

Canadian Mine Openings, Closings, Expansions, Extensions and New Mine Developments

Lo-Sun Jen

*The author is with the Minerals and Metals Sector, Natural Resources Canada.
Telephone: (613) 992-0658
E-mail: ljen@nrca.gc.ca*

OVERVIEW

In 1996, the number of mine openings continued to exceed mine closings. During the year, there were 20 mine openings (14 new mines and 6 re-openings) and 17 mine closings (10 suspensions and 7 closures) (Tables 1 and 2). The new mines opened consisted of 7 gold mines, 3 base-metal mines, 3 industrial mineral mines and 1 coal mine. The 6 re-openings included 3 gold mines, 1 base-metal mine, 1 limestone-dolomite mine and 1 asbestos mine. The 17 mine closings included the permanent closure of 5 gold mines, 1 base-metal mine and 1 uranium mine, and the temporary suspension of production at 3 gold mines, 6 base-metal mines and 1 pyrophyllite mine. In 1996, new mine openings again increased over 1995 with the opening of 9 new mines. Two of the new mines that opened for production and two of the suspensions in 1996 were foreign-controlled or were joint ventures between Canadian and foreign companies.

The new mines opened in 1996 were: the Stog'er Tight/Ming gold mine, the Rambler gold tailings operation and the Fischells Brook gypsum mine in Newfoundland; the Stellarton coal mine in Nova Scotia; the Beaufor gold mine and the Gonzague Langlois zinc-copper-silver-gold mine in Quebec; the Holloway gold mine, the McCreedy East nickel-copper mine, the Pick Lake zinc-copper mine and the Street Township garnet mine in Ontario; the Farley gold mine (the Keystone mine) in Manitoba; the Komis gold mine in Saskatchewan; the Mt. Meager pumice mine (Canada's first pumice mine) in British Columbia; and the Brewery Creek gold mine in the Yukon. The re-opened mines included the Lower Cove limestone-dolomite mine in Newfoundland; the Lake George antimony mine in New Brunswick; the British-Canadian asbestos mine in Quebec; the Nighthawk gold mine in Ontario; the Evening Star gold mine in British Columbia; and the Mt. Nansen gold mine in the Yukon.

The most important new mines in 1996, in terms of value of production and employment, were the Gonzague Langlois base-metal mine in Quebec, the Holloway gold mine and the McCreedy East and Pick Lake base-metal mines in Ontario, the Farley gold mine in Manitoba, and the Brewery Creek gold mine in the Yukon. The most important re-openings were the British-Canadian asbestos mine in Quebec and the Mt. Nansen gold mine in the Yukon.

Four significant mine closures took place during 1996. In Quebec, the Chimo gold mine, which began production in 1986, closed in December due to ore depletion. In Ontario, the Stanleigh uranium mine closed in April due to the termination of a long-term supply contract with Ontario Hydro because of high production costs. This mine first came into production in 1958 and was the last uranium-producing mine in the province of Ontario. The Goldstream copper-zinc mine in British Columbia, one of the highest-grade copper mines in Canada, closed at the end of January and the Nickel Plate gold mine closed in October, both because of ore exhaustion. In addition, the Armstrong pyrophyllite mine and the Ming copper operations in Newfoundland, the Gonzague Langlois zinc-copper-silver mine in Quebec, the Red Lake gold mine and the Redstone nickel mine in Ontario, the Evening Star and Premier Gold mines and the Similco copper mine in British Columbia, and the Grum and Vangorda zinc-lead-silver mines in the Yukon suspended operations during the year.

In addition to mine openings, there were at least 15 significant mine expansion and mine extension projects across Canada in 1996 (Table 2). Most of these projects marked the continuation of existing programs that began in 1995, several of which were further expansions or extensions. One of the most important of these existing programs has been the Red Lake gold mine in Ontario where significant high-grade gold mineralization was discovered in the 1994-95 period. The mine holds promise to triple its gold production by 1998. The most significant new expansion and extension programs announced and started in 1996 include the Copper Rand 5000 project, which is a \$24 million deep ore development and mine extension program at the Copper Rand gold-copper mine in Quebec, and a \$22 million mine and mill expansion at the Pamour gold mine in Ontario.

The total capital cost (excluding acquisition costs) for new and re-opened mines in 1996 is estimated to be about \$500 million, \$100 million higher than in 1995. Another \$200 million is estimated to have been spent on mine expansions and extensions, which is 20% lower than in 1995. Because of the sudden drop in copper prices and a subsequent decline in other metal prices since mid-1996, many mine development projects were delayed or postponed. Project postponements have resulted in lower-than-expected capital spending in 1996 on mine openings, expansions and extensions, but spending is expected to rise considerably in 1997 and 1998.

REGIONAL PERSPECTIVE

During 1996, eight provinces and one territory were affected by mine openings or closings. Most occurred in Newfoundland, Quebec, Ontario, British Columbia and the Yukon. Of the 20 mine openings in the year, 5 occurred in Ontario, 4 in Newfoundland, 3 in Quebec, 2 each in British Columbia and the Yukon, and 1 each in Nova Scotia, New Brunswick, Manitoba and Saskatchewan. Of the 17 mine closings, 7 occurred in British Columbia, 3 in Ontario, 2 each in Newfoundland, Quebec and the Yukon, and 1 in Manitoba. However, because the opening or closure of a larger mine will have more effect on production and employment than that of a smaller mine, the impact of mine openings and closings varied considerably from province to province. Consequently, Ontario, British Columbia and the Yukon were the hardest hit by production suspensions or mine closures at relatively large mines in these regions.

In Newfoundland, the Rambler gold tailings operation near Baie Verte was opened in May by Raymo Processing Limited, a wholly owned subsidiary of Electra Mining Consolidated Ltd. of Vancouver. The operation is recovering gold from the tailings, which were impounded on the Rambler copper mine property through its indoor vat leach plant using a vat leach technology developed by NovaGold Resources Inc. of Halifax. The Ming (formerly Rambler) copper mine near Baie Verte, which had operated between mid-1964 and April 1982, re-opened in December 1995, but ceased the production of copper in August 1996. In September, the mine was converted for processing gold and, in November, the owner, Ming Minerals Inc., opened the Stog'er Tight gold mine nearby. Although the open-pit operation at Stog'er Tight was suspended in January 1997 because of high dilution problems and weak gold prices, the owner intends to re-open the mine when the price of gold recovers. On the industrial minerals front, the Fischells Brook gypsum mine near Flat Bay came on stream in July 1996, and the Lower Cove limestone and dolomite mine near Stephenville was re-opened by its new owner Atlantic Minerals Limited. Production was suspended at the mine in August 1995 when its previous owner, The Newfoundland Resources & Mining Company Limited, declared

bankruptcy. In April, production at the Armstrong mine at Manuels was suspended because of weak market conditions. The mine, Canada's only pyrophyllite mine, had been in continuous production on a seasonal basis since 1957. Overall, Newfoundland incurred a net gain of some 10 690 t of daily ore capacity and some 25 new mining jobs, again faring better than in the previous year when two mines re-opened and one mine suspended operations.

One new mine in Nova Scotia, the 570-t/d Stellarton coal mine near Stellarton, came into production in March, creating 30 mining jobs. The 275-t/d Lake George antimony mine near Lake George, New Brunswick, re-opened in July, creating 80 mining jobs. The mine had been in production from 1972 to 1989.

