PREFEASIBILITY REPORT & MARKETING SUMMARY

HUTTON GARNET BEACHES
NEWFOUNDLAND AND LABRADOR

Mineral Claim Licences & UTM Co-ordinates:

Kanga East 7151M  6,606,500N  450,500E
Kanga NE 7148M  6,608,000N  451,500E
Kanga SW 6006M  6,604,000N  450,00E
Kanga NW 6007M  6,608,500N  448,000E
Kanga OSS 6775M  6,608,000N  453,000E
Seven Islands 7435M  6,590,500N  456,500E

N. T. S. Map Sheet Numbers:
14 M/5 & 12, Zone 20V, NAD 27

for:
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October 14, 2004
EXECUTIVE SUMMARY

HUTTON GARNET BEACHES
NORTHERN LABRADOR

FREEPORT RESOURCES INC.

Freeport Resources is a junior mineral exploration company listed on the Toronto Stock Exchange (TSX-V – FRI: Issued: 10,739,600, Fully diluted: 12,076,600). Founded in 1981, Freeport currently holds a number of properties in Labrador and British Columbia.

EXPLORATION PROGRAM

Freeport began work in Labrador nine years ago, exploring for nickel near Voisey's Bay, and for diamonds and other minerals on the Hutton claims in northern Labrador. Total expenditures on Freeport’s properties exceed $2.5 million, including approximately $700,000 to date at the Hutton.

LABRADOR: THE HUTTON PROJECT

In 1997, Freeport first evaluated the "Iron Strand" to assess heavy minerals related to diamond exploration work underway at other claims in the area. The beaches are red in colour, not due to iron content, but because of high concentrations of industrial garnet. In contrast to major alluvial operations in India and Australia which grade from 8-30%, the South Beach deposit averages over 60% garnet, with about 25% at the North Beach and offshore. The discovery received international publicity with articles appearing in Industrial Minerals and The Mining Journal (London, England), as well as North American Minerals News (New York, USA).

HUTTON ECONOMICS

Volumes of Material: The Hutton garnet deposits are well-situated to serve both North American and European garnet markets for years to come. The garnet available at the South Beach alone could sustain a 20,000 tonne per annum development for over 20 years. The North Beach and offshore deposits provide further garnet to fill additional demand over time. Development planning has focussed on optimization studies examining costs for various scenarios vs. market issues.

Mineral Extraction: Garnet recovery involves pre-concentrating the sand, loading it onto a barge, and shipping it to a processing plant for washing, drying, sieving, magnetic separation and bagging. To capitalize on proximity to nearby markets in eastern North America and western Europe, the plant could be located in the Province of Newfoundland and Labrador.

Market Value: The Hutton garnet is naturally suited to waterjet cutting and performs at 96% of the leading U.S. and world material produced at a hardrock mine in New York state. Comparable waterjet garnet is available in North America at prices of C$675-1500/tonne, depending on quality, packaging and amount purchased. Prices are expected to increase at least at the rate of inflation (2-5% per year). Operating costs to produce the Hutton garnet are estimated at C$165/tonne.

Demand: Demand for industrial garnet in North America and Europe has increased over the past ten years. The waterjet market has a historic annual growth rate of over 12% and continues to expand in major eastern industrial centres such as Montreal, Toronto, Boston, New York and Philadelphia.
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James D. Hansink, M.S. (Geol.), M.S. (Mgmt.)
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SECTION I
PROJECT OVERVIEW

1.1 THE HUTTON GARNET BEACHES

The Hutton garnet deposits have unusually high concentrations of almandine (or almandite) garnet. Most commercial deposits in North America average less than 20% garnet. In contrast, the South Beach averages over 60% garnet, and exceeds 75% locally. The North Beach is a much larger, lower-grade resource with samples to date averaging about 25% garnet. Offshore areas beyond the South and Seven Islands beaches have similar grades as the North Beach.

The unusually high grade of the South Beach deposit – about four times of what is currently mined in Idaho (Emerald Creek, 14%) and twice that in Western Australia (GMA, 30%) – assures that small areas can yield significant values in contained garnet. Disturbance of only a few acres represents full-scale annual production.

The size of the alluvial grains in the Hutton deposits falls naturally into the range commonly sought in at least two commercially well established markets – waterjet cutting and abrasive blast cleaning. Processing of the Hutton sand has shown a concentrate is easily produced, and testing indicates the garnet is very suitable for use in commercial applications.

The Hutton garnet deposits represent an important Canadian resource that can be brought into commercial production within one to two years. It is well positioned to supply north-eastern Canada and the United States, as well as western Europe.

1.2 ORE RESOURCES & RESERVES

Total world consumption of waterjet cutting garnet is estimated at 60,000 to 80,000 tonnes per year. Preliminary Resource estimates based on sampling since 1997 indicate the Hutton deposits could meet this demand for many years. The total onshore Measured Resource at the South Beach alone could sustain a 20,000 tonnes per annum operation for over 20 years. Half of this Resource is classified as a Probable Mineral Reserve. A laboratory scale sample of garnet concentrate was successfully tested against commercial grade products, and potential market areas have been identified with garnet users located within an economical distance.

<table>
<thead>
<tr>
<th>TABLE 1. ESTABLISHED RESOURCES</th>
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</thead>
<tbody>
<tr>
<td>Garnet Content (weight %)</td>
</tr>
<tr>
<td>MEASURED RESOURCES</td>
</tr>
<tr>
<td>S. Beach Onshore</td>
</tr>
<tr>
<td>N. Beach Onshore</td>
</tr>
<tr>
<td>Sub-Total</td>
</tr>
<tr>
<td>INDICATED RESOURCES</td>
</tr>
<tr>
<td>S. Beach Offshore</td>
</tr>
<tr>
<td>Seven Islands Offshore</td>
</tr>
<tr>
<td>Sub-Total</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

*1 256,150 tonnes included as Probable Reserve
*2 Note: Tonne=2205 lbs., Ton = 2000 lbs (Canadian metric tonne x 1.1 = US short ton)
1.3 EXTRACTION PLAN

The Hutton project would be run like a small sand and gravel operation over two to four weeks in the summer, in either July or August. Work would initially take place at the highest-grade deposit – the South Beach. As average volumes proposed range between 10,000 to 16,000 tonnes of garnet concentrate per year, scale of operations is not extensive. An area of only a few acres would be needed during a season.

On-site work would be carried out 24 hours per day, with the crew stationed on a barge. The necessary mining equipment consists of 2-3 small-scale loaders (i.e. skid-steer and/or front-end). The extracted sand would be upgraded via 2 diesel-operated hydrosizers or another type of gravity separator. The barren sand would be backfilled and regraded. Several options for transportation of the product have been considered, including shipping bulk or in maxi-bags. A small feeder conveyor or ramp would transport garnet concentrate to the barge. Depending on the capacity, several trips during the season may be required. Once aboard, the garnet would be shipped to a commercial centre in Newfoundland and Labrador for final processing by magnetic and electrostatic separators and final distribution to customers.

1.4 PROJECT ECONOMICS

The Hutton garnet sands represent a high-grade resource well positioned to supply waterjet-grade material to eastern North America and potentially Europe. Testing of the Hutton concentrate has been very favourable, comparing well with commercial products currently available in the marketplace: The Hutton garnet is naturally well-suited to waterjet cutting due to its particle size range, sub-angular shape, and lack of fractures and inclusions.

Ancillary minerals with possible economic potential include approximately 14 weight % titanium and titanium-iron minerals, with an average of 4.12% TiO₂ assayed. Further study would be needed to determine whether titanium minerals add value as a by-product.

Since originally evaluated in early 2001, there has been no real change in garnet prices, with slight increases in selected markets. However, the relative strengthening of the Canadian dollar results in a slightly lower sales price, as all published data used in this report is from US sources. Published prices confirm a relatively flat price trend, reflecting the recent recession in the US manufacturing sector, and a temporary oversupply situation among West Coast garnet consumers. Prices in the eastern parts of North America have remained more stable, due to fewer imports from South Asia.

Commercially available waterjet products equivalent in quality to the Hutton material continue to command high prices in North America. The premium U.S. garnet #80 mesh product ranges from C$1010-1500/tonne, depending on type of packaging and amount purchased. Finer material is slightly more expensive (C$1040-1510), while coarser sandblast material is somewhat lower (C$560-1115). Waterjet garnet prices will continue to increase at rates exceeding the rate of inflation (2-5% per year) due to growth in the industry.

Preliminary extraction and processing costs are estimated at C$165/tonne -- well below current prices for waterjet-grade garnet. For this reason, the Hutton product will be competitive commercially with garnet presently sold in eastern Canada, the north-east United States, and potentially western Europe.
SECTION II

PROPERTY AND GEOLOGICAL SUMMARY

2.1 PROPERTY DESCRIPTION

The Hutton beach claims are located on tidewater in an uninhabited area on the northern coast of Labrador, in the Province of Newfoundland and Labrador. The nearest settlement in the province is Nain, about 360 km south. Towns in the vicinity are Kanqisualujuaq (George River, 155 km west), Quebec, and Iqualuit on Baffin Island (Frobisher Bay, 530 km north-west), Nunavut. Due to sea ice conditions, fuel and supplies are shipped to these towns from July to November.

