MAR 19980009: PELICAN MOUNTAIN

Received date: Jun 12, 1998
Public release date: Jun 13, 1999

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ASSESSMENT REPORT ON METALLIC MINERAL PERMITS
No. 9396020002, 9396020003, 9396020004 and 9396020005

PELICAN MOUNTAIN AREA, ALBERTA

Prepared for
Ellesmere Minerals Ltd.

APEX Geoscience Ltd.

JUNE, 1998

D. Vernet
M.B. Dufresne
ASSESSMENT REPORT ON METALLIC MINERAL PERMITS No. 9396020002, 9396020003, 9396020004 and 9396020005 PELICAN MOUNTAIN AREA, ALBERTA

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SUMMARY

APEX Geoscience Ltd. (APEX), was retained in the spring of 1998 as consultants by Ellesmere Minerals Ltd. to prepare an independent evaluation of the diamond potential of the Pelican Mountain property (Metallic Minerals Permits 9396020002, 9396020003, 9396020004, and 9396020005). Although diamond exploration at Ellesmere's mineral permits is still considered high risk because the presence of kimberlite has not been confirmed, the potential for discovery of kimberlites on the permit areas is considered good based upon the regional geological setting in conjunction with the positive results of limited exploration that has been conducted to date.

Based upon (a) the favourable regional geological setting and (b) the presence of several high quality magnetic targets for the Pelican Mountain mineral permits, an aggressive, systematic follow-up exploration program is warranted to search for diamondiferous kimberlites in the permit area. Exploration for the permit area should include systematic follow-up surface prospecting and sampling, and conducting ground geophysical surveys to determine whether any of the airborne magnetic anomalies could be indicative of near surface diatremes that may warrant drill testing. Finally, a review and interpretation of available seismic data over high priority targets for both properties should be considered to aid in evaluation of airborne magnetic anomalies. The estimated cost of the exploration program at the Pelican Mountain Property, not including GST, is estimated at $70,000.

INTRODUCTION

Ellesmere Minerals Ltd. (Ellesmere) owns the rights to mineral permits 9396020002, 9396020003, 9396020004, and 9396020005 (hereafter referred to as the 'Pelican Mountain permits') in northcentral Alberta (Figure 1). In early 1998, Ellesmere commissioned Spectra Exploration Geoscience Corp. to fly a high resolution airborne magnetic survey (HRAM survey) over its Pelican Mountain Property. In February 1998, APEX Geoscience Ltd. (APEX) was commissioned by Ellesmere to review the HRAM survey data and to compare the results to HRAM surveys over known kimberlites.

Property Location

The claim blocks which comprise the Ellesmere permits are south of South Wabasca Lake in the Pelican Mountain area and approximately 75 km northeast of the town of Slave Lake (Figure 1). Slave Lake is located 200 km north-northwest of Edmonton and can be reached via Provincial Highways 2 and 44. Slave Lake is also accessible by air or rail, with
daily air passenger service.

The Ellesmere permits are geographically centered at about latitude 55°35' N and longitude 113°35' W, and are within 1:50,000 National Topographic System (NTS) map areas 83P/11 and 83P/12. The size and legal township-range legal description for mineral permits 9396020002, 9396020003, 9396020004, and 9396020005 are summarized in Table 1.

**TABLE 1**

<table>
<thead>
<tr>
<th>Permit Identifier</th>
<th>Date Issued</th>
<th>Expiry Date</th>
<th>Size (ha)</th>
<th>Location (mer-rng-twp) Legal Description</th>
</tr>
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<tr>
<td>9396020002</td>
<td>1996/02/13</td>
<td>2006/02/13</td>
<td>6656</td>
<td>4-23-076</td>
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<tr>
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<td>2006/02/13</td>
<td>9216</td>
<td>4-24-076</td>
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<td>9396020004</td>
<td>1996/02/13</td>
<td>2006/02/13</td>
<td>7380</td>
<td>4-23-077</td>
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<td>1996/02/13</td>
<td>2006/02/13</td>
<td>9216</td>
<td>4-25-077</td>
</tr>
</tbody>
</table>

**TOTAL AREAL EXTENT** 32468

**Property Description and Access**

The Pelican Mountain permits are owned 100% by Ellesmere Minerals Ltd. and consist of 32,468 acres in partial or full townships. Geographically, the Pelican Mountain area is composed of a number of topographic peaks surrounded by flat prairie and muskeg. The elevation of Pelican Mountain is up to 3000 m above sea level (asl) and the average elevation of the surrounding area is approximately 2200 m asl. The Ellesmere permits encompass a large part of Pelican Mountain and some of the surrounding lowlands. There is extensive forest cover over the Ellesmere permits.

