

Canadian Mineral Exploration and Discovery Analysis

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CANADA'S STANDING AS AN EXPLORATION TARGET

In 1998, exploration and deposit appraisal expenditures for non-petroleum minerals in Canada totaled \$656 million. Canada remained one of the world's top targets (second after Australia) in terms of mineral exploration expenditures that year. The "preliminary" exploration and deposit appraisal total for 1999 (gathered early in 1999) is \$501 million. The Metals Economics Group's (MEG) survey (data gathered later in 1999) indicates that the United States continued to hold third position in 1999. The relative rankings of these three top countries have remained unchanged since 1992 (Figure 1). The United States has been consistently in third place since 1980.

However, the MEG exploration rankings do not adequately account for exploration expenditures in countries such as China and the various countries that have resulted from the breakup of the former Soviet Union. This is because MEG surveys only exploration expenditures by the "Western" companies exploring these countries, so their survey results are indicative of only part of the exploration there. The value of Chinese non-petroleum mineral output is at least six times that of Canada, at least five times that of Australia, and more than 50% higher than that of the United States. For this reason, it may well be that the magnitude of the Chinese mineral exploration effort actually exceeds that in Australia, Canada and the United States.

The MEG survey has a cutoff exploration budget of US\$2.9 million; therefore, the survey has consistently and substantially underestimated the real levels of annual exploration spending in Canada and Australia because both countries each have several hundred active junior exploration companies with

individual exploration expenditures that are below that US\$2.9 million cutoff. Aggregate exploration expenditures directed at Canada and Australia by

Figure 1
Top Three Country Destinations of Mineral Exploration Capital from Worldwide Sources, 1974-99

Year	Rank		
	First	Second	Third
1999	Australia	Canada	United States
1998	Australia	Canada	United States
1997	Australia	Canada	United States
1996	Australia	Canada	United States
1995	Australia	Canada	United States
1994	Australia	Canada	United States
1993	Australia	Canada	United States
1992	Australia	Canada	United States
1991	Canada	Australia	United States
1990	Canada	Australia	United States
1989	Canada	Australia	United States
1988	Canada	Australia	United States
1987	Canada	Australia	United States
1986	Canada	Australia	United States
1985	Canada	Australia	United States
1984	Canada	Australia	United States
1983	Canada	Australia	United States
1982	Canada	Australia	United States
1981	Canada	Australia	United States
1980	Australia	Canada	United States
1979	Australia	United States	Canada
1978	Australia	United States	Canada
1977	United States	Canada	Australia
1976	Canada	United States	Australia
1975	United States	Canada	Australia
1974	Canada	United States	Australia

Source: Natural Resources Canada, based on official Canadian and Australian statistics and the best available data for the United States.

Notes: Australian expenditures were 6.5% higher than those for Canada in 1983 and 3.3% higher in 1991; however, correcting the reported Australian totals for substantial mine development expenditures, which are not included in Canadian statistics, ranks Canada first in 1983 and 1991. Complete data are not available for the former Soviet Union and China.

these companies have been substantial, and most likely considerably in excess of the expenditures of junior companies in other individual countries worldwide. For this reason, the MEG survey exploration expenditure totals for Australia and Canada almost undoubtedly understate the exploration expenditures actually being directed at these countries relative to such expenditures in other countries.

RECENT MINERAL EXPLORATION AND DISCOVERY ACTIVITY AND RESULTS

Continued low market prices for most metals, combined with continued difficulty being experienced by junior companies in raising exploration funds, have resulted in a continued decline in exploration and deposit appraisal spending in Canada to \$501 million (preliminary) in 1999, significantly lower than the \$656 million spent in 1998. Such expenditures are expected to remain about the same in 2000 as in 1999. Company spending intentions for exploration and deposit appraisal in 2000 (gathered early in 2000) total \$502 million.

New orebodies continue to be discovered in various Canadian localities. Falconbridge Limited continues to discover additional nickel-copper-platinum group metals deposits on its property in the Ungava Nickel Belt of Quebec and, based on a surface drill hole

intersection of 33.4 m (true thickness approximately 18 m) averaging 2.6% nickel and 0.8% copper, at a depth of 436 m, appears to have made a discovery at Sudbury, Ontario, located 3 km west of Inco Limited's Creighton mine. Also at Sudbury, Inco has discovered a new deposit near its former Totten mine. Exploration of important gold deposits continues in Nunavut near Rankin Inlet, Hope Bay, Baker Lake and George Lake. Hudson Bay Mining and Smelting is developing its deep, recently discovered, Triple 7 orebody at Flin Flon, Manitoba, and, in Saskatchewan, a new high-grade uranium deposit appears to have been discovered on the La Roque claims, near Dawn Lake, where three drill holes intersected 6.95% U over 3.6 m, 25.36% U over 7.0 m and 16.2% U over 2.5 m. In Quebec, Noranda Inc. has recently discovered the high-grade Perseverance zinc-copper deposit near Matagami.

