Report

on

Mineral Exploration Expenditures and Flow-Through Share Funding

Intergovernmental Working Group on
the Mineral Industry

September 1993

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by the

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prepared for the

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FOREWORD

The intent of this report is to present the facts as to the current level of mining exploration expenditures and flow-through share financing. The data and views expressed have been assembled and agreed upon through a joint federal/provincial exercise of the Intergovernmental Working Group (IGWG) on the Mineral Industry.

The Mineral Policy Sector of the Department of Energy, Mines and Resources (EMR), which prepared reports compiled since 1988 has coordinated the preparation of this report.

Throughout this report mineral exploration refers to exploration for metals, nonmetallic minerals and coal, but not for oil sands, tar sands and oil and gas.

EXECUTIVE SUMMARY

The Federal Provincial Survey of Mining and Exploration Companies (Federal-Provincial Survey) indicates that Canadian exploration expenditures, exclusive of those spent in the search for oil and gas resources, totalled $532 million in 1991, down from the $775 million spent in 1990. Senior companies spent $415 million (78 percent) of the $532 million and junior companies spent the remaining $117 million (22 percent). Out of this $532 million, a total of $465 million was spent on general exploration. The remaining $67 million was directed to minesite exploration (defined as the search for new mines on the properties of existing mines).

The preliminary estimate of exploration expenditures for 1992 shows a decline in the level of exploration expenditures to about $420 million. Seniors are expected to have spent $335 million (80 percent) of the $420 million while the juniors would have spent $85 million (20 percent). Year-over-year total expenditures were lower in seven provinces and one territory.

The forecast of exploration expenditures for 1993 reveals that the decline in exploration may be levelling off. Early indications are that some $434 million could be spent on exploration in Canada in 1993. Seniors are expected to spend $298 million (69 percent) of the $434 million and the juniors are expected to spend $136 million (31 percent). If the forecast turns out to be accurate, exploration activity in 1993 would be comparable to the exploration level of 1992.

EMR's own view, while still preliminary, is that exploration spending for 1993 will likely be in the area of $400 - $450 million.

EMR now estimates that the amount of money raised by flow-through shares in 1992 was about $45 million, up approximately $5 million from the $40 million level raised in 1991. EMR estimates that flow-through share funding for 1993 will be at somewhere around $70 million. A diversified limited partnership has announced plans to raise a minimum $5 million and a maximum $50 million for diamond exploration in Canada. The $70 million estimate does not take into account any funds that this partnership may raise. If the partnership's plans materialize and to the extent that its efforts are successful, total flow-through share financing in 1993 could be $75 million and, possibly, as much as $120 million.

The provinces and territories indicate that grass-roots exploration is down, and exploration is more focused on advanced projects (those having known reserves in the ground and a higher potential for development and production). Exploration expenditures directed at gold have declined by over 50 percent in the past two to three years and the amount directed at base metals has increased. Diamond fever has reached several provinces in addition to the Northwest

Territories, in terms of staking and exploration activity. Also, some Canadian companies have been shifting their emphasis away from Canada to foreign exploration plays. Over the past few years, a number of provincial/territorial governments have introduced initiatives to promote exploration activity by implementing or enhancing tax incentives and/or providing grants linked to flow-through shares.

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SECTION A. OUTLOOK FOR CANADIAN MINERAL EXPLORATION AND FLOW-THROUGH SHARE FINANCING

This paper reports on the current outlook and recent historical trends in both flow-through share financing activity and mineral exploration.

1. Outlook for Flow-Through Share Funding in 1993

1.1 Introduction

This section focuses on the quantity of funds raised for exploration by means of flow-through share financing.

Flow-through share financing has been an important element in determining the junior component of the total exploration picture. Since most junior companies are public and need approval from the stock exchanges for their placements, the information on their financing activities was obtained mainly from publications reporting on stock exchange activities or from information gathered directly from the exchanges. However, information on flow-through funding collected from stock exchanges does not include flow-through funding obtained through private issues.

1.2 Recent Background

Funds raised by flow-through shares increased dramatically from $34 million in 1983 to a peak of $1183 million in 1987. Since 1988, however, many factors have led to increasing difficulties in raising flow-through funds for junior exploration companies. These include: 1) the stock market crash of October 19, 1987; 2) changes in income tax treatment of capital gains; 3) declining gold prices; 4) a relative lack of major exploration successes; and 5) since 1991, the withdrawal of the diversified limited partnerships from the flow-through share market.

On the other hand, rumours that North America's first commercial diamond mine may have been found in the Northwest Territories may offer enough market appeal to provide juniors with greater flow-through financing opportunities.

Investor enthusiasm for diamond shares has prompted a group to try to arrange a minimum $5 million and a maximum $50 million partnership fund offering. The partnership would use the proceeds of the offering to invest in flow-through shares in a basket of large and small diamond companies active not only in the Northwest Territories, but throughout the country. If fully subscribed, this maximum amount would slightly exceed, by itself, the 1992 preliminary estimate of flow-through share funds made available to junior

companies. Further, if successful, the fund offering would mark the first re-appearance of the diversified limited partnership in the flow-through share market in three years.

Table 1 illustrates the impressive contribution made by diversified limited partnerships to the total dollar volume of flow-through funds raised in the years 1987 to 1990.

TABLE 1. Flow-through share funds raised by diversified limited partnerships, 1987-90

	Value of issues sold			
	1987	1988	1989[1]	1990[1]
	($ Million)			
TAP	28	23	0	0
CMP	239	234	113	89.4
NEF	-	8	0	0
MVP	57	26	0	0
NIM	260	270	49	0
FIRST EX	47	21	0	0
MIDDLEFIELD	29	5.5	5.5	10.9
MINTAX	15	3.5	0	0
Total	675	591	167.5	100.3

[1] The figures for 1989 and 1990 generally represent financing for mining only. Some limited amounts of funds raised for oil and gas exploration are, however, included in the 1987 and 1988 totals. The numbers for 1989 and 1990 include the so-called "gross-up" whereby companies retained Canadian Exploration Incentive Program (CEIP) monetary incentives and spent them as well.

1.3 Stock Exchange Data

Despite the sluggish economy, Canadian corporations floated a record amount of new equity issues in 1992. The number and value of equity issues brought to Canadian markets in the first half of 1993 kept pace with the boom of 1992. Low interest rates have been a key support for the equities market. The retreat of retail and institutional investors from low-paying capital instruments in favour of equities is providing encouragement for companies to bring out new issues.

Companies of all sizes and of all kinds, including resource companies, have taken advantage of the strong equity markets to raise cash. The rush of money into the resource market was further fuelled by a red-hot oil and gas sector, a rebound in the price of gold and speculative plays not the least of which is diamonds.

The gain to July 1, 1993 on Canada's two major exchanges is impressive, but that pales dramatically when measured against Canada's junior stock markets. The Vancouver Stock Exchange (VSE) composite index, for example, is up 59 percent while the Alberta Stock Exchange (ASE) index's growth is even greater at 85 percent.

The ASE composite index was 1808 at July 1, 1993 from 975 from the beginning of this year. The increased activity is attributed to growth and investor interest in oil, gas and mining exploration.

The VSE index, which collapsed from a high of 2015 in May 1987 to less than 500 in 1991, is experiencing a major run in the market. The VSE composite index which broke through the 1000 point mark in late June from a level of 643 at the start of the year -- stood at 1022 on July 1, 1993. Soaring stock prices, burgeoning trading volumes and renewed individual participation in stocks allowed smaller companies, including resource companies, to tap capital markets to restructure balance sheets and finance new investment.