A number of all weather roads which come within 10 km of the Ellesmere permits can be accessed from Slave Lake via Secondary Highways 67 and 813. In addition, there are a number of dry weather gravel roads crossing the permits which can be accessed by truck or all terrain vehicles. In addition a number of seismic cutlines also cross the permits and can be accessed by all-terrain vehicles. Due to the high number of seismic lines and roads, and the high topography in the area, ground access should be good even in wet conditions. The closest serviced airstrip is just north of Calling Lake, about 25km southeast of the permits, which is suitable for helicopter or small aircraft. Due to the number of seismic lines and seasonal roads helicopter access in the permits is also good.
**REGIONAL GEOLOGICAL SETTING**

**Precambrian**

The Pelican Mountain permits lie in the Western Canadian Sedimentary basin along the south flank of the Peace River Arch (PRA). However, Precambrian rocks are not exposed within the Pelican River region (NTS 83P). The basement underlying the PRA is comprised of several terranes including the Buffalo Head and the Chinchaga (Figure 2), which collectively form the Buffalo Head Craton (Ross et al., 1991, 1998). The Buffalo Head Craton was accreted to the western edge of the Churchill Structural Province approximately 2.0 to 2.4 billion years ago. Due to their relatively stable history since accretion, the Buffalo Head and Chinchaga terranes are currently the focus of extensive diamond exploration in northern Alberta.

Ellesmere's Pelican Mountain permits are underlain by the southeast extension of the Buffalo Head Terrane (BHT)(Figure 2). The BHT is an area of high positive magnetic relief with a north to northeasterly fabric (Villeneuve et al., 1993). Seismic and gravity data indicate crustal thickness is likely around 35 to 40 km in the vicinity of the Peace River Arch, a characteristic favorable for the preservation and formation of diamonds in the upper mantle (Dufresne et al., 1993). The area of Ashton Mining of Canada Inc.'s (Ashton) kimberlite discovery is underlain by basement of the BHT.

The BHT is thought to represent either Archean crust that has been thermally reworked during the Hudsonian (Proterozoic) Orogeny (Burwash et al., 1962; Burwash and Culbert, 1976; Burwash et al., 1994) or accreted Proterozoic terranes that may or may not have an Archean component (Ross and Stephenson, 1989; Ross et al., 1991; Villeneuve et al., 1993). Precambrian rocks which have been intersected in drill core from the BHT comprise felsic to intermediate metaplutonic rocks, felsic metavolcanic rocks and high-grade gneisses (Villeneuve et al., 1993). The presence of a large number of eclogitic garnets and eclogitic pyroxenes in association with kimberlites or related intrusions in northern Alberta may indicate the presence of a significant volume of subducted sedimentary protolith in the upper mantle and lower crust beneath the Buffalo Head Craton. The Pelican Mountain permits lie within an area with an intermediate to high residual gravity signature.

**Phanerozoic**

Overlying the basement in the Pelican Mountain region is a thick sequence of Phanerozoic rocks comprised mainly of Cretaceous sandstones and shales and Mississippian to Devonian carbonates and salts (Glass, 1990)(Figure 3). Table 2 shows the upper units found in the region.

Underlying the near surface Cretaceous units in the Pelican Mountain area is a thick succession of Devonian to Mississippian carbonates, calcareous shales and salt horizons (Mossop and Shetson, 1994). Several of the Devonian carbonate units are part of the
Symbols

- Origin Uncertain
- 2.0 - 1.8 Ga Magmatic Arcs
- 2.4 - 2.0 Magnetic Lows
- 2.4 - 2.0 Accreted Terranes
- 2.6 - 2.8 Archean
- Known Kimberlite Occurrence
- Ellesmere Minerals Ltd. Mineral Claim Boundaries; Identifier
- Extent of Grossmont Reef Complex

(Modified after Ross et al., 1996)
TABLE 2
GENERALIZED STRATIGRAPHY PELICAN MOUNTAIN PERMIT AREA