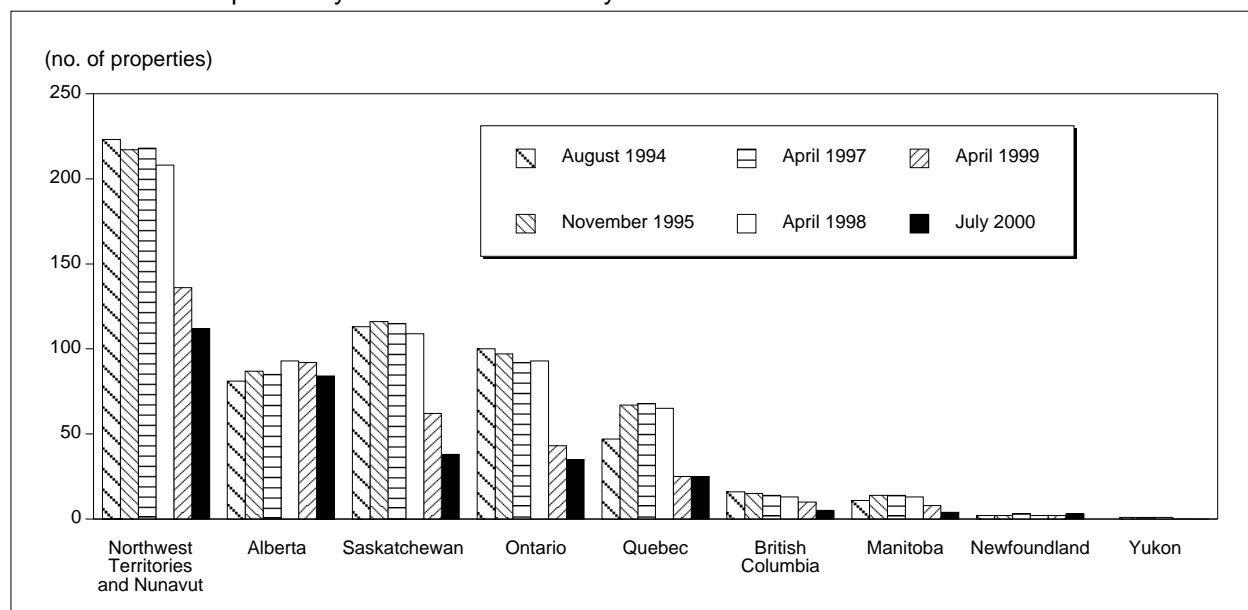
DIAMOND EXPLORATION HIGHLIGHTS

Introduction

In July 2000, there were some 315 diamond exploration properties in Canada (Figure 2), down from 378 properties in April 1998.

Diamond exploration continues in the Northwest Territories, Nunavut, Saskatchewan, Manitoba,

Figure 2
Exploration for Diamonds in Canada, 1994-2000
Distribution of Properties by Province and Territory



Source: Natural Resources Canada, based on *MIN-MET CANADA* database for 1992-98 and *InfoMine* db for 1999-2000, Robertson Info-Data Inc., Vancouver, British Columbia and used under licence.

Note: The decrease in number of properties between 1998 and 1999 is probably due in part to the implementation of database features that make it possible to exclude inactive properties in 1999.

Ontario, Quebec and Labrador. A 10 000-t bulk sample is being taken by De Beers-owned Monopros Limited on the Victor property, in Ontario, 90 km west of James Bay, and a further bulk sample is being taken at the promising Snap Lake deposit near Camsell Lake in the Northwest Territories. The Diavik project at Lac de Gras has received permission to proceed to production, with the Snap Lake deposit likely to be Canada's third diamond producer.

Continuing exploration of the Snap Lake diamond deposit has indicated that its size is considerably larger than the few million tonnes indicated by exploration in 1998; this deposit has the potential to be one of Canada's single most important diamond deposits.

Ekati Diamond Mine

As of the end of 1999, a total of 121 kimberlite pipes had been discovered on the Ekati property, 86 of them on the Core Zone (a joint venture of BHP Diamonds Inc., 51%; Dia Met Minerals Ltd., 29%; Charles E. Fipke, 10%; and Stewart L. Blusson, 10%) and 35 on the adjacent Buffer Zone claim block (owned by BHP Diamonds Inc., 51%; Archon Minerals Limited, 31.2%; Charles E. Fipke, 10%; and Dia Met Minerals Ltd., 7.8%).

Bulk samples taken in 1999 from the Gazelle, Phoenix and Piranha pipes yielded the following results:

Pipe	Sample Size (tonnes)	Sample Grade (ct/t)	Value (US\$/ct)	Value (US\$/t)
Gazelle	240.7	0.59	15.12	9
Phoenix	106.1	1.41	24.78	35
Piranha	87.4	2.33	29.72	69

The Gazelle pipe is approximately 2 ha in size and Phoenix is approximately 0.6 ha (a satellite pipe to the Point Lake pipe). Piranha is approximately 0.4 ha and lies beneath Lac de Gras on the boundary between the Buffer Zone and the adjacent property held by Diavik Diamond Mines Inc.

The Lynx pipe, discovered in the Buffer Zone in the summer of 1999, yielded a transparent brown octahedral diamond of 1.43 ct in weight, as well as other stones greater than 0.5 mm in size.

BHP is seeking approval to produce from the Beartooth and Pigeon pipes and has stated that the Ekati diamond mine project is expected to have a life of 25 years or beyond, an increase from the previ-

ously announced 17 years. The company now plans to increase diamond output from the Ekati operation by 50%.

Diavik Project, N.W.T.

The Diavik project in the Northwest Territories is operated by Diavik Diamond Mines Inc., which owns a 60% joint-venture interest in the property. This company is a wholly owned subsidiary of Rio Tinto plc of London, England. The remaining 40% is held by Aber Resources Ltd. of Vancouver, British Columbia. Aber is providing 40% of the project costs, retains the right to market its 40% share of diamond production, and has negotiated a diamond sales agreement with the jewellery firm Tiffany and Co. Tiffany has purchased a 14.9% interest in Aber for \$104 million and has agreed to purchase a minimum of US\$50 million of diamonds annually for a 10-year period.

A feasibility study completed in 1999 estimates a capital cost of \$1280 million ($\pm 15\%$) including \$163 million for inflation, design allowances and contingencies. The feasibility study projects a full production rate of 1.5 Mt/y that would produce, after ramp up, at full open-pit production, 6.3-7.0 Mct/y. The capital cost estimates include the cost to construct the Diavik diamond mine, including site facilities, the main processing plant, a diamond sorting facility, mine development and dike construction, camp facilities, logistics, and mobilization and management costs, including engineering and construction management. This \$1280 million capital cost estimate is substantially higher than previous cost estimates.