The property is located 75 km due east of the Twin Mining diamond discovery near George River. The beaches were initially staked to assess placer diamond potential in heavy mineral sand beaches reported by Wardle in 1993. A number of ultramafic dykes with kimberlitic affinities have been identified in the area. Although a variety of diamond indicator minerals and ruby grains are present in the beach sands, industrial garnet has been the main target for the past five years.

The Hutton beaches are contained in 6 blocks of 218 claims, over an area just over 54 square kilometres. The claims are 100% owned by Freeport Resources Inc., and as listed below:

<table>
<thead>
<tr>
<th>Claim Name</th>
<th>Licence Number</th>
<th>Claim Issuance Date</th>
<th>NTS Map Sheet Number</th>
<th>Number of Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanga East</td>
<td>7151M</td>
<td>(97.09.29)</td>
<td>14M/12</td>
<td>40</td>
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<tr>
<td>Kanga NE</td>
<td>7148M</td>
<td>(98.03.02)</td>
<td>14M/12</td>
<td>24</td>
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<tr>
<td>Kanga SW</td>
<td>6006M</td>
<td>(98.03.02)</td>
<td>14M/12</td>
<td>20</td>
</tr>
<tr>
<td>Kanga NW</td>
<td>6007M</td>
<td>(98.03.02)</td>
<td>14M/12</td>
<td>41</td>
</tr>
<tr>
<td>Kanga OSS</td>
<td>6775M</td>
<td>(99.05.06)</td>
<td>14M/12</td>
<td>88</td>
</tr>
<tr>
<td>Seven Islands</td>
<td>7435M</td>
<td>(00.05.01)</td>
<td>14M/05</td>
<td>05</td>
</tr>
</tbody>
</table>

Total claims 218

Although the area has been known for decades as the “Iron Strand”, its garnet potential was not recognized until Freeport conducted work on the property. It consists of two beaches separated by a rocky headland at the mouth of a land-locked fiord known as Miriam Lake. They are protected from the north by a long cobble esker extending past the mouth of Ryan’s Bay. Seven Islands beach, about 14 km south near Kangalaksiorvik Fiord, is another “bayhead” beach, where sand collects between two headlands. Due to significant garnet content, the red colour of the sand is so intense it is plainly visible on satellite images.

The flat-lying beaches are located in front of highlands up to 1000 metres in elevation. Thin soil and till in the uplands gives way to deeper talus, glacial till and outwash in the valleys, which are mainly well-drained by streams and rivers. Sparse grasses and lichens are the only vegetation.
2.2 GEOLOGY

2.2.1 GENERAL OVERVIEW

The ocean conditions have resulted in extremely well-sorted sand deposits with high concentrations of heavy minerals, in some cases over 95% >3.2 specific gravity. The beaches consist of horizontally stratified, medium to coarse sand. It is assumed they developed from original offshore sand or “swash” bars and that some of the shallow ponds behind the beaches are actually remnants of former lagoons. The shallowly sloping beach surfaces are between 50 and 200 metres wide, with sand dunes above the high tide line.

The sand deposition pattern is most likely influenced by longshore currents from the southeast, which carry ocean sediments northwards up the coast. Broad areas of accumulated sand, as near the Helga River, are evidence of this process.

In contrast to the red garnet sand, the inland terrain is grey and hummocky with many shallow ponds. Aerial photos show a fine-grained texture, interpreted as end moraine till from the Wisconsin glaciation. According to Peter U. Clark (Ph.D. thesis, Colorado, 1984), till represents the surrounding bedrock and does not include rock fragments from remote areas. Some till samples studied as part of the thesis contain up to 90% garnet.

Primary rock types in this region are Archean gneisses, largely overprinted with a high-pressure garnet-clinopyroxene granulite facies assemblage. For this reason, garnet is a dominant rock-forming mineral, and hills in the area have a reddish cast. Rocks contain up to 75% garnet.

After glaciers dumped garnet-rich till into the ocean, heavy minerals and sand particles were separated from fines by wave action and then gradually accumulated along the shoreline as beaches. Further concentration of garnet is an ongoing process in the swash zone, where winnowing of fines and lighter particles continues daily. Waves deposit heavier minerals onshore and lighter particles are washed (primary concentration method) or blown away (secondary concentration mechanism). Storm surge action concentrates garnet at the back of the beach by mechanical transport.

Ocean sediments are also garnet-enriched. Depth sounding carried out in 1999 indicates the sea floor to be flat and sandy for at least 750 metres offshore. No rock outcrop was detected.

2.2.2 BEACH REGIMES AND DYNAMICS, SOUTH AND NORTH BEACH

According to exploration data and Clark’s 1984 thesis, the beach sand is underlain by gravel and cobble sized layer and/or till at depth of approximately 2 to 2.5 metres. The beach sand layer is fairly uniform in size and lacking pebble or larger size particles. A recent report by Catto (2003) discusses the origin and present regime of the Hutton beaches in detail. The following text extensively quotes from Dr. Catto’s report.

The Hutton beaches are reworked glacial sediments deposited at the time of the melting of the Miriam Lake Valley glacier. This created a large fan delta complex from Hassell Head to 2 km south of the Helga River outflow, surrounding both the North and South Hutton beaches. Marine shells indicate the delta toe was underwater at the time of deposition. As sea level varied, sediments along the seaward edge were reworked by marine processes, as they continue to be today. Importantly, the Hutton heavy mineral sand deposits are geologically ‘young’ with sub-angular particles in contrast to the older, reworked South Asian and Australian alluvial deposits which feature well rounded grain shapes.
The sand deposits are classified as “sand dominated wide flats” developed on sediment substrates. Development of this type of system under a boreal to arctic climate in formerly glaciated terrain indicates relatively low energy and limited storm activity compared to a gravel dominated system, with sediment supply considerably in excess of the amount removed by erosion and transportation. The presence of offshore seasonal ice reduces the period available for storm wave erosion. In addition, seasonal freezing and snow cover on the beaches limits the removal of sand during winter storms. The shallow offshore bathymetry, low energy levels, absence of large cusps and scoured channels and gently concave configuration of the shorelines, indicate that both North and South Beach can be considered as dissipative systems.

Individual beaches show indications of sediment transport along their lengths. The net transport of sediment takes place from south to north along both South Beach and North Beach.

In summary, the two beaches are modally relatively low energy systems protected from winter storms by seasonal ice and have abundant sediment supply. They are dissipative systems with shallow, gently sloping offshore bathymetry, dominated by shore-parallel transport.

**2.2.3 SOUTH BEACH**

The South Hutton Beach is a baymouth bar system developed by dominant northward transport, essentially parallel to the shoreline, under low energy, largely dissipative conditions. The presence of offshore sand bars indicates that dissipative conditions are normally dominant. The beach widens to the north, and the outlet of Helga River has been displaced northward, as have the drainage channels for shallow ponds in the former lagoonal area. The alignment of the small spits and channels at the mouth of the river also indicate dominant northern transport. Aerial photographs indicate this direction has been generally maintained over the past 60 years.

Small, laterally coalescent dome dunes and incipient parabolic dunes are present in the backbeach. The dunes appear to be generally stable or growing with local surfaces covered with some grass. The increase in height to 3 metres can be observed at the north end near the Helga River outlet.

The forebeach and nearshore areas are marked by ridge-and-runnel development, where garnet is concentrated on the ridges and runnels are infilled by quartz and feldspar. Difference in density and to lesser degree in grain size result in the segregation of mineral species into distinct bands. Differing wave energies associated with storm events are responsible for the formation of multiple bands of mineralogically segregated assemblages. Higher concentrations of garnet at some backbeach and upper forebeach sites reflect both residual lags of heavy minerals following winnowing of quartz and feldspar, and initial deposition during higher energy wave events.

The presence of concentrations of garnets in the active areas of the forebeach and in the nearshore zone, and their formation into constructional ripples and incorporation into cuspatc features indicate that garnets are being actively transported into and within the South Beach system. The pattern of concentration around the Helga River mouth and along the river, with the highest concentrations generally seaward and successive layers of alternating garnet-rich and garnet-poor units exposed in cutbanks, indicate that the garnets did not originate from fluvial transport of Helga River. The vertical succession and variation in thickness visible in the cutbanks indicates that the garnets were transported from east to west, i.e. inland by wave action. The beach is growing because sediment influx is greater than the sediment erosion.

The variations recorded by the exploration programs and photographs suggest that there is sediment accumulation at the northern end of the beach system and there is net transport from south to north.
2.2.4 NORTH BEACH

North Beach is an essentially independent system from the South Beach. Although some sediment from South Beach may eventually be transported to North Beach, the configuration of the northernmost part of South Beach in comparison to North Beach indicates that sediment is not directly transferred from one to the other, largely due to the rocky headland between.