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>GROUP</th>
<th>FORMATION</th>
<th>AGE* (MA)</th>
<th>DOMINANT LITHOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLEISTOCENE</td>
<td></td>
<td></td>
<td>Recent</td>
<td>Glacial till and associated sediments</td>
</tr>
<tr>
<td>TERTIARY</td>
<td></td>
<td></td>
<td>6.5 to 80</td>
<td>Preglaciated sand and gravels</td>
</tr>
<tr>
<td>UPPER</td>
<td>Wapiti</td>
<td></td>
<td>70 to 80</td>
<td>Sandstone, minor coal seams and conglomerate lenses</td>
</tr>
<tr>
<td>CRETACEOUS</td>
<td>Smoky</td>
<td>Puskwaskau</td>
<td>75 to 86</td>
<td>Shale, silty-shale and ironstone, First White Specks</td>
</tr>
<tr>
<td></td>
<td>Bad Heart</td>
<td></td>
<td>86 to 88</td>
<td>Sandstone</td>
</tr>
<tr>
<td></td>
<td>Kaskapau</td>
<td></td>
<td>88 to 92</td>
<td>Shale, silty-shale and ironstone, Second White Specks</td>
</tr>
<tr>
<td></td>
<td>Dunvegan</td>
<td></td>
<td>92 to 95</td>
<td>Sandstone and siltstone</td>
</tr>
<tr>
<td></td>
<td>Fort St. John</td>
<td>Shaftesbury</td>
<td>95 to 98</td>
<td>Shale, bentonites, Fish-Scale Fm.</td>
</tr>
<tr>
<td>LOWER</td>
<td>Pelican</td>
<td></td>
<td>98 to 100</td>
<td>Glaucionic sandstone, siltstone, mudstone and conglomerate</td>
</tr>
<tr>
<td>CRETACEOUS</td>
<td>Joli Fou</td>
<td></td>
<td>100 to 103</td>
<td>Shale, glauconitic sandstone and bentonite</td>
</tr>
</tbody>
</table>

*Ages approximated from Green et al. (1970), Glass (1990), Dufresne et al. (1996) and Leckie et al. (1997).

Grosmont Reef Complex, a large structure that extends in a northwesterly direction from the Pelican Mountain area to the N.W.T. (Bloy and Hadley, 1990) The Grosmont Reef Complex is likely the result of tectonic uplift during the Devonian along this trend. This structure in conjunction with the PRA could have played a significant role in the localisation of faults and other structures that could have provided favourable pathways for kimberlite volcanism.

In general, the Cretaceous strata underlying the Pelican Mountain permits is composed of alternating units of marine and nonmarine sandstones, shales, siltstones, mudstones and bentonites. The oldest documented units exposed in the permit area belong to the Smoky Group, a sequence of Upper Cretaceous calcareous and noncalcareous shales. However, older units from the top of the Fort St. John and/or the base of the Colorado groups may be exposed in river and stream cuts.
Lower Cretaceous

Buffalo Head Hills Kimberlites

Mountain Lake Kimberlite

Peace River Arch (Axis)

Tertiary

(Modified after Dufresne et al., 1996)

ELLEMERE MINERALS LTD.

NORTHERN ALBERTA

REGIONAL GEOLOGY

EDMONTON, ALBERTA

MAY, 1998

FIGURE 3
The Colorado Group is Lower Cretaceous in age and contains numerous formations, including the Joli Fou and the Pelican formations, which are correlative with the Peace River Formation of the Fort St. John Group further west (Dufresne et al., 1996). The Joli Fou Formation is comprised of shale with interbedded, bioturbated to glauconitic sandstones and minor amounts of bentonite, pelecypod coquinas, nodular phosphorite and concretionary layers of calcite, siderite and pyrite (Glass, 1990). The Pelican Formation disconformably overlies the Joli Fou Formation and is gradational with the overlying Shaftesbury Formation (shales of the Colorado Group) and is correlative with the Cadotte and Paddy Sands of the Peace River area (Fort St. John Group). The Pelican Formation is comprised of glauconitic sands, interbedded siltstone and mudstone with minor amounts of conglomerate. Coalified plant fragments and bioturbated sandstones are locally abundant.

The La Biche Formation is a frequently incorrectly used term correlative to units of the Shaftesbury Formation and other formations within the Smoky and Colorado groups (GSC, 1977; Glass, 1990). In the Pelican Mountain permit area, the term Shaftesbury Formation (Fort St. John Group) is more commonly used. This unit is correlative with the shales overlying and underlying the Fish Scale unit in the Colorado Group. The Shaftesbury Formation is lower Upper Cretaceous in age and is comprised of marine shales with fish-scale bearing silts, thin bentonitic streaks and ironstones. The upper contact is conformable and transitional with the Dunvegan Formation, however, the Dunvegan Formation may be absent in the Pelican Mountain region. The Shaftesbury Formation may be exposed along deep river and stream cuts along the Athabasca River. Evidence of extensive volcanism during deposition of the Kaskapau and the Shaftesbury formations exists in the form of bentonites of variable thickness, distribution and composition. Numerous bentonitic horizons exist throughout the Shaftesbury Formation, especially within and near the Fish Scales horizon across much of Alberta (Leckie et al., 1992; Bloch et al., 1993). The time span of deposition of the Shaftesbury Formation is also chronologically correlative with the deposition of the Crowsnest Formation volcanics of southwest Alberta (Olson et al., 1994; Dufresne et al., 1995) and with kimberlitic volcanism near Fort à la Come in Saskatchewan (Lehnert-Thiel et al., 1992; Scott Smith et al., 1994). In addition, there is documented igneous activity associated with the Steen River Anomaly, a possible impact structure, which formed in northwestern Alberta about this time (Carrigy, 1968; Dufresne et al., 1995).