The feasibility study includes a mine plan and schedule with initial open-pit mining in 2003 on the A-154 S and A-154 N kimberlite pipes. The A-418 pipe would be mined by open pit beginning in approximately 2010 and the A-21 pipe would be mined in approximately 2013. Underground mining methods would be employed in the lower portions of the A-154 S and A-418 pipes in the later part of the mine plan.

Exploration results to date on the Diavik property indicate a resource of 37 Mt in four kimberlite pipes containing 133 Mct of diamonds for an average resource grade of 3.6 ct/t. Estimated diluted mineable reserves are 26.5 Mt containing 101.5 Mct, for an average reserve grade of 3.96 ct/t and an average value of US\$53/ct. The reserves include only measured and indicated resources, above the 420-m level below surface, deemed to be economic by a specific mining method and mine plan. This estimate excludes inferred resources of 29.8 Mct (12.5 Mt at 2.38 ct/t), which are excluded from reserves and have not been included in the feasibility study or mine plans.

The initial capital cost does not include construction of the A-418 and A-21 dikes starting in 2006 or

underground mining capital or exploration. In addition to ordinary sustaining capital for continued operation of the mine, the estimate for the A-418 dike construction cost is approximately \$115 million and the estimate for the A-21 dike construction is approximately \$148 million. The estimated cost of underground mining development and equipment purchases is \$45 million.

Exploration of the Diavik property continued in 1999, but little information has been released concerning 1999 exploration results. Pipe A-180, discovered in 1998, was further tested to assess its potential. Diamond-bearing kimberlite A-841 (Piranha), situated on the boundary between the Diavik and Ekati properties, was also tested, as were several targets identified in 1997.

Snap Lake Project, N.W.T.

Winspear Resources Ltd. continues to work on the Snap Lake diamond-bearing dike near Camsell Lake in the Northwest Territories. The deposit is owned by Winspear and Aber Resources Ltd., although a dispute arose in March 1999 concerning the extent of Aber's minority ownership. During the winter of 1998/99, two bulk samples were taken from surface pits in the shallow-dipping diamond-bearing dike. A 3003.9-t sample from Pit no. 4 yielded 5542.27 ct of diamonds, for a grade of 1.845 ct/t. These diamonds were valued at US\$98.42/ct, yielding a value of US\$181.58/t. Six stones exceeded 10.8 ct in weight and have been classified by seven independent valuers as "specials." A total of 88 stones in the parcel exceeded 3 ct in weight. The largest diamond recovered weighs 14.3 ct.

The second of these bulk samples (2981.8 t) from Pit no. 3 yielded 5165.81 ct, for a grade of 1.732 ct/t valued at US\$111.98/ct, or US\$193.95/t. Three stones from Pit no. 3 exceeded 10.8 ct in weight and have been classified by seven independent valuers as "specials." A total of 103 stones in the parcel are classified as "specials." The largest diamond recovered weighs 14.07 ct. Of all the kimberlite bulk samples taken in Canada, the per tonne values for these two bulk samples are surpassed only by the US\$296/t that has been obtained from the A-154 pipe on the Diavik property.

In February 2000, Winspear stated that 189 contiguous drill intersections of the Snap Lake deposit indicate that the NW dike is a gently dipping single phase of macrocrystic hypabyssal kimberlite. MRDI Canada, a division of AGRA Simons Ltd., has established a resource of 21.3 Mt of kimberlite. Included in this resource are 16.47 Mt contained in kimberlite that is greater than one metre thick. Of this 16.47 Mt, approximately 8.35 Mt are classified as an indicated resource with an estimated recoverable grade of 1.97 ct/t and an additional 8.12 Mt are

classified as an inferred resource with an estimated recoverable grade of 2.07 ct/t. These tonnage and grade figures include estimates for internal dilution. Resource figures assume a strict 1.18-mm cutoff for diamond recovery.

An advanced exploration program began in January 2000. In this program, a decline will be driven out under Snap Lake to about 600 m east of the bulk sample sites on the Northwest peninsula. From this position a drive will be extended approximately 575 m in kimberlite. The purpose of this work is to test underground mining conditions under Snap Lake and to obtain a bulk sample of the kimberlite from this location. A 10-t/h diamond-processing plant will be used to process the underground bulk sample. During test mining it is anticipated that 20 000 t of kimberlite may be extracted. Plans are to process approximately 6000 t of this material to test for the recovered diamond grade and value.

A pre-feasibility study of mining the NW dike and detailed planning of required surface facilities are under way. Completion of these studies and submission of an Environmental Assessment Report is planned for the second quarter of 2000.

Jericho Property, Nunavut

In Nunavut, Tahera Corporation continues to work on the Jericho diamond project. The company has filed a project proposal and an application for a water permit for the Jericho diamond project that marks the formal commencement of the environmental assessment and regulatory approval process. The project proposal is for an open-pit diamond mine on the land-based JD/OD-1 kimberlite pipe near the northwest end of Contwoyto Lake, approximately 27 km northwest of the Lupin gold mine. Ore would be transported by an ice road (mid-January to mid-May) from the mine to a year-round processing plant (using conventional diamond-processing techniques) at the Lupin site. The kimberlite has an open-pit mineable resource of 2.345 Mt grading 1.13 ct/t. A pre-feasibility study completed in November 1999 utilized a diamond valuation of US\$65/ct and recommended an annual production rate of 300 000 t, which would yield a mine life of eight years. A final feasibility study is in progress, scheduled for completion in the second quarter of 2000. The 10 527-ct parcel of diamonds extracted during the underground bulk sampling program has been re-valued at US\$74/ct, up from the previous US\$65/ct. The intent of a definition drilling program in the winter of 1999/2000 was to provide better definition of the geometry of the Jericho kimberlite between the 100 and 300-m levels and convert the resources in this area from inferred to indicated. The final feasibility study will consider both the increased value of the diamonds and the additional kimberlite outlined below the presently defined open-pit bottom. Tahera

is of the opinion that the mine life and economics of the Jericho diamond project are expected to improve significantly.