North Hutton Beach is also a baymouth bar system developed by dominant northward transport, essentially parallel to the shoreline, under low energy, largely dissipative conditions. The beach widens to the north and the outlet of Howard Lake is located at the far northern end of the barrier system. This geomorphology, including the alignment of the small spits at the mouth of the Howard Lake outlet, indicates dominant northward transport. Hassell Head deflects the main flow of the coastal subcurrents associated with the Labrador Current offshore, shielding North Beach from the direct effects of the net southeastward flow. Sediment movement is generated primarily by waves generated from the southeast, counter to the modal direction of the offshore current. There is consistent northward direction of transport, and dome dunes and parabolic dunes are present in the backbeach area.

Garnet, feldspar and quartz distribution and concentration is similar to the situation described for the South Beach. The presence of concentrations of garnets in the active areas of the forebeach and in the nearshore zone, however, and their formation into constructional ripples indicate that garnets are being actively transported into and within the North Beach system.

The heavy minerals are less mobile and thus remain as lag deposits when moderate energy events rework the surface sediments. Higher concentrations of heavy minerals may result primarily from the removal of quartz and feldspar, rather than the deposition of greater amounts of heavy minerals. Although there is net transport from south to north, the maintenance of geomorphology indicates that the amount of sediment influx to the southern end of the beach approximately balances the amount of transport to the north. At the northern end, sediment is currently accumulating, while the south part remains constant.

2.2.5 SEVEN ISLANDS BEACH

Seven Islands Beach is a mid-bay bar system developed by dominant southward transport, essentially parallel to the shoreline, under low to moderate energy conditions. The beach is narrower and steeper than the Hutton Beaches. The beach widens from north to south, indicating a net southward transport direction. Because the beach is protected from eastern and southeastern winds by the Whale and Amiktok Islands, the wave reworking takes place only from the northeast.
2.3 EXPLORATION AND ANALYTICAL DATA

Five assessment reports by Freeport have been filed with the Newfoundland and Labrador Department of Mines and Energy. These reports, dated February 23, 1999, October 30, 1999, April 24, 2000, July 30, 2001, and June 21, 2002, describe the sampling and laboratory results in detail.

To summarize, the sand is stratified with garnet well distributed throughout the deposits. Representative samples from trenches and test pits were taken to evaluate garnet content over the whole depth of exposed sand. Larger samples up to 2 tonnes were taken in 1999 for preparation of concentrate. Offshore samples have been taken from below the low tide line. All have been studied for garnet content and grain size distribution. Laboratories used include Lakefield Research of Ontario, ALS Chemex, Vancouver Petrographics, Process Research, and Cominco Research Lab, all of Vancouver, as well as DCM Science Labs and Inprosys of Colorado. The most recent processing study was carried out by the Centre for Industrial Minerals Innovations at the University of British Columbia, Vancouver, during the spring of 2004.

All garnet content figures included in this report have been converted to weight percentage.

2.4 ONSHORE SUMMARY

A legal surveyor measured the area of sand at the South Beach deposit as approximately 185,625 square metres (46 acres). This includes the majority of garnet-enriched sand above the low tide line to the dunes and wash-over fans of the backshore. Sampling from 1998 to 2001 generally showed that garnet content is relatively consistent from the low to high tide lines and along the length of the beach. In 1998, work established about 63% garnet over 860 metres (2820 ft) of the foreshore. 1999 samples contain an average of 60% garnet over 590 m (1935 ft). The combined samples from both years average 62% garnet over 1000 metres (3280 ft).

The North Beach was also surveyed, and approximately 1.6 times larger at about 296,525 square metres (73 acres). The northern end was initially sampled in 1997. A series of samples were taken from the southern end the following year over 660 metres (2165 ft) – about one third of its length. Average garnet contained in 1997 and 1998 samples is about 25%. Notably, 2004 sampling revealed red sands visually similar to South Beach under a thin layer of wind blown sediment in the central portion of the forebeach. Additional sampling is needed to assess the North Beach deposit.

A definitive assessment of the thickness of the onshore deposits at the South and North Beaches by split-spoon sampling has not yet been completed. The Province of Newfoundland and Labrador did not permit site work from 1999 until late summer 2004 when work was allowed to resume. However, a section through the South Beach included in Clark’s 1984 thesis indicates the sand is underlain by a cobbly layer and/or till at a depth of 2.5 metres. Photographs illustrate a net accumulation of sand above roots of dune grasses from previous years.

In 1998, the depth of sand near the dune was estimated at about 2-3 metres over the cobble layer illustrated in Clark’s thesis. The legal survey conducted in 1999 established the average height of the dunes along the South and North beaches to be about 3 metres above the low tide line. Test pits dug near the low tide line were open to depth at 1.4 metres. For these reasons, thickness is assumed to be an average of 2 metres over the South and North Beaches. Dunes are much more pronounced at the northern end of both beaches, suggesting northward longshore drift.

Data density and distribution is illustrated on the maps which follow.
Work carried out in 2004 consisted of on site evaluation by Dr. Norm Catto, a highly respected geomorphologist with many years experience in beach formation and glacial processes. Dr. Catto visited the beaches as part of a larger sustainable development study. As work was done by hand, test pits were dug to a maximum depth of 1.4 metres. About 30 sand samples were collected to study the nature of the beach system regimes and to evaluate heavy mineral content and variations in particle size distribution.

Eighteen samples were collected from South Beach along one-fifth of its total length (1.8 km). Because of significant and uniform garnet content, South Beach is distinctly red in colour, and one of the highest grade alluvial garnet deposits known worldwide. In contrast, the larger North Beach deposit is grey, because of a layer of light wind-blown sediments which form a blanket over the dunes and forebeach. Notably, previous sampling was focused along the ‘apron’ of the dunes, where Dr. Catto advises heavy mineral content is typically lowest (25 weight % garnet previously reported). Recent sampling in the central foreshore revealed red sands visually similar to South Beach under a thin grey veneer. Twelve samples were taken along 1.5 km of North Beach, about two-thirds its total length (2.2 km).

In the upcoming months, additional beneficiation work based on UBC’s Center for Industrial Minerals Innovations recent study is planned, along with North American & European market testing.

Logistical considerations did not permit more extensive surveys this year, and the planned work will be continued in 2005. It is anticipated to consist of ground penetrating radar and/or split spoon sampling, as well as a larger scale bulk sample of approximately 600 tonnes. Environmental studies will also be continued.

2.5 OFFSHORE SUMMARY

The offshore beyond the South Beach has been tested by Van Veen grab sampling at depths from 5.2 to 11.3 metres, and with an acrylic tube sampler below the low tide line. This sampler penetrates to an average of about 30-50 cm in sand. A sediment depth of 1 metre is interpolated assuming generally consistent conditions with test pits near the low tide line. As noted, depth sounding indicates the sea floor to be flat and sandy for at least 750 metres offshore.

In 1999, an average of about 25% garnet was established off South Beach. In 2000, this was confirmed by sampling below the low tide line over almost its full length, approximately 1550 metres (5085 ft). The 29 samples averaged 29 weight % garnet. The offshore below the low tide line of Seven Islands is similar, with about 22 weight % garnet along its length of 1000 metres (3280 ft).

Data density and distribution is illustrated on the maps which follow.
2.6 TONNAGE AND GRADE

A geological resource of alluvial garnet has been well established by sampling and testing to date. The onshore garnet resource at the South Beach alone could potentially supply 20,000 tonnes garnet concentrate annually for over 20 years. The remaining garnet at the North Beach and the offshore could be used if needed to meet additional demand.

Bulk density test results used in the following section were performed by Process Research Associates as well as UBC’s Center for Industrial Minerals Innovations.

2.7 RESOURCE ESTIMATES AND RESERVES

Work to date has largely been concentrated on the South Beach deposit, which is the highest grade resource. For the sake of simplicity, overall garnet grade used to estimate tonnage is 60%. With an assumed average depth of 2 metres and dry bulk density of ~2.3 tonnes/m³, the total Measured Resource of 512,150 tonnes garnet is estimated as follows:

\[
(185,625 \text{ m}^2) \times (1 \text{ m depth}) \times (2300 \text{ kg/m}^3) \times 60\% \text{ garnet} \times \frac{1000 \text{ kg/tonne}}{\text{tonnes/metre depth x 2 metres}}
\]

The resource represented by the North Beach deposit is estimated the same way. With average depth assumed as 2 metres, dry bulk density of ~1.8 tonnes/m³, and garnet content of 25%, the total Measured Resource is 266,900 tonnes garnet.

Offshore resources are estimated by multiplying the length of beach by an assumed area of influence offshore of about 500 metres, a sediment depth of 1 metre, and a bulk density of ~1.8 tonnes/m³. With these assumptions, the Indicated Resource offshore at the South Beach is estimated at 348,750 tonnes, with 180,000 tonnes offshore at Seven Islands.