The Smoky Group is Upper Cretaceous in age and is comprised of thinly bedded, marine, silty shale with occasional ironstone and claystone nodules and thin bentonite streaks. The group is divided into three formations: (a) a lower shale unit, Kaskapau, which includes the Second White Specks marker unit; (b) a middle sandstone, named the Bad Heart; and, (c) an upper shale, Puskwaskau, which contains the First White Specks marker unit. The Smoky Group is conformably and transitionally overlain by the Wapiti Formation. Ammonite fossils and concretions are present in both the Puskwaskau and the Kaskapau formations. In addition, foraminifera are present in the lower arenaceous units (Glass, 1990). The upper formations of the Smoky Group are correlative with the Lea Park Formation. The lower portions of the Smoky Group are correlative with the middle to upper units of the Colorado Group, including the First and Second White Speckled Shale marker units (Glass, 1990). Bedrock exposures in the Calling Lake permits are likely comprised of the Kaskapau
Formation, in particular, the Second White Specks unit or lower, since most of the upper portions of the Smoky Group have been eroded away by glacial and/or post-depositional processes. However, areas, where the Smoky Group is overlain by the Wapiti Formation, may still have most of the Bad Heart and/or Puskwaskau formations still intact with minimal erosion. In general, exposures of the Smoky Group are limited to river and stream cuts, topographic highs, and regions with thin drift veneer. There is strong evidence of volcanism associated within the depositional time span of the Smoky Group in the vicinity of the PRA (Auston, 1998; Carlson et al., 1998). Ashton’s recently discovered Buffalo Head Hills kimberlites intrude Kaskapau shale and yield emplacement ages of 86 to 88 Ma (Auston, 1998; Carlson et al., 1998).

The youngest bedrock unit in the Pelican Mountain area is the Wapiti Formation of Upper Cretaceous age, comprised of non-marine, thinly bedded to massive sandstone with minor coal seams and thin conglomerate lenses. The upper surface of the Wapiti Formation is generally erosional. Thickness of the unit may exceed 100 m (Glass, 1990). The Wapiti Formation is occurs under Quaternary cover and occasionally outcrops in the vicinity of Pelican Mountain. In addition, smaller outliers or remnants of the Wapiti Formation are known to be present south and east of the permits (Green et al., 1970). The Mountain Lake Kimberlite near Grande Prairie intrudes the Wapiti Formation sediments and yields an emplacement age of 75 Ma (Leckie et al., 1997).

**Structural Geology**

In north-central Alberta, the PRA is a region where the younger Phanerozoic rocks which overlie the Precambrian basement, have undergone periodic vertical and, possibly, compressive deformation from the Proterozoic into Tertiary time (Cant, 1988; O’Connell et al., 1990; Dufresne et al., 1995, 1996). This pattern of long-lived, periodic uplift and subsidence has imposed a structural control on the deposition patterns of the Phanerozoic strata in northern Alberta. In addition, this periodic movement has resulted in a rectilinear pattern of faults that not only is responsible for structurally controlled oil and gas pools, but may have provided potential pathways for later deep-seated intrusive kimberlitic magmas.

During the mid-Cretaceous and Early Tertiary, compressive deformation occurred as a result of the orogenic event that eventually led to the formation of the Rocky Mountains. The PRA was emergent during this period resulting in the reactivation of many prominent basement faults. The Phanerozoic rocks beneath the Pelican Mountain permits lie within the southeastern edge of the PRA and are underlain by and proximal to basement faults related to the STZ and the underlying Grosmont Reef Complex (Bloy and Hadley, 1990; Ross, 1995; Dufresne et al., 1996). Basement faults may have controlled the emplacement of the Mountain Lake Kimberlite and the Buffalo Head Hills kimberlites northwest of the Pelican Mountain permits (Dufresne et al., 1996; Leckie et al., 1997). The Ellesemere permits lie in proximity to the eastern and southern boundaries of the BHT and the STZ to the south, and are therefore structurally complex.
WORK CONDUCTED IN 1998

Airborne geophysical survey

In early 1998, a high resolution (200 metre line spacing) fixed-wing airborne magnetic survey was conducted on the Pelican Mountain permits on behalf of Ellesmere. The survey was flown by Spectra Aviation Services and processed by Spectra Exploration Geoscience Corp (Spectra). In late January 1998, APEX received digital airborne geophysical data, the raw data line profiles, and a number of filtered magnetic maps processed from the data. The raw and processed data was then used by APEX to evaluate the data for the presence of possible near-surface kimberlite or lamproite diatremes.