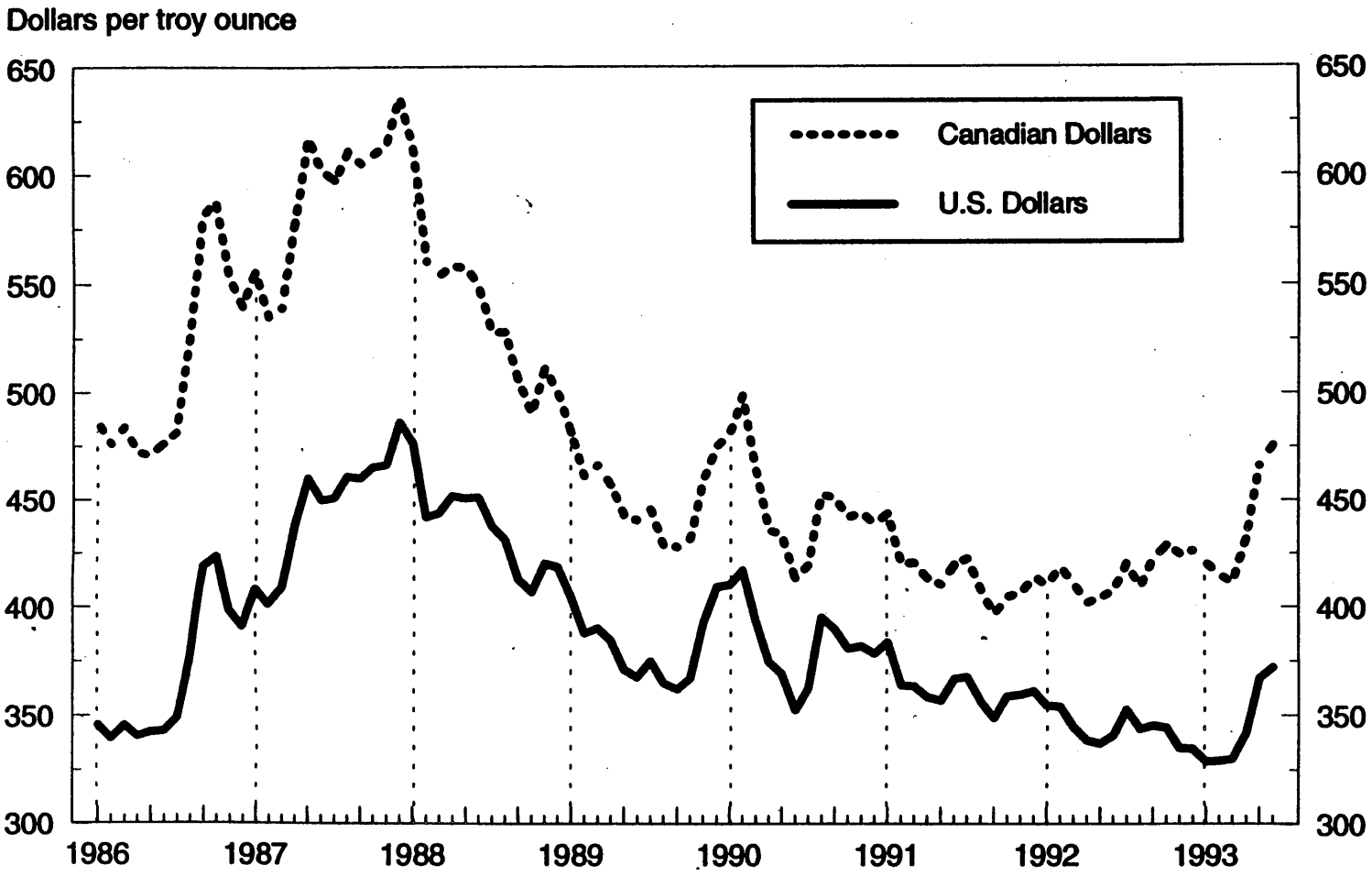
Although common share financings in the first half of the year were up sharply, unfortunately, this phenomenon has not extended to flow-through share financings.

Statistics provided by the VSE indicate that some $8.6 million of flow-through share financing had been raised on the exchange through 26 private placements during the first six months of 1993. The $8.6 million includes $3 million that will be used for oil and gas exploration, which leaves $5.6 million available for mining exploration.

However, monitoring of the VSE financing trends has revealed a significant increase in flow-through share financing offerings during the months of May and June. EMR believes that this recent surge in flow-through share financing offerings has not been captured in the above $8.6 million because they have yet to be accepted by the VSE. As much as $10.5 million of additional flow-through share financing may have been raised for mining and as much as $14 million more may have been raised for oil and gas during these two months.

Figure 1

MONTHLY AVERAGE GOLD PRICE
JANUARY 1986 TO JUNE 1993



Source: Metals Week, Handy and Harman quote; average of London AM Fix.

Statistics provided by the ASE indicate that, excluding amounts raised by interlisted companies, some $8.4 million of flow-through share financing had been raised on the exchange through 29 private placements during the first six months of 1993. The $8.4 million includes $7.1 million that will be used for oil and gas exploration, which leaves $1.3 million available for mining exploration.

Data from the Montreal Exchange (ME) --excluding over the counter sales-- indicate that, excluding amounts raised by interlisted companies, some $12 million of flow-through share financing has been raised on the exchange over the first six months of the year. $9.5 million of this amount was for mineral exploration.

Data from the Toronto Stock Exchange (TSE) --excluding over the counter sales-- indicate that some $33 million of flow-through share financing has been raised on the exchange over the first six months of the year. Only $6 million of this amount was for mineral exploration.

1.4 Outlook

The amount of flow-through share funds raised for mining on the four stock exchanges totalled $32.9 million at July 1, 1993. Assuming that an equal amount of funds will be raised in the second half of 1993 would lead to the conclusion that $65.8 million of flow-through share financing would be available for the whole year.

Although it is difficult to forecast the amount of flow-through share financing for the entire year at this time, EMR believes that $70 million represents a reasonable estimate for 1993.

2. Outlook for Exploration in 1993

2.1 Introduction

This section looks at the expected level of mineral exploration, as opposed to its financing. Since we are looking ahead, the usual statistical reporting sources are supplemented by other sources. The section first reports the results of the Federal-Provincial Intentions Survey for 1993 coordinated by Statistics Canada and EMR. While this is the latest complete survey available, it suffers from a serious shortcoming in that the intentions in question were gathered in the December 1992-March 1993 period, and the results of this once-a-year survey may no longer reflect the current situation.

A second source of information is a modelling technique designed by the Mineral Policy Sector to forecast the amount of total exploration and the amount of senior

exploration. This modelling technique is based on a "statistically significant" relationship between exploration activity and metal prices.

Thirdly, this section reviews recent levels of diamond drilling to give yet another view of the trend in exploration activity.

2.2 EMR and Statistics Canada Surveys of Exploration Spending Intentions - 1993

Methodology

On October 31, 1992, Statistics Canada sent 286 questionnaires to mineral producing firms. EMR has assumed responsibility for the collection of data from the non-producing firms and sent out close to 2111 questionnaires (jointly with provincial governments that participate in this exploration survey). It should be noted that one company can receive several questionnaires depending on the number of provinces in which the company is working. The number of companies actually engaged as operators of exploration projects in Canada is about 580, down from 637 in 1992 and 732 in 1991. Joint venture partners who are not project operators do not report intended expenditures on exploration. Companies were asked to report intended exploration expenditures for their fiscal year that ended between April 1, 1993 and March 31, 1994.

The exploration expenditure statistics were collected for both "general" and "minesite" exploration. Forecast exploration figures include expenditures in the following categories: field expenditures on physical work and surveys; related land costs; overhead expenditures in the field; and, exploration-related head office expenses.

Results

Statistics Canada published the results of its survey under the heading "on-property exploration" (minesite exploration) in its annual publication "Exploration, Development and Capital Expenditures for Mining and Petroleum and Natural Gas Wells" - Intentions 1993 (Statistics Canada catalogue 61-216). The Statistics Canada intentions total published for minesite exploration for 1993 is $64 million. This total was revised at $70 million by EMR as of April 1993. Statistics Canada is currently conducting a revised Forecast 1993 Survey of producing companies and the results should be available soon.

EMR released the results of its survey in the June 1993 issue of the Mineral Industry Quarterly Report and in the Canadian Minerals Yearbook 1992 Review and Outlook. The first indication suggests that "general exploration" (off-property exploration) would be $364 million.

Accordingly, on the basis of company intentions in the December 1992-March 1993 period, total exploration (both on- and off-property) for 1993 would be expected to total about $434 million ($364 million plus $70 million).

Interpretation

The Statistics Canada and EMR surveys of intentions provided an indication of the late 1992 industry view of total exploration spending expectations for 1993. However, because intentions expressed in late 1992 may subsequently have been modified by events that can limit the availability of funds, such as stock market conditions, changing metal prices as well as other general economic factors or company-specific factors, it may be that the results of this survey can no longer be interpreted as being realistic forecasts of the exploration that will be ultimately performed in 1993.

Table 2 shows intentions, as well as preliminary and actual expenditures, for minesite and general exploration for the years 1984 to 1993. The table demonstrates that for the period 1985-88, total expenditures reported initially on a preliminary basis, and then later on an actual basis, generally exceeded intentions for the same period. In 1989, this pattern was reversed. The explanation for the period 1985-88 could be that exploration funding was becoming more abundant than companies had originally anticipated but, starting in 1989, there was an unexpected decline in the availability of flow-through share funds.

2.3 Senior Firm Exploration Spending for 1992 and 1993

Methodology

Information on exploration spending by type of company (1991 actual, 1992 preliminary and 1993 intentions) is now available from the Federal-Provincial Survey of preliminary and forecast exploration expenditures. About 162 active senior companies in 1992 and 143 in 1993 reported exploration spending. Included in these numbers for senior companies are producers and their affiliates as well as foreign and petroleum companies. For joint ventures, total project expenditures are reported by the project operator. Accordingly, senior participation has at times been subject to overestimation. Nevertheless, data analysis has been consistent over the years and a clear trend can be noted.