TABLE 3. ESTABLISHED RESOURCES

<table>
<thead>
<tr>
<th></th>
<th>Garnet Content (weight %)</th>
<th>Total Area (square metres)</th>
<th>Estimated Resource (tonnes per metre depth)</th>
<th>Estimated Total Depth (metres)</th>
<th>Estimated Total Garnet (tonnes)*</th>
<th>Estimated Total Garnet (tons)***</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEASURED RESOURCES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Beach Onshore</td>
<td>60</td>
<td>185,625</td>
<td>256,150</td>
<td>2</td>
<td>512,300*</td>
<td>563,530</td>
</tr>
<tr>
<td>N. Beach Onshore</td>
<td>25</td>
<td>296,525</td>
<td>133,450</td>
<td>2</td>
<td>266,900</td>
<td>293,590</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>389,600</strong></td>
<td><strong>779,200</strong></td>
</tr>
<tr>
<td><strong>INDICATED RESOURCES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Beach Offshore</td>
<td>25</td>
<td>775,000</td>
<td>348,750</td>
<td>1</td>
<td>348,750</td>
<td>383,625</td>
</tr>
<tr>
<td>Seven Islands Offshore</td>
<td>20</td>
<td>500,000</td>
<td>180,000</td>
<td>1</td>
<td>180,000</td>
<td>198,000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>528,750</strong></td>
<td><strong>581,625</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>918,350</strong></td>
<td><strong>1,307,950</strong></td>
</tr>
</tbody>
</table>

* 256,150 tonnes included as Probable Reserve

†† Note: Tonne=2205 lbs., Ton = 2000 lbs (Canadian metric tonne x 1.1 = US short ton)

Geologically similar beach sand deposits in Australia and India have both lateral and vertical continuity and are relatively predictable over considerable distances. At the South Beach, a one metre depth has been sufficiently verified to classify half the total Measured Resource – 256,150 tonnes -- as a Probable Reserve (included in Measured Resources as noted above).
2.8 HUTTON GARNET: PHYSICAL CHARACTERISTICS AND QUALITIES

The Hutton garnet is mainly pale pink to orange almandine (Fe₃Al₂Si₃O₁₂), similar to commercially available garnet from Australia, India and the USA. As the beaches are derived from reworked glacial deposits, garnet grains are typically sub-angular and unfractured -- important in abrasive waterjet cutting as breakage resistance is increased. Photomicrographs illustrate grain shapes ideal for nearly all waterjet applications.

Well-known industrial minerals expert, Mr. Frank Alsobrook, of New Jersey, summarized that the sand is well sorted, its garnet grains typically contain few inclusions and are free of internal fractures. Sub-angular grains predominate by far, favourable from a commercial standpoint as cutting ability is enhanced.

Alsobrook states, “This is a garnet deposit with a natural particle size distribution well suited to water-abrasive jet cutting... remarkable for an alluvial material after no processing other than magnetic separation.” The garnet grains are generally 0.30mm to 0.15mm in diameter -- the sizing required for waterjet products. Lesser amounts of coarser material may be retained for sand blasting applications.

In a 2001 valuation report prepared for the Government of Newfoundland and Labrador, MPH Consulting Limited stated, “the Hutton Garnet Project has reasonable potential to supply high quality industrial garnet to the eastern North American and western European markets and that further work would be justified to advance the evaluation if the mineral rights tenure was secure”. Since then, the Labrador Inuit Association (LIA) has ratified its land claim, which included shifting the boundaries of the proposed National Park reserve to exclude the garnet beaches. The beaches will now be located in an enclave of Labrador Inuit Lands outside the park, and appropriate arrangements will be put in place with LIA to facilitate the development to proceed. In summary, independent experts consider the Hutton property a viable prospect with development potential.

2.9 OTHER MINERALS

Work by Lakefield Research indicates the mineral assemblage of the sand is dominated by garnet, with lesser amounts of pyroxene, hematite, ilmenite, quartz, feldspar, zircon and rutile. Trace amounts of corundum (ruby), spinel, tourmaline, and kyanite also occur.

Ancillary minerals with possible economic potential include approximately 14 wt.% titanium and titanium-iron minerals, present as discrete, rounded particles and consist of ilmenite and rutile. An average of 4.12% TiO₂ assayed in the composite tested by Lakefield. Further study would be needed to determine whether titanium minerals add value as a by-product.

2.10 ORE SEPARATION TESTING AND RECOVERY

Separation of heavy mineral sands is generally carried out by a combination of wet gravity and magnetic separation methods. Four independent laboratories -- Lakefield Research Limited of Ontario, Inprosys Inc. of Colorado, UBC’s Center for Industrial Minerals Innovations of British Columbia, and Outokumpu of Jacksonville, Florida – have conducted separation tests on the Hutton garnet sands.
Preliminary beneficiation work by Lakefield included both magnetic and gravity separation methods. To further refine recovery and details of magnetic processing, Inprosys separated sieved and unsieved sand, and processed a 35 kg bulk sample. A high quality concentrate was successfully made with minimum recovery loss of total garnet. In all three tests, garnet concentrate represents about 65% of the weight of unprocessed sand.

The resulting garnet concentrate passed requirements of the toxic leach test (US-EPA TCLP) required for marketplace acceptance in the USA.

In the spring of 2004, the UBC Center for Industrial Minerals Innovations (CIMI) completed an extensive processing study of South Beach sand. The proposed flow sheet consists of a scalping screen, shaking table, dry high intensity rare earth magnetic separator, and an electrostatic separator. The resulting product achieved 93.1% garnet product with 60% weight recovery. A preliminary test of the North Beach sample produced 78% garnet concentrate with 31.9% recovery from a feed with approximately 30.3% garnet.

The South Beach product compares favourably with commercial waterjet garnet products.

2.11 WATERJET TESTING

One of the leading manufacturers of waterjets worldwide, tested the garnet concentrate prepared by Inprosys. The Hutton concentrate performed at 96% of the premium U.S. hard rock waterjet product.
SECTION III

PRODUCTION PLANS AND COSTS

3.1 EXTRACTION PLAN AND PROCESSING

Given positive results in terms of high garnet grades, ease of preparation of a concentrate, and excellent results from waterjet testing, a mining lease application was made for a 9.9 hectare (24.5 acre) portion of the South Beach in December, 1999.

A number of extraction methods have been considered. The proposed outline below is believed to be the best scenario for development of the South Beach deposit. The overall intent is to minimize both time spent on site as well as any possible environmental impact. It is also possible to rotate production from the South to North Beach deposits on an annual basis to allow for infilling of removed material by natural processes over a longer period of time. Production of offshore garnet via dredging has been less fully explored.

3.2 MINING METHOD AND PRODUCTION PROFILE

Mining of beach sands can be “wet” or “dry”. The cheapest mining method for large scale operations concentrating several hundred thousand tonnes of sand per year is dredging, with an operating cost between CDN$1.50 to $5.00/m$^3$. Beach sand deposits in Australia or India often use floating dredges working behind safety barriers in ponds parallel to the coastline.

Total world consumption of waterjet cutting garnet is estimated at 60,000 to 80,000 tonnes per year. Full-scale long-term production at the South Beach is anticipated at approximately 20,000 tpa garnet concentrate.

Given proposed volumes are small, and due to the location and morphology of the deposits, a “dry” mining method is more practical than a floating dredge approach. The Hutton project would be run like a small sand and gravel operation over two to four weeks in the summer, from July to August on an annual basis. Given the short time frame, earth-moving equipment could be leased or the operation contracted to reduce initial capital costs.

The scale of the operations need not be extensive. As little as a few acres are needed for the operation during any single operating season. For example, using only a 25 m (80 ft) radius of influence around a sample point at the South Beach, with a 1 metre mining thickness, total garnet is:

$$(\pi r^2) (1 \text{ m depth}) \times 2300 \text{ kg/m}^3 \times 60\% \text{ garnet} = 2,700 \text{ tonnes garnet}$$

Onshore work at the South Beach would be carried out 24 hours per day with an 8-12 person crew on two 12 hour shifts. They would be stationed in a mobile base camp on a barge or boat. Small earth-moving equipment, such as 2-3 skid-steer loaders (possibly on dual wheels and double tracks), would move the sand to two diesel-operated hydraulic concentrators – hydrosizers or jig tables – which can operate with either fresh or salt water. As these units can process up to 45 tonnes per hour each, about one to two weeks would be needed to upgrade 17,000 tonnes sand with 60% garnet to 10,000 tonnes of a 90%+ concentrate. The barren sand would be backfilled and regraded.
The garnet concentrate would mostly likely be bagged and transported to a small feeder conveyor. It could also be moved onto the barge via a ramp. Independent contractors have advised 3 days are needed for lightering and loading of 10,000 tonnes of bagged material.

The concentrate would be transported to a commercial centre in Newfoundland for final processing and distribution over the course of the year. The final product must meet industry specifications, such as minimum and maximum size, specified garnet content (>90%) and an absence of deleterious substances -- i.e. crystalline silica, magnetic minerals and soluble chlorides (usually <25 ppm). This is achieved by washing, drying, magnetic separation and screening techniques. These process steps are well understood in the mineral sand industry and present no real problems.

3.3 ENVIRONMENTAL AND ARCHEOLOGICAL CONSIDERATIONS

The Hutton beaches are located in a sub-arctic region subject to pack ice for about eight months of the year. The deposits are exposed beach areas and largely free of vegetation. The area is typical for the northern Labrador region and there are sparse signs of wildlife – no particularly sensitive or limiting habitat was noted during the August-September, 2000, site visit.