A 50.1-t mini-bulk sample extracted from the Contwoyto-1 kimberlite (discovered in the fall of 1998) yielded 13.60 ct of diamonds, for a preliminary diamond grade of 0.27 ct/t. Due to the relatively low grade, no further evaluation of the Contwoyto-1 kimberlite is planned at this time.

Tahera sold its bulk sample processing plant to Winspear Resources Ltd. and it has been moved to that company's Snap Lake deposit. Tahera indicates that it will be able to treat bulk sample material from any future kimberlite discoveries at its proposed full-scale diamond-processing plant. The company continues to explore its 93 000-ha Jericho Group property, with exploration focused on discovering more kimberlites in close proximity to the Jericho kimberlite.

Victor Project, Ontario

Monopros Limited, the Canadian exploration subsidiary of De Beers Consolidated Mines Limited, has been exploring for diamonds 90 km to the west of Attawapiskat in the James Bay Lowlands for some years. Twenty kimberlites have been found, the rights to 18 of which are held by Monopros. The pipes were discovered in the late 1980s. Sixteen of the 18 pipes have been drilled; 15 of the 16 are diamond-bearing.

Monopros is taking a 10 000-t bulk sample from the Victor pipe (52°48' N, 83°53' W). The first 2500 t of this was to be taken in the winter of early 2000 using a large-diameter drill. The other 7500 t will be taken from two trenches where the overburden is thinnest, with the 10 000-t bulk sample to be processed beginning in the spring at a custom-built treatment and recovery plant erected on site. The pilot plant, which uses heavy media and x-ray processing techniques, has a capacity of 10 t/d. Monopros expects to recover about 3000 ct of diamonds for valuation.

The Victor kimberlite appears to be the first potentially important kimberlite pipe discovered in Ontario in the approximately 50 years since Ontario's first kimberlite discovery was made.

Buffalo Hills, Alberta

Ashton Mining of Canada Inc., with a 44.7% share, is the operator of a diamond exploration project in the Buffalo Hills of northwestern Alberta. The other partners are Alberta Energy Company and Pure Gold Resources Inc. From early 1997 until the end of February 2000, a total of 34 kimberlites had been found on the property, of which at least 19 contain diamonds. The company has not yet found any kim-

berlites of economic interest, but is continuing exploration of the Buffalo Hills property.

MINERAL DEPOSIT DISCOVERIES IN CANADA OVER THE TEN-YEAR PERIOD 1990-1999

Table 4 is a listing of about 70 of the more than 140 mineral deposits discovered in Canada over the 10-year period 1990-99 inclusive. The discovery list is incomplete because no comprehensive search of public data sources has been undertaken. Also, over any 10-year period, a number of potentially important discoveries are made, the existence of which does not become public knowledge until years later.

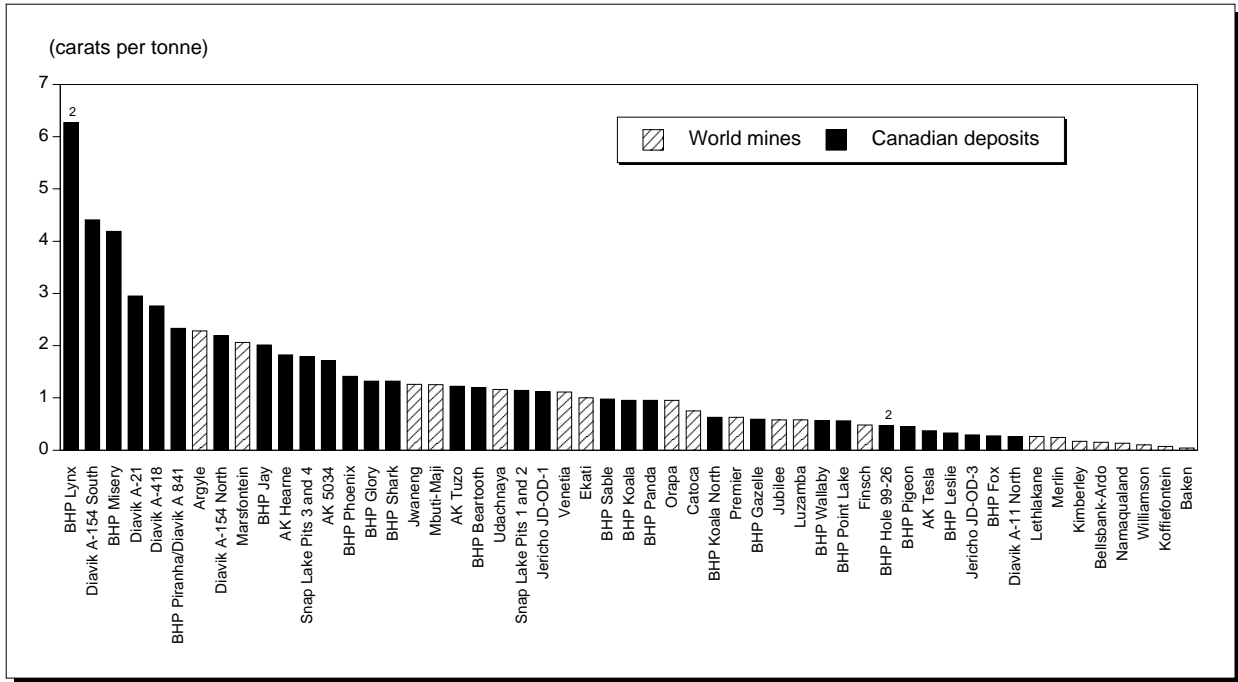
The approximately 70 discoveries made in the 1990-99 period that have been excluded from this table appear to be too small or too low of a grade to be of sufficient economic significance to be included in this discovery listing.

Notes: (1) Information in this review was current as of May 31, 2000. (2) This and other reviews, including previous editions, are available on the Internet at http://www.nrcan.gc.ca/mms/cmty/index_e.html.

