration programs.

Respectfully Submitted

A handwritten signature in black ink, appearing to read "Mark D. Connell". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Mark D. Connell, B.Sc.
January, 2004

ABBREVIATIONS

Minerals		Descriptives	
Apatite	ap	brown	br
Ankerite	ak	blue	bl
Biotite	bio	black	bk
Calcite	calc	red	r
Calc silicate	calc si	wine red	wr
Carbonate	carb	green	gr
Chlorite	chl	grey	gy
Clinopyroxene	cpx	orange	or
Chrome diopside	cr cpx	alteration	alt
Corundum	cor	vesicular	vesc
Diamond	<>	crystal	xll
Feldspar	f	amygdule	amg
Graphite	grph	fine grained	f.g.
Garnet	gar	coarse grained	c.g.
Ilmenite	il	diatreme facies	df
Kinoshitalite	ksh	root zone	rz
Kyanite	ky	hypabyssal	hypab
Leucite	leu	xenocryst	xcrst
Limonite	lm	xenolith	xlith
Magnesium	mg	geologic boundary known, unknown	
Magnetite	mag	outcrop	
Olivine	ov	bedding with dip	
Picroilmenite	pcil		
Phlogopite	phlog	jointing vertical, inclined	
Potassium	k		
Pyrrhotite	po	foliation with dip	
Pyrite	py		
Quartz	q	shear zone	
Silliminite	sil	fault	
Serpentine	serp	lineation with plunge	
Zircon	zr		

CERTIFICATE OF QUALIFICATIONS

I, Mark D. Connell, of the village of Markhamville, near the town of Sussex, King's County, New Brunswick, Canada – postal address P.O. Box 4645, Sussex, N.B. E4E 5L8 – do hereby certify:

That I am a consulting, contracting and prospecting geologist residing in New Brunswick

That I have studied at University of New Brunswick and Concordia University obtaining a Bachelor of Science in Geology..

That I have graduated from Dalhousie University with a Bachelor of Education

That I have practiced as a government geologist and a mineral exploration geologist since 1957

That I am a lifetime member of the Prospectors and Developers Association of Canada and of New Brunswick, a past member of the CIMM and the New Brunswick Professional Geologists Association.



Mark D. Connell
P.O. Box 4645
Sussex, N.B.
Canada
E4E 5L8

STATEMENT OF LIMITATIONS

I Mark D. Connell do declare that I have no financial interest in or expectations to receive any financial benefits from Diamond Discoveries International, Tandem Resources or Prospecting Geophysics Limited presently exploring in the Torngat Mountains of northeastern Quebec.

I declare that all information in this report is obtained from sources considered to be reliable and believed to be true and correct.

I declare that I am not responsible for the accuracy of information or assumptions of such items furnished by other parties in this report.

I declare that any opinions or interpretations expressed in this report are personal to the author and are not meant to be anything other than opinions or interpretations and that any party relying on such opinions or interpretations do so at their own risk.

I declare that the author does not make any warranty as to the accuracy of his opinion or interpretation and specifically does not warrant that recommendations for further work will either be successful or profitable.



Mark D. Connell
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January, 2004

APPENDIX A

GEOLOGY MAPS AND SAMPLING PLANS

Champagne Grid	figure 2.11.0
Champagne North Extension	2.11.1
Olympic Ridge	2.12
Henri South – Olympic Ridge Stream North	2.13
Henri South – Olympic Ridge Stream South	2.14
Ned’s Dyke	2.15
Round Lake	2.16
Yvon#2-K16	2.17
Holy Smoke	2.18
	2.18A
E dyke	2.19
G dyke	2.20
C dyke	2.21
K dyke	2.22



DIAMOND DISCOVERIES INTERNATIONAL

Projection:
UTM Zone 20 (NAD 27)