As the Hutton garnet sand deposits are alluvial, work consists of moving sand with small equipment and concentrating heavy minerals with locally obtained water. These activities would be largely confined to the foreshore area. Waste materials generated (sand, water) are already present in the environment. The barren sand would be readily backfilled and regraded. The concentrate would then be moved to a barge for shipping to the processing plant. Blasting, crushing and grinding are not needed. No chemicals are required.

The mining lease outline is just under 10 hectares in size. As proposed production volumes are small, only an insignificant amount of land would be disturbed -- for example, only 0.72 hectares (1.8 acres) to a metre in depth is needed to produce 10,000 tonnes garnet concentrate.

Activity on site is expected to be two weeks up to one month on an annual basis. Any onshore facilities (i.e. fencing) would be temporary and existing conditions would be restored at the end of the project each season.

Common sense dictates that mining the Hutton property for garnet would have negligible impact on this part of the Labrador coast. The beaches are “bayhead” beaches, where sand built up in a “swash zone” naturally accumulates between headlands. Physical changes due to sand removal would be temporal, as the beach would restore its shape within a matter of days.

Some key considerations are as follows:

1. Bears

   Special provisions would be made to minimize any possible bear encounters, protect people, equipment and bears. Protocols will be developed in consultation with provincial authorities to ensure that animals are only destroyed as a last possible resort. All crew members would be instructed in appropriate conduct, and one would act specifically as a bear monitor.

   The camp and garbage facilities would be self-contained on a barge or a boat, and earth-moving equipment would have enclosed cabs. Use of temporary or electric fencing could be considered around the concentration equipment. Firearms would be secured by management.
2. Fish and Fish Habitat

The nearest commercial fishery is several days away by boat.

Disturbance of onshore beach sand is not anticipated to adversely affect marine fish habitat.

It is important to note that the beach deposits are produced in a high-energy surf zone and the sand itself is subsequently coarse in texture. No silt or clay, defined by the Department of Fisheries and Oceans as particles from 0.0005 mm to 0.05 mm and smaller, is present. For this reason, wastewater generated from hydrosizers or jig tables will not contain any fine particles known to impact fish.

3. Mechanized Equipment

Special provisions would be made to address use of motorized equipment on shore due to sand porosity and proximity to the water table.

All machines would be inspected and well-serviced prior to transport to the site. Wherever possible, equipment with biodegradable hydraulic oil would be specified. Oil spill response equipment (i.e. clean-up kit including a deactivator) would be maintained at the site at all times. Fuel caches will comply with all environmental requirements. A dedicated fuel-filling site with an impervious pad would be established to restrict impact of any possible spills.

The mining plan would make provisions to minimize any disturbance to shore vegetation, and to rehabilitate any areas which require revegetation.

4. Raptors

The South and North Beaches are located at least a kilometre away from cliffs with any potential raptor nesting sites.

Although an environmental scientist was part of the team that carried out the work on the property in 2000, further environmental and archeological assessments would be completed prior to commencing production at the property. An Environmental Protection Plan would establish specifications pertaining to contingency for wildlife encounters, spill response, discovery of historic resources, and possibly water quality monitoring. A policy of no fishing, hunting or trapping would be adopted.
3.4 TRANSPORTATION, LOGISTICS AND COSTS

Preliminary cost estimates of C$165/tonne have been derived from a variety of sources, including similar-scaled sand and gravel operations, written quotes, and known industry costs experienced by other garnet producers. Although this figure is believed to be high, it is included for illustrative purposes.

The preliminary cost estimate includes:

♦ Mining and pre-processing of 1m$^3$ to obtain ~1.2 tonnes of garnet (similar to a small-scale sand and gravel operation)

♦ Loading and shipping to processing/distribution plant in eastern Canada

♦ Processing – washing, drying, sizing, magnetic separation, preparation for shipping (similar cost in Australia)

♦ General and Administration

♦ Contingency

These figures are based on moving one 10,000 tonne shipment of garnet concentrate from the South Beach on a barge to a location in Newfoundland. Other alternatives, such as backhaul arrangements with cargo ships returning from Baffin Island, may offer substantial cost savings. To transport the material to Europe, further costs of about C$40/tonne should be added.

Preliminary extraction and processing costs are well below current prices for commercially available waterjet products equivalent in quality to the Hutton material. The Hutton garnet’s sub-angular shape, lack of fractures and inclusions, all contribute to its performance which closely approaches the premium product -- which ranges from C$1010-1500/tonne. A mid-range price for a lower-quality material is C$675-790/tonne. As selling prices far exceed production and processing costs, the Hutton garnet can be mined at a significant profit.
SECTION IV

MARKETING ASPECTS

4.1 THE HUTTON DEPOSITS

The recent discovery of significant alluvial deposits of almandite garnet along the coast of Newfoundland-Labrador -- the Hutton Deposits -- is important: Waterjet cutting abrasives and blast cleaning media for parts of eastern North America and portions of Europe may soon become available from eastern Canada.

Section IV of this report summarizes the important aspects of the North American market which may be affected by garnet from the Hutton deposits. Nothing contained in the available technical data base or in the commercial market place requirements for garnet abrasives appears to limit the possibility for economic development of the Hutton deposits.

Testing indicates that the Hutton product meets required specifications for abrasive waterjet cutting. This market is expanding at a rate of 12% annually, and waterjet products are currently in high demand in major industrial centres in eastern North America.

The high grades and quality of the Hutton garnet sands, complemented by transportation advantages to a Newfoundland producer serving East Coast markets, significantly contribute to the overall value of the project.

4.2 GARNET IN NORTH AMERICA

Garnet has been mined and used for various abrasive applications in the United States and Canada for nearly 150 years. The discovery of garnet-rich rocks in the eroded core of the folded metamorphic rocks of northern New York state created a local industry that survives to this day. Barton Mines Company LLC operates a mine and mill complex in the area. It continues to serve markets it helped establish in past decades.

In more recent years, alluvial garnet has been produced from stream and river gravel deposits in the mountains of northern Idaho. Here, WGI Heavy Minerals Inc. operates the Emerald Creek Mine, which helped establish the initial U.S. market for garnet in both the blast cleaning and filtration business sectors.

Other garnet production facilities and garnet imported into North America from India and Australia have combined to meet the demand as it has developed. Deposits of quality garnet that may or may not come onto the market in the near future are known to exist in Canada, Mexico, and in the USA. Similar deposits are known in China and Sri Lanka. These later deposits - together with current producers in India - suffer from uncertain ocean freight rates to North America - rates that may far exceed the FOB cost of the mineral! However, none of the new suppliers would be likely to serve precisely the same regional markets targeted by the Hutton deposits.
4.3 GARNET – THE MINERAL

“Garnet” is a rather common accessory mineral in many rocks, and it is found in small quantities in most geologic environments. The name actually applies to a family of generally similar minerals with the general chemical formula:

\[ R^{++}_3 R^{+++}_2 (SiO_4)_3 \]

where \( R^{++} \) is a combination of calcium, magnesium, iron, or manganese, and \( R^{+++} \) is iron, aluminum, (or rarely) chromium or titanium.

**TABLE 5. GARNET TYPES**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Formula</th>
<th>Hardness</th>
<th>SG</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aluminum Garnet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almandite</td>
<td>3FeO.Al_2O_3.3SiO_2</td>
<td>7.5</td>
<td>4.1</td>
<td>Rd/Brn</td>
</tr>
<tr>
<td>Grossularite</td>
<td>3CaO.Al_2O_3.3SiO_2</td>
<td>7.0</td>
<td>3.6</td>
<td>Gn/Yel</td>
</tr>
<tr>
<td>Pyrope</td>
<td>3MgO.Al_2O_3.3SiO_2</td>
<td>7.0</td>
<td>3.7</td>
<td>Rd/Blk</td>
</tr>
<tr>
<td>Spessertite</td>
<td>3MnO.Al_2O_3.3SiO_2</td>
<td>7.0</td>
<td>4.1</td>
<td>Rd/Brn</td>
</tr>
<tr>
<td><strong>Iron Garnet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andradite</td>
<td>3CaO.Fe_2O_3.3SiO_2</td>
<td>6.5</td>
<td>3.6</td>
<td>Bn/Tan</td>
</tr>
<tr>
<td><strong>Chromium Garnet</strong></td>
<td>(Very Rare)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uvarovite</td>
<td>3CaO.Cr_2O_3.3SiO_2</td>
<td>7.5</td>
<td>3.5</td>
<td>Green</td>
</tr>
</tbody>
</table>

The table above shows the most common species within the garnet family and the most important physical and chemical traits. Members of the Almandite-Pyrope series – those containing a mix of Fe and Mg in the \( R^{++} \) position - are the only garnet species commonly used in industry, although some andradite is used in filtration.

The table also illustrates at least one of the traits – hardness - that makes garnet an effective abrasive. Almandite-pyrope is hard enough to scratch most common metals and glass. Barton Mines Company continues to supply crushed almandite garnet to manufacturers of garnet “sandpaper” around the world.

