GM 59666

REPORT OF ACTIVITIES ON DIAMOND DISCOVERIES INTERNATIONAL PROPERTY DDI 4 IN THE TORNGAT MOUNTAINS

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Additional Files

Licence

License

Year 2001

REPORT OF ACTIVITIES ON DIAMOND DISCOVERIES INTERNATIONAL PROPERTY DDI 4

CLAIM LICENCE NO. P.E.M. 0001517

1:50,000 NTS Map Sheets 24P/08 & 24P/09

IN

THE TORNGAT MOUNTAINS OF NORTH-EASTERN QUEBEC

MRN-GÉOINFORMATION 2002

GM 59666

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SUMMARY

Geological and geochemical stream sediment surveys were conducted over the Diamond Discoveries International mineral exploration licence number 0001517 during July, August and September of the year 2001. Ten samples having a mass of from twenty five to thirty five kilogram were collected on key drainage sites on the property. These samples were further processed in camp to obtain a fine and a coarse concentrate of the heavy minerals found in that sample. The concentrate vials were then shipped to Robert Dillman of Arjadee Prospecting, of Mount Brydges, Ontario for microscope examination of the grains in order to identify Diamond Indicator Minerals (or diamonds) contained in the samples. The mineral grains selected by Bob Dillman were then sent for microprobe analysis. This microprobe work was done by R. L. Barnett Geological Consultant Inc., 9684 Longwood Road, RR32 London, Ontario, N6P 1P2. The results for this work are pending for the samples taken on the DDI-4 mineral exploration licence. In total ten (10) sample were taken from streams located on the DDI-4 claims. A separate report covering the microscope phase of the work will be compiled and submitted by Mr. Robert Dillman.

Using this process of silt sampling, the kimberlite indicator minerals found in the samples will indicate the presence of kimberlite dykes or pipes in the watershed drained by that portion of a stream.

In the process of collecting these stream sediments it is possible that an experienced crew might visually locate a kimberlite dyke or pipe. This happened on numerous occasions. The crews were well instructed that sampling was not the only goal of the project. The true goal was to locate kimberlite pipes or dykes. All crewmembers were very active in searching for kimberlite rock, or dykes or pipes. By this method the "J" west dyke was located about 108 metres west of the "J" East dyke no DDI-4. The most northern point at which a "J" dyke was seen is on the Labrador boundary. The southern piece of this dyke "L" (Laura) is six (6) kilometres SSW. The Labrador boundary in this direction is only two kilometres south. Foot traverses were made around "the crater", another located the north end of the "J" dyke, yet another located the southern end of the same dyke at "L". A traverse in the high country near the south central portion of the property failed to locate any kimberlitic rocks.

Laboratory assay of rocks from this dyke are pending.

The property is at an elevation greater than about 1000 feet. This low point is where the Riviere Vent d'Ouest (West Wind River) exits the claim

group in the south. The West Wind here is the headwaters of the river that flows into the Abloviak Fiord. Work in this high country is restricted by the frequency of low cloud cover and fog.

PREVIOUS WORK

Previous geological work done in the area consists of regional scale geological mapping by the Geological Survey of Canada.

The map by: VanKranendonk, M.J. 1994,

Geology Tower Mountain

GSC Open File 2828, Scale 1:50,000.

The Quebec Department of Mines has just released map sheet 24P08 in October 2001. It is a compilation by Chantel Belodeau and Serge Perreault and numbered SI-24P08-C3G-01H. The coloured map has a slightly different code The map is called Tower Mountain and its' scale is 1:50 000.

There is also map 1429A at 1:250,000 scale called Point Le Droit compiled by F. C. Taylor in 1975. It is published by the Geological Survey of Canada and has the map legend printed separately as "map 1462A".

1.0 INTRODUCTION

This paper reports on the fieldwork completed on the Diamond Discoveries International mineral licence PEM 0001517 in the TORNGAT Mountains of Northeastern Quebec during the 2001 field season.

Stream Sediment Samples were collected from the first and second order river drainages in an attempt to find Diamond Indicator Minerals in the Heavy Mineral Concentrates (HMC) of those samples.