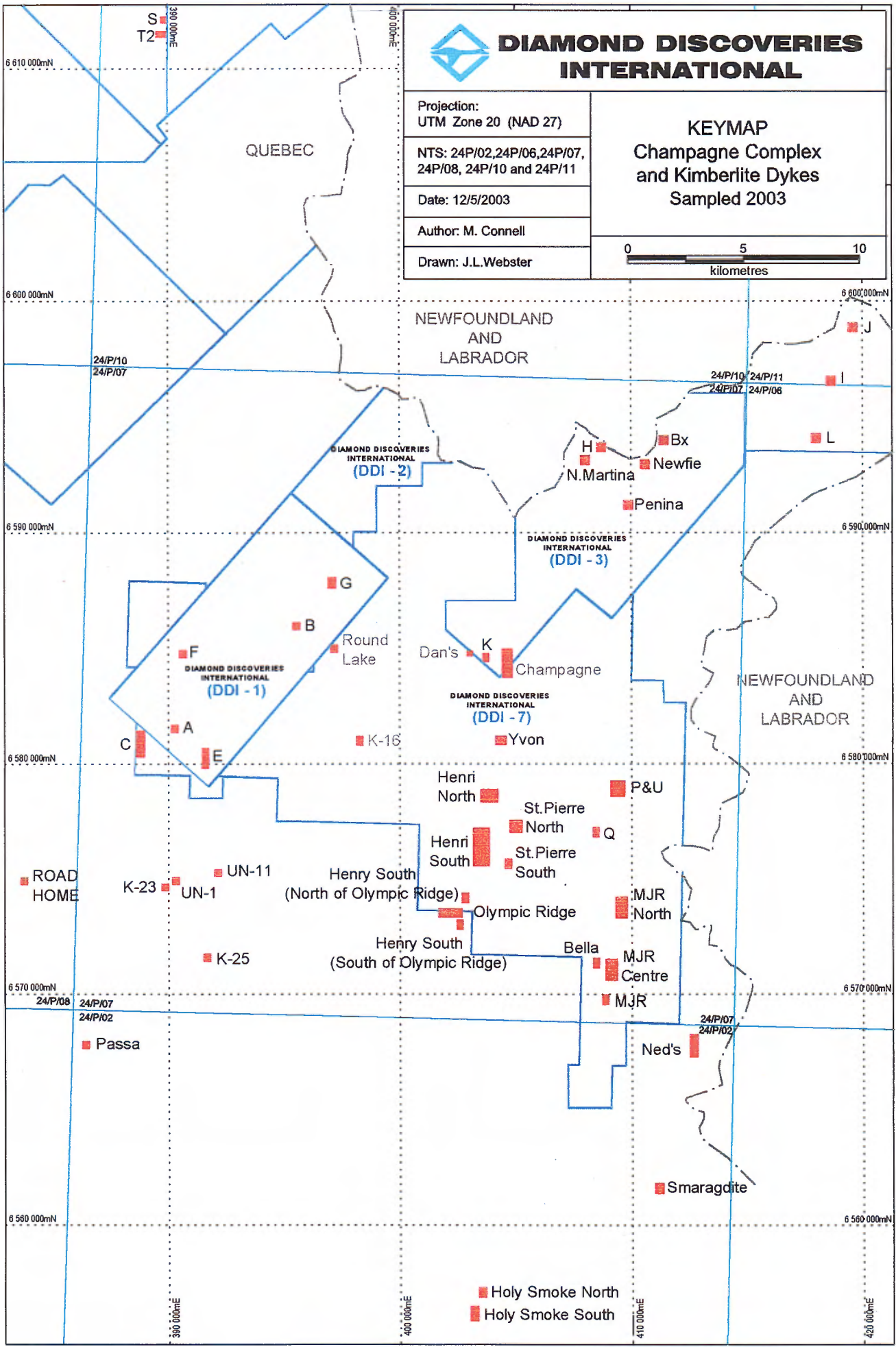
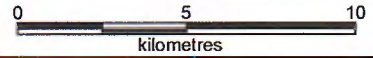
NTS: 24P/02, 24P/06, 24P/07,
24P/08, 24P/10 and 24P/11