Results

According to the Federal-Provincial Survey, the decrease in the level of expenditures by seniors was significant from 1988 to 1989, down 22 percent from $708 million to $555 million. In 1990 and 1991, the decrease continued. The

TABLE 2. Comparison of intentions, preliminary and actual exploration expenditures, 1984-93

Exploration Expenditures	Intentions	Preliminary	Actual
		($ Millions)	
1984			
Minesite		158.6	136.4
General		389.7	480.9
Total	N/A	548.3	617.3
1985			
Minesite	150.9	89.4	100.1
General	361.2	471.5	488.8
Total	512.1	560.9	588.9
1986			
Minesite	87.5	110.2	108.6
General	431.2	483.6	589.3
Total	518.7	593.8	697.9
1987			
Minesite	122.6	121.5	161.0
General	583.2	849.6	1139.0
Total	705.8	971.1	1300.0
1988			
Minesite	154.7	138.7	143.0
General	891.0	1107.9	1207.0
Total	1045.7	1246.6	1350.0
1989			
Minesite	111.7	160.0	115.3
General	832.2	766.7	712.5
Total	943.9	926.7	827.8
1990			
Minesite	150.0	107.7	112.4
General	633.0	643.5	662.3
Total	783.0	751.2	774.7
1991			
Minesite	97.9	80.4	67.3
General	548.3	514.5	464.4
Total	646.2	594.9	531.7
1992			
Minesite	71.2	75.4	
General	426.3	344.2	
Total	497.5	419.6	
N/A			
1993			
Minesite	70.1		
General	364.5		
Total	434.6		

Source: Statistics Canada and Federal-Provincial Survey of Mining and Exploration Companies. The 1992 actual survey is currently in progress, and the 1993 preliminary and actual questionnaires will not be sent out until late 1993 and early 1994, respectively.
N/A: Not available.

actual amount for 1991 ($416 million) was down another 22 percent from 1990 while the preliminary estimate for 1992 ($335 million) is down 19 percent from 1991.

Further, intentions for 1993 ($298 million) point to another 11 percent decrease from the preliminary estimate for 1992. Expenditures by seniors made up 52 percent of the total exploration expenditures in 1988, 67 percent in 1989, 69 percent in 1990, 78 percent in 1991, an estimated 80 percent in 1992 and an expected 69 percent in 1993.

Overall intentions for 1993 of $434 million and senior intentions of $298 million implies a value for junior intentions of $136 million. However, junior exploration spending levels are determined more by availability of financing than company intentions.

2.4 Outlook for Exploration Based on Metal Prices

Methodology

An analysis of historical data indicates that the level of expenditures on mineral exploration in a given year can be linked to the previous year's metal prices. This may be because companies who explore view it as an investment, with expected returns being dependent on expected revenues from the subsequent mining of discovered deposits. Expected future revenues would obviously depend on future commodity prices. And expectations of future commodity prices by exploration companies would likely be influenced by current commodity prices.

As well, prices are an important determinant of the level of a company's cash flows and, therefore, may indicate the amount of funds available for spending on mineral exploration.

Changes in exploration spending are likely to lag price changes because exploration activity in any particular year is the result of a budgeting process that takes place in the preceding year. Budget allocations in a given year are therefore likely to reflect metal prices in existence during the immediately preceding year.

Figure 2 shows the relationship between historic exploration expenditures and the EMR yearly metals price index, lagged one year. The index is a composite of the prices of six metals comprising gold, silver, copper, zinc, lead and nickel.

Results

The relationship observed between exploration expenditures and metal prices over

the period 1969 to 1992 would predict total exploration expenditures in 1993 in the neighbourhood of $525 million (see Figure 2). For senior companies, a similar estimation would predict exploration expenditures in 1993 of about $410 million (see Figure 3).

The difference between these two estimates would imply spending by juniors in 1993 of about $115 million. However, since exploration by junior companies is largely determined by the availability of financing from equity markets, no attempt was made to predict junior exploration spending based on metal prices.

2.5 Recent Diamond Drilling Activity

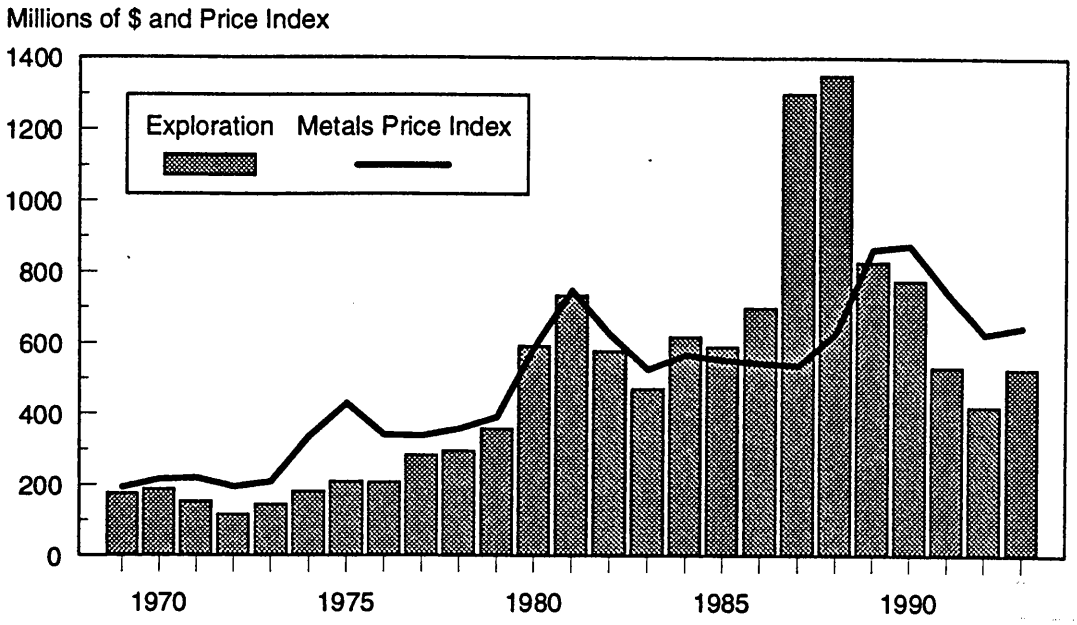
Diamond drilling is an essential component of exploration for nearly all mineral properties in Canada, from the anomaly investigative stage to the deposit delineation and deposit definition stages. This is why diamond drilling statistics constitute an essential indicator of recent levels of Canadian mineral exploration activity.

The Canadian Diamond Drilling Association (CDDA) gathers monthly diamond drilling statistics from its member companies. Available CDDA statistics cover about 50-60 percent of total Canadian contract diamond drilling activity. There has been a reasonably close correlation between annual CDDA drilling footages and Canadian exploration expenditures over the past 10 or 15 years, so that the CDDA drilling statistics depicted in Figure 4 (monthly, 1985-93), Figure 5 (quarterly, 1985-93) and Figure 6 (annual, 1973-92) should provide a reasonable and up-to-date indication of recent national mineral exploration activity trends. In addition, a comprehensive 17-year graph (Figure 7) depicts total Canadian contract drilling up to 1991, as reported annually to EMR by drilling contractors and published in Statistics Canada Catalogue 26-201. Although these two sources provide different annual results, the same overall trends are observable in both, even though the CDDA statistics are incomplete, because not all Canadian diamond drilling contractors are members of CDDA and not all member companies report their drilling to CDDA.

Current dollar costs per meter drilled for exploration in Canada can be calculated for the period 1985-90 inclusive, using data from the Federal-Provincial Exploration Survey. Such data are not available for years prior to 1985. These costs may exceed the actual amounts paid to drilling contractors, as some companies may have included some costs associated with the drilling such as geological logging and assaying of core. These average drilling costs include both surface and underground drilling expenditures, surface drilling costs are normally significantly higher than those for underground drilling.

Figure 2

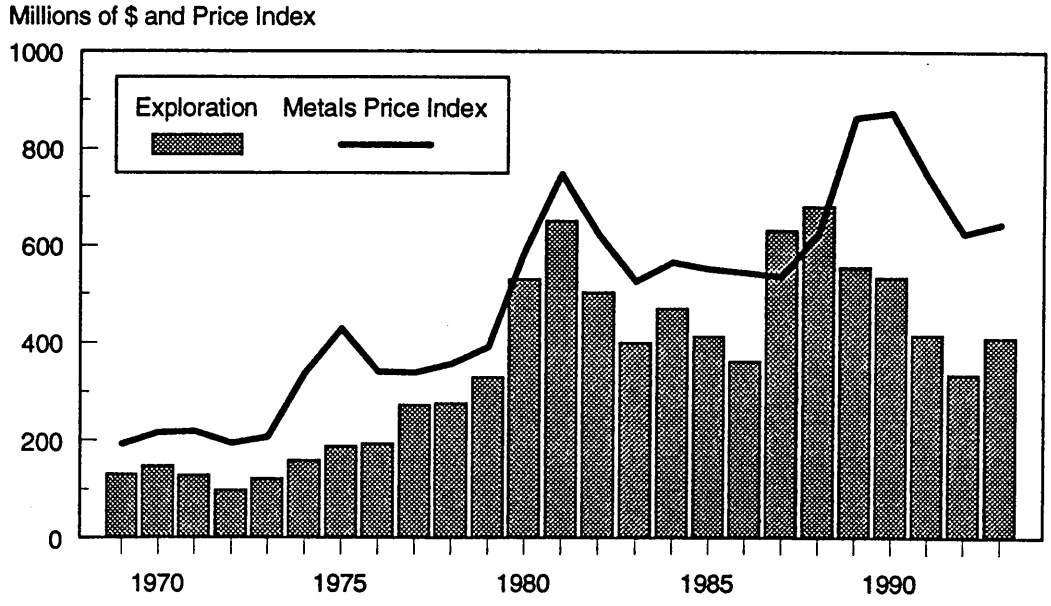
TOTAL EXPLORATION EXPENDITURES AND METALS PRICE INDEX LAGGED ONE YEAR



Sources: Statistics Canada 61-007 and 61-216 for 1969-92 exploration data;
EMR for Metals Price Index.
1993 exploration forecast by EMR model.