NOTE TO READERS

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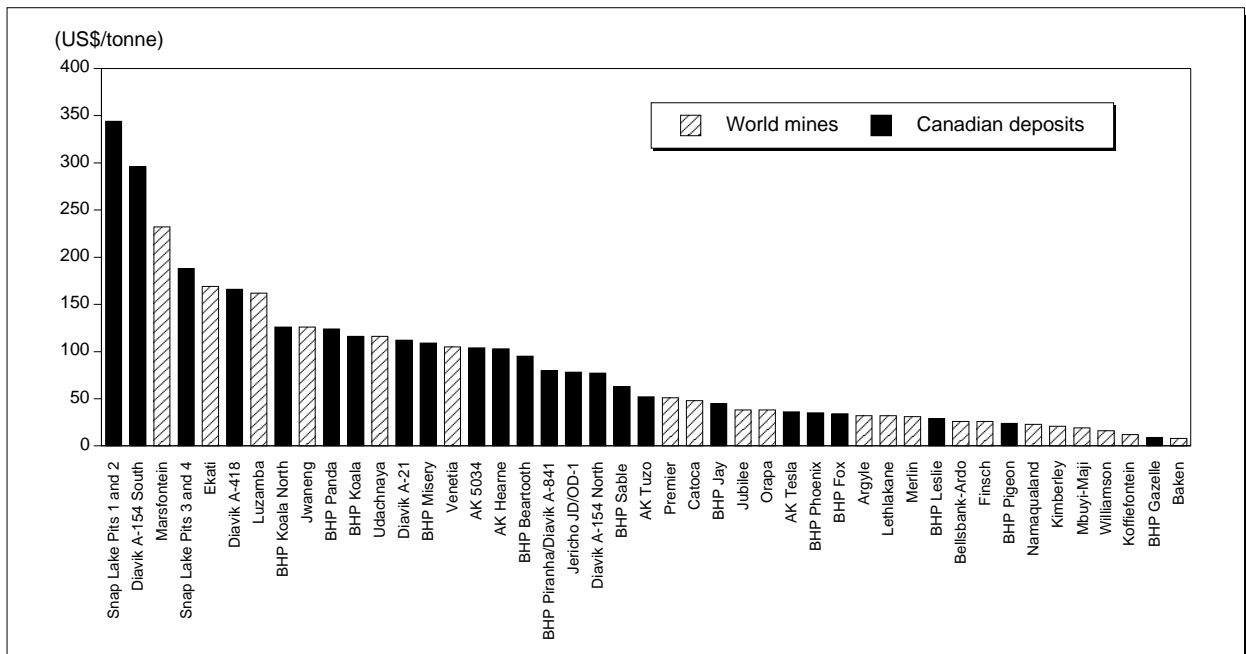
Figure 3
Recoverable Diamond Grades From World Diamond Mines¹ and Canadian Diamond Deposits



Source: Natural Resources Canada, based on published data.

¹ Grades of world diamond mines are 1999 production grades. ² Based on a sample weight of a fraction of a tonne of drill core.

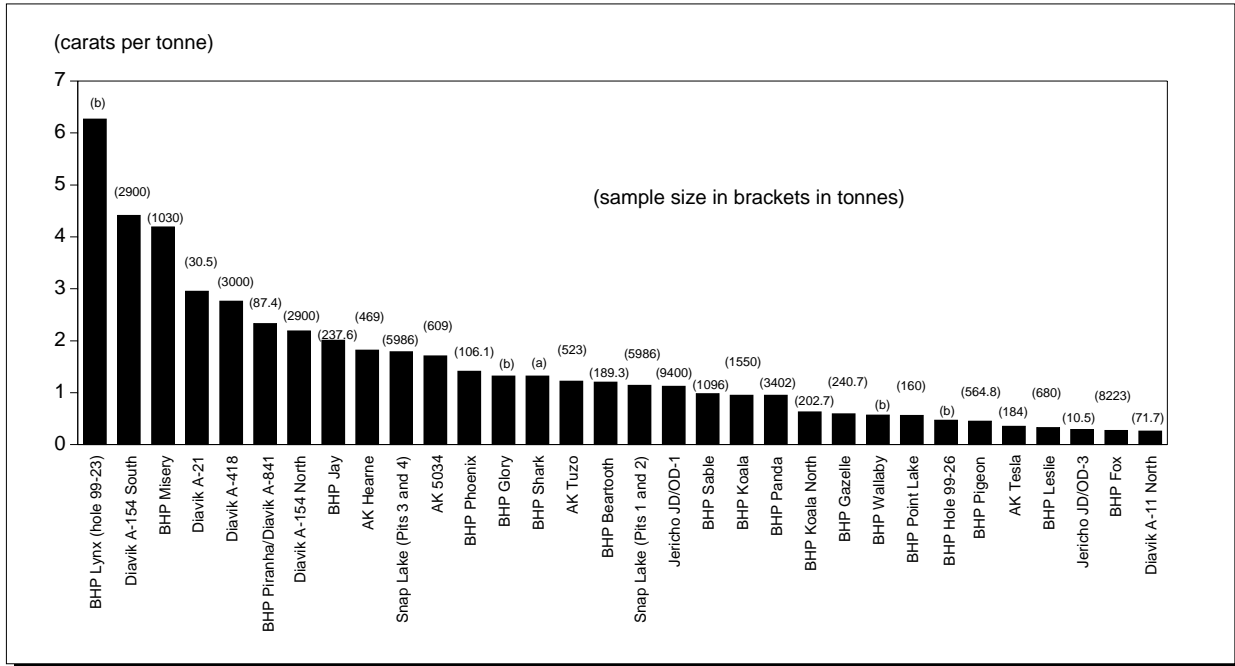
Figure 4
Recoverable Diamond Values for World Diamond Mines¹ and Canadian Diamond Deposits



Source: Natural Resources Canada, based on published data.

¹ Values for world diamond mines are 1999 production grades.