Date: 12/5/2003

Author: M. Connell

Drawn: J.L.Webster

KEYMAP Champagne Complex and Kimberlite Dykes Sampled 2003



■ Holy Smoke North
■ Holy Smoke South

Lab #	Sample #	General Location	East	North	Type	Map	Weight	Description
90901	ST-057-03	Chmp-N					30kg,65lb	(6K) dyke, serp,nods,pink garnet
90903	MC-130-03	Newfie	410810	6593446			50kg,110lb	(6a) phlog,oliv nod,mag,carb
90904	PF-132-03	StPierreS	404721	6575623			24kg,53lb	(6c) nod,cpx,oliv,carb,minor mica
90905	PF-131-03	StPierreS	404774	6575745			50kg,110lb	(6c) Crdiopside,G-9's,nod eclogite
90906	MC-131-03	StPierreS	404774	6575745			18kg,40lb	(6c) sample same area as above
90907	DD-005-03	Chmppipe	404699	6584526			18kg,40lb	(6K) below triangular blow,nods
90908	DD-006-03	A	390197	6581716			52kg,115lb	(6a) aillikite phlog, Cr diop,mag
90909	DD-004-03	Chmppipe	404684	6585071			50kg,110lb	(6Kx) 80% matix,xenoliths gneiss
90910	DD-003-03	Chp-Nex	404968	6586112			52kg,112lb	(6a) phlog, nod,EsidedBx zone
90911	DD-002-03	HSOImpN	402866	6574291			59kg,130lb	(6a) nod,phlog,mag,carb,massive
90912	DD-001-03	StPExOIN	404866	6574989			68kg,150lb	(6c) nod,cpx,carb,mag
90913	MD-133-03	StPrNBL0	404986	6577003			45kg,100lb	(6c) nod,Cr diop,G-9 garnets,eclg
90914	MD-134-03	U hilltop	409295	6578657			14kg,30lb	(6a) micaceous, nod,carb,mag
90915	MD-135-03	U S slope	409324	6578526			32kg,70lb	(6a) banded attached gneiss walls
90916	MD-136-03	MJR discv	409640	6572060			45kg,100lb	(6c) nod,carb,oliv,Crdiop,garnet
90917	MD-137-03	MJRS sinu	408848	6569824			48kg,105lb	(6c) nod,carb,cpx,oliv,Crdiop,G-9
90918	YT-108-03	L	418019	6594015			52kg,115lb	(6a) phlog,mass,mag,carb,nod
90919	YT-107-03	I-J	419581	6598765			34kg,75lb	(6a) 2cm nod, rugose surface
90920	YR-111-03	I	418630	6596538			43kg,95lb	(6a) Phlog macrocrysts,mag,carb
90924	DL-046-03	C	388839	6580677			43kg,95lb	(6c) aillikite nod,cpx,mag,mass
90925	DY-038-03	C	388747	6581419			73kg,160lb	(6a) phlog,cpx,ocelli calc,nod
90926	DY-037-03	C	388809	6581661			68kg,150lb	(6c) cpx,phlog,nod,mag,dark
90927	BM-138-03	Yv2K-16	398319	6580762			48kg,105lb	(6c) nod,cpx,Crdiop,G-9,carb
90928	RM-138-03	G	397058	6587898			23Kg,50lb	(6C) nod,cpx,mag,carb,Crdiop
90929	BM-139-03	Yv#2K-16	398395	6580950			16kg,35lb	(6c) nod,phlog,mass,mag,carb
90930	BM-142-03	Yv#2K-16	398387	6581113			48kg,105lb	(6c) nod.calc,mag,fracture zone
90935	DR-050-03	Champagne Ext.	404846	6585634	Chip chanel	24P/7	125lbs	6Bx 50-60% matrix
90936	RD-057-03	UN-1 Dyke	390316	6574813	float	24P/7	75lbs	Magnetic, non reactive to Hcl, phlogopite books 3cm, nodular 6a
90937	DD-006B-03	A-Dyke	390347	6582149	Float	24P/7	150lbs	Phlog., Magnetic, Weak Ca, 6a
90938	YD-114-03	C-Dyke	388819	6581211		24P/7	95lbs	Massive, magnetic, cpx, 6a