Northwestern Quebec received a much needed boost to its mining industry and employment situation with the opening of the 2500-t/d Gonzague Langlois (formerly Grevet) zinc-copper-silver-gold mine near Lebel-sur-Quévillon and the opening of the Beaufor gold mine near Val-d'Or, both in January. The Eastern Townships also benefited when the 14 000-t/d British-Canadian asbestos mine near Thetford Mines re-opened in June. However, an announcement on the suspension of production at Gonzague Langlois in December, because of weak metal prices and the need to correct mining methods, sent shock waves through the communities nearby and beyond. Given that zinc prices have been improving and copper prices have been relatively stable since the beginning of 1997, the suspension of production at the Gonzague Langlois mine is expected to be of short duration. Overall, Quebec fared well in 1996 with net gains of some 12 900 t/d of productive mine capacity and 645 direct mining jobs. In fact, Quebec fared better in 1996 than in the previous four years during which the province incurred consecutive net losses in both mine capacity and mining employment.

In Ontario, five mines opened in 1996. These included four new mines: the Holloway gold mine near Matheson, the McCreedy East nickel-copper mine and the Street Township garnet mine, both near Sudbury, and the Pick Lake zinc-copper operation at Pays Plat Lake. With gold output at 100 000 oz annually and a mine life of at least 13 years, the Holloway mine, Ontario's first major gold mine opening in Canada in 1996. The McCreedy East mine, with an associated high-grade copper orebody (the 153 orebody), has an overall mine life of more than 20 years. At full production (beginning in December 1997), the mine is expected to produce some 22.5 million lb of nickel and 77.5 million lb of copper annually, and is the most important new nickel-copper mine in Canada in 1996. The Street Township mine, which was to come on stream in 1995, began producing high-quality almandine garnet in January on a limited scale. In addition, the Nighthawk gold mine near Timmins re-opened, while

two mines suspended production during the year. The Redstone mine, a small nickel mine near Timmins, was shut down in January because of weak nickel prices. Production was also suspended at the Red Lake gold mine near Balmertown in June as the result of a labour dispute. However, the biggest negative impact came from the closure of the Stanleigh uranium mine at Elliot Lake at the end of June because of the termination of a long-term uranium supply contract by Ontario Hydro, rendering the mine's low-grade underground uranium ore uneconomic. This mine first began production in 1978 and was Ontario's last uranium mine. All 600 workers at the mine were affected by the closure. Consequently, the province of Ontario incurred a net loss of some 950 t/d of mine production capacity and some 370 mining jobs in 1996.

Although production at the BT open-pit gold mine in Lynn Lake, Manitoba, ceased in June 1996 as the result of ore depletion, the nearby Farley open-pit mine came into production during the same month, providing undisrupted ore feed to the company's (Black Hawk Mining Inc.) Lynn mill. Because the Farley orebody is larger and of higher grade than that of the recently reactivated BT mine, the mining life of the overall Keystone gold operations is expected to be extended by at least another four years. A higher annual gold production is also expected. In addition, the entire workforce of BT was absorbed by Farley. Consequently, there were small net gains of some 50 t of daily ore production capacity and 7 new mining jobs from mine openings and closings in Manitoba in 1996.

The opening of the 400-t/d Komis gold mine near La Ronge, Saskatchewan, in August 1996 added a third gold mine to that province's mineral assets, along with 80 new mining jobs. With the 500-t/d Seabee mine and the 700-t/d Contact Lake mine all nearby, the La Ronge area has firmly established itself as the most important gold-producing area in Saskatchewan.

With six mine closings and only two small mine openings, British Columbia was the hardest-hit province in 1996. The Mt. Meager mine near Pamberton, Canada's first pumice mine, opened in July, almost one year later than expected. At a designed capacity of 150 t/d and with five employees, the mine has yet to reach full production in 1997. The Evening Star gold mine near Rossland, a mere 90-t/d gold mine with a work force of 15, began production in January but suspended operations three months later because of limited financing and custom milling problems. More severe blows, however, came from the suspension of production at the 2000-t/d Premier Gold mine near Stewart in April, the suspension of the 22 680-t/d Similco copper-gold-silver mine near Princeton in November, and the closure of the 1200-t/d Goldstream copper-zinc-gold mine near Revelstoke and the 2000-t/d Hedley and Mascot tailings operations at Hedley. Net losses in ore pro-

duction capacity and employment from mine openings and closings in the province amounted to over 28 000 t/d and some 416 mining jobs.

While gold mining fared well with two mine openings, the Yukon suffered a severe blow when mining operations were suspended at two base-metal mines. The Brewery Creek gold mine, a 6850-t/d open-pit heap-leach operation near Dawson Creek, came on stream in November. The mine is the largest lode gold mine in the Yukon and is also Canada's largest heap-leach gold mining operation. Near Carmacks, the Mt. Nansen gold mine, which produced small quantities of gold from 1968 to 1989, was reactivated for production in October. The 700-t/d mill, which was rebuilt and expanded to employ new cyanide and carbon recovery circuits, may be further expanded to 2000 t/d. This would accommodate the custom milling of ores from several previously closed mines and potential new ones along the Mt. Nansen Trend – a potential gold mineralization structure that hosted a number of former gold producers including the Mt. Nansen, Arctic, Brown-McDade, Huestis, Webber and La Forma gold mines. However, mining was suspended at both the Grum and Vangorda zinc-lead-silver mines at Faro in December as a result of weak zinc prices and production problems. Hence, the Yukon incurred net losses of nearly 7000 t/d of ore capacity along with 320 mining jobs. With the purchase by Cominco Ltd. of a 28% interest in the Anvil Range Mining Corporation, and the original partner, Hyundai Corporation of the Republic of Korea, holding on to 20%, and with zinc prices improving, it appears possible that mining and production at Faro will resume sometime in 1997.

MINE EXPANSIONS AND EXTENSIONS

At least 15 significant mine expansion and extension projects were initiated or undertaken in 1996 (Table 2). These included 1 in New Brunswick, 8 in Quebec, 5 in Ontario, and 1 in British Columbia. While the majority of these projects involved existing programs, 6 were new. One of the new projects was in New Brunswick, four were in Quebec and one was in Ontario. In addition, at least three existing programs have been extended, including two in Quebec and one in Ontario. The most significant of the expansion projects completed during 1996 were at the LaRonde (Quebec) gold mine, the Dome and Detour Lake (Ontario) gold mines, and at the Craig (Ontario) and Thompson (Manitoba) nickel-copper mines. During 1996, the most significant new expansions began at the Joe Mann gold-copper mine in Quebec and at the Pamour gold mine in Ontario, while the most significant new extensions occurred at the Copper Rand (the Copper Rand 5000 project) gold-copper mine and at the Gaspé Mines (the E-38 orebody) copper operations in Quebec. A final hurdle was cleared in October for a planned major further expansion at the Quinsam coal mine in British Columbia to proceed.

In New Brunswick, a recent \$10.4 million program was successful in extending the mine life of the Heath Steele Mines, a zinc-copper-lead-silver producer near Newcastle, from 1997 to 2000. The mine life of the B mine was extended to the end of December 1999, and that of the C mine was extended to June 2000.