Figure 5
Grades of Selected Canadian Diamond Deposits



Source: Natural Resources Canada, based on published data.
 (a) Sample size not available. (b) Based on samples of only a fraction of a tonne of drill core.

TABLE 1. SELECTED DATA ON CANADA'S MOST PROMISING DIAMOND DEPOSITS

Pipe	Total Tonnes Sampled	Total Carats Recovered	Average Grade (ct/t)	Average Value (US\$/ct)	Average Value (US\$/t)
EKATI MINE AND BUFFER ZONE PROPERTIES					
Panda	3 402	3 244	0.95	130	124
Misery	1 030	4 313	4.19	26	109
Koala	1 550	1 465	0.95	122	116
Koala North	201.7	126.58	0.63	200 ^a	126
Fox	8 223	2 199	0.27	125	34
Leslie	680	233	0.33	89	29
Pigeon (original sample)	154	60	0.39	51	20
Pigeon (1998 sample)	564.8	251.31	0.45	54	24
Jay	237.6	476.8	2.01	22.50	45
Sable	1 096	1 070	0.98	64	63
Beartooth	189.3	227.09	1.20	79	95
Point Lake	160	90+	0.56	..	..
Phoenix (98-C)	106.1	149.2	1.41	25	35
Shark	..	..	1.32	..	..
Gazelle	240.7	141.4	0.59	15	9
Glory	0.2438	..	1.32	..	..
Wallaby	0.1208	..	0.57	..	..
Piranha (= A841) (straddles boundary of Buffer claims and Diavik property)	87.4	203.44	2.33	30	80
Lynx (hole 99-23)	0.2511	1.574 ^b	6.27	..	..
Hole 99-26	0.1736	0.082	0.47	..	..
 DIAVIK PROPERTY					
A-154 South	2 900	12 800	4.41	67	296
A-154 North	71.72	156.81	2.19	35	77
A-418	3 000	8 275	2.76	56	166
A-21	30.5	90	2.95	38	112
A-11 North	29	7.6	0.26	..	..
JERICHO PROPERTY					
JD/OD-1	9 400	10 539	1.12	70 ^d	78 ^d
JD/OD-3 (first sample)	10.53	7.34	0.697 ^c	..	..
JD/OD-3 (second sample)	35.9	10.41	0.29	..	..
AK PROPERTY					
5034 (1999 bulk sample)	609	1044	1.71	63	104
Hearne	469	856	1.82	44 ^c	103 ^e
Tuzo	523	540	1.03	43	52
Tesla	..	..	0.37	96	36
Telsa (1999 bulk sample)	184	64	0.35	..	..
SNAP LAKE PROPERTY					
Snap Lake Dike (Pits 1 and 2)	199.7	226.7	1.14	301	344
Snap Lake Dike (Pits 3 and 4)	5 985.7	10 708.1	1.789	105	188

Source: Natural Resources Canada, based on company data.

.. Not available.

^a Approximately 77% of the value is due to three gem-quality stones 3.26 to 5.41 ct in size. ^b Includes a 1.43-ct transparent brown octahedral diamond. ^c Includes a single 3.6-ct stone; if this stone is excluded, the grade is 0.25 ct/t. ^d Values have been revised to include stones larger than 10.8 ct that had been omitted in previously published values. ^e Values are based on previous smaller samples. Values of bulk samples listed are not yet available.

TABLE 2. DIAVIK PROJECT RESOURCE ESTIMATES

Unit	A-418 Pipe	A-154 South Pipe	A-154 North Pipe	A-21 Pipe	Total/Average
Resources (million tonnes)	9.0	12.0	11.5	4.9	37.4
Grade (ct/t)	3.7	4.8	2.4	3.0	3.5
Total (millions of carats)	33	57	28	15	133

Source: Natural Resources Canada, based on company data.

TABLE 3. ESTIMATED RESOURCES OF AK PROPERTY DEPOSITS

Pipe	Tonnage	Average Grade	Value Per Carat	Value
	(million tonnes)	(carats/tonne)	(US\$)	(US\$/tonne)
5034 ¹	12	1.71	63	104
Hearne ¹	6.9	1.71	65	111
Tuzo ^{1,2}	10.2	1.22	43	52
Tesla ³	4.6	0.35	96	36

Source: Natural Resources Canada, based on company data.

¹ Modeled grade and revenues. ² Revised data from 1999 bulk sampling program. ³ Values based on 1998 mini bulk sample; tonnage and grade based on 1999 bulk sample.