Lab #	Sample #	General Location	East	North	Type	Map	Weight	Description
90939	Y-123-03	Champagne Ext.	404719	6585428		24P/7	75lbs	Massive, cpx, minor phlog, 6a
90940	Y-116-03	C-Dyke	388787	6579985		24P/7	40lbs	Nodular kimberlite with red-nodules (?) pyrochlore (?)
90941	DAN-St.P.Ext.-03	St. Pierre Extention	404862	6574522		24P/7	140lbs	Dyke of 6c
90942	YD-126-03	K-25	392104	6572675		24P/7	40lbs	Massive, magnetic, 6c?
90943	YD-124-03	K-25	392419	6573461		24P/7	45lb	Massive 6c
90944	YDR-127-03	K-23	389978	6575605		24P/7	40lbs	Cal, massive, olivine rich, cpx, mag
90945	Y-128-03	UN-11 Dyke	392133	6573256		24P/7	20lbs	Nodular phlog, Rich 6a
90946	YD-063-03	K-25	391590	6568933		24P/7	95lbs	Cpx, phlog, kimberlite. Massive and magnetic
90947	Yvon-095-03	Penina Dyke	409994	6591500	Float		85lbs	Phlog rich 6a. Cpx, magnetic, massive.
90948	DY-042-03	C-Dyke	388814	6581253	HS	24P/7	1lb	Kimberlite breccia
90950	SW-010-03a,b	Holy Smoke	403596	6557163	soil,float			2 bags plus float nodular and homogeneous kimberlite
92202	YT-035-03	Henri South	402616	6573188		24P/7	4Kg	Kimberlite
92203	YT-046-03	MJR	409193	6571356		24P/7	1Kg	Cr. Diopside, cpx, nodular Kimberlite
92204	YT-039-03	E-Dyke	391621	6580123		24P/7	2Kg	Calcitic, phlog, Kimberlite
92205	YT-040-03	A-Dyke	390193	6581715		24P/7	HS	Course grained, phlog, oliv
92206	YT-033-03	Henri S. N. Olimpic	402866	6574291		24P/7	HS	Phlog, mag., cal. Kimberlite
92207	MC-round lake	Round Lake	397407	6585424		24P/7	HS	pink altered bands. Green
92208	YT-MJR-Centre-03	MJR Centre	409640	6572048	Float	24P/7	HS	Nodular, cpx, calcite, magnetic
92209	YT-33-03	Henri S. N. Olimpic	402860	6574269		24P/7	HS	Phlog, mag., cal. Kimberlite
92210	YT-034-03		402233	6574275		24P/7	1Kg HS	Narrow 50cm wide Kimberlite dyke
92211	YT-Bella-03	Bella Dyke	408613	6571340		24P/7	5Kg HS	Phlog, magnetic kimberlite
92212	YT-053-03	MJR	408856	6569880		24P/7	2Kg HS	Nodular, cpx, surp, 5% phlog, oliv, possible G9s
92213	YT-050-03		408618	6571322		24P/7	5Kg HS	Micaceous kimberlite
92214	YT-094-03	Bella Dyke	410028	6591542		24P/7	1Kg HS	5 cm wide, phlog rich kimberlite
92215	YT-093-03	Penina Dyke	409936	6591386		24P/7	1Kg HS	200m N of "Discovery"
92216	YT-095-03	Penina Dyke	409984	6591527		24P/7	1Kg HS	30m long, 1.5 m wide, nodular, olivine rich kimberlite
92217	YT-098-03	Newfie Dyke	410734	6592953		24P/7	6Kg HS	700 m long dyke, 2m wide, Phlog. Mag weak, carb, massive
92218	YT-100-03	Newfie Dyke	410820	6593467		24P/7	4Kg HS	1.5m wide, massive, phlog, magnetic, calcite
92219	YT-086-03		411201	6561614		24P/7	55lb	Amphibole diopside
92220	Dan-001-03	UN-9	403254	6584435			25lb	Nodular, cpx, calcite, olivine rich Kimberlite. (good one)
92221	PEN-122-03	Penina Dyke	409906	6591165			34lb	