Figure 3

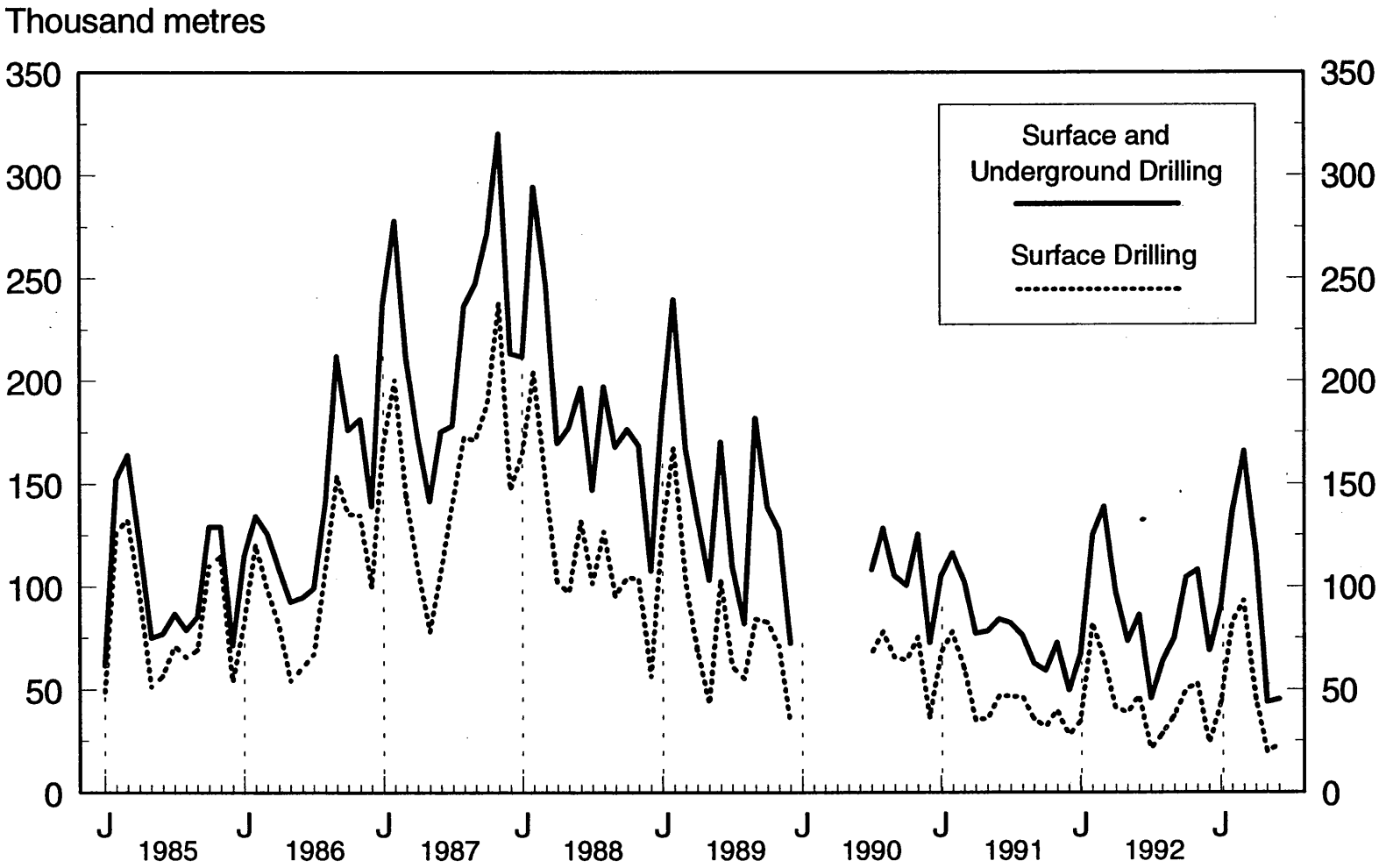
SENIOR EXPLORATION EXPENDITURES AND METALS PRICE INDEX LAGGED ONE YEAR



Sources: Statistics Canada 61-007 and 61-216 for 1969-92 exploration data;
EMR for Metals Price Index.
1993 exploration forecast by EMR model.

Figure 4

SURFACE AND UNDERGROUND DRILLING BY MONTH - JANUARY 1985 TO JUNE 1993

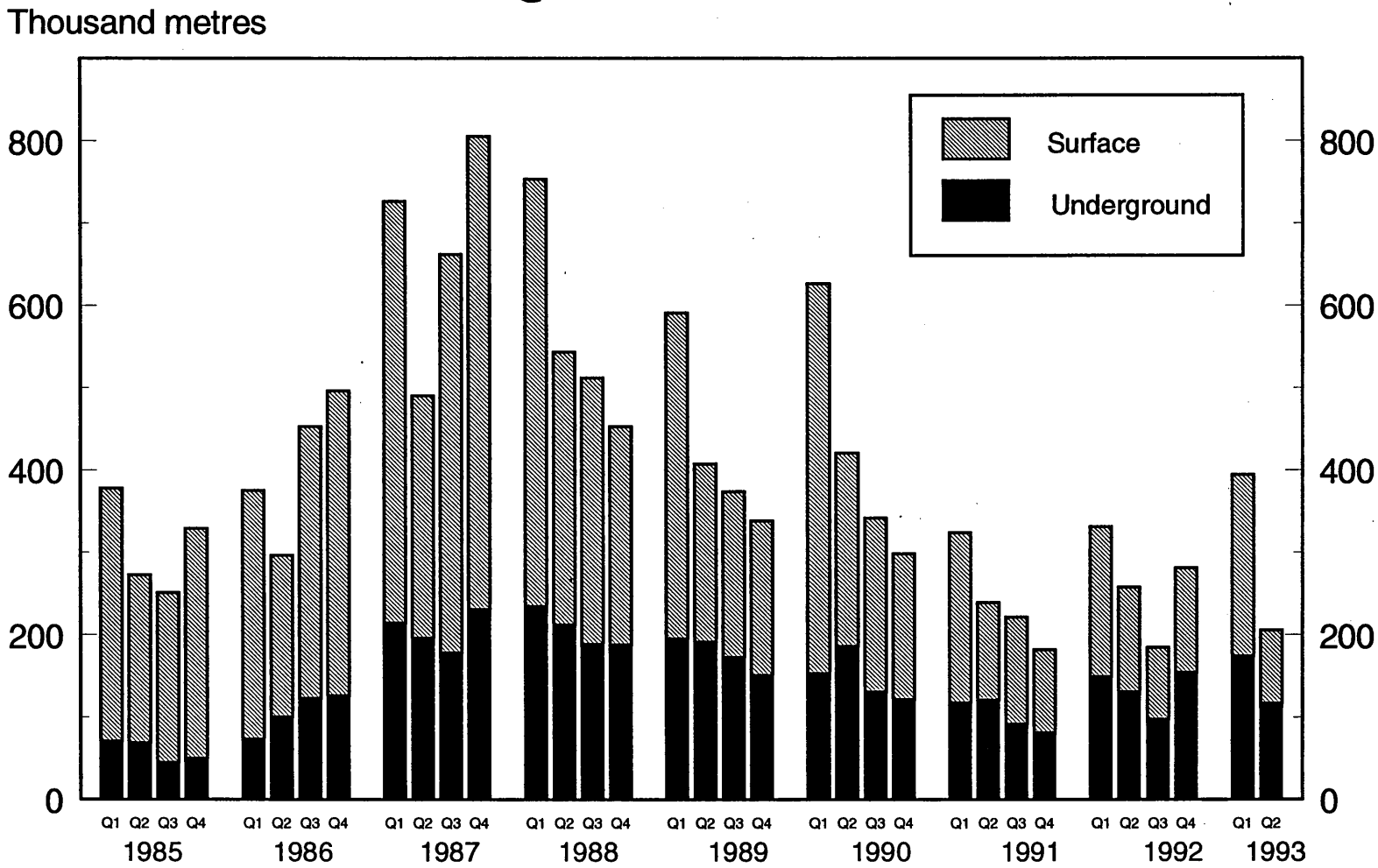


Source: Canadian Diamond Drilling Association.

Note: To the end of September 1992, the data included approximately 50-60 percent of total drilling activity. Beginning with October 1992 there was a substantial increase in the number of companies reporting. Therefore drilling statistics for October 1992 and later months are not comparable to those for earlier months.
Monthly data were not available for the period January to June 1990 because final CDDA statistics for this period were released only as a six month total.