In Quebec, while the expansion program at Sigma was completed as planned, expansions at Doyon and extensions at Joe Mann and Sleeping Giant were further extended. However, the \$30 million expansion program at Casa Berardi (Est and Ouest) was not completed in 1996. In February 1997, production was suspended at both the Casa Berardi Est and Ouest mines as a result of high production costs associated with mining problems and the failure to find a new buyer for the mines. At the Chibougamau camp, where low-grade problems at the Copper Rand gold-copper mine forced the discontinuation of ore development in the upper levels, the \$24 million Copper Rand 5000 project – a deep ore development project – is forging ahead. In the meantime, successful recent new ore development at the nearby Portage mine has enabled the postponement of the mine's scheduled closure in January to November 1997. If the remaining pillars are also to be exploited, the mine life of Portage may be further extended by another two months.

In addition to the Copper Rand 5000 project, three other new programs began in 1996: the Francoeur gold mine near Rouyn-Noranda, the Joe Mann gold-copper mine near Chibougamau, and the Gaspé Mines copper operations at Murdochville. After five years of production totalling 1 Mt at a recovered grade of 6.21 g/t gold (nearly 200 000 oz), gold reserves at the Francoeur mine at the end of 1996 were higher than when the mine first started. Although there were no major new ore discoveries, continuous incremental exploration successes at the mine have had the effect of discovering an equivalent new mine at Francoeur over a period of five years. During 1996, the successful development of the E-34 Zone at the Gaspé copper mine has extended its overall mine life to 1999. A new \$10 million program to develop the E-38 Zone will most likely further extend the mine life of Gaspé Mines beyond 2000. A major expansion and extension program at Doyon, which started in 1994, has been further extended and will be completed in 1997. The total capital expenditure for completion of the shaft and underground development, especially the development of a newly outlined mineralization west of the Doyon Fault for 1996-97, was estimated at US\$20 million. At the Joe Mann mine, a \$13.5 million 18-month capital investment program that was approved in December 1996 is expected to add 400 000 oz of new gold reserves. Successful underground development at the Sleeping Giant gold mine near Amos, like that at Francoeur, has also continued to expand ore reserves net of production and has allowed a mill expansion. These mine expansions and extensions continue to attest to

the result of mine-site exploration successes in recent years in the Gaspé and in northwestern Quebec.

Furthermore, Noranda Inc. announced in early November 1996 that it plans to invest a total of \$212 million to fund capital projects in Quebec. These include \$124 million to update its 360 000-t/y CCR refinery in Montréal with cathode technology. Another \$18 million will be used to build a third converter at the Gaspé Mines copper smelter in Murdochville to boost copper cathode production there by 16 000 t to 350 000 t/y. In addition, about \$61 million will be used to upgrade Canadian Electrolytic Zinc Limited's refinery in Valleyfield to boost its zinc output to 250 000 t/y. The remaining \$9 million will be used to re-open the Gallen open-pit zinc mine at Rouyn-Noranda, which is expected to produce some 82 000 t of zinc concentrates for 18 months for the Horne smelter.

One major new gold mine expansion and extension program was launched in Ontario in 1996. A \$22 million program to expand the Pamour open-pit into a super pit and to increase its mill capacity from the current 3600 t/d to 13 600 t/d is expected to increase gold production at Royal Oak Mines Inc.'s Ontario Division mines in Timmins to 300 000 oz of gold annually starting in 1998. Royal Oak's Ontario Division of gold mines currently consists of the Pamour and Nighthawk producing mines, as well as the Matachewan mine, which is under development for production in 1998 at a project cost of \$75 million. As well, plans to develop the nearby Hopson and Ronnoco orebodies as additional sources of ore feed for the Pamour mill in the 1997-98 period are in place. Total ore reserves at the Ontario Division, which have recently been expanded, now stand at 120 Mt grading 1.9 g/t gold, or 7.3 million oz of gold, which is about 2.8 million oz more than at the end of 1995.

A further \$10 million extension program began in 1995 at Red Lake where a recent discovery of high-grade gold mineralization below previously known ore reserves has considerably boosted the mine's reserves. A new production plan may see the tripling of gold production from the mine by 1998. A \$70 million program, launched in 1995, to expand production at the nearby Campbell gold mine and mill operations and to extend the mine life moved into high gear in 1996. Planned capital outlays for the mill expansion, the sinking of a new shaft and deep ore development were \$10 million for 1995 and \$20 million for each of 1996, 1997 and 1998. The program is scheduled for completion in 1998. During 1995, the mill capacity was expanded from 1365 t/d to 1585 t/d. The sinking of a new shaft began in May 1996. At the Hoyle Pond gold mine near Schumacher, a \$35 million two-year expansion program that began in 1995 to increase production has been rescheduled for completion in 1997. While the sinking of a 750-m production shaft was completed in July 1996, deep ore development will continue in 1997. Production capacity at the Dome mine also increased from

3800 t/d to some 9100 t/d. The expansion at the Craig nickel-copper mine, which started in 1993, was completed in 1996. Ore production at that mine has now reached its full production capacity of 1.2 Mt/y. Craig, a part of the existing Onaping-Craig mine and mill complex, which has cost some \$365 million to develop and expand since 1985, has now firmly established itself as the flagship of Falconbridge Limited's nickel mines in Sudbury.

A three-year collective agreement with its labour union in October 1996 has finally cleared the way for a \$14.1 million expansion program for the Quinsam coal mine on Vancouver Island. Through a succession of expansions since 1992, the mine attained a capacity of 600 000 t/y in 1994. This new expansion plan is expected to increase the mine's coal production to 1.2 Mt/y by the end of 1997. The expansion will also result in over 100 new jobs at the mine.

The large number of significant mine expansions and extensions in Canada during 1996 and the accompanying capital investment have reinforced the upward trend that began in 1992.

IMPACT

Mine openings in Canada again outnumbered mine closings in 1996 for the third consecutive year. However, there was a net loss in production capacity due to the closure of the 4500-t/d Stanleigh uranium mine in Ontario and production suspensions at the 22 680-t/d Similco copper mine in British Columbia and at the 14 500-t/d Grum and Vangorda zinc-lead-silver mines in the Yukon. New mine openings and re-openings resulted in gross gains of some 44 750 t of daily ore production capacity and 1790 jobs, but about 55 200 t of daily capacity and 1850 jobs were lost because of mine closures and suspensions. Overall, Canadian mines incurred relatively small net losses of some 10 400 t of daily ore production capacity and some 60 mining jobs in 1996. On the other hand, mine expansions and extensions have created at least 125 new jobs at Canadian mines, making 1996 a relatively positive year in Canadian mining in recent years.

Mine openings during 1996 contributed significantly to the total mineral and metal production in Canada. Production from new and re-opened mines in 1996 amounted to some 14.3 t (460 000 oz) of gold, 40 000 t of copper, 10 000 t of nickel, 110 000 t of zinc and 2600 t of antimony (Table 3). Most of the new mines are expected to produce into the new century. In addition, significant amounts of coal and industrial mineral production have been added.

Table 4 shows that new and re-opened mines in 1996 have also added nearly 110 t, or 3.5 million oz, of gold; more than 611 t, or 19.7 million oz, of silver; 644 000 t of copper; 194 000 t of nickel; and 1.1 Mt of zinc reserves to the Canadian totals of these metals.

Although most of the gold came from gold mines, most of the silver came from base-metal mines, as has been the case in the past. While two mines (Gonzague Langlois and Pick Lake) contributed all of the new zinc reserves, copper came from all three base-metal mines in Quebec and Ontario, and all of the nickel came from the McCreedy East mine in Ontario.