Lab #	Sample #	General Location	East	North	Type	Map	Weight	description
92222	RH-123-03	Road Home Dyke					32lb	
92223	Passa-092-03	Passa Dyke	386475	6567801			36lb	
92224	MC-121-03	T2 Dyke					28lb	
92225	MC-120-03	S Dyke					55lb	
92226	MC-113-03	Ned's Dyke	412748	6567767			50lb	
92227	MC-114-03	Ned's Dyke	412767	6568030			45lb	
92228	YC-118-03	Ned's/Cross Dyke	412900	6568570			45lb	6a
92351	SW-012-03	Holy Smoke	403764	6557313				
92352	DL-002-03	Holy Smoke	403097	6556125	mica soil			1 bags
-----	Yvon-104-03	NE of Newfie	413264	6596728	outcrop	HS		Fault breccia (?)
	DH-01-03	Champagne N	404971	6586114				NOT FOUND?!
	SW-221-03	Champagne N	404705	6585357				Crystal Breccia
	DL-003-03	Holy Smoke	403119	6556172	float			nodular micaceous kimberlite
	DL-005-03	Holy Smoke	403178	6556262	float			kimberlite
	DL-006-03	Holy Smoke	403199	6556291	mica soil			2 bags
	DL-009-03	Holy Smoke	403398	6556613	mica soil			2 bags incl. cm fragments of mica kimberlite
	DL-028-03	Yvon South Face	404146	6582716	Float		23lb	6Kc
	RM-143-03		403050	6578706	sand		150lbs	moderately garnetiferous sand or glacial fluvial outwash pan (wind) 100m s of Vert de l'Ouest aluvial sands project
	RM-144-03		399692	6576681	sand		150lbs	sand, pebbles and cobbles which were winnowed out garnets +/- 5% of sand good catchment at pool at mouth of Alluviaq river bank 20 m high
	RM-145-03		396923	6578190	sand		150lbs	sand on south bank of abloviak where stream cuts glacial fluvial deposit band 15m high well sorted. Some muddy layers at top.
	RM-146-03		396701	6578897				10m high glacial fluvial deposit with abundant garnets from gneisses in face of potential camp site.
	RS-101-03	Champagne Ext.					76lb	6Bx 20-30% matrix
	RS-102-03	Champagne Ext.					78lb	6a

Lab #	Sample #	General Location	East	North	Type	Map	Weight	Description
	ST-054-03	Champagne N			subcrop			1 rice bag - 6k massive kimberlite, local nodules along 14, 50,25,37
	ST-057-03	Champagne N						1 rice bag
	SW-071-03	Champagne	404701	6585012	outcrop			6Kf - small sample 1cm kimberlite plus wallrock. Phlogopite, 5% olivine(?), + dark mineral, strongly magnetic, no fizz with HCl, less than 1mm pale green contact
	SW-072-03	Champagne	404698	6585094	outcrop			6K layered parallel to wall-rock contact 155, 70NE. Phlog 90%, olivine and serpentinized ol. 10%, magnetic mineral and rare white carbonate and pyrite in <mm concentrations
	SW-073-03	Champagne	404635	6585010	outcrop			
	SW-074-04	Champagne	404690	6584988	outcrop			
	SW-075-04	Champagne	404678	6584990	outcrop			
	SW-076-04	Champagne			outcrop			
	SW-200-03	Champagne grids	404618	6584584	Float-outcrop			6Kf plog-50%, calcs-20%, diop/oliv-40%? 1mm macrocrysts. strong to mod mag, strong "fiz"
	SW-201	Champagne						
	SW-202	Champagne						3 rice bags of disintegrated 6Kc - about 150 lbs
	SW-203	Champagne						
	SW-204	Champagne						
	SW-205	Champagne			float			6Kc, nodular. 1.5mX1mX1m, sample in flowing stream, small samples nodular kimberlite dyke and numerous nodule fragments - good Cr diopside in one olivine-rich nodular
	SW-206	Champagne						
	SW-209	Champagne						
	SW-209-03	Champagne N	404873	6585564	FLOAT			6K WITH QTZ recrystallization
	SW-210-03	Champagne N	404674	6585282			1lb	6Kc

Lab #	Sample #	General Location	East	North	Type	Map	Weight	Description
	SW-212-03	Champagne N	404810	6585635	FLOAT			Breaciated 6K
	SW-213-03	Champagne N	404853	6585634			5lb	6K
	SW-220-03	Champagne N						1 rice bag
	SW-LMK070-03	Champagne	404685	6585080				
	YT-081-03	Ned's/Cross Dyke	413754	6568194			9lb	6a