The concentrates were sent to Robert Dillman of Arjadee Prospecting for microscope examination of the individual grains. Selected suspect grains, from the sample, are then sent for detailed microprobe identification.

The analytical results for this work are pending.

The property was largely prospected and mapped in 2000. Four days was spent examining the rocks on the property in 2001. The north and south extensions of the "J" and "I" dykes were located by this work. We now know them to be one single dyke more than six kilometres long. In addition the "J" west dyke was located by an alert field crew member. The proximinity of two dykes may increase the chance of the presence of a pipe in the area. At the north boundary there may be two dykes on the cliff face in Labrador but at the "L" location at the south end there is only one dyke in the cliff face.

2.0 LOCATION AND ACCESS

The Diamond Discoveries International Torngat Mountain property (licence 00011517) is split in north and south halves by the two map sheets 24P/08 and 24P/09. There are about 2700 HA on sheet 24P/08 in the south and 2400 HA on the north map sheet 24P/09. The centre of the property would be at approximately centred on Latitude 59° 30'00"N and 064° 25' 00"W. The property is 5200 Ha in area as recorded in the Quebec mineral licence records. It has a maximum east to west extent of 10 Kms and 07.75Kms maximum north to south distance . (Fig 1)

The nearest community, George River - KANGIQSUALUJJUAQ, Quebec is about 100 kilometres to the southwest of the centre of the claim group.

There is one marginal sized lake on the property on which a fixed wing aircraft may be able to land and take off. It is only about 1kilometre long and may therefore be to small for safety. Most lakes of suitable size and distance are in Labrador.

The 2001 field crew was serviced out of a camp at the West End of Pangia Lake at a Latitude 59°36'N and Longitude 065°15'W. The camp was about 30 to 45 minuets flying time from George River The camp was about 48 kms west-north-west of the centre of the DDI 4 claim group.

The group is split by the valley of the West Wind River. The valley is about 1.3 to 2 kilometres wide. The till filled valley rises rapidly for at least 1000 feet to the plateau tops of the mountains. The rise on the north side of the valley is in excess of 1500 feet. The mountain tops are largely boulder covered with rare outcrop exposure. Accessible outcrop is very limited probably making up less than 20% of the property.

The West Wind Valley is pleasant with eskers and recessional moraines trapping water as ponds and small lakes. At low elevations, usually in the valleys or cracks in the rocks, vegetation such as grasses can be found. No shrubs were observed on the claims. The high portion of the licence is rock covered, barren and bleak with a number of small glaciers on sheltered hill faces. Rock outcrops are small, scattered and not numerous in the rock debris fields.

In relation to significant geology, the licence has a known kimberlitic dyke that is at least six kilometres long crossing the property from north to south. The cliff faces in the main valley were examined by chopper with field glasses. It is felt that there are no kimberlite dykes in the ground one kilometre east of the presently known "I", "J", "L" dyke structure.

The "Crater" was examined closely in 2001. It is a glacial cirque in a hanging valley. It was caused by glaciation. There are unusual points regarding it. It does seem deeper than one would expect. A peridotite lens outcrops at the edge of the lake. This peridotite is part of a series of pods and lenses trending to the northeast. This peridotite is old Archean age rock and not fresh.

3.0 REGIONAL GEOLOGICAL SETTING

The rocks underlying the Diamond Discoveries International Licence - 1517 are part of the Nain Geological Province of the Canadian Shield. The Nain Province makes up most of Labrador and Northern Quebec above the Abloviak Fiord. The Nain geological province is part of the Torngat Orogen that took place (2 to 1.9 billion years ago). The rock types strike across the property from east to west. Locally some folding gives the rocks a northeast strike on the north central side of the West Wind valley. The oldest rocks are of the Saglek Suite. They are Archean in age greater than 1.71 to 1.79 billion years. There is ultrabasic peridotite locally metamorphosed to actinolite. There are thin bedded mafic gneisses and granulites and paragneisses. These rocks are intruded by younger monzodiorite through granite to diorite rocks. The youngest stratified rocks are thin bedded amphibole gneisses. Intruding these rocks are diabase dykes and sills having an ophitic texture. The Kimberlite dyke probably cuts even this young rock. One diabase was seen to strike east-west across the property dipping at a low angle to the south.