Besides hardness, almandite has a number of other traits that make it suitable for uses as an abrasive and for other applications. The garnet crystal is a dense, durable grain that resists chemical weathering and breakdown in most geological environments. The grains survive erosion and, because of the relatively high specific gravity, are concentrated by alluvial processes, as is the case at the Hutton property.

The garnet species found in the Hutton deposits are of the **Almandite-Pyrope** series. The Hutton garnet is mainly pale pink to orange almandite (\( Fe_3Al_2Si_3O_12 \)) and composed of 28.6% \( Fe_2O_3 \), 21.5% \( Al_2O_3 \), 8.06% \( MgO \) & 4.90% \( CaO \). This is similar to commercially available garnet from other deposits around the world.

In addition to the locations in the U.S. mentioned earlier, almandite garnet is currently produced in India, Australia, China, and small amounts in the Ukraine and in South Africa.
4.4 GARNET MARKETS DEFINED

4.4.1. Abrasive waterjet cutting

Perhaps the most exciting market for garnet is in the waterjet cutting industry. Patented in the early 1980's, this emerging computer-based technology uses ultra-high pressure water forced through very small nozzles to cut a wide range of materials. If fine garnet is introduced into the flow, precision cuts become possible in a wide range of materials, from titanium metal to glass.

In comparison to lasers, which operate at high temperatures and are limited to cutting 1.3 – 2 cm thick material, abrasive jets are more versatile and more cost-effective. Commonly used on 10 cm thick metal, waterjets can cut up to 25 cm steel and 60 cm glass at slow speeds, or surface etch for decorative purposes. Any complex two-dimensional shape may be machined with high precision and excellent quality finish. Some waterjet machines cut with a tolerance of +/- 0.005 cm. For these reasons, the aerospace industry makes extensive use of this technology.

Abrasive waterjet cutting is less than twenty years old and already has an American trade association and U.S. government-funded research. Total demand for this sector is difficult to estimate, and published figures range from as low as 15,000 to over 30,000 tonnes per year. The market has a historic growth rate of over 12% annually – a rate that flattened during the recent recession, but that has remained positive. Future growth rates are expected to be in the 5.0-7.0% range. Strong positive demand exists worldwide, though differences in base level exist – for example, waterjet is presently most popular in North America and Europe, but it is a recent technology in the Far East.

Waterjets utilize garnet in the 0.30 mm to 0.15 mm size range. Users require a high degree of product cleanliness and processing consistency. Although large users exist (i.e. Boeing Co.), most abrasive waterjets are owned by small “jobbers” or machine tool shops. Sales are therefore often in small lots.

As waterjet demand continues to grow, the shift in emphasis from coarser to finer grains will cause suppliers and mining companies to restructure operations to meet the new demand. It is worth noting that Emerald Creek Garnet Company is already crushing some of its very coarse material to make finer waterjet material. Flow Industries, the leading waterjet equipment manufacturer, purchases garnet from WGI Heavy Minerals in India and markets it worldwide as #80 Paser Plus for use in waterjets. GMA Garnet, with a relatively large percentage of its mine-run material in the finer size ranges, is in a good position to benefit from growth in this market. The distribution of particle sizes in the Hutton sands falls naturally into the size ranges found most effective for waterjet cutting.

Barton Mines, operating a high-cost hard rock mine and mill in New York, has positioned its garnet at the high end of the quality spectrum and commands a price premium. Other suppliers try to approach the perceived Barton quality as closely as possible, but price their material to attract new customers in the shortest possible time. This has led to a “stratified” market summarized below.

<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>COMMENT</th>
<th>C$/tonne (US$/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barton Mines</td>
<td>Market leader, very high quality image</td>
<td>$1010-1500 ($700-1020)</td>
</tr>
<tr>
<td>Indian garnet (FLOW)</td>
<td>Captive house brand from Flow Industries</td>
<td>$675-790 ($460-540)</td>
</tr>
<tr>
<td>Emerald Creek (WGI)</td>
<td>New plant with washed product</td>
<td>$615-770 ($420-525)</td>
</tr>
<tr>
<td>GMA - others</td>
<td>Excellent blast product, quality &amp; service</td>
<td>$540-745 ($370-510)</td>
</tr>
</tbody>
</table>

Note: Dollar values are approximate only
The natural size distribution of the Hutton sand is naturally suited to a #80 mesh product most commonly in use for waterjet applications. Commercially available products in this sizing thus establish a pricing benchmark for the Hutton garnet.

In the original version of this report, completed in Spring 2001, it was proposed that the Hutton garnet would initially be sold with mid-range products, such as the #80 Bengal Bay garnet then distributed by Flow International. This approach allows room for distributor mark-up and gives users an incentive for direct sales. Although market prices have not increased substantially over the last three years, the waterjet market has held constant, signs of growth are now evident, and a similar price range of C$675-790/tonne is still applicable. Several manufacturers have recently increased sales prices and business is reportedly good.

The United States Geologic Survey - the USGS - annually reports trends and statistics for various mineral commodities. The USGS data for industrial garnet shows a consistent pattern of growth in demand through the 1990's and a downturn reflecting the recession of 2000-2001. Demand has increased again with economic recovery. Supply has come from both domestic suppliers and from increasing imports.

The USGS data for both prices and tonnages must be interpreted with care. The gross statistics reflect both almandite and andradite production - two species of garnet minerals that do not compete in the same markets. In addition, the data does not reflect the differences in production costs for the so called “hard rock” garnet in the eastern US and the lower cost alluvial material that is mined in the western states and garnet which is imported from Asia and Australia. Lastly, the data for waterjet cutting garnet markets is grossly understated, in part to protect corporate marketing information, considered proprietary and confidential by the producers.

The waterjet business sector will remain an important and growing opportunity not just in North America but worldwide in the years to come. The Hutton project is well located geographically to benefit from future growth, particularly in North America and Europe.

### 4.4.2. Abrasive blast media

At this time, the largest North American market for industrial garnet is in abrasive blast cleaning – commonly known as sandblasting. In abrasive blasting, a grain of material is held in a pressurized steel pot until released through a system of hoses and a nozzle to impact a surface. The grain, often traveling at velocities approaching the speed of sound, cleans the surface through a combination of “cutting” through layers of dirt and paint, and through a mechanical action of disrupting the surface through shock impact. Nearly any material of the proper size to pass through the pneumatic system with sufficient mass to carry energy can be used as a blasting abrasive.

The PERFECT BLAST MEDIA are.....

- heavy and hard enough to be effective;
- durable enough to resist breakdown on impact (low dusting);
- angular enough to “cut” through paint and to roughen the surface;
- free of toxic substances that are harmful to man or the environment;
- available from local stocks to minimize delivery problems; and
- low in purchase cost.

There is no “perfect abrasive”.

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Freeport Resources Inc. – Hutton Prefeasibility and Marketing Study – October 14, 2004
Silica sand, still widely used in North America, has nearly all these attributes, but carries serious health risks. Smelter slags are safer but often contain heavy metals perceived to present other health or environmental risks. Steel abrasives eliminate many of these risks, but are quite costly, requiring purchase of recycling and related equipment to justify their use. Other minerals — garnet is one example — offer alternatives that meet some, but not all, of the listed attributes.

In abrasive blasting, nearly any sizing shown to be effective can find a market niche. Garnet sizes used for blast cleaning range from very coarse material (about 2.0 mm) used in some specialized recycling applications to fine grained (0.15 mm) material used to clean aluminum and thin steel. Most blasting is done with material in the 0.8 x 0.5 mm and a slightly finer 0.6 x 0.2 mm size range.

The growth rate of demand for garnet blasting abrasives is about 5% per year. As governments continue to stress the importance of eliminating silica from the workplace, it is reasonable to expect growth rates exceeding 10% per year in coming years. In the US, OSHA is currently evaluating new regulations that would significantly restrict the use of silica sand as a blast media.

Approximate demand for various abrasive blast media is shown on the following table:

<table>
<thead>
<tr>
<th>TABLE 7. NORTH AMERICAN DEMAND FOR ABRASIVE BLAST MEDIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ABRASIVES</strong></td>
</tr>
<tr>
<td>Silica Sand</td>
</tr>
<tr>
<td>Coal Slag</td>
</tr>
<tr>
<td>Copper Slag</td>
</tr>
</tbody>
</table>

| **MINERALS**                    |              |                                               |
| Staurolite                      | 80,000      | Very fine grained; limited future             |
| Olivine                         | 30,000      | Limited availability; dusty                   |
| Garnet                          | 35,000      | High perceived cost; regionally limited availability |
| Steel abrasives                 | 300,000     | High related capital cost                    |
| **TOTAL**                       | 2,605,000   |                                               |

All producers offering garnet to the U.S. market must meet the minimum standards set forth in International Standards Organization (ISO) and Steel Structures Painting Council (SSPC) specifications. The most important of these are as follows:

<table>
<thead>
<tr>
<th>TABLE 8. ISO AND SSPC SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ITEM</strong></td>
</tr>
<tr>
<td>Free Silica</td>
</tr>
<tr>
<td>Soluble Chlorides</td>
</tr>
<tr>
<td>Toxic Metals</td>
</tr>
<tr>
<td>Friability</td>
</tr>
</tbody>
</table>

Current published prices for abrasive blasting products are from C$560-1115/tonne (US$380-760/ton), just slightly lower than waterjet-grade material. In some areas, such as India, increased waterjet production has created excess supplies of coarser blasting grades, resulting in short-term reductions in pricing for blast media.
4.4.3. Water filtration

The third major market for garnet grains is in single or multi-media, high-density sand filters. The use of garnet as a high-density layer under the sand and anthracite layers can increase the efficiency of the filtering process in some areas.