TABLE 4. PARTIAL LISTING OF MAJOR CANADIAN MINERAL DISCOVERIES, 1990-99

Province or Territory/ Project Name	Discovery Year ¹	Remarks
NEWFOUNDLAND AND LABRADOR		
Beaver Brook	1990	2 401 550 t grading 4.08% antimony at a cutoff grade of 1.5% antimony; the deposit is expected to be much larger.
Hammerdown deposit	1992	464 000 t grading 17.48 g/t gold.
Voisey's Bay deposit	1994	31.7 Mt grading 2.83% nickel, 1.68% copper, 0.12% cobalt and unspecified precious metals; and 105 Mt grading 1.2% nickel and unspecified copper, cobalt and precious metals; total of 136.7 Mt grading 1.71% nickel, 0.92% copper, 0.09% cobalt and unspecified precious metals. Also in 1999, intersected a thick zone of nickel mineralization at the Sarah target, 5.5 km north of the ovoid, and a zone grading 1.3% nickel over 29.5 metres in the Ryan's Pond area, 4 km southeast of the Eastern Deeps zone.
QUEBEC		
Bell Allard mine	1993	Proven 2 770 000 t grading 13.6% zinc, 1.21% copper, 0.12% lead, 36.7 g/t silver and 0.7 g/t gold; probable 576 000 t grading 12.77% zinc, 1.54% copper, 0.13% lead, 47.3 g/t silver and 0.7 g/t gold.
Caber deposit	1994	Measured, indicated and inferred 800 000 t grading 10% zinc, 0.6% copper, 11.6 g/t silver and 0.14 g/t gold.
Caber North deposit	1995	484 000 t grading 11.7% zinc, 1.0% copper and 15 g/t silver; inferred resources of 2.1 Mt grading 4.1% zinc, 1.5% copper and 19 g/t silver.
Perseverance deposit (at Matagami)	2000	Inferred resources of 947 000 t grading 19.12% zinc, 1.37% copper, 32 g/t silver and 0.4 g/t gold; drilling continues; reserves are not yet available for the thick, high-grade Perseverance West and Equinox zones.
Falconbridge Raglan project additional discoveries		
Katiniq	1995	A new lens containing 400 000 t grading 3.36% nickel and 0.83% copper.
Unnamed deposit	1995	Located 4 km east of Katiniq; 814 000 t grading 3.36% nickel and 0.83% copper.
East Lake	1998	1 153 000 t grading 3.71% nickel, 1.09% copper and 0.08% cobalt.
Zone 3	1999	295 000 t grading 3.3% nickel and 0.96% copper; 170-280 m below surface on a previously unexplored horizon that appears to extend across a significant portion of the company's Raglan property.
Lens 441	..	Located 300 m east of Lens 1040; undiluted indicated resource of 500 000 t grading 2.37% nickel and 0.64% copper.
Lens 1040 orebody	..	Diluted probable reserves of 1.26 Mt grading 3.23% nickel and 0.95% copper.
Zone 13-14	..	9 km east of Katiniq; 395 000 t grading 1.90% nickel and 0.51% copper (deep deposit, would have to be mined from underground).
Porphyry Mountain deposit (Noranda)	..	Located at Gaspé Copper; 206 Mt grading 0.7% copper.
Chevrier	..	8 300 000 t grading 2.3 g/t gold.
ONTARIO		
McCreeley East (Inco)	1990	Initial mining phase; 15 Mt grading 1.44% nickel and 4.32% copper (the deposit is considerably larger).
Victor (Inco)	1990	About 36 Mt averaging 2% nickel and 6% copper.

TABLE 4 (cont'd)

Province or Territory/ Project Name	Discovery Year ¹	Remarks
Nickel Rim Deep (Falconbridge)	1990	An extension of the Victor deposit onto the Falconbridge property; 1.6 Mt grading 1.58% nickel and 10.13% copper, or an inferred resource of 0.5 Mt grading 4.13% nickel and 25.53% copper.
Kelly Lake (Inco)	1996	10.5 Mt grading 1.77% nickel, 1.34% copper and 3.69 g/t platinum group metals.
Onaping Depth (Falconbridge)	1996	Indicated resource of 19.8 Mt grading 2.52% nickel and 1.21% copper; inferred resource of 0.9 Mt grading 3.70% nickel and 1.44% copper.
Norman West (Falconbridge)	1997	Inferred resource of 7.6 Mt grading 1.59% nickel and 1.28% copper.
Likely discovery at Sudbury (Falconbridge)	1999	8 km northwest of Lockerby and 3 km west of Creighton, a surface exploration hole intersected 33.4 m averaging 2.6% nickel and 0.8% copper at a depth of 436 m; the estimated true thickness of the zone is approximately 18 m.
Discovery near the former Totten mine (Inco)	1999	8.4 Mt averaging 1.42% nickel, 1.90% copper and 4.7 g/t platinum group metals.
Pump Lake (Inco)	1999	Two zones, each with a strike length of 200 m, with nickel and copper grades higher than the grade of ore currently being mined in Inco's Ontario Division. Exploration continues in 2000.
Mineralized zone, 1800 m north of Copper Cliff South mine shaft (Inco)	..	The tonnage and grade have not yet been released by Inco; depth is 900 m; thickness is 7.8 m; averages 5.90% nickel, 4.16% copper and 1.7 g/t platinum group metals; open at depth; exploration continues.
Big Whopper petalite deposit	1997	11.6 Mt averaging 1.34% Li ₂ O, of which 5.6 Mt average 1.41% Li ₂ O.
Big Mack petalite deposit	..	Tonnage and grade not yet published; adjacent to the Big Whopper deposit.
MANITOBA		
Photo Lake mine	1993	Mineable reserves were 533 623 t grading 4.5% copper, 6% zinc, 33 g/t silver and 4.7 g/t gold; the deposit is mined out; the tonnage and grade produced are unpublished.
Pipe #1 Deep deposit	1994	4 Mt grading 2.32% nickel.
Triple 7 deposit (Flin Flon) (Hudson Bay Mining and Smelting Co. Limited)	..	Currently being developed for production; 14.5 Mt grading 2.51% copper and 4.68% zinc.
William Lake (Falconbridge)	..	Falconbridge has been doing extensive drilling at William Lake for several years (located on the southwest extension of the Thompson Nickel Belt) and appears to have discovered a nickel deposit there. The tonnage and grade data have not yet been released.
SASKATCHEWAN		
Konuto Lake mine	1994	Mineable resources at January 1, 1999, were 1 550 159 t grading 4.00% copper, 1.20% zinc, 8.35 g/t silver and 1.84 g/t gold.
La Roque claims	1999	Three drillholes have intersected 6.95% uranium over 3.6 m, 25.36% uranium over 7.0 m, and 16.2% uranium over 2.5 m; exploration continues.
BRITISH COLUMBIA		
Kemess South mine	1990	250 000 000 t grading 0.22% copper and 0.6 g/t gold.
Kemess North deposit	1990	120 000 000 t grading 0.19% copper and 0.4 g/t gold.