No Tasuyiak gneiss is known to occur on the property. There is a belt of brittle deformation mapped running east to west just south of the property boundary. Such features are common in Labrador but this is only instance that it was seen in the 2001field season. This is the type of feature that gave the reason for the proposal for the Abloviak shear Zone (ABZ).

James Moorhead et el in in the Quebec Government publication "Kimberlites and Diamonds In Northern Quebec" place the northern limits of the E-W trending Abloviak Shear Zone (ABZ) (his Fig 8) just south of the licence. The ABZ then contains no Tasuyiak gneiss in this region of Quebec. The Kimberlite dykes in the ABZ discussed in his document are all in the Tasuyaik gneiss in this Abloviak Shear Zone. We have here kimberlitic rock that cut older rocks north of the ABZ and not considered part of the ABZ.

It is suggested by Moorhead et. el. that there were tensional events that opened the crust in the area of the ABZ. This would allow for the emplacement of the Kimberlite dykes from great depths.

It has been learned in 2001 that there are Kimberlite dykes north of the Tasuyaik gneisses and therefore out of the proposed Abloviak Shear Zone (ABZ). It is clear that it is possible to have Kimberlite intruding rocks of **any** of the three ages associated with brittle-ductile deformation events in the region. James Moorhead et el P.4 in "Kimberlites And Diamonds In Northern Quebec" says: "At least three crustal extension events are known in the area occurring in Middle Proterozoic in Lower Proterozoic and in Mesozoic" (time). It should therefore be possible to find Kimberlitic rocks outside the boundaries of the ABZ and in rocks both older and younger than the Tasuyiak gneiss.

Twin Mining reports that kimberlite dykes have been found in the oldest member of the Lake Harbour Group on the Beaufremont River in rocks of the Far North Craton itself. These dykes trend east-southeast. Kimberlite dykes in the ABZ trend NNW through NNE. Other kimberlite dykes on Diamond Discoveries International ground DDI-3 are also in metasediments that are older than the Tasuyiak unit and are located north of the Abloviak Shear Zone as are the "S", T2", and "M" dykes on Tandem resources ground 30 kilometres to the northwest. Furthermore Moorhead et. el (page 4) states that "Post-tectonic ultramafic lamprophyres, some of which are kimberlites, have been identified in the northernmost portion of Labrador, approximately 75 km NE of the Abloviak Fiord dykes (Wardel et el., 1994)." We conclude therefore that exploration efforts for kimberlite rock need not be restricted to the area of the Abloviak Fiord or the ABZ.

4.0 LOCAL GEOLOGY

The rock foliation on the property strikes W - E. The rocks have been folded and their axial planes trend in about the same direction. The rocks on the north side of the West Wind Valley strike NE - SW as do the trend of the folds . The distance between axial planes is about 1.5 to 2 km. Usually the dip on the western limb of a synclinal fold is nearly vertical while the eastern limb dips at a shallow angle (about 35°) to the west as at the "crater". This is similar to the pattern of folds on the continent side of a mountain thrust belt. This therefore is consistent with the position of the rocks on the property in relation to the main axis of the Torngat Mountains which are located approximately on the eastern margin of the claim licence.

There are numerous outcrops of peridotite. It occurs as pods and lenses strung out along selected horizons. These probably represent the base of the crust that has been thrust or subducted (tipped on edge) prior to the

Torngat Mountain building event. The belt crossing NE out of the "crater" is a good example of this. In the "crater" high on the talus slope on the north through west sides were found float of mafic biotite rich rock. It does not appear to be intrusive but the fragments were small. There may be kimberlitic rocks in the vertical cliffs on the west side of this feature.

A traverse was made to locate the north extension of the "J" dyke. The mountain is covered with large boulders but just at the cliff dropping northward into Labrador float of kimberlite was found. The cliff face was looked at by helicopter. The face has three clefts in it. It is not known if the other two clefts represent kimberlite dykes. An examination of the topographic map shows three small ponds less than one kilometre from this point and on strike with the known dyke and each other. They appear to be slightly elongated in the dyke direction. They could be water filled dyke depressions or pipes.