Figure 5

SURFACE AND UNDERGROUND DRILLING BY QUARTER 1985-93

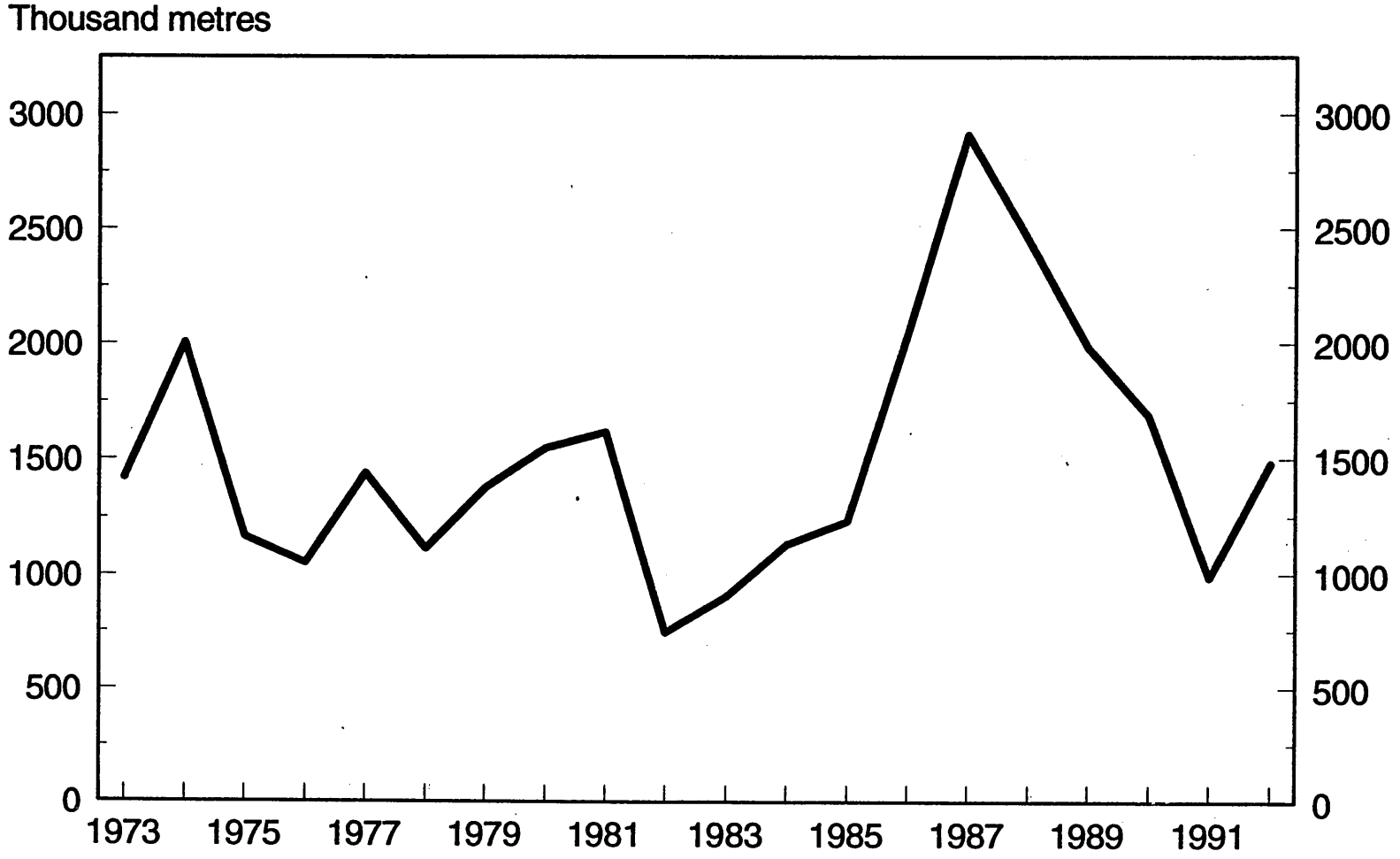


Source: Canadian Diamond Drilling Association.

Note: To the end of Q3 1992, the data included approximately 50-60 percent of total drilling activity. Beginning with October 1992 there was a substantial increase in the number of companies reporting. Therefore drilling statistics for Q4 1992 and later quarters are not comparable to those for earlier quarters.

Figure 6

SURFACE AND UNDERGROUND DRILLING BY YEAR 1973-92

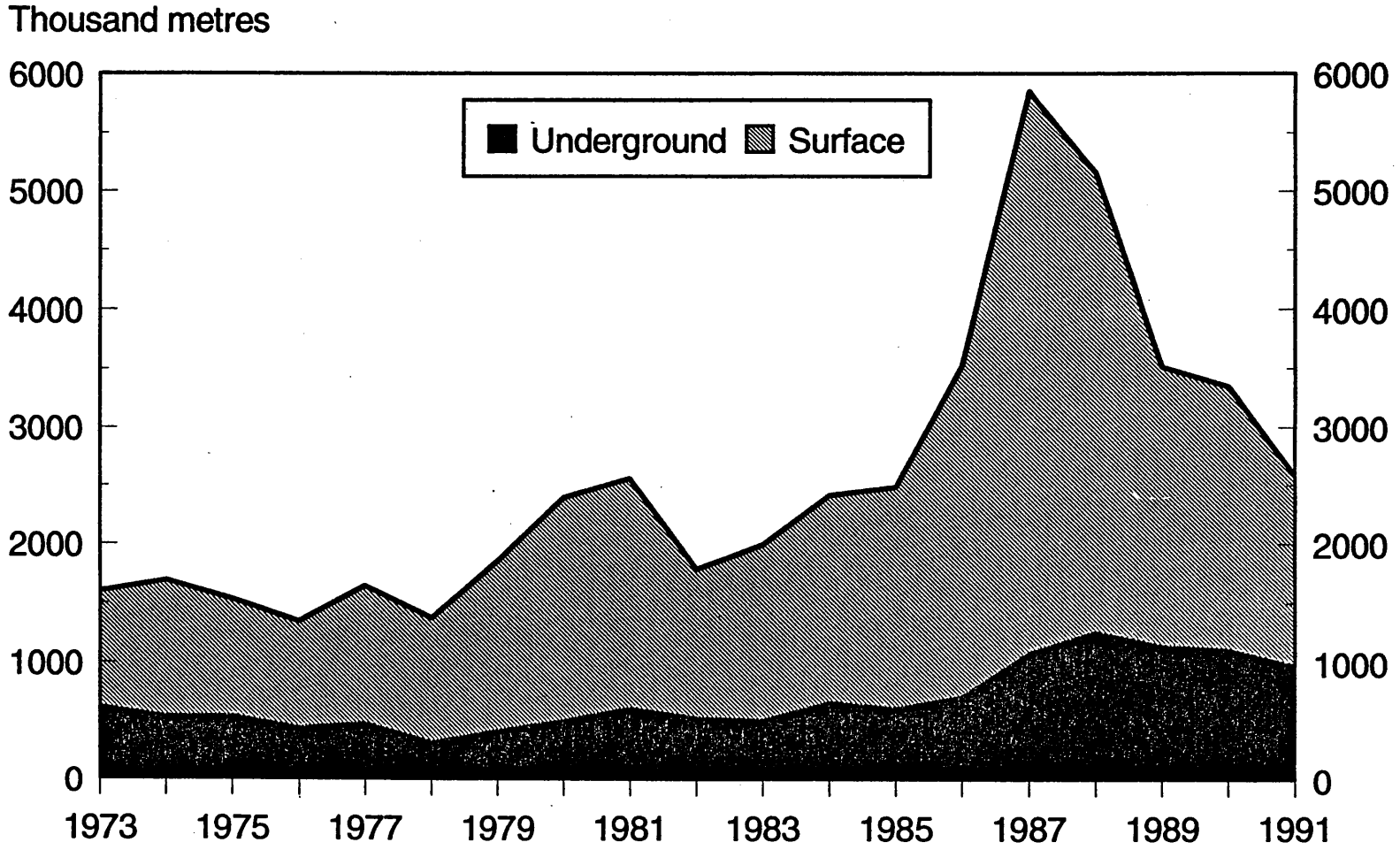


Source: Canadian Diamond Drilling Association.

Note: To the end of September 1992, the data included approximately 50-60 percent of total drilling activity. Beginning with October 1992 there was a substantial increase in the number of companies reporting. Therefore drilling statistics for 1992 are not comparable to those for earlier years.

Figure 7

SURFACE AND UNDERGROUND DRILLING CONTRACT DIAMOND DRILLING OPERATIONS 1973-91



Source: Statistics Canada, Catalogue no. 26-201.
Note: Data refer to SIC 0921; 1991 is the latest year for which data are available.

	Diamond Drilling			Other Drilling[1]		
Year	Metres Drilled (million)	Total Cost ($ million)	Cost Per Metre (dollars)	Metre Drilled (million)	Total Cost ($ million)	Cost Per Metre (dollars)
1985	2.531	185	73	.270	10.8	40
1986	3.616	249	69	.055	3.4	62
1987	6.221	510	82	.262	18.4	71
1988	6.206	478	77	.211	10.5	50
1989	3.940	291	74	.297	9.5	32
1990	3.702	282	76	.241	12.6	52

[1] Drilling methods such as percussion exploration drilling, reverse circulation drilling for overburden and rotary drilling (such as used in petroleum exploration) employed in exploration for coal, potash, salt, gypsum and similar layered mineral commodities.