The technology for this application was patented in the early 1980’s using WGI Heavy Minerals’ Idaho material as the standard. The technology and the patents are now in the public domain. Much of the original design work using garnet was done with WGI Heavy Minerals’ #8/12, #3040, and #50 materials. Other sizes are rarely used in the filtering process.

The total North American market for garnet filtration sands is estimated at about 9,000 tonnes annually. It is not clear whether this market is growing or if it is static. The demand is highly dependent on the decision of contracted engineering firms as to size and filter type to be employed.

4.4.4. Other Garnet markets

Garnet is occasionally used in other markets, but none present important short-term investment opportunities. Use of garnet as an anti-skid additive to paints and floor tiles is well established, but the market is so highly segmented that no suppliers have made an effort to control it. It offers a good future application as garnet is significantly less expensive than aluminum oxide.

Garnet is also ideal as a substitute for higher cost aluminum oxide used in blast cabinets, but sales to individual users are small and are best done by a dedicated distributor. An opportunity may exist to form a business alliance with one or more manufacturers to introduce a branded cabinet media.

4.5 NORTH AMERICAN GARNET SUPPLY

North American garnet supply is the total of domestic almandite production at Barton Mines and Emerald Creek Garnet Co. in the USA, plus imported material from Australia, India and China. Two smaller producers that operated in Montana have closed. The closure should create a vacuum for a few thousand tonnes of waterjet cutting material.

The table below summarizes the productive capacity and import statistics of the major suppliers. It is stressed here that the information for Barton Mines Co. is only an educated “best guess” as the company is privately held, and it is difficult to estimate most of the desired data.

<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>LIMIT (tonnes)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barton Mines, New York</td>
<td>23,000</td>
<td>Competes with others only in WJ; angular grains (crushed)</td>
</tr>
<tr>
<td>Emerald Creek, Idaho</td>
<td>23,000</td>
<td>Pushing into waterjet sector; sub-rounded grains (alluvial)</td>
</tr>
<tr>
<td>China and India</td>
<td>28,000</td>
<td>Sold in Europe, Asia, N. America; sub-rounded grains (alluvial)</td>
</tr>
<tr>
<td>GMA imports, Australia</td>
<td>23,000</td>
<td>Currently about 15,000; sub-rounded grains (alluvial)</td>
</tr>
<tr>
<td>Others</td>
<td>3,000</td>
<td>Few potential new suppliers</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
The table is misleading in that it indicates a gross imbalance between potential supply of 100,000 tonnes and current demand about 63,000 metric tonnes - see below. It must be stressed again that not all potential supply tonnage is available for all markets. For example, GMA cannot compete for medium - coarse blast product for heavy maintenance painting demand, and Barton’s crushed garnet from its hard rock mine is far too expensive to attract buyers in abrasive blasting or filtration. The table also does not reflect regional distribution or usage patterns. For example, Los Angeles is now oversupplied with garnet, but some cities in the East suffer from shortages in some sizes. Waterjet garnet is reportedly in high demand in the east and northeastern U.S. Canadian statistics are not as reliable, but high demand is known in the south-eastern region (i.e. Montreal and Toronto). Producers have attempted to resolve availability issues by establishing regional warehouses and by creating new distributors. As noted, WGI Heavy Minerals is now crushing coarse garnet to meet increased demand for waterjet product.

The picture is further complicated by the costs of transportation and distribution.

### 4.6 TRANSPORTATION AND DISTRIBUTION

Most garnet sold is delivered to users in small lots handled through a distributor warehouse. Limited sales are made directly from supplier to end-user. Customers specify mode of delivery and packaging. All suppliers offer delivery in bulk bags and either 50 or 100 lb. paper bags. Pallets are generally shrink-wrapped to protect shipments from moisture.

Given the size of North America, transportation costs can often exceed the cost of raw materials. Internal trucking costs from a production center like the Emerald Creek Mine in northern Idaho can easily add US$50 per ton to a customer in California or more than US$100 per ton to one in the eastern part of the continent.

All producers and suppliers face these same numbers. Add to this the cost of material in India or Australia combined with the cost of ocean freight and the picture becomes complete. The cost to the customer can easily exceed US$300 per short ton. **This becomes the competitive basis for the Hutton material.**

The importance of transportation benefits to a Labrador garnet producer should not be understated. Sea freight to major eastern Canadian and U.S. cities such as Montreal, Boston, and New York, as well as to the major industrial centres in the Great Lakes area (Buffalo, Detroit, etc.) and in western Europe, represents an attractive cost advantage to both supplier and consumer.

### 4.7 GARNET DEMAND IN NORTH AMERICA

As stated above, the total garnet demand in North America is about 65,000 tonnes per year at this time. It is possible that the **waterjet** segment has been underestimated, but it is also possible that filtration and “other” uses are overstated.

The table below illustrates current and possible future (2005) demand, as both a high and low case, based largely on further restrictions on the use of silica sand as a blast media. "Other" uses include powders and special markets presently served exclusively by Barton Mines.
TABLE 10. GARNET DEMAND IN NORTH AMERICA  
(000 metric tonnes)

<table>
<thead>
<tr>
<th>Demand Sector</th>
<th>2002 Demand</th>
<th>% of Demand</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasive Blasting</td>
<td>26</td>
<td>41%</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>Waterjet Cutting</td>
<td>18</td>
<td>29%</td>
<td>37</td>
<td>50</td>
</tr>
<tr>
<td>Filtration</td>
<td>09</td>
<td>14%</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Other (powders, etc.)</td>
<td>10</td>
<td>16%</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>63</strong></td>
<td><strong>100%</strong></td>
<td><strong>96</strong></td>
<td><strong>140</strong></td>
</tr>
</tbody>
</table>

The implications for the producing sector of the 2007 case numbers are important to recognize. Even though there is excess overall capacity in the system at the current time, the imbalance of particle sizes needed to meet specific market demand will influence the availability (and therefore the prices) of many current products. Importantly, the Hutton deposit is rich in the sizes needed for the rapidly expanding waterjet market.

As in any business venture, fortune favors the low-cost supplier. As rate of waterjet demand escalates at a rate exceeding abrasive blasting demand, the gap between the two will narrow, and mines such as the Hutton will open to target waterjet as the primary market.

As the Hutton deposits are alluvial, it is relatively easy to adjust production capacity to meet increased demand. This provides much more flexibility than a hard rock mine, further enhancing the value of the Hutton project.

Proximity to eastern markets is also a key factor to consider. Major cities within about 2500 km (1500 mi.) of St. John’s include Halifax, Boston, Montreal, New York, Philadelphia, Toronto, Buffalo, Detroit and Cleveland.

4.8 GARNET DEMAND IN EUROPE

Seven years ago, the European garnet market was estimated at 18% of global consumption with about 30 to 35% in jet cutting sizes. At an assumed 12% annual growth rate, this represents over 30,000 tonnes today. However, there is a high level of uncertainty about such figures. Low cost freight from India and Australia has also acted to increase demand, and the total consumption may be much greater than the amount shown.

This study has focussed on the North American market as, in the short-term, it will absorb all the Hutton waterjet garnet produced. The European market is presently supplied from Australia and India; lower-quality Scandinavian olivine is also used. Europe offers an opportunity for additional distribution, particularly if pricing differences make this attractive.

A distribution alliance with a custom processing company in the UK or the Netherlands could be considered, as these often have upgrading facilities and established distribution networks for a variety of industrial minerals.
4.9 BUSINESS RISKS

Several areas of possible risk identified in North American markets, though none is deemed serious. Financial risk (inventory loss, etc.) can be assigned and born by the distributor in many cases. Key areas are listed below:

4.9.1 Regulatory:

Waterjet:
The waterjet supply market will face less regulation than blast media. Waterjet cutting takes place indoors in a shop operation under controlled conditions. The potential for airborne dust is significantly limited as garnet is entrained in water at time of impact.

Abrasive Blasting:
The trend in North America is “cleaner, safer, faster”. To the extent that all abrasive blasting is perceived as a dusty, hazardous occupation, it will be regulated along with less desirable media. Countering this trend will be continued pressure on use of silica sand and (potentially) smelter slag. The overall trend in the regulatory environment will be in favor of more environmentally friendly products.

4.9.2 Technological:

Waterjet:
The waterjet sector has no identified substitute material. Key aspects in maintaining garnet’s position in this market are excellent quality control and effective marketing.