Raw data profiles were used to: (1) identify shallow responses superposed on larger wavelength basement responses; (2) to identify possible culture effects indicated by very high noise; (3) to evaluate the topography over the respective flight lines; and (4) to evaluate anomalies identified on the high pass difference filter map. In conjunction with the profiles, the high pass difference filter map was used to identify twenty-eight near surface anomalies which are prioritized and described in Table 2. Of the twenty-eight magnetic anomalies sixteen exist. Prioritization of anomalies was based on: (1) the distortion of the total magnetic field by a low wavelength (shallow source) feature described as either a peak or a shoulder, which were further quantified (i.e. good, moderate, strong) based on their amplitude (typically 0.5 nT to 2.0 nT in this survey); (2) the absence of strong magnetic noise indicating cultural features; and, (3) the location of the anomaly with respect to known cultural features.

Results and comparison with known kimberlites

Twenty-eight magnetic shallow-sourced anomalies were identified that display magnetic characteristics that could be indicative of near surface intrusive pipes (Table 2). Seven anomalies were classified as either medium or high priority near surface anomalies which require follow-up exploration for kimberlites or related intrusions (Figure 4). The initial inspection of the shallow target enhancement maps and the first vertical derivative map indicate that there are no apparent targets which are not culture related of the quality of the magnetic targets that have yielded kimberlites in the Buffalo Head Hills. However, there are several important points to make about the Buffalo Head Hills kimberlite pipes. First, while there are a few spectacular magnetic anomalies that have yielded kimberlites there are many that are less spectacular that have yielded kimberlites as well. In general, very few (perhaps two or three pipes) of the Buffalo Head Hills pipes are visible on the contoured total field magnetics for airborne geophysical data similar in quality to the Ellesmere magnetic survey data. However, most or all of the Buffalo Head Hills pipes are visible as discreet anomalies on the bulk of the filtered magnetic maps. The Ellesmere magnetic data for the Pelican Mountain seems to yield few map anomalies that could be indicative of kimberlites on the total magnetics map. The background magnetic data from the basement beneath the Pelican Mountains is comparable to the background magnetic data for the Buffalo Head Hills area. For example, a contour map of the 1st vertical derivative of the total magnetic field for the Buffalo Head Hills area yields a total range of 300 nT/m. The range for Ellesmere’s Pelican Mountain permits is about 200 nT/m for the same map. Anomalies that could be of interest are tabulated in Table 2. The more prospective magnetic anomalies include 3, 4, 10, 12, 26, 27...
and 28. Several of the above mentioned anomalies could be of interest for possible kimberlite or lamproite related intrusions or volcanic horizons and, therefore, warrant conducting further exploration.

Little sampling for indicator minerals has been conducted on the Ellesmere permit date. A sample provided to Ellesmere by the vending prospector has yielded several pyropic garnets, eclogitic garnets, picrochromites and a chrome diopside. The exact location of this sample on the permits is unknown. However, an anomalous till sample has also been collected by the Alberta Geological Survey about 10 km east of the Ellesmere permits. The sample yielded G1 and G9 pyropic garnets and a high magnesium spinel. These diamond indicator results warrant follow up exploration.

CONCLUSIONS AND RECOMMENDATIONS

At this stage, conducting further airborne geophysical surveys, including infilling the prior survey, is likely not going to result in the discovery of any other high quality magnetic anomalies that could be indicative of kimberlites or lamproites that were not identified in the initial survey. Any further airborne geophysical surveys will likely only enhance the existing targets that have been identified to date. The existing targets warrant further exploration including ground testing prior to conducting any drill tests.