TABLE 4 (cont'd)

Province or Territory/ Project Name	Discovery Year ¹	Remarks
Akaie deposit	1994	12 000 000 t grading 8.6% zinc, 1.5% lead and 17.1 g/t silver.
Gibraltar North deposit	1994	33 500 000 t grading 0.45% copper and 3 g/t silver.
YUKON		
Kudz Ze Kayah property		
Main deposit	1994	Indicated resource of 11 300 000 t averaging 5.89% zinc, 1.52% lead, 0.3% copper, 133.0 g/t silver and 1.34 g/t gold; inferred resource of 1 500 000 t averaging 6.4% zinc, 3.1% lead, 0.1% copper 90 g/t silver and 2 g/t gold.
Second discovery	1998	1 000 000 t averaging 6% zinc and 3% lead, plus copper with silver and gold.
Wolverine deposit	1995	6 237 000 t grading 1.33% copper, 1.55% zinc, 370.9 g/t silver and 1.76 g/t gold; as this deposit has a high selenium content, it may be impossible to market concentrates produced without reducing their selenium content.
Wolf deposit	1995	4 100 000 t grading 6.2% zinc, 1.8% lead and 84 g/t silver.
East Slope zone	1998	Tonnage and grade not available.
NORTHWEST TERRITORIES		
Ekati diamond mine		
BHP Diamonds had indicated that the following nine kimberlites are viable orebodies. Still other diamond-bearing pipes known on the property are also likely to turn out to constitute mineable orebodies.		
Panda Pipe	..	Open pit: proven and probable, 12.6 Mt grading 1.09 ct/t (US\$130/ct); underground: proven and probable, 0.8 Mt grading 0.97 ct/t (US\$130/ct).
Koala Pipe	..	Open pit: proven and probable, 14.6 Mt grading 0.76 ct/t (US\$122/ct); underground: proven and probable, 2.8 Mt grading 1.63ct/t (US\$122/ct).
Misery Pipe	..	Open pit: proven and probable, 5.5 Mt grading 4.26 ct/t (US\$26/ct).
Fox Pipe	..	Open pit: proven and probable, 16.7 Mt grading 0.40 ct/t (US\$125/ct).
Sable Pipe	..	Open pit: proven and probable, 12.9 Mt grading 0.93 ct/t (US\$64/ct).
Leslie pipe	..	Tonnage not available; grade about 0.33ct/t (US\$89/ct).
Beartooth pipe	..	Tonnage not available; grade about 1.20ct/t (US\$79/ct).
Pigeon pipe	..	Tonnage not available; grade about 0.54 ct/t, value about US\$54/ct.
Koala North	..	Tonnage not available; grade about 0.63ct/t, value about US\$200/ct.
Diavik project (deposits going ahead to production):		
A-154 South Pipe	1994	12.0 Mt grading 4.8 ct/t (about US\$296/t)
A-418 Pipe	1995	9.0 Mt grading 3.7 ct/t (about US\$166/t)
A-154 North Pipe	1995	11.5 Mt grading 2.4 ct/t (about US\$77/t)
A-21 Pipe	1995	4.9 Mt grading 3.0 ct/t (about US\$112/t)
Snap Lake diamond deposit	1996	Exploration continues; indicated and inferred resource of 12.6 Mt grading 1.75 ct/t = US\$206.50/t; considerable potential for additional ore with global resources for the dyke estimated at 21.3 Mt grading 1.97 ct/t.

TABLE 4 (cont'd)

Province or Territory/ Project Name	Discovery Year ¹	Remarks
AK (Kennady Lake) property		Exploration continues; four diamondiferous kimberlites have been defined to date:
5034 Pipe	1995	15 Mt grading 1.6 ct/t (US\$ 51/ct; US\$ 82/t)
Hearne Pipe	1997	8 Mt grading 2.33 ct/t (US\$ 44/ct; US\$ 103/t)
Tuzo Pipe	1997	9 Mt grading 2.2 ct/t (US\$ 68/ct; US\$ 150/t)
Telsa Pipe	1997	4 Mt grading 0.37 ct/t (US \$ 96/ct; US\$ 36/t)
NUNAVUT		
Hope Bay gold project	..	\$85 million spent exploring the property to date, exploration continues.
Boston deposit	..	5.7 Mt grading 1.31 g/t gold (2.4 million oz of gold).
Doris Lake deposit	..	2.4 Mt grading 17.8 g/t gold (1.2 million oz of gold).
Madrid deposit	..	5 Mt grading 4.3 g/t gold (690 000 oz of gold).
Meliadine West and East properties		To date, some \$45 million has been spent exploring the Meliadine West deposit; exploration continues.
Meliadine West	1990(?)	23.7 Mt grading 8.5 g/t gold (uncut) (6.5 million oz of gold).
Meliadine East	1992(?)	1.841 Mt grading 6.72 g/t gold (400 000 oz of gold).
Meadowbank property		Exploration continues.
Third Portage deposit	1990(?)	4 502 636 t grading 7.06 g/t gold (1 022 000 oz of gold) (open-pit resource).
North Portage deposit	1990(?)	2 019 000 t grading 4.49 g/t gold (291 000 oz of gold).
Goose Island deposit	1991	976 834 t grading 11.5 g/t gold (360 000 oz of gold).
Bay Zone	1997	684 000 t grading 4.71 g/t gold (104 000 oz of gold).
George Lake project		
George Lake and Goose Lake deposits	..	6.46 Mt grading 10.65 g/t gold (2 200 000 oz of gold); property being explored in 2000 by Kinross Gold Corporation with the goal of increasing the resource base by 35% to improve the economics of the project; exploration continues.
Inukshuk Zone (at Izok Lake)	1992	2 000 000 t grading 2% copper and 8% zinc.
Jericho diamond project	1995	Exploration continues; mineable resource in the JD/OD-1 pipe is 2.5 Mt grading 1.19 ct/t (US\$75/ct); total resource of 7.1 Mt grading 0.84 ct/t.
OTHER DISCOVERIES IN CANADA		At least 70 additional discoveries of deposits have been announced that the author does not consider to be of sufficient current economic significance to be included in this listing.

Source: Natural Resources Canada.

.. Not available.

¹ Discovery year provided if readily available to the author.