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R. Dillman
 Attn : ---

January 08, 2004

8901 Rely Drive
 RR5 Mount Brydges, Ont, N0L 1W0
 CANADA

Date Rec. : 22 December 2003
 LR Report : CA9456-DEC03
 Project : 2303722
 Client Ref : HS-01-03 to HS-32-03

Phone: 519-264-9278
 Fax 519-264-9278

CERTIFICATE OF ANALYSIS


Sample ID	Ba g/t	Ce g/t	Cr g/t	Ni g/t	Sr g/t	Be g/t	Zr g/t	Co g/t	Mg g/t
1: HS-01-03	460	83	90	74	210	0.43	98	25	12000
2: HS-02-03	410	92	68	55	140	0.31	38	23	9500
3: HS-03-03	420	75	71	34	210	0.41	91	23	10000
4: HS-04-03	700	240	60	83	160	0.41	49	< 20	5500
5: HS-05-03 Silt 1 & 2 Comb	310	180	88	74	100	0.41	48	28	9200
6: HS-07-03 Silt 1 & 2 Comb	500	58	73	40	200	0.83	80	< 20	11000
7: HS-08-03	590	92	79	23	200	0.53	74	< 20	12000
8: HS-09-03 Silt 1 & 2 Comb	500	75	66	27	250	0.68	98	< 20	10000
9: HS-10-03 Silt 1 & 2 Comb	440	100	65	25	260	0.47	140	< 20	9800
10: HS-11-03	490	120	65	24	150	0.37	180	< 20	9100
11: HS-12-03	480	64	53	< 20	150	0.43	92	< 20	7400
12: HS-13-03	500	42	66	< 20	140	0.39	70	< 20	9500
13: HS-14-03	330	79	300	< 20	120	0.41	170	< 20	15000
14: HS-15-03	370	100	80	44	110	0.31	150	< 20	11000
15: HS-16-03	550	51	49	< 20	160	0.35	88	< 20	6700
16: HS-17-03	530	71	58	< 20	160	0.37	92	< 20	10000
17: HS-18-03 Silt 1 & 2 Comb	380	76	77	41	260	0.19	67	30	13000
18: HS-19-03	480	60	98	46	210	0.21	72	32	16000
19: HS-20-03	480	53	150	32	170	0.29	120	< 20	13000
20: HS-21-03	340	70	140	62	160	0.19	47	29	12000
21: HS-22-03	520	60	53	< 20	180	0.33	120	< 20	7700
22: HS-23-03	410	86	120	49	150	0.81	100	24	15000
23: HS-24-03	---	---	---	---	---	---	---	---	---
24: HS-25-03 Silt 1 & 2 Comb	450	83	100	64	200	0.57	99	26	15000
25: HS-26-03 Silt 1 & 2 Comb	330	81	92	37	240	0.13	86	26	14000
26: HS-27-03 Silt 1 & 2 Comb	390	150	110	72	180	0.25	70	33	13000
27: HS-28-03 Silt 1 & 2 Comb	250	110	83	51	160	0.21	33	22	11000
28: HS-29-03 Silt 1	270	110	81	41	160	0.21	48	< 20	11000
29: HS-30-03 Silt 1 & 2 Comb	160	56	77	36	110	0.23	24	< 20	6800

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Sample ID	Ba g/t	Ce g/t	Cr g/t	Ni g/t	Sr g/t	Ba g/t	Zr g/t	Co g/t	Mg g/t
30: HS-31-03 Silt 1 & 2 Comb	190	25	51	23	210	0.21	23	< 20	8400
31: HS-32-03 Silt 1 & 2 Comb	230	40	63	44	180	0.23	23	< 20	10000
32: HS-06-03	630	76	86	64	260	0.57	78	33	13000
33-DUP: HS-21-03	370	74	140	69	170	0.25	41	24	13000

Sample #24 (HS-24-03) was not received.



Nicole Mozola, B.Sc. (Eng)
Project Coordinator
Mineral Services, Analytical