The top of the plateau south of the "I" portion of the dyke was prospected by Scott and Mazerolle with no trace of the kimberlite seen in the boulder field there. On the south cliff of that same plateau upon examining a cleft, a 60 centimetre kimberlite dyke was located. It is certainly the extension of the "J" and "I" portions to the north. Samples were taken and sent for assay from various locations along its length.

While sampling the "J" east dyke one of the crew went for water and found the "J" west dyke one hundred meters to the west. The east dyke is about 20 cms but the west "J" is about 60 cms wide.

Granite pegmatite rock also occurs on the property as dykes and stringers. In some locations their presence is common. No economic minerals are seen to be associated with them.

The youngest rocks mapped on the DDI-4 licence are gabbro or diabase in composition. They were seen by the geologist as E - W striking south dipping sills on the south side of the West Wind River Valley.

5.0 LICENCE INFORMATION

The Diamond Discoveries International Inc. claims reviewed here are Quebec Exploration Licence Number 0001517. They cover about 5200 HA. The claims are all located on NTS 1:50000 map sheet 24P/08 and 24P/09. The work in 2001 is the second year of renewal for this licence. The licence has a maximum east to west extent of 10 Kms and a maximum 7.75 Kms north to south extent. (Fig 1)

6.0 2001 EXPLORATION PROGRAM

The program was designed to collect ten (10) stream sediment samples then concentrate the heavy minerals from the samples by panning and mechanical jigging. Concentrates were then examined for the presence of any diamond indicator minerals in them. The presence of kimberlite indicator minerals grains would reveal the presence of kimberlite rock in that part of the drainage basin. Ten sample sites were visited and ten samples were taken. The samples were panned and jugged in facilities installed at the camp on Pangia Lake. The concentrates obtained after mechanical jigging were sent to Robert Dillman for microscope selection of suspected indicator mineral grains. These selected grains were then sent to a R. L. Barnet for microprobe identification of these mineral grains. The results of this work are pending. A separate report will be compiled and submitted by Robert Dillman.

Stream sediment samples were taken immediately down stream from high energy sites were stream energy was seen to drop rapidly. The site should have at least 5cm diameter gravel. This size material moves only in the flood stage and permits the winnowing of light material out of the spaces around the larger stones as the flood stage dissipates. This process should concentrate the garnets, magnetite, chrome diopside and other kimberlite indicator minerals. The initial screen had openings of 6mm. More than 20 kilograms of the material that passed through this screen was de-slimed. This involved stirring with lots of water so that the clay and organic portion became suspended. This was followed quickly by carefully decanting the dirty liquid. This process was repeated until the residue was largely sand size or larger. The site was marked with a sample ribbon (ex DDI-4 #10). The GPS location of the sample site was taken and written in the field notes of the sample team. The original record of the sample location was also kept on file. This information was later transferred by that crew to a master log book kept at camp. If the next sample was to be collected nearby (100's of metres) the first bucket was carried to the next site. This is a difficult task in rough country. A helicopter returned crew and samples to camp as required.

At camp on rain days or foggy early mornings the 40 - 60 pound samples were screened and panned in the lake. Each screen was jigged by hand and the eye that resulted was examined for diamonds or indicator minerals. The eye of the material that remained on the Milner diamond screen was collected into an appropriately labelled vial. This constituted the

"coarse" sample for that location site. The material that passed through the Miller Diamond screen was panned to remove some of the lightest fraction and further de-slimed. The remaining material was collected in a clean properly labelled polyethylene sample bag. This process continued until all the material from that sample site was processed. It required from three to six "pans" to completely process the sample at this stage. The "coarse" fraction was filed for future reference in case indicator minerals are found in the fine fraction. The last step was to have the fine material from the polly bags jigged mechanically. This was done by a trained operator using a motorized jig designed for that purpose. The eye from this final stage was collected and placed in a properly labelled vial. These vials were shipped to Robert Dillman for examination of their kimberlite indicator mineral content.
Possible Improvements

Use screen sizes in the field that will allow the direct collection of 1-1.5 litres of de-slimed sand. Pan and keep the coarse fraction of the sample in the field. This will permit the easy transport of the sample to the next site. It should be possible in this way for one crew to collect up to 6-8 samples per day. This could only be done last year with direct helicopter support. This process will also reduce panning at camp. It will also standardize the sample size taken from one site to the next. The amount of time walking the ground by the crew will increase and allow for the increased chance of locating dykes or pipes. The helicopter is vital but in some terrain, eyes on the ground are more effective in locating dykes. This is especially true in the high elevations where grass does not grow.