NEW DEVELOPMENTS EXPECTED TO BECOME MINES IN 1997

A surge in the number of new mining projects that have reached the advanced development stage is expected to result in a large number of mine openings in 1997. Preliminary estimates at the beginning of 1997 indicate that some 31 mines will come on stream during the year. Among the most promising new mines are the Beaver Brook (antimony), Nugget Pond and Pine Cove (both gold) and Keels (slate) mines in Newfoundland; Restigouche (zinc-lead-silver-gold) in New Brunswick; Raglan (nickel-copper), Troilus (gold-copper) and St. Onge (wollastonite) in Quebec; Musselwhite, Edwards and Glimmer Gold (all gold), and Victoria (graphite) in Ontario; McLean Lake (uranium), Athona (gold) and Key Lake tailings (nickel-cobalt) in Saskatchewan; Huckleberry (copper-molybdenum-gold-silver) and Mount Polley (gold-copper) in British Columbia; and Kim-Cass and Nicholas Lake (both gold) in the Northwest Territories.

Several mining operations that had previously suspended production are likely to re-open in 1997. These include the St. Lawrence Fluorspar (fluorspar) operation in Newfoundland; Caribou (zinc-lead-silver-gold) in New Brunswick; McWatters (gold) in Quebec; Aquarius and Madsen (gold) in Ontario; Bissett (gold) in Manitoba; Box (gold) in Saskatchewan; Bralorne, Golden Bear and Ladner Creek (all gold) in British Columbia; and La Forma (gold) in the Yukon. In addition, several of the existing mine expansions and extensions are expected to continue in 1997 and many new ones will likely be announced during the year. These expansions and extensions, together with new mine developments, are central to sustaining mining production in Canada.

OUTLOOK

With demand for key metals (especially nickel and zinc) and industrial minerals improving since the end of 1996, the outlook for 1997 is bright. Preliminary estimates indicate that not only will more mines open than close in 1997, but more new mines will also come on stream in the year, continuing the upward trend that began in 1994. As well, there appears to be a trend showing rising numbers of larger new mines in Canada since 1990. Barring any unexpected changes in metal prices, some 31 mines are expected

to open in 1997 and another 32 in 1998. With about half of that number of mine closures and suspensions expected in each of 1997 and 1998, both years are expected to outperform 1996 with substantial net gains in production capacity and new mining jobs. As larger new mines are developed for production, overall capital expenditures are expected to rise. Preliminary estimates indicate that capital expenditures for mine openings are expected to reach \$1.7 billion in 1997 and are likely to exceed \$2 billion

in 1998, with significant tax revenue for governments and spin-off social and economic benefits for Canadians. Although it is too early to predict the actual number, there are good indications that more new gold and base-metal mines will come on stream in Canada, continuing the upward trend in gold and base-metal mining that began in 1994.

Note: Information in this review was current as of February 28, 1997.

TABLE 1. MINE OPENINGS AND CLOSINGS IN CANADA, 1996

Province/ Territory	New Mines			Mines Re-Opened			Mines Suspended			Mines Closed		
	Precious Metals	Base Metals	Other Minerals	Precious Metals	Base Metals	Other Minerals	Precious Metals	Base Metals	Other Minerals	Precious Metals	Base Metals	Other Minerals
Newfoundland	2	—	1	—	—	1	—	1	1	—	—	—
Nova Scotia	—	—	1	—	—	—	—	—	—	—	—	—
New Brunswick	—	—	—	—	1	—	—	—	—	—	—	—
Quebec	1	1	—	—	—	1	—	1	—	1	—	—
Ontario	1	2	1	1	—	—	1	1	—	—	—	1
Manitoba	1	—	—	—	—	—	—	—	—	1	—	—
Saskatchewan	1	—	—	—	—	—	—	—	—	—	—	—
British Columbia	—	—	1	1	—	—	2	1	—	3	1	—
Yukon	1	—	—	1	—	—	—	2	—	—	—	—
Canada, total by commodity group	7	3	4	3	1	2	3	6	1	5	1	1
Total, Canada	14			6			10			7		

Source: Natural Resources Canada.
— Nil.

TABLE 2. MINE OPENINGS, RE-OPENINGS, EXPANSIONS, EXTENSIONS, SUSPENSIONS AND CLOSURES IN CANADA IN 1996

Mining Project	Location	Province/Territory	Ore Capacity (tonnes/day)	Employment ¹	Date of Opening, Re-Opening, Expansion, Extension, Suspension or Closure	Mine or Plant Type	Main Commodities	Companies	Remarks
NEW OPERATIONS									
Precious Metals									
Stog'er Tight/Ming	Baie Verte	Nfld.	750	75	November	U/G & O/P	Gold	Ming Minerals Inc.	Copper production at the Ming Mine ceased in August 1996. A gold circuit was installed and the mine was converted to the production of gold by processing ore mined from the nearby Main Zone deposit. In June 1996, the company acquired the Stog'er Tight deposit from Hemlo Gold Mines Inc. of Toronto and Tapestry Venture Ltd. of Vancouver for \$1 million. Although ore reserves at the Stog'er Tight deposit were sufficient for only 18 months of production, there is potential for more ore reserves. The company is also actively seeking ore feed from other deposits nearby for custom-milling. Although the mill is now processing gold ore, its 1200-t/d copper circuit enables the mill to position itself as the central milling facility of the Baie Verte Peninsula, capable of producing both copper and gold.
Rambler Tailings	Baie Verte	Nfld.	450	15	May	Tailings	Gold	Raymo Processing Limited	In April 1996, Raymo Processing Limited became a wholly owned subsidiary of Electra Mining Consolidated Ltd. of Vancouver. The company is processing tailings impounded on the Rambler mine property through its indoor vat leaching plant using a vat leach technology developed by NovaGold Resources Inc. of Halifax. The plant will initially process 1 Mt of tailings averaging 2.06 g/t gold, which is among the highest grade tailings in the country.
Beaufor	Val-d'Or	Que.	400	72	January 3	U/G	Gold	Aurizon Mines Ltd. and Louvem Mines Inc.	Ore is custom-milled at the nearby Camflo mill, which is owned by Richmond Mines Inc. Gold production in 1996 was about 25 000 oz. Annual production recommended by a feasibility study is 31 500 oz of gold. Companies plan to develop the nearby Pascalis deposit and treat its ore along with the ore from Beaufor. Estimated mine life for Beaufor is about 5.5 years.
Holloway	Matheson	Ont.	1 250	120	October	U/G	Gold	Battle Mountain Gold Company and Teddy Bear Valley Mines, Limited	Ore reserves pertain to the Lightning Zone. Mine life is estimated at about 13 years. Cash operating cost for 1996 is projected at US\$198/oz, declining to US\$190/oz in 1997. On a daily basis, at least 800 t of ore will be custom-milled at the nearby Holt-McDermott mill, which is owned by Barrick Gold Corporation.