As can be seen from Figure 5, each of the four years (1988, 1989, 1990 and 1991) has shown a similar pattern of diminishing diamond drilling through the year, with the first quarters exhibiting an increase in drilling over the final quarters of the previous years. This continued until the end of the third quarter of 1992. From 1988 to 1992, drilling peaked consistently during the first quarter. The explanation is two-fold: 1) in each of those years, flow-through funds from the previous year were carried over into January and February, and 2) much drilling must be done during the winter months from the ice on lakes and on areas of muskeg that are generally inaccessible to drilling equipment at other times of the year. The general pattern of decreasing quarterly drilling through the year in 1988, 1989, 1990 and 1991 contrasts with the pattern of 1986 and 1987, when diamond drilling levels in the second half of the year were higher than in the first half, because of increasing availability of flow-through funding. The decline that started in the first half of 1988 supports the general view that exploration activity began to slow down in 1988 from the peak level reached at the end of 1987 and early in 1988.

An interesting feature demonstrated by Figures 4 and 5 is that the number of metres of diamond drilling reported to CDDA in the first quarter of 1992 (331 164 metres) exceeded that reported in the first quarter of 1991 (323 558 metres) by some 2 percent. However, this net increase reflects the combination of a 27 percent increase in metres of underground drilling and a 12 percent decrease in surface drilling (see the table below).

Drilling Period	Surface	Underground	Total Surface & Underground
First Quarter 1991	205 752	117 806	323 558
First Quarter 1992	181 515	149 649	331 164

Over the years, surface diamond drilling activity has fluctuated more than underground drilling (Figures 4, 5 and 7). The likely explanation for this appears to be that a significant amount of the underground drilling consists of contract drilling aimed at establishing replacement ore reserves at producing mines. In the gathering of exploration expenditures statistics, expenditures on this sort of drilling are counted as "development expenditures" rather than "exploration expenditures", so that much of the underground diamond drilling is not "exploration drilling" in the sense of being aimed at the exploration for new mines. In interpreting Figures 4 to 7, it is important to recognize that because of inclusion of underground drilling at producing mines, these Figures may in effect be overstating recent levels of mineral exploration activity.

3. Overall View on Mining Exploration for 1993

This section brings together the information discussed above.

Total exploration expenditures in 1992 amounted to about $420 million, with senior exploration at about $335 million and junior exploration at about $85 million. This preliminary figure is $112 million lower than the $532 million recorded in 1991.

Arriving at an overall total forecast for 1993 requires the comparison of different amounts derived from several sources.

Senior Exploration

The exploration intentions survey, which was carried out in late 1992 and early 1993, indicated that exploration spending in 1993 would be $434 million. As indicated, this figure included $298 million for seniors and $136 million for

juniors. The $298 million for senior exploration spending is more likely to take place because senior companies have more certain sources of funds than juniors. Recognizing that seniors report total spending for the joint ventures of which they are the operators, we have reduced the estimate of $298 million to $280 million in order to avoid double counting.

From a different perspective, as discussed in section 2.4, a regression model based on metals prices predicts an overall spending level of about $525 million for 1992. This $525 million estimate is about $91 million more than the Intentions Survey estimate of $434 million. This difference is largely in expected senior exploration spending, i.e. $298 million under the Intentions Survey versus $410 million under the regression analysis. It is likely that the slower than anticipated economic recovery and the resultant slow recovery in metals prices caused senior companies to further postpone exploration activity and further reduce exploration budgets in late 1992 and early 1993. EMR is discounting the level of senior exploration spending obtained by the regression analysis because current information does not support that level of senior exploration for 1993.

Junior Exploration

Since junior exploration is largely determined by the availability of financing from equity market, the level of junior exploration spending is more difficult to forecast.

One indicator of the possible amount of junior exploration spending is the Federal-Provincial Survey of Intentions for 1993, which was carried out in late 1992 and early 1993. According to this survey, juniors intend to spend about $136 million in 1993, about $51 million more than the preliminary amount of $85 million spent by juniors in 1992. As discussed in Section A, it is estimated that probably about $70 million of flow-through share financing could be raised in 1993 by junior companies listed on Canadian Stock Exchanges. If the level for flow-through share financing turns out to be $70 million, then there would be some $66 million of additional financing left to be raised, assuming the realization of total junior exploration intentions (some $136 million) as indicated from the federal-provincial survey.

A review of the individual junior company intentions from the Federal-Provincial Survey list and of junior financing reported in the media and other available sources indicates that the additional $66 million is attainable. This additional $66 million would come mainly from non-flow-through share financing but would also include some uncompiled flow-through share financings realized by unlisted companies.

An additional piece of information used to estimate junior exploration spending, comes from an examination of the rate of raising new non-flow-through equity capital on the Vancouver Stock Exchange. VSE officials have indicated that the first quarter market activity reached its highest level since 1987, as share prices gained considerably on vigorous trading. "Resource based stocks were the driving force behind the VSE composite's gain as the resource and venture indices added 31 and 28 percent, respectively to their year end values." This level of speculative fervour embodied by the VSE during the first quarter of 1993 has continued through the second quarter. On July 1, 1993, the VSE index -- taken as a proxy for the measure of investor interest in junior stocks -- is up 59 percent from the beginning of the year. These favourable conditions have offered junior companies attractive financing opportunities and a good number of small resource companies have issued new equity to raise substantial amounts of cash.

During the 1985 to 1988 period, actual expenditures were higher than the earlier intentions, probably because companies raised more flow-through share financing than they had originally expected. Since 1989, this trend has reversed and actual expenditures have been repeatedly lower than the intentions, probably because of the reduced availability of flow-through share financing. However, given the strong equity markets, the strong rebound in the price of gold and the trend in non-flow-through share financing by juniors so far in 1993, EMR is inclined to believe that actual junior spending in 1993 will be more in line with the intentions than it has been in previous years.

Total Exploration

As mentioned in section 1.4, a diversified limited partnership has announced plans to raise a minimum $5 million and a maximum $50 million for diamond exploration in Canada. The partnership would use the proceeds of the offering to invest in flow-through shares in a basket of large and small companies searching for diamonds. EMR's estimate of exploration spending does not take into account any funds that this partnership may raise. If the partnership's plans materialize and to the extent that its efforts are successful, that much more money could be made available for senior and junior exploration spending.

On the basis of a forecast of $136 million or more for junior exploration and an expected $280 million of senior exploration spending, it is felt that 1993 exploration expenditures will be in the range of $400 to $450 million.

SECTION B. CURRENT REGIONAL OUTLOOK

4.1 Introduction

This section presents comments from provincial and territorial officials on recent exploration activity, and gives an indication of what they expect for 1993.

4.2 Newfoundland and Labrador

Mineral exploration in Newfoundland during 1992 continued to decrease from the record setting levels in 1988 and 1989, but decreased marginally from 1991.

The total expenditures on mineral exploration in 1992 is approximately $10.6 million, down from $23.2 million in 1990 and $12.0 million in 1991. Expenditures for 1993 are forecast to be down slightly at approximately $10.5 million. The 1991/1992 statistics for claims staked (7 411/5 118), claims in good standing (33 297/24 002) and diamond drilling (43 927m/21 873) also reflect the decline in mineral exploration in the province since 1989. First half 1993 claim statistics stand at 3000 claims staked and 22,104 claims in good standing. A slight increase in diamond drilling is forecast for 1993.

Major exploration efforts continue to be directed towards base metals, followed by gold and industrial minerals. Most exploration programs are being carried out by senior mining firms with a small but growing percentage of total exploration being conducted by the junior sector and prospectors. Exploration is focused on the more advanced projects with very little grass-roots exploration anticipated for 1993. The acquisition by Noranda Exploration Company, Limited of the AND Charter Lands in the general Buchans area of central Newfoundland from Talisman Energy Inc. in early 1993 and Noranda's subsequent 50:50 joint venture exploration agreement with Brunswick Mining and Smelting of the area is considered to be a long term commitment to base metal exploration in Newfoundland. The pending startup of mining-milling operations at the Pine Cove gold deposit on the Baie Verte Peninsula is also significant in that it will be the province's second gold mine in addition to Hope Brook.

The Mineral Industry Assistance Program (MIAP) under the Canada-Newfoundland Mineral Development Agreement continued to provide training programs and grants to local prospectors as well as assistance to individuals and companies for feasibility/demonstration and infrastructure projects.

The province, through initiatives identified in its Strategic Economic Plan, will cost share advanced exploration activities with Newfoundland based junior mining companies to a maximum of $80,000 per approved project. Individual companies may be eligible for assistance on more than one project to a maximum of

$160,000. A total of $500,000 has been allocated for the current fiscal year.

The 1993/94 Provincial budget announced changes to its mining tax regime to encourage investment. Provincial corporate taxes will now be creditable against mining taxes for a mine's first 10 operating years. The depreciation schedule will now allow accelerated write-offs. Meanwhile, the processing allowance will be changed from 8 percent of the processing base up to a maximum of 65 percent of net income, to 8 percent of the processing asset base or 15 percent of taxable income whichever is greater, to a maximum of 65 percent of net income.