6.1 GRID PREPARATIONS FOR GROUND MAGNETIC SURVEY

A picket grid was constructed on the "I" portion of the known kimberlite dyke. The grid construction of the "J" portion had progressed as far as having completed the base line and installing about a third of the total number of cross lines.

This was one continuous grid having the centre point at UTM 419068E and 6597611N. The actual base line bearing for the both halves of the project (as confirmed by GPS) is 022° true north. This over a distance of more than two miles is a testament to the skill of the field crews. The loss of the magnetometer and the delay in being able to have another shipped in precluded conducting the planned magnetic survey over the dyke trend.

The delay in shipping was caused by the terrorist attach on the New York World Trade Centre Buildings. It was necessary that Dan Ferdeber

accompany the mag to camp. Upon arrival the magnetometer was employed on the high priority Champagne complex project.

Most of the "J", "I", "L" dyke is hidden by till in the valley or moraine on the gentler hills. This would have been a good test of the ability to trace kimberlitic dykes under glacial cover by using a ground magnetometer. The ten lines from 4 to 40 north on the "J" grid can be completed in the next field season. The ground magnetic survey can then be carried out over the completed grid.

DIFFICULTIES

It is more difficult to locate kimberlite dykes on this property because of the extensive boulder-fields at these higher elevations and the extensive glacial deposits in the valleys. Additionally there is also mush less vegetation at these elevations decreasing this key clue which helps locate kimberlite rocks.

It is difficult to get a continuous stretch of good weather in this high country. The fog at high elevations or rain restricts access and makes it impossible to work continuously on these properties at high elevations. The field crew returned to the high country when weather permitted.

There was not sufficient time to do more on the DDI-4 property in 2001 because of the number of dykes found on other DDI properties. The weather restriction of working in high country is also considerable. A project on DDI-4 must go ahead in conjunction with work on a property at lower elevations to avoid excessive lost time. An alternative would be to place a crew in a camp on the property at the point where work needs to be done.

6.2 RESULTS

The results of the stream sediment sample work - <u>are pending</u>. Robert Dillman will submit the mineral grain data under a separate report. The silt sample locations are plotted and printed on the Sample Location Map DDI-4 (Fig 2) and are listed as a table in Appendix II.

7.0 CONCLUSIONS

The geology of this property is simpler in many ways to that on other properties examined in 2001. The cliffs give complete rock exposure and the talus and till hide everything else. The presence of belts of peridotite in pods and lenses as NE of the "crater" demonstrates that the crustal slabs here were once in contact with the mantle. The presence of kimberlite completes the picture and assures one that all the ingredients are present for the possible

emplacement of diamond beating kimberlite rocks.

It is fortunate that the Quebec department of mines has published their geology map of the area in October 2001. The information contained on it will be valuable in interpreting the distribution of indicator minerals in the drainage systems on the property.

This western part of the property will require a separate program of exploration to identify the presence of kimberlite dykes or pipes on it. Separate work needs to be carried out on the known dyke. Rack samples should be taken at regularly spaced intervals along the dyke. Samples should also be taken in areas where the ground magnetic survey indicates there may be a "blow". Till samples in the valley floor would indicate the near presence of buried kimberlite bodies.

The use

Since one of the key signs of the presence of the kimberlite dykes is the grassy cleft in the rocks, exploration at this elevation on the property needs to be done on the ground, by taking systematic till samples or using a ground magnetometer as described below.