TABLE 2 (cont'd)

Mining Project	Location	Province/Territory	Ore Capacity (tonnes/day)	Employment ¹	Date of Opening, Re-Opening, Expansion, Extension, Suspension or Closure	Mine or Plant Type	Main Commodities	Companies	Remarks
Farley	Lynn Lake	Man.	1 350	92	June	O/P	Gold	Black Hawk Mining Inc.	Expected mine life is four years. Cash cost of production is estimated to be US\$250/oz. Additional resources of 1.4 Mt grading 3.2 g/t gold exist in the South and Southeast Zones outside the planned open pits. Granduc Mining Corporation, a 50% owner in the Keystone joint venture which included the Farley deposit, merged with Black Hawk in July 1996.
Komis	La Ronge	Sask.	400	80	August 31	U/G	Gold	Golden Rule Resources Ltd.	Ore is being custom-milled at the nearby Jolu mill. Gold production was expected to reach 3700 oz per month when full production is reached by year-end 1996. Annual gold production beginning in 1997 is expected to be 44 000 oz at a cash production cost of US\$236/oz.
Brewery Creek	Dawson Creek	Yukon	6 850	80	November 15	O/P HL	Gold	Viceroy Resources Corporation	Mining started in August 1996 and gold production began in November. The mine is the largest lode gold mine in the Yukon. Gold production in 1997 is expected to be about 100 000 oz. Long-term annual production is planned at 85 000 oz of gold. Its capital cost is estimated at US\$36.9 million and cash cost at about US\$200/oz of gold. Currently, all mining originates from the Canadian pit. Mine life based on current reserves is expected to be about 8 years. The potential to add oxide ore reserves and to outline sulphide ore is considered excellent.
Base Metals									
Gonzague Langlois (formerly Grevet)	Lebel-sur-Quévillon	Que.	2 500	200	January	U/G	Zinc, copper, silver	Cambior inc.	The mine was brought into production at a capital cost of \$80 million. Commercial production began in January 1996 with mining rate reaching 2200 t/d on January 1. Mine life is estimated to be about 12 years. Operations were temporarily suspended on December 20, 1996, in response to weak metal prices and the need to modify mining methods in certain sectors of the deposit (see suspension below).

McCreedy East	Sudbury	Ont.	1 630	160 ^e	April 1	U/G	Nickel, copper	Inco Limited	Ore production began in April 1996 at about 550 t/d, increasing to 1800 t/d at full production by December 1997. Ore production from the 153 orebody began in November 1996, reaching 1100 t/d in 1999. The 153 orebody is a high-grade copper orebody associated with the nickel-rich main orebody. The overall mine life of McCreedy East is more than 20 years. Employment at the mine is expected to rise to about 170 by the end of 1997. An expansion plan is expected to bring the ore production capacity to 2700 t/d and employment to 270 by the year 2000.
Pick Lake	Pays Plat Lake	Ont.	800 ^e	140 ^e	March	U/G	Zinc, copper	Inmet Mining Corporation	The mine is expected to reach full production in 1998. Annual ore production will then be 290 000 t through to 2002. Planned gradual increase in ore production between 1996 and 1998 will offset a production drop from the company's Winston Lake mine, which is expected to close in 1998 when Pick Lake reaches full production. The company has incorporated the ore reserves at Pick Lake into that of the Winston Lake mine.
Other Minerals									
Fischells Brook	Flat Bay	Nfld.	150	5	July	O/P	Gypsum	Atlantic Gypsum Resources, Inc.	The mine produced some 20 000 t of gypsum in 1996, supplying the Atlantic Group Limited in Corner Brook. The mine will be a seasonal operation, with planned gypsum production at 30 000 t/y. Current ore reserves stand at 17 Mt grading 93% gypsum.
Stellarton	Stellarton	N.S.	570	30	March 11	Strip	Coal	Pioneer Coal Ltd.	Coal production is sold to Nova Scotia Power's thermal-electric plant in nearby Trenton.
Street Township	Sudbury	Ont.	180	16	January	O/P	Almandine (garnet)	EcoSource Garnet, Inc.	Production of high-quality almandine garnet began in 1996 on a limited scale. The company's objective is to be the leading producer of high-quality garnet abrasives for the waterjet and sandblast media markets in North America. EcoSource is an equal-partnership joint venture between two Canadian companies, Stralak Resources Inc. and Emerald Isle Resources Inc., and an American company, DDG Group. The capital cost of developing the mine to production is estimated at \$3 million.
Mt. Meager	Pemberton	B.C.	150	5	July	O/P	Pumice	Great Pacific Pumice Inc.	The mine is Canada's first pumice mine. At full production, it is expected to produce about 50 000 t of pumice annually. Ore reserves at the end of 1996 stood at about 5-20 Mt (including possible reserves), sufficient for 100 years of supply of pumice. However, its mine life is initially planned for about 20 years.

TABLE 2 (cont'd)

Mining Project	Location	Province/Territory	Ore Capacity (tonnes/day)	Employment ¹	Date of Opening, Re-Opening, Expansion, Extension, Suspension or Closure	Mine or Plant Type	Main Commodities	Companies	Remarks
RE-OPENINGS									
Precious Metals									
Nighthawk	Timmins	Ont.	750	50 ^e	May	U/G	Gold	Royal Oak Mines Inc.	In 1996, Royal Oak Mines gained control of Ronnoco Gold Mines, which owns a 4-Mt gold deposit grading 3.4 g/t gold on claims completely surrounded by Nighthawk. The capital cost of developing the Nighthawk mine was about \$11 million. Company is developing the nearby Hopson property for production in late 1997 as a satellite ore source.
Evening Star	Rosland	B.C.	90	15	January	U/G	Gold	Pacific Vangold Mines Ltd.	Production began in January 1996, but operations were suspended in March of the same year due to financing problems. The company is seeking a joint-venture partner to help build a mill but, until then, the property is on care and maintenance. There is good potential to increase ore reserves at the mine.
Mt. Nansen	Carmacks	Yukon	700	50	October 1	O/P & U/G	Gold, silver	B.Y.G. Natural Resources Inc.	Mining began in October 1996 from the open pit. A full month of gold production was achieved in December 1996 with the production of 2525 oz of gold and 12 900 oz of silver at an operating cost of US\$169/oz. Gold recovery was 93.5%, which is 4% better than planned. Gold output in 1997 is expected to exceed 50 000 oz, as initially planned, at a cost of lower than US\$200/oz. The mine produced small amounts of gold from 1968 to 1989, but operations were suspended because of poor mill recovery associated with the refractory ore. B.Y.G. is employing new cyanide and carbon recovery circuits with an expanded mill capacity and is able to achieve a much higher percentage of gold recoveries - in the low 90s, as compared with the high 70s to low 80s from flotation by the previous operation. The company is also developing other gold properties along the Mt. Nansen Trend, including the Huestis mine, and plans to further expand the mill capacity at Mt. Nansen to 2000 t/d to accommodate custom milling.
Base Metals									
Lake George	Lake George	N.B.	275 ^e	80	July 22	U/G	Antimony	Apocan Inc.	The mine produced from 1972 to 1989. The company plans to mine about 70 000 t of ore to produce 2600 t of antimony annually.

Other Minerals

Lower Cove	Stephenville	Nfld.	10 000 ^e	30	April	O/P	Limestone, dolomite	Atlantic Minerals Limited	The mine is producing high-calcium limestone and dolomite for iron and steel, fluid gas-bed combustion and SO ₂ absorption applications.
British-Canadian	Thetford Mines	Que.	14 000	475 ^e	June	O/P	Asbestos	LAB Chrysotile Inc.	Mining at the British-Canadian and Beaver mines was suspended in May 1995 for economic reasons. Production at the British-Canadian mine resumed in June 1996, but operations at the small Beaver mine remain suspended.