Abrasive Blasting:
All traditional abrasive blasting is at risk from new coatings systems, robot blasters, captive waste disposals schemes, and any number of other technologies, or so we are led to believe. In truth, abrasive blasting remains the most cost-effective tool for cleaning steel and other surfaces. It is likely to remain so for some years to come. Contractions and substitutions in the abrasive market favor quality products like garnet in the long run.

4.9.3 Imported Garnet:

Waterjet & Abrasive Blasting:
Garnet producers from India and Australia (and China to a lesser extent) are low cost suppliers that impact domestic North American waterjet and blasting suppliers (producers), but they are subject to increasing ocean tariffs and freight rates. The regional nature of production is a key factor to consider given the influence of transportation on overall costs.

Due to its location in India, WGI Heavy Minerals’ Bengal Bay production is more profitably targeted at the Middle East and Europe. Other Indian inventories have been established in several U.S. cities, but have not been marketed effectively. These inventories have been used to supplement Idaho production in the waterjet market.

Similarly, GMA garnet is imported from Australia to a number of U.S. port cities. The producer has been active in countering the impression that the GMA #80 is an ineffective waterjet media, to offset industry opinion that this product is best-suited to blasting due to its sub-rounded grain shape.
4.9.4 Substitute Materials:

Waterjet:

There is no viable substitute for garnet in waterjet cutting. Almandite garnet is available at economical costs, is harder than quartz sand and does not have the associated health risk.

1. Quartz is more friable and creates ultra-fine slimes that tend to plug the cutting nozzle.

2. Aluminum oxide is too hard and aggressive – it drives up equipment maintenance costs with little gain in cutting rate.

3. Olivine also has many drawbacks in waterjet applications -- this mineral is not as durable or hard as garnet and breaks down on impact at an unacceptable rate.

Abrasive Blasting:

In blasting, garnet competes with other mineral abrasives and slags.

1. Coal boiler slag resources are being depleted by roofing market demands and by exhaustion of a number of the existing raw material source piles.

2. Smelter slags, with high levels of contained metals, are now under attack in some market areas. (In the U.S., all West Coast slag sales are now accompanied by a commitment to arrange for effective disposal.)

3. Olivine, mined for the steel industry at two U.S. sites, is not available in sufficient quantities to warrant long-term concern as an abrasive blast substitute.

4. Staurolite sands, (StarBlast – by DuPont) mined in Florida as a titanium bi-product, is an 80x120 mesh material which cannot compete with coarser garnet in the maintenance market. Freight costs ensure it will be a strong competitor in the south and south-east U.S. Freight costs ensure it will be a strong competitor in the south and southeast US.

5. Crushed Glass: Recycled glass has been found unsatisfactory for most abrasive blasting applications.

6. Specular Hematite: East and Gulf Coast blasting markets are starting to use hematitic iron ore mined in Labrador by Quebec Mining Corporation. This material has high weight (SG = 5+) and lacks free silica and heavy metals. Users are apparently split on its value.
Freeport Resources controls an attractive garnet resource that can serve eastern Canada, selected
U.S. and European waterjet markets. The future for garnet in all of these markets is very bright.

There are currently no industrial garnet producers in Canada. The Hutton deposits’ location in
Labrador-Newfoundland offers a key advantage in terms of lower transportation costs to major
nearby industrial centres such as Boston, New York, Montreal, Toronto, Buffalo and Detroit, as well
as in western Europe.

Due to the natural sizing and physical qualities of the Hutton garnet, abrasive waterjet cutting is the
primary target market. The garnet meets the required specifications for this high-tech application.
Testing indicates the Hutton garnet closely approaches the performance of the industry leader
(96%). High-quality waterjet products command high prices in the marketplace.

Resource and reserve estimates indicate that more material exists at the South Beach alone than
would be used over a 20 year period. The Beach North deposit and the offshore are available to
meet additional long-term market demand.

As the Hutton deposits are alluvial, a concentrate is relatively simple, environmentally friendly
and cost-effective to produce. Investment costs to take the project into production are minimal due
to the low-tech nature of extraction methods. The nature of the deposits also offers flexibility in
terms of adjusting production rates to meet market demands over time.

The Hutton garnet would be offered as an excellent product at a fair and competitive price – similar
to mid-range commercially available products. As these selling prices far exceed production and
processing costs, the Hutton garnet can be mined at a significant profit.

The information at hand strongly supports proceeding with this development.
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Unsigned Articles


STATEMENT OF QUALIFICATIONS

I, Zdenek D. Hora, P. Geo., of Victoria, British Columbia, do hereby certify that:

I am a Consulting Geologist and Registered Professional Geoscientist in British Columbia and previously in Alberta, residing at 3657 Doncaster Drive, Victoria, BC, V8P 3W8.

I graduated from Charles University of Prague, Czechoslovakia with a M.Sc. Degree in Economic Geology and Mineralogy in 1958. Since graduation, I have been continuously practicing my profession in Europe and overseas, and since 1971 in Canada, namely in Quebec, Alberta, the N.W.T. and British Columbia. My work has largely been focussed on the geology, exploration and evaluation of industrial minerals deposits. From 1978 to 1984, I was the Industrial Minerals Specialist for the British Columbia Ministry of Energy, Mines and Petroleum Resources. From 1984 to 1999, I acted as the Program Manager for industrial minerals inventory and market studies in the province. This included one hardrock and two alluvial garnet deposits. Since my retirement in 1999 I am consulting in the field of industrial minerals – property assessment and evaluation, tenure aspect of industrial minerals in B.C. and its historical development, aggregate prospecting and deposit models for a wide range of industrial minerals. My professional activities included teaching industrial minerals courses (i.e. University of Victoria -- Economic Geology; B.C. Ministry of Energy, Mines and Petroleum Resources, B.C. and Yukon Chamber of Mines, and Geological Association of Canada – Courses for Prospectors). I have previously served as Chairman of the Industrial Minerals Division of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), and was the organizer and Co-Chairman of the 27th FORUM on Geology of Industrial Minerals and several other symposiums dealing with industrial minerals. From 1995 to 2000, I was part of the CIM Standing Committee on Reserve Definitions representing the CIM Industrial Minerals Division. I am presently a Consulting Geologist and have been so since June, 1999. As a result of my experience and qualifications, I am a Qualified Person as defined in N.P. 43-101.

I have not received, nor do I expect to receive any interest, directly or indirectly, in the properties or securities of Freeport Resources Inc. or any affiliate. I am independent of Freeport Resources Inc. in accordance with the application of Section 1.5 of National Instrument 43-101. I consent to use of this report by the company in submissions for any regulatory requirements and development opportunities. I am not aware of any material fact or material change which is not reflected in this report. I have read National Instrument 43-101, Form 43-101FI and this report has been prepared in compliance with NI 43-101 and Form 43-101FI.

This report is based on a study of all information made available to me by Freeport Resources Inc., including five assessment reports previously filed with the Department of Mines and Energy, as well as all geological and analytical data generated to date. This report was prepared under my direct supervision in consultation with several technical specialists -- Mr. J.D. Hansink, who authored the marketing section of this report, and Mr. P.M. Dimmell, P. Geo., who both visited the mine site. Mr. Hansink, a Consultant in business development and marketing, has over 13 years of experience in the garnet industry and is the author of numerous publications. Mr. Dimmell, of St. John’s, NF, is also a Qualified Person with many years experience in various aspects of mineral exploration and development. The information provided by the various parties is to the best of my knowledge and experience correct.

Dated in the City of Victoria, British Columbia this 14th day of October, 2004.

“Dan Hora”

Qualified Person

Z.D. Hora, M.Sc., P.Geo., Consulting Geologist
Tel.: 250-721-3728  Email: zdhora@telus.net
STATEMENT OF QUALIFICATIONS

I, James D. Hansink, of Kirkland, Washington, do hereby certify that:

I am a Consultant in business development and marketing in Washington, with previous experience in Colorado, Wyoming, New Mexico, and in Asia. My business address is P.O. Box 546, Kirkland, Washington, USA 98083-0546.

I graduated from St. Louis University, Missouri, with a BS, Geological Engineering, in 1963, and a MS, Geology, in 1965. I graduated from the Massachusetts Institute of Technology with a MS, Management (Sloan Fellow), in 1977.

I have been practicing my profession since graduation in 1965. From 1987 to 1993, I was General Manager, Blast Media, for Barton Mines Co. I served as VP, Marketing, for Western Garnet International from 1993 to 1997, and as Director, Marketing (North America) for GMA Garnet Pty. from 1997 to 1999. I recently served as Chair of the Steel Structures Painting Council (SSPC) Abrasives Committee, am a member of its Surface Preparation Steering Committee, and have published seven articles and several speeches for this organization. I have served as National Association of Corrosion Engineers (NACE) Committee Chair for TG-4 (presently inactive). I have been President of Garnet Services Inc. since 1999.

I have not received, nor do I expect to receive any interest, directly or indirectly, in the properties or securities of Freeport Resources Inc. or any affiliate.

This report is based on a study of all information made available to me by Freeport Resources Inc. I consent to use of this report by the company in submissions for any regulatory requirements and development opportunities.

Dated in the City of Kirkland, Washington, this 14th day of October, 2004.

“Jim Hansink”

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President, Garnet Services Inc.
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