Amendments to The Mineral Act and Regulations in 1992 included extending the term of the exploration licence from 10 to 20 years; the elimination of an annual rental on licences beyond the first five year term; the harmonization of assessment requirements for the entire province; limiting the carry-forward of excess assessment work credit to 9 years; limiting the size of a licence to a maximum of 256 claims; the elimination of claim tag fees; and requiring companies to submit a plan for approval of proposed activities which may cause ground disturbance or seriously affect wildlife.

NEWFOUNDLAND AND LABRADOR EXPLORATION STATISTICS

	1988	1989	1990	1991	1992[p]	1993[f]
			(dollars)			
Annual Exploration Expenditures	41 155 481	36 252 686	23 275 000	12 000 000	10 600 000	10 500 000
Claim Staking						
Claims Staked	26 606	17 571	10 421	7 411	5 118	4 500
In Good Standing	69 677	65 223	45 427	33 297	24 002	20 000
Exploration Field Expenditures						
BM-PM	17 559 585	10 970 673	10 339 710	7 385 312	5 875 962	N/A
Gold	18 698 498	14 895 933	7 344 583	1 701 298	1 329 545	N/A
Other	457 370	1 364 328	1 520 051	550 502	1 192 898	N/A
			(metres)			
Diamond Drilling						
Production/Development	17 449	16 355	8 884	6 850	819	20 000
Exploration	217 382	106 497	84 462	37 077	21 054	25 000
Total	234 831	122 852	93 346	43 927	21 873	45 000

TOTAL EXPENDITURES VS. PAID TO CONTRACTORS

YEAR	EXPLORATION $THOUSANDS	% PAID TO CONTRACTORS	% PAID TO CONTRACTORS LESS DIAMOND DRILLING	% PAID TO DIAMOND DRILL COMPANIES
1981	16 000	45	20	25
1984	8 400	52	27	25
1986	11 800	55	32	23
1987	32 500	55	37	18
1988	41 160	70	26	44
1989	36 250	63	41	22
1990	23 275	52	27	25
1991	12 000	37	17	20
1992p	10 600	46	31	15

Source: Dept. of Mines and Energy

BM: Base metals; PM: Precious metals; f: Forecast; p: Preliminary; N/A: Not Available.

4.3 Nova Scotia

Most indicators for the level of exploration activity in Nova Scotia during 1992 and the first half of 1993 showed a continuation of the decline that has characterised mineral exploration in this province as well as nationally since mid-1988.

The 5 year decline from record high levels of activity and expenditures to what are now the lowest levels in at least 20 years is predominantly due to several economic and financial factors that have come into play at various times since mid-1987.

1992 expenditures were down 40 percent from 1991. Total 1992 exploration expenditures on claims in Nova Scotia are estimated at $2,500,000 compared with $4,500,000 in 1991. By far the greatest proportion of the work in 1992 was carried out or funded by senior mining companies, and the emphasis was on base metal exploration. Most of the remaining work was performed by private and senior companies for industrial minerals, with a small percentage spent on gold and other commodities. The junior mining sector was essentially inactive, and it is unlikely that any money was raised for exploration by means of flow-through share financing.

New claims staked during the year totalled 6,137 (9,038 in 1991). The total number of claims in good standing at the end of 1992 was 13,673 compared with 19,150 at the end of 1991. The number of new claims staked during the first five months of 1993 was down 20 percent from the same period in 1992, and the number of claims in good standing at the end of May 1993 declined by 33 percent from a year earlier.

Drilling for mineral exploration amounted to approximately 10,000 m in 1992 compared with about 11,000 m in 1991. Nearly 4,000 m of exploration drilling was carried out in the first five months of 1993.

While there is no evidence of any upturn in activity yet, it is likely that the level of activity has stabilised for the time being, and with the slight improvement of some economic and financial conditions during recent months, there is cautious optimism for increased levels of activity by mid-1994.

NOVA SCOTIA MINERAL EXPLORATION INDICATORS 1988-1993

	1988	1989	1990	1991	1992	1993
New Claims	27,162	12,544	14,168	9,038	6,137	2,075 (5 months)
Areas held under Exploration, Development and Special Licences (x 000 acres)(December)	1,256	687	842	766	547	482 (May)
Total claims in good standing (December)(excluding tailings)	31,365	17,176	21,061	19,150	13,673	12,058 (May)
Exploration expenditures Field & overhead ($ million)	49.0	21.4	11.0	4.5	2.5	1-2 (forecast)
Percentage of national total expenditures	3.6%	2.7%	1.4%	0.8%	0.5%	
Exploration drilling (x 000m)	110.0	25.0	17.0	11.0	10.0	4.0 (5 mos.)

(Prepared by John McMullin, Regional Exploration Services, Mineral Development Division, NSDNR, 15th June 1993)

4.4 New Brunswick

New Brunswick continued to see an increase in exploration expenditures in 1992. Preliminary results from a joint EMR-NB exploration survey indicate that there was a 5.7 percent increase in expenditure in 1992 from the actual figure of $15.8 million for 1991. Data collected from 85 individuals and companies indicated that approximately $16.7 million was spent on general plus minesite exploration in New Brunswick in 1992.

The total number of claims staked in 1992 was 3,444 down 25 percent from the 1991 total of 4,571. At the end of the year there were 19,262 claims, 6 coal agreements, 2 potash leases, and 17 mining leases in effect, which represent a total claim equivalent of 27,926.3 down 7 percent from 1991.

Assessment work reported in the first 6 months of 1993 totalled approximately $2.1 million as compared to $2.5 million for the same period for 1992.

The primary exploration targets continued to be base metals in and surrounding the Bathurst camp of northern New Brunswick and gold and base metals in the Annidale area of southern New Brunswick. Interest in the tin deposits of the Mount Pleasant area of southern New Brunswick continued as a result of the indium content of the ores.

4.5 Quebec

Flow-Through Share Financing and Exploration Expenditures in Quebec

Flow-Through Share Financing

Preliminary data indicate that funds raised in 1992 totalled close to $18 million, an increase of 90 percent compared to 1991. These results lead us to believe that the tax measures announced in the May 14, 1992 budget have stimulated fund raising. Furthermore, the additional deduction of 25 percent for exploration expenses incurred in Quebec and the supplementary deduction of 50 percent for surface exploration expenses have been extended for two more years (1994 and 1995) in the May 20, 1993 provincial budget.

The trend of 1992 should continue in 1993 given that the economic recovery, based on the 1 percent increase in the Canadian GNP in the first quarter, is finally under way.

Flow-Through Share Financing and Exploration Expenditures in Quebec

	1989	1990	1991	1992[1]	1993
	($ Millions)				
Flow-through shares	73.2	44.4	9.5	18	N/A[2]
Exploration expenses	196.5	206.3	144.4	120.9	150.5[3]
Off-property	164.7	167.5	124.2	101.4	133.1[3]
On-property	31.8	38.8	20.2	19.5	17.4[3]

Source: Service de la statistique et de l'économie minérale, M.E.R.
1. Preliminary data.
2. N/A: Not Available.
3. Data estimates derived from the survey carried out in the fall of 1992.

Exploration Expenditures

In 1991, mining companies spent $144.4 million on exploration. Some $124.2 million of the $144.4 million was spent on off-property expenses and $20.2 million on on-property expenses. This represents a 12 percent decrease in exploration activity from the previous year. This situation is closely tied to the level of flow-through share financing, metals prices and growing international investment by senior companies.

Preliminary data indicate that total exploration in Quebec amounted to $120.9 million in 1992, a 16.3 percent decrease in exploration activity from the previous year. Off-property expenses and on-property expenses totalled $101.4 million and $19.5 million respectively.

According to the survey carried out in the fall of 1992 on the spending intentions of mining companies, exploration activity should pick up in 1993. Thus, total exploration spending in Quebec should amount to $150.5 million, $133.1 million on off-property expenses and $17.4 million on on-property expenses.

Other Statistics on Exploration

The number of metres drilled by diamond drilling companies and the number of recorded claims are two other useful indicators to monitor the evolution of exploration activity. In 1992, diamond drilling reached 616,443 metres compared to 960,918 metres in 1991, a decrease of 35.8 percent according to preliminary data[1]. For the first four months of 1993, the number of metres drilled is 252,805, a decrease of 19.6 percent from the corresponding period in 1992.

As for recorded claims, the number is 13,253 in 1992 compared to 18,110 in the previous year, representing a decrease of 27 percent. From the beginning of the year to the end of April 1993, 4,388 claims have been recorded, for an increase of 4 percent compared to the corresponding period in 1992.

Tax Measures For Flow-Through Share Financing

Since 1989, the Quebec government has greatly improved flow-through share financing:

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[1] Note that the number of diamond drilling metres had decreased by 26 percent in 1991 from 1990.