EXPANSIONS AND EXTENSIONS**Precious Metals**

Casa Berardi Est and Ouest	La Sarre	Que.	2 000	290	1995-96	U/G	Gold	TVX Gold Inc. and Golden Knight Resources Inc.	A \$30 million deep development program that started in 1995 was completed in December 1996. Additional ore was added to existing reserves. However, more capital investment is needed to further develop ore reserves from known mineralization and to expand mining areas. In January 1997, the companies put both mines and the mill up for sale and in February suspended the operations.
Copper Rand	Chibougamau	Que.	3 000	300	1996-99	U/G	Gold, copper	MSV Resources Inc.	Successes in outlining new ore reserves at the mine since the company acquired it in 1993 have enabled the mine to extend its life and increase production. Currently, mine development is focusing on the newly discovered deep ore zone, called the "Copper Rand 5000" project, below the 4000-foot level. As of December 31, 1996, proven and probable ore reserves of the mine stood at 1.1 Mt grading 1.33% copper and 3.43 g/t gold. An additional 3-4 Mt of ore reserves at similar grades are expected to be outlined in 1997 and 1998, and production from below the 4000-foot level could begin in early 1998. Capital cost of the Copper Rand 5000 project is expected to be about \$24 million, which includes the deepening of the 4-compartment main production shaft to the 5000-foot level.
Doyon	Cadillac	Que.	3 500	453	1994-97	U/G	Gold	Cambior inc. and Barrick Gold Corporation	A major mine and mill expansion and extension program that began in September 1994 continued in 1996. The mill capacity was increased from 3300 to 3500 t/d and the shaft was extended 370 m to a depth of 1024 m. As well, mining was extended into a newly outlined mineralized zone west of the Doyon Fault containing additional ore reserves of 4.9 Mt grading 6.3 g/t gold. Ongoing investments at the mine were \$8.4 million in 1996. The total planned capital expenditure for completion of the shaft and underground development in 1996/97 was estimated at US\$20 million.

TABLE 2 (cont'd)

Mining Project	Location	Province/Territory	Ore Capacity (tonnes/day)	Employment ¹	Date of Opening, Re-Opening, Expansion, Extension, Suspension or Closure	Mine or Plant Type	Main Commodities	Companies	Remarks
Precious Metals (cont'd)									
Francoeur	Rouyn-Noranda	Que.	1 225	125	1995-97	U/G	Gold	Richmont Mines Inc.	An underground exploration program, which began in 1995, was completed in August 1996, resulting in the addition to ore reserves of 250 000 t grading 6.45 g/t gold at a cost of \$1.05 million. Proven and probable ore reserves at the end of August 1996 stood at 930 000 t grading 7.023 g/t gold. After five years of production totalling 1 Mt for a recovered grade of 6.21 g/t gold, the current gold reserves were higher than when the mine first started. Work to expand the ore reserves will continue in 1997.
Joe Mann	Chibougamau	Que.	1 045	257	1996-98	U/G	Gold, copper	Campbell Resources Inc.	Development of new ore reserves from below the current levels continued in 1996. A newly discovered deep ore zone has also proven to be higher grade than existing ore reserves. A \$13.5 million 18-month capital investment program approved in December 1996 is expected to add 400 000 oz of new gold reserves. At its current production rate of 70 000 oz/y, this will extend the mine life for more than 5 years. The capital program includes a 300-m shaft deepening to allow for six new production levels. In addition, the newly discovered West Zone is yet to be developed. It has the potential to become a significant source of ore for a possible mine expansion in the future.
Sigma	Val-d'Or	Que.	1 875	318	1995-96	U/G & O/P	Gold	Placer Dome Canada Limited	A US\$13 million expansion program converted the existing 1600-t/d Merrill-Crowe mill to an 1875-t/d CIP plant in 1996. Gold production is expected to increase to 100 000 oz annually. Although ore from the Sigma II open pit is expected to be exhausted in 1998, increased ore production from the higher-grade underground ore at Sigma will likely maintain the new production level as planned.
Sleeping Giant	Amos	Que.	600	105	1995-96	U/G	Gold	Aurizon Mines Ltd. and Cambior inc.	Successful underground development at the mine has consistently expanded ore reserves net of production. The mine life has increased to four years from three since production resumed in 1993. Three levels being developed below 600 m have shown higher grades in drifts than were indicated by earlier drilling. Production capacity has also been expanded from 600 t/d in 1995 to 900 t/d in 1996. Aurizon is planning to develop the newly acquired Douay West property, about 50 km north of Sleeping Giant, and truck ore to be processed at the Sleeping Giant mill.

Campbell	Balmertown	Ont.	1 585	380	1995-98	U/G	Gold	Placer Dome Canada Limited	A \$70 million mine and mill expansion program that began in 1995 continued in 1996 with an increase in mill capacity to 1585 t/d from 1365 t/d. Capital outlays for 1995 and 1996 were \$10 million and \$20 million, respectively, and will be \$20 million for each of 1997 and 1998, including the sinking of a new shaft and deep ore development. Successful exploration drilling has continued to outline new ore reserves and resources beneath the bottom of the mine in 1996.
Holt-McDermott	Kirkland Lake	Ont.	2 200	200	1995-96	U/G	Gold	Barrick Gold Corporation	Mill capacity was expanded from 1500 t/d to 2200 t/d to accommodate ore from the adjacent Holloway mine of Placer Dome Canada Limited. The high-grade S Zone, which was discovered in 1993, was in full production in 1996. Planned overall production from the mine is expected to be 120 000 oz of gold in 1996. The capital cost of the mill expansion and bringing the S Zone into production was US\$9.4 million, with an additional US\$3 million spent in 1996. Gold production from the mine is expected to be 120 000 oz in 1996 at an average cost of US\$150/oz.
Hoyle Pond	Schumacher	Ont.	1 000	210	1995-97	U/G	Gold	Kinross Gold Corporation	A \$35 million production expansion program that started in 1995 continued in 1996. The sinking of a 750-m four-compartment production shaft, which began in June 1995, was completed in July 1996. Gold production is expected to reach 150 000 oz annually beginning in 1997. During 1996, exploration and development activities at Hoyle Pond were focused on the down-dip extension of the 1060 Zone, Owl Creek, and the so-called Z-fold area. These activities to further extend the mine life will continue in 1997.
Pamour	Timmins	Ont.	3 600	355	1996-97	O/P & U/G	Gold, silver	Royal Oak Mines Inc.	Royal Oak Mines is expanding the mill capacity at Pamour from the current 3600 t/d to 13 600 t/d by late 1997. The company's Ontario Division, which consists of the Pamour open pit and underground, the Hoyle South, the Nighthawk and the Matachewan mines, is expected to produce 300 000 oz of gold annually starting in 1998. Total ore reserves at the Ontario Division at Timmins amount to 120 Mt grading 1.9 g/t gold, or 7.3 million oz of gold, which is about 2.8 million oz more than at the end of 1995.
Red Lake	Balmertown	Ont.	770	250	1995-97	U/G	Gold, silver	Goldcorp Inc.	Continued success in outlining new ore reserves from newly discovered ore zones below existing workings has increased the mine's gold reserves to 1.9 million oz in June 1996. A \$10 million expansion at the mine, which began in 1995, is scheduled to be completed by mid-1997. The company is planning to triple its gold production to 150 000 oz/y starting in 1998, with its operating cost dropping to US\$150/oz in 1998 from US\$339/oz in 1995.