Based upon the good quality of several of the profile magnetic anomalies a field test of selected magnetic anomalies is warranted and should include the following: (a) ground checking and prospecting all the potential anomalies of interest in order to eliminate those anomalies that are likely related to culture and/or natural features such as drainage, (b) collecting a number of till, soil or rock samples at each of the higher priority magnetic targets in order to evaluate whether any of the magnetic anomalies yield indicator minerals that could be indicative of kimberlites, and (c) conducting ground geophysical surveys over selected higher priority airborne magnetic anomalies in order to evaluate whether any of the anomalies are real and unexplained and, therefore, could be indicative of near surface diatremes that may warrant a drill test. As well, the possibility of obtaining existing seismic data for several of the higher priority magnetic anomalies should be investigated. The recommended exploration program will likely require two weeks of field work by a three man geological crew working out of fly camps with a small amount of helicopter support for camp moves and reconnaissance prospecting and sampling. The estimated cost to conduct the recommended fieldwork is $70,000, not including G.S.T.

APEx Geoscience Ltd.

EDMONTON, ALBERTA JUNE 10, 1998
<table>
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<th>Anomaly</th>
<th>Line</th>
<th>Fiducial</th>
<th>Description</th>
<th>Priority</th>
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<th>UTMN</th>
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<td>1</td>
<td>27</td>
<td>6640</td>
<td>8-9 nT peak; very noisy; about 290 m diameter; likely culture related to drillpad</td>
<td>very low</td>
<td>347031</td>
<td>6173307</td>
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<tr>
<td>2</td>
<td>24</td>
<td>6772</td>
<td>1 nT weak shoulder; about 250 m diameter; likely related to bridge</td>
<td>very low</td>
<td>345063</td>
<td>6173874</td>
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<tr>
<td>3</td>
<td>18</td>
<td>3453</td>
<td>1.5-2.0 nT peak, about 210 m diameter; low topography; low noise; near river</td>
<td>med</td>
<td>341844</td>
<td>6175094</td>
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<td>4</td>
<td>59</td>
<td>8023</td>
<td>6-7 nT strong shoulder; about 550 m diameter anomaly halo; in topographic low; possibly forestry clearing; 4 line anomaly- on line 163 at 3862; on line 161 at 8812 and 8820</td>
<td>high</td>
<td>339625</td>
<td>6166973</td>
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<tr>
<td>5</td>
<td>91</td>
<td>11085</td>
<td>10 nT peak; very noisy; about 250 m diameter; likely related to drillpad</td>
<td>very low</td>
<td>336805</td>
<td>6160692</td>
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<tr>
<td>6</td>
<td>90</td>
<td>10620</td>
<td>4 nT peak; very noisy; well</td>
<td>very low</td>
<td>334943</td>
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<tr>
<td>7</td>
<td>40</td>
<td>2807</td>
<td>2-3 nT peak, about 290 m diameter; associated swamp or vegetation anomaly</td>
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<td>8</td>
<td>39</td>
<td>2391</td>
<td>2 nT peak, low noise; about 340 m diameter; vegetation anomaly; topographic high</td>
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<td>332977</td>
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<td>9</td>
<td>17</td>
<td>2412</td>
<td>5-6 nT peak, moderate noise; about 510 m diameter; slight topographic high</td>
<td>high</td>
<td>330248</td>
<td>6175452</td>
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<tr>
<td>10</td>
<td>16</td>
<td>1406</td>
<td>7-8 nT peak; very noisy; about 380 m diameter; anomaly centred on seismic line; possibly culture</td>
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<td>326904</td>
<td>6175648</td>
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<tr>
<td>11</td>
<td>7</td>
<td>1370</td>
<td>12 nT peak, about 300 m diameter; well</td>
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<td>6177450</td>
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<td>12</td>
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<td>4224</td>
<td>2-3 nT broad shoulder; low noise; about 500 m diameter</td>
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<td>332977</td>
<td>6171359</td>
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<tr>
<td>13</td>
<td>49</td>
<td>2108</td>
<td>1 nT moderate shoulder; low noise; low topography; possibly paleochannel</td>
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<td>354269</td>
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<td>14</td>
<td>74</td>
<td>3168</td>
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<td>10</td>
<td>3528</td>
<td>2 nT sharp peak; moderate noise; in valley; possibly topographic effect</td>
<td>low</td>
<td>320450</td>
<td>6176735</td>
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<td>24</td>
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<td>6174103</td>
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<td>20</td>
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<td>low</td>
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<td>6173673</td>
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<td>9 nT peak; very noisy; topographic low; likely culture</td>
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<td>55</td>
<td>6404</td>
<td>5 nT peak; low noise; low topography</td>
<td>high</td>
<td>322165</td>
<td>6167898</td>
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<td>24</td>
<td>50</td>
<td>2667</td>
<td>weak deflection; low noise; low topography</td>
<td>low</td>
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<td>26</td>
<td>7805</td>
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<td>low</td>
<td>323569</td>
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<td>39</td>
<td>2290</td>
<td>1 nT rounded peak; low noise; anomaly centered on topographic high</td>
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<td>8</td>
<td>1283</td>
<td>2 nT good shoulder; low noise; low to level topography</td>
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<td>320329</td>
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<td>28</td>
<td>99</td>
<td>1037</td>
<td>3 nT rounded peak; low noise; slight topographic high; part of large &gt; 1km linear anomaly; possibly fault or dyke</td>
<td>med</td>
<td>336150</td>
<td>6159000</td>
</tr>
</tbody>
</table>
REFERENCES