The magnetometer used in walking mode is a very good tool in following invisible kimberlitic dykes once they disappear under the extensive boulder fields at these higher elevations. It should be used to follow the south extension of the known kimberlite dyke. It can also be used to locate narrow steep gradient magnetic features that are magnetic dykes but may be diabase dykes. An experienced operator should be able to find the more resistant diabase as float on the surface.

It is possible to rent a magnetometer that has a built in GPS. If this machine is used along with its base station magnetometer, collected data can be correction for its position and diurnal magnetic variation at the same time. The precision of data and location are top quality and are completed in minutes rather than days. Such a dedicated base station magnetometer also has a base station GPS capability. This corrects the GPS field points to an accuracy in the meter range. This would eliminate the need to construct extensive grids in the field.

Grid construction in this region takes three times longer than below the tree line. The savings in detailed grid construction costs will easily justify the rental and use of such equipment. Grids can be reduced to witness markers done in paint or with ribbons. In areas of snow, pickets could still be used.

A computer with appropriate software and an operator familiar with the system will be needed to give daily feedback on likely targets for the crew to focus on the next day.

8.0 RECOMMENDATIONS

Extensive use of a ground magnetometer with correcting base station should be used to survey all the drift covered areas accessible by foot on properties of interest. It is especially true of the "J", "I", "L" dyke. It is hidden under large scree fields on the high plateau and by till deposits in the West Wind Valley. Blows may occur along its length.

Research by the author indicates that it is possible and preferable to take smaller silt samples in the field. By first screening the material to the required mesh sizes in the field and returning to camp with 1 to 2 litres of material to be jigged. If a coarse fraction is wanted the field crew could jig the sample in the field on the required screen and return the vial of concentrate to camp. This would speed up movement from one sample site to another. It would not be necessary to carry 20 to 30 Kg samples to the next location OR have an expensive helicopter land at three or more sites to recover the buckets.

It may be warranted to collect additional silt samples to narrow the target areas in places where kimberlite indicator minerals were found in 2001 It would also be profitable to collect till samples in a box pattern around anomalies detected in 2001 silt samples.

After narrowing the suspect drainage with silt samples a grid of till sampling for HMC's should be used to locate buried or hidden dykes or pipes especially in the large areas of the property that are talus covered. Foot prospecting would not be effective in these types of areas.

APPENDIX I

9.0 MAN DAYS OF WORK

10 samples collected		6 man-days
10 samples panned & jigged		3 man days
Concentrates Examined R. Dillman in process.....		
Microprobe work.....		
Grid construction		12 man-days
General prospecting		4 man days
Share of mobilization and demobilization...		5 man-days
reports		1 man days
TOTAL	**more than**	**31 man days**

APPENDIX II

9.1 SAMPLE LOCATIONS

Stream Sediment Heavy Mineral Concentrates

Sample ID	No of fine vials	No. of coarse vials	UTM Coordinates
DDI4- 01	1	1	418997E 6598913N
DDI4- 02	1	1	419071E 6598071N
DDI4- 03	1	1	422162E 6596710N
DDI4- 04	1	1	421316E 6596414N
DDI4- 05	1	1	417052E 6597086N
DDI4- 06	1	1	416097E 6596062N
DDI4- 07	1	1	417393E 6593342N
DDI4- 08	1	1	419871E 6596820N
DDI4- 09	1	1	417675E 6593306N
DDI4- 10	1	1	416049E 6595645N

10.0 DISCLAIMER

I, Gerard J Mazerolle of 88 Brookland Street, Antigonish, Nova Scotia; have been a professional Geologist for more than 32 years. I declare that I have never, nor do I hold any interest, monetary or otherwise, in any of the Diamond Discoveries International properties or in the company itself.

I declare that I performed and supervised the performance of all the fieldwork declared in this report on behalf of Diamond Discoveries International.

Gerard J Mazerolle

11.0 QUALIFICATIONS

I, Gerard J. Mazerolle, declare I am a graduate geologist. I received my B.Sc. degree in Geology from St. Francis Xavier University in 1969.

I have practiced my profession in Canada and the United States over the last 32 years. I am a member of the Prospectors and Developers Association of Canada.

I have performed or supervised all the work declared in this report.

YOURS TRULY

Gerard J. Mazerolle BSc.