TABLE 2 (cont'd)

Mining Project	Location	Province/Territory	Ore Capacity (tonnes/day)	Employment ¹	Date of Opening, Re-Opening, Expansion, Extension, Suspension or Closure	Mine or Plant Type	Main Commodities	Companies	Remarks
Base Metals									
Heath Steele	Newcastle	N.B.	3 600	240	1995-96	U/G	Zinc, copper, lead, silver	Noranda Mining and Exploration Inc.	A \$10.4 million ore development program that began in 1995 was completed in 1996. As a result, the overall life of the Division has been extended to 2000 from 1997. While the mine life of the B mine has been extended to the end of December 1999, that of the C mine has been extended to June 2000.
Mines Gaspé	Murdochville	Que.	11 000	550	1995-97	O/P & U/G	Copper	Noranda Mining and Exploration Inc.	The E-34 Zone will begin production in January 1997. With ore reserves running at 1.03 Mt grading 3.39% copper, the ore zone will extend the overall mine life to 1999. Also, the company is spending \$10 million to develop the E-38 Zone, which hosts proven reserves of 1.07 Mt grading 3.59% copper and 15.3 g/t silver. A new SX-EW pilot plant was recently completed to take custom smelter feed from anywhere in eastern North America. The company is now considering adding a third converter to the smelter and initiating slag milling. The project will cost \$28.5 million and will add 50 000 t of annual capacity to the smelter while increasing copper and sulphur dioxide recoveries.
Other Minerals									
Quinsam	Campbell River	B.C.	3 300 ^e	104	1995-97	O/P & U/G	Coal	Hillsborough Resources Limited and Marubeni Corporation	A three-year collective agreement with its labour union in October 1996 has cleared the way for the mine to proceed with a planned \$14.1 million capacity expansion to 1.2 Mt/y and to reach a scheduled production of 100 000 t of clean coal on a monthly basis in 1997.
SUSPENSIONS									
Precious Metals									
Red Lake	Balmerton	Ont.	770	250	June 23	U/G	Gold, silver	Goldcorp Inc.	Operations have been suspended due to a labour dispute at the mine since June 23, 1996. However, because of the discovery of a series of high-grade mineralizations and confirmation of the extension of the orebody from the neighbouring Campbell mine of Placer Dome Canada Limited, the mine is undergoing a major expansion. The plan is to at least triple its gold production by 1998.

Evening Star	Rossland	B.C.	90	15	March	U/G	Gold	Pacific Vangold Mines Ltd.	Production began in January 1996, but operations were suspended in March of the same year due to problems in financing needed for more development and for custom-milling. The company is seeking a joint-venture partner to help build a mill.
Premier Gold	Stewart	B.C.	2 300	80	April 12	U/G	Gold, silver	Westmin Resources Limited	Operations were suspended because of poor gold grades in the developed zones. Its production rate at February 1996 was 750 t/d, at which time about two years of mine life were remaining.
Base Metals									
Ming Copper (formerly Rambler)	Baie Verte	Nfld.	360	75	September	U/G	Copper, gold	Ming Minerals Inc.	The mine was previously in production from 1964 to 1982. It re-opened in December 1995. Copper production ceased in August 1996 due to a shortage of copper ore in the current ore reserves. Since August, the mine has been turned into a gold operation, initially because of its gold content in the predominantly copper-rich ore, and subsequently from mining a gold ore zone and ore deposit nearby. See Stog'er Tight/Ming above.
Gonzague Langlois (formerly Grevet)	Lebel-sur-Quévillon	Que.	2 500	200	December 20	U/G	Zinc-copper, silver	Cambior inc.	Mining was suspended on December 20, 1996, due to the necessity to modify the underground mining methods in certain sectors of the deposit and the weakness of the zinc market. The company intends to re-open the mine in the second quarter of 1997 in anticipation of more favourable zinc market conditions. About 100 employees were kept on site to continue mining modification and development. The remaining 100 workers were temporarily laid off and will be recalled by the mine when it re-opens.
Redstone	Timmins	Ont.	290	70	January 9	U/G	Nickel	Black Hawk Mining Inc.	Due to weak nickel prices, mining was suspended in April 1992. Mining operations resumed in October 1995 at a cost of \$1 million but were suspended again in January 1996 as a result of low nickel prices. The company indicated that the mine will not be opened until nickel prices exceed US\$4.50/lb.
Similco	Princeton	B.C.	22 680	226	November 15	O/P	Copper, gold, silver	Princeton Mining Corporation	Mining and milling operations were suspended due to weak copper prices. Some employees were kept for care and maintenance of the mine and mill and to continue exploration. A return to production will depend on an improvement in copper prices and the success of the exploration program in the Alabama area nearby. In August 1996, the Alabama deposit was estimated to contain a resource of 26 Mt grading 0.352% copper and 0.17 g/t gold.

TABLE 2 (cont'd)

Mining Project	Location	Province/ Territory	Ore Capacity (tonnes/day)	Employment ¹	Date of Opening, Re-Opening, Expansion, Extension, Suspension or Closure	Mine or Plant Type	Main Commodities	Companies	Remarks
Grum and Vangorda	Faro	Yukon	14 500	450	December 20	O/P	Zinc, lead, silver	Anvil Range Mining Corporation and Hyundai Corporation	Mining operations were suspended at both mines in December 1996 due to low metal prices and production problems. The milling of stockpiled ore was expected to continue into early 1997. About 300 workers were laid off but 150 were kept on site to continue exploration and development. The companies hoped to re-open the mines and concentrator when zinc and lead prices are higher, and through restructuring and refinancing. On February 6, 1997, Cominco Ltd. acquired a 28% interest in Anvil Range while Hyundai maintained a 20% ownership in Anvil Range.
Other Minerals									
Armstrong mine	Manuels	Nfld.	300	26	April	O/P	Pyrophyllite	Dal-Tile Corporation and Armstrong World Industries Canada Ltd.	Mining was suspended in April 1996 due to weak market conditions. The mine, Canada's only pyrophyllite producer, had been in continuous production on a seasonal basis since 1957. All production, which averaged 35 000-40 000 t annually, was shipped to Pennsylvania and Mississippi for the manufacturing of high-quality ceramic tiles and electrical porcelain. The mine, previously owned and operated by Newfoundland Minerals Limited, was recently acquired by Dal-Tile Corporation, which was formed by the merger between American Olean Tile Company Inc. and Dal-Tile International.
CLOSURES									
Precious Metals									
Chimo	Val-d'Or	Que.	1 500	40	December	U/G	Gold	Cambior inc.	The mine closed because of ore exhaustion. Production from the mine began in July 1986. Most of the workers were relocated to the company's other mines in the area.
BT (Keystone joint venture)	Lynn Lake	Man.	1 300	85	June	O/P	Gold	Black Hawk Mining Inc.	Ore was exhausted at the BT pit but the Lynn mill continues to treat ore from the company's new Farley orebody nearby. No significant changes in the work force are expected as the miners were retained to mine the higher-grade Farley deposit. Granduc Mining Corporation, a previous 50-50 joint-venture partner, amalgamated with Black Hawk in 1996.