CERTIFICATION

I, D.C.M. VERNET OF EDMONTON, ALBERTA, CERTIFY
AND DECLARE THAT I AM A GRADUATE OF QUEEN'S UNIVERSITY WITH A
B.SC. SPECIALIZATION DEGREE IN GEOLOGICAL ENGINEERING (1996). I AM
ELIGIBLE FOR REGISTRATION AS A GEOLOGICAL ENGINEER WITH THE
ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND
GEOPHYSICISTS OF ALBERTA.

MY EXPERIENCE INCLUDES SERVICE AS AN EXPLORATION GEOLOGIST WITH
BLUE RIBBON RESOURCES, VANCOUVER, BRITISH COLUMBIA IN 1996. FROM
OCTOBER 1996 TO PRESENT I HAVE CONDUCTED AND DIRECTED
PROPERTY EXAMINATIONS AND EXPLORATION PROGRAMS ON BEHALF OF
COMPANIES AS A GEOLOGIST IN THE EMPLOY OF APEX GEOSCIENCE LTD.

I HAVE NO INTEREST OR SECURITIES, DIRECT OR INDIRECT, IN THE
PROPERTY HELD BY ELLESMERE MINERALS LTD., NOR DO I EXPECT TO
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THIS REPORT ENTITLED "ASSESSMENT REPORT ON METALLIC MINERAL
PERMITS No. 9396020002, 9396020003, 9396020004, AND 9396020005,
PELICAN MOUNTAIN AREA, ALBERTA" IS BASED UPON THE STUDY OF
PUBLISHED AND UNPUBLISHED DATA.

I HEREBY GRANT ELLESMERE MINERALS LTD. OF EDMONTON, ALBERTA,
PERMISSION TO USE THIS REPORT IN A PROSPECTUS OR STATEMENT OF
MATERIAL FACTS FOR THE PURPOSE OF PRIVATE OR PUBLIC FINANCING.

MAY, 1998
EDMONTON, ALBERTA

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THIS REPORT ENTITLED "ASSESSMENT REPORT ON METALLIC MINERAL PERMITS No 9396020002, 9396020003, 9396020004, AND 9396020005, PELICAN MOUNTAIN AREA, ALBERTA" IS BASED UPON THE STUDY OF PUBLISHED AND UNPUBLISHED DATA.

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MAY, 1998
EDMONTON, ALBERTA
<table>
<thead>
<tr>
<th>Sample#</th>
<th>Pi#</th>
<th>Mineral (Min-id.asc)</th>
<th>SiO₂ (wt%)</th>
<th>TiO₂ (wt%)</th>
<th>Al₂O₃ (wt%)</th>
<th>Cr₂O₃ (wt%)</th>
<th>FeO (wt%)</th>
<th>MgO (wt%)</th>
<th>MnO (wt%)</th>
<th>CaO (wt%)</th>
<th>Na₂O (wt%)</th>
<th>K₂O (wt%)</th>
<th>Total   (wt%)</th>
<th>NIO  (wt%)</th>
<th>ZnO  (wt%)</th>
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<td>0.00</td>
<td>20.38</td>
<td>5.20</td>
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<td>17.96</td>
<td>0.49</td>
<td>5.97</td>
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<td>39.22</td>
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<td>22.13</td>
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<td>CD-1</td>
<td>CPX₁₆½ UNKNOWN</td>
<td>53.24</td>
<td>0.04</td>
<td>1.07</td>
<td>0.81</td>
<td>3.02</td>
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<td>PM-001</td>
<td>Ox-1</td>
<td>PICO_PICROCHROMITE</td>
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<td>1.75</td>
<td>14.17</td>
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<td>n/a</td>
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<td>0.1548</td>
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CaO vs Cr2O3 For Peridotitic Garnets From Northern Alberta
MgO vs FeO For Eclogitic Garnets From Northern Alberta

- DI Eclogitic Garnets (World)
- DI Eclogitic Garnets (Australia)
- NAT95-134 & 96-216 Eclogitic Garnets
- Pelican Mountain Eclogitic Garnets
CaO vs TiO2 For Eclogitic Garnets From Northern Alberta

- DI Eclogitic Garnets (World)
- DI Eclogitic Garnets (Australia)
- NAT95-134 & 96-216 Eclogitic Garnets
- Pelican Mountain Eclogitic Garnets
FeO vs TiO2 For Eclogitic Garnets From Northern Alberta

- Northern Alberta Eclogitic Garnets (1952-1984)
- Pelican Mountain Eclogitic Garnets
- DI Eclogitic Garnets (Australia)
- DI Eclogitic Garnets (World)
- NAT95-134 & 96-216 Eclogitic Garnets

FeO (wt%)
0.2 1.0 1.8 2.6 3.4 4.2 5.0 5.8 6.6 7.4 8.2 9.0 9.8 10.6 11.4 12.2 13.0 13.8 14.6 15.4 16.2

TiO2 (wt%)
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0 3.2 3.4 3.6 3.8 4.0
Na$_2$O vs TiO$_2$ For Eclogitic Garnets From Northern Alberta
CaO vs Cr2O3 For Peridotitlc Cr-Diopsides From Northern Alberta

DI Peridotitic Cr-Diopsides
- Mountain Lake Cr-Diopsides
- Northern Alberta Cr-Diopsides (1992-1994)
- Northern Alberta Cr-Diopsides (1995-1997)
- NAT95-134 & 96-216 Cr-Diopsides
- Pelican Mountain Cr-Diopside

CaO (wt%) vs Cr2O3 (wt%)
Na2O vs Cr2O3 For Peridotitic Cr-Diopsides From Northern Alberta

- DI Cr-Diopsides
- Mountain Lake Cr-Diopsides
- Northern Alberta Cr-Diopsides (1992-1994)
- Northern Alberta Cr-Diopsides (1995-1997)
- NAT95-134 & 96-216 Cr-Diopsides
- Pelican Mountain Cr-Diopsides
MgO vs Cr2O3 For Chromites From Northern Alberta

DI Chromites
+ Argyle Chromites
■ Mountain Lake Chromites
• Northern Alberta Chromites (1995-1997)
• NAT95-134 & 96-216 Chromites
• Pelican Mountain Chromites
TiO2 vs Cr2O3 For Chromites From Northern Alberta

- DI Chromites
- Argyle Chromites
- Mountain Lake Chromites
- Northern Alberta Chromites (1995-1997)
- NAT95-134 & 96-216 Chromites
- Pelican Mountain Chromites
TABLE I

EXPENDITURES BY ELLESMERE MINERALS LTD. ON BEHALF OF LARRY MCGOUGAN ON THE PELICAN MOUNTAIN PERMITS, NUMBERED 9396020002, 9396020003, 9396020004, AND 9396020005

Work performed by Ellesmere Minerals Ltd.

Review of geology; government reports including sediment sample data, rock grab sample data, and thin sections of selected samples; planning of airborne survey; logistics etc; 30 days at $500/day.

$15,000

Geological Consulting (APEX Geoscience Ltd.)

Includes review and interpretation of data; purchase of digital elevation data ($1700); purchase of data over known kimberlites ($4500); all costs associated with reporting; all administrative costs ie. communications, consumables, maps and publications ($200); 1 day at $300/day; 9 days at $225/day; 2 days at $450/day; 2 days at $187.50/day.

$10,000

Contractor costs (SPECTRA Exploration Geoscience Corp.)

Includes flying of high resolution airborne survey; all post acquisition data processing; deculturing costs; maps and digital data.

$60,500

Total Expenditures Excluding GST $85,500
Dear Hazel:

I have enclosed copies of the minor revisions to our report entitled “Assessment Report on Metallic Mineral Permits No. 9396020002, 9396020003, 9396020004, and 93696020005”. I have included 2 copies of the expenditures summary and 2 copies of figure 4 as you requested. Please note that I have also included 2 copies of the cover and 2 copies of page 2 which also required some minor changes. Please bind these pages into the reports that I sent to your office and discard the old copies. I apologize if this has caused any inconvenience. Should you have any more questions or concerns please call me at 439-5380.

Sincerely,

Daniel Vernet, B.Sc.
**Sun angles**

Azimuth: 45 degrees  
Elevation: 35 degrees

Flown by Spectra Aviation Services

**ELLESMERE MINERALS LTD.**

Pelican Mountain Permits

CALCULATED VERTICAL GRADIENT OF TOTAL MAGNETIC INTENSITY

Scale: 1.000

North / South 1000 2000 3000

Easting / Northing 0.0 1000 2000 3000

Metres

June, 1998

FIGURE 5