Hedley and Mascot Tailings	Hedley	B.C.	2 000	15	September	Tailings	Gold	Candorado Operating Company Ltd.	Mining ceased at the end of March 1996, but leaching of stacked tailings continued until closure of the operations in September. The company is now focusing on the evaluation of other mining projects such as the Buchans Brook Delta tailings deposit, which consists of three mine tailing piles in the Buchans area of Newfoundland.
Nickel Plate	Hedley	B.C.	2 450	77	October 13	O/P	Gold	Homestake Canada Inc.	Mine closed due to ore exhaustion. The mine first began production in August 1987.
Base Metals									
Goldstream	Revelstoke	B.C.	1 200	130	January 31	U/G	Copper, zinc	Imperial Metals Corporation and Goldneve Resources Inc.	Mining and milling operations ceased in January 1996 due to ore exhaustion. The mine began production in June 1991. On January 1, 1995, Bethlehem Resources Corporation, a 50% owner of the mine, became a wholly owned subsidiary of Imperial Metals Corporation.
Other Minerals									
Stanleigh	Elliot Lake	Ont.	4 500	600	June 30	U/G	Uranium	Rio Algom Limited	The mine closed due to the termination of a long-term supply contract with Ontario Hydro because of the high cost of uranium production at the mine. All 600 employees were affected. Only a few workers were kept on site for mine and mill decommissioning. The mine first began production in 1958, suspended production in 1960, and re-opened in July 1983.

Source: Natural Resources Canada, based on company reports and communications with companies.

O/P open-pit; U/G underground; HL heap leach; SX-EW solvent extraction-electrowinning.

e Estimated.

1 Employment refers to workers on the company's payroll and to contract workers at an operation, or at an operation prior to its closure.

Note: A mine that closed and re-opened in the same year is shown under both categories.

TABLE 3. NEW PRODUCTION FROM MINE OPENINGS IN CANADA IN 1996

Mining Project	Main Commodities	Estimated Annual Production ¹					
		Gold	Gold	Copper	Nickel	Zinc	Other Minerals
		(g)	(oz)	(t)	(t)	(t)	(t)
NEW OPERATIONS							
Precious Metals							
Stog'elright/Ming	Gold	933 100	30 000	—	—	—	—
Rambler Tailings	Gold	233 270	7 500	—	—	—	—
Beaufort	Gold	777 580	25 000	—	—	—	—
Holloway	Gold	3 110 340	100 000	—	—	—	—
Farley	Gold	1 555 170	50 000	—	—	—	—
Komis	Gold	1 368 550	44 000	—	—	—	—
Brewery Creek	Gold	2 643 790	85 000	—	—	—	—
Base Metals							
Gonzague Langlois (formerly Grevet)	Zinc, copper, silver	—	—	3 600	—	71 000	—
McCreedy East	Nickel, copper	—	—	35 000	10 200	—	—
Pick Lake	Zinc, copper	—	—	1 900	—	41 000	—
Other Minerals							
Fischells Brook	Gypsum	—	—	—	—	—	30 000 (gypsum)
Stellarton	Coal	—	—	—	—	—	200 000 (coal)
Street Township	Almandine (garnet)	—	—	—	—	—	..
Mt. Meager	Pumice	—	—	—	—	—	50 000 (pumice)
RE-OPENINGS							
Precious Metals							
Nighthawk	Gold	1 026 410	33 000	—	—	—	—
Evening Star	Gold	466 550	15 000	—	—	—	—
Mt. Nansen	Gold, silver	2 177 240	70 000	—	—	—	—
Base Metals							
Lake George	Antimony	—	—	—	—	—	2 600 (antimony)
Other Minerals							
Lower Cove	Limestone, dolomite	—	—	—	—	—	1 500 000 (limestone and dolomite)
British-Canadian	Asbestos	—	—	—	—	—	45 000 (asbestos fibre)
Total		14 292 000	459 500	40 500	10 200	112 000	

Source: Natural Resources Canada.

— Nil; .. Not available.

¹ Represents a full year's production from a mine. However, as mine openings do not usually occur in the beginning of a year and, in general, mines seldom reach full production immediately after opening, the first year of production will likely fall short of the planned annual level of production as indicated.

TABLE 4. NEW ORE RESERVES FROM MINE OPENINGS IN CANADA IN 1996

Mining Project	Main Commodities	Proven-Probable Ore Reserves ¹		In-Situ Metal Reserves							
		Tonnage	Grade	Gold	Gold	Silver	Silver	Copper	Nickel	Zinc	Other Minerals
		(tonnes)		(g)	(oz)	(g)	(oz)	(t)	(t)	(t)	(t)
NEW OPERATIONS											
Precious Metals											
Stog'er Tight/Ming	Gold	672 000	6.9 g/t gold	4 636 800	149 070	—	—	—	—	—	—
Rambler Tailings	Gold	1 165 000	1.695 g/t gold	1 974 670	63 490	—	—	—	—	—	—
Beaufor	Gold	933 900	10 g/t gold	9 339 000	300 250	—	—	—	—	—	—
Holloway	Gold	5 800 000	6.75 g/t gold	39 150 000	1 258 700	—	—	—	—	—	—
Farley	Gold	1 450 000	3.9 g/t gold	5 655 000	181 810	—	—	—	—	—	—
Komis	Gold	687 300	10.3 g/t gold	7 079 190	227 600	—	—	—	—	—	—
Brewery Creek	Gold	16 700 000	1.48 g/t gold	24 716 000	794 640	—	—	—	—	—	—
Base Metals											
Gonzague Langlois (formerly Grevet)	Zinc, copper, silver	10 970 000	8.5% zinc, 0.45% copper, 35 g/t silver, 0.1 g/t gold	1 097 000	35 270	383 950 000	12 344 280	49 365	—	932 450	—
McCreedy East	Nickel, copper	13 500 000	4.32% copper, 1.44% nickel	—	—	—	—	583 200	194 400	—	—
Pick Lake	Zinc, copper	1 300 000	0.91% copper, 15.5% zinc, 0.66 g/t gold, 35.62 g/t silver	858 000	27 585	46 306 000	1 488 770	11 830	—	201 500	—
Other Minerals											
Fischells Brook	Gypsum	17 000 000	93% gypsum	—	—	—	—	—	—	—	15 810 000
Stellarton	Coal	2 600 000	..	—	—	—	—	—	—	—	2 600 000
Street Township	Almandine (garnet)	500 000	35% almandine (recoverable grade)	—	—	—	—	—	—	—	175 000
Mt. Meager	Pumice	5 000 000	90% pumice ^e	—	—	—	—	—	—	—	4 500 000
RE-OPENINGS											
Precious Metals											
Nighthawk	Gold	869 000	5.8 g/t gold	5 040 200	162 050	—	—	—	—	—	—
Evening Star	Gold	18 000	17.1 g/t gold	307 800	9 900	—	—	—	—	—	—
Mt. Nansen	Gold, silver	953 383	9.39 g/t gold, 190 g/t silver	8 952 260	287 820	181 142 770	5 823 870	—	—	—	—
Base Metals											
Lake George	Antimony	200 000 ^e	4% antimony ^e	—	—	—	—	—	—	—	8 000 ^e
Other Minerals											
Lower Cove	Limestone, dolomite	..	—	—	—	—	—	—	—	—	..
British-Canadian	Asbestos	..	—	—	—	—	—	—	—	—	..
Total				108 805 920	3 498 185	611 398 770	19 656 920	644 395	194 400	1 133 950	

Source: Natural Resources Canada.

— Nil; .. Not available; ^e Estimated.¹ Ore reserves as of December 31, 1996.