- with the introduction in 1989 of an additional deduction for surface mining exploration expenses incurred in Quebec and the exclusion of exploration expenses in calculating cumulative net investment losses (CNIL);

- since tax reform, issue costs have to be included in the CNIL calculation and deducted over a five-year period; in order to facilitate and simplify flow-through share financing, the government decided in 1991 to allow the issue costs to be deducted in a single year and to be excluded from the CNIL calculation for Quebec tax purposes up to a maximum of 15 percent of the proceeds from the issue of flow-through shares or partnership units and to the extent that the exploration expenses qualify for the additional Quebec deductions;

- in the May 14, 1992 budget, two new tax measures were announced:

  a) to better target tax concessions to higher risk exploration expenses, the additional deduction of 33⅓ percent for exploration expenses incurred in Quebec was reduced to 25 percent and the supplementary deduction of 33⅓ percent for surface exploration expenses was raised to 50 percent; hence, the total deduction for surface mining exploration expenses is now 175 percent instead of 166⅔ percent;

  b) as a temporary measure (in effect for two years) and for exploration expenses incurred in Quebec before January 1, 1994, the difference between the purchase price and the adjusted cost base (which is nil) of flow-through shares will no longer be taxable for the investor who has exhausted his $100 000 or $500 000 capital gains exemption, depending on the case.

These measures as a whole reduce the after-tax cost of flow-through shares (including the federal income tax deduction) to $31.03 for $100.00 of surface mining exploration expenses incurred in Quebec; the break-even point upon disposition of these shares is $44.52 for an investor eligible for the capital gains exemption and $38.90 for the investor who has exhausted his exemption. The differences between the net cost of the shares and the two break-even points are attributable to the federal taxation of capital gains and in particular, at the federal level, to the inclusion in CNIL of 50 percent of exploration expenses deducted in a given year.

In May 1991, the Quebec government set up a "programme de soutien à l'exploration minière", a financial assistance program administered by the Société québécoise d'exploration minière (SOQUEM). The program is aimed essentially at helping the most dynamic junior companies maintain mining activities until

flow-through share financing picks up again. This program was extended for one more year in the May 14, 1992 budget, the termination date of the program being June 30, 1993. The program targets Quebec-based junior mining companies that have carried out a minimum of $300 000 worth of exploration work since January 1, 1988. Eligible projects require minimum expenditures of $100 000. At the end of the first year of the program (30/04/92), 34 exploration projects had been approved by SOQUEM for a total amount of $4.7 million of assistance, while 29 new projects have been approved for a total amount of $3.6 million at December 31, 1992 of the second year. In exchange for funds invested, SOQUEM receives shares (appraised at market value) and/or an interest in the mining properties to be explored. *Therefore, it is not a grant program.*

- in the May 20, 1993 budget, the Quebec minister of Finance announced the extension for two more years (1994 and 1995) of the flow-through share tax incentives, i.e. the additional 25 percent and 50 percent deductions for exploration expenses incurred in Quebec.

4.6 Ontario

Exploration and Development Expenditures

Mineral exploration and development expenditures in Ontario are forecast to be $262 million in 1993. These expenditures are down from an estimated $278 million in 1992 and $437 million in 1991. Mineral exploration and development expenditures in the province peaked in 1988 at $756 million.

Off- and on-property (general and minesite) exploration expenditures are forecast to be $94 million in 1993, similar to the estimated $95 million in 1992 and down from $110 million in 1991. Minesite development expenditures are anticipated to be $169 million in 1993 compared to $183 million in 1992 and $327 million in 1991. This data includes both field and overhead expenditures.

The number of active claims/claim units in Ontario at the end of April 1993 was 138,105, up more than 9 percent from 126, 370 claims in April 1992. The number of claims in good standing is considered a good indicator of the level of exploration activity in the previous year. The number of claims in good standing at the end of 1992 was about 135,000, up from about 118,000 at the end of 1991 and 125,000 at the end of 1990. The number of claims in good standing peaked in 1988 at over 171,000.

Senior mining companies were responsible for approximately 89 percent of the off- and on-property field exploration expenditures of $86 million in 1991, compared to 87 percent in 1990, 72 percent in 1989 and 56 percent in 1988. Thus, junior companies made 11 percent of exploration expenditures in 1991, down from

13 percent in 1990, 28 percent in 1989 and 44 percent in 1988. This decrease in spending by junior companies is largely the result of the reduced utilization of flow-through share financing.

Exploration activity continues to be highest in north-eastern Ontario. In 1991, 77 percent of exploration and development expenditures were made in north-eastern Ontario, the same as in 1990. Of the 17 advanced exploration and development projects active in the province in 1992, 9 were located in the northeast. Three development stage projects (production decisions announced) in the province in 1992 were located in the northeast.

In 1991, 42 percent of general and minesite exploration dollars was spent on precious metals exploration, primarily gold, and 48 percent was spent on base metals exploration. This indicates that the emphasis continues to shift to base metals exploration when compared to 1990, when 61 percent was spent on precious metals exploration and 44 percent on exploration for base metals, and to 1989 when 73 percent was spent on precious metals and 23 percent on base metals.

In 1991, 53 percent of minesite development expenditures were on base metals projects and 31 percent on precious metals projects. This compares with 40 percent and 32 percent, respectively, in 1990.

In 1991, 10 of the 17 advanced exploration projects in Ontario were gold projects. However, 2 of the 3 mines in development stage were nickel-copper mines in the Sudbury area.

Mineral Exploration Incentive Programs

Ontario's two incentive programs, the Ontario Mineral Incentive Program (OMIP) and the Ontario Prospectors Assistance Program (OPAP), provide financial assistance to qualified individuals and companies involved in mineral exploration and development in Ontario.

A total of 430 Ontario prospectors received OPAP grants of up to $10,000 for the 1992-93 fiscal year. The financial assistance provided under OMIP has taken the form of grants up to $300,000 a year covering 30 percent (50 percent in Northern Ontario) of eligible exploration expenditures. In 1992, $7.6 million was disbursed under the program to 96 projects.

In 1993, after three years of enhanced funding, the allocated budget for both programs returned to the original base level of $5 million. The incentives budget will be split $2 million for OPAP and $3 million for OMIP. A total of 220 OPAP grants have been approved for 1993. The OMIP grants for Northern Ontario

projects will return to the former level of 30 percent of eligible expenses. The maximum grant available under OMIP remains at $300,000.

To offset the reduced OMIP funding the Northern Ontario Heritage Fund Corporation (NOHFC) has expanded its program guidelines to provide financial assistance to more advanced mineral exploration projects in Northern Ontario. The assistance will be made available through the Resource Diversification and Development Program. Assistance will be in the form of non-repayable contributions equal to 30 percent of approved costs, up to a maximum of $300,000.

New Tax Treatment of Flow Through Share

The 1993 Ontario Budget promised capital tax relief for mining companies using flow-through shares for financing. This relief will be retroactive to 1985 and will apply only to exploration expenses renounced to individuals. This measure will remove a potential obstacle to junior mining companies hoping to raise funds for exploration on Ontario properties by issuing flow-through shares.

4.7 Manitoba

Mineral exploration expenditures for 1992 are estimated at $26 million (1991 was $30 million) and surface diamond drilling is estimated at 131 000 metres (1991 - 178 948 metres). This compares to record highs in 1987 of $50 million and 278 537 metres. The total area of claims recorded in Manitoba during 1992 was 140 379 hectares (1991 - 101 636 ha), while the total mineral dispositions in good standing, including claims, permits and leases was 2 725 301 hectares (1991 - 2 071 676 ha). Although expenditures and drilling are down in 1992, ground acquisition was up appreciably.

The forecast for 1993 is positive. In 1992 the provincial government implemented a number of measures to encourage exploration and investment in Manitoba. As a result, it is anticipated that exploration levels in 1993 will be on par with 1992, in spite of the uncertain economy.

The emphasis on exploration in Manitoba has shifted from gold to base metals. Copper-zinc exploration programs dominate the Flin Flon-Snow Lake greenstone belt. The same is true, but to a lesser degree, in the Lynn Lake region and southeastern Manitoba. Exploration for nickel continues along the Thompson belt, particularly on its southern extension under Palaeozoic cover. In the major greenstone belts of Flin Flon-Snow Lake, Lynn Lake, Gods Lake and Rice Lake, exploration for gold continues. Diamond fever has reached Manitoba as well, with several companies acquiring ground both in the northern Precambrian and southern Palaeozoic-covered areas of the province.

The province of Manitoba recognizes the importance of mining in terms of creating wealth and providing economic benefits to the people. It is for this reason that the following initiatives have been implemented. They are aimed at increasing exploration activity and encouraging the formation of risk capital in the mineral industry.

Mineral Exploration Incentive Program

Through this program, junior exploration corporations are encouraged to perform new exploration activities in Manitoba. Eligible investors are offered a 25 percent grant. Financing is arranged via a partnership of flow-through shares in either a private or publicly-traded corporation by private sector corporations registered as Manitoba Exploration Investment Corporations.

Grant funding of $12.5 million ($10 million for minerals and $2.5 million for oil) has been allocated to the program.

The program is expected to result in a minimum of $50 million of exploration in Manitoba being financed during the next three years.

Mining Tax Holiday for New Mines

Effective January 1st, 1993, qualifying mining operators are not required to pay the mining tax until their profit for mining tax purposes equals their capital outlay in the opening of a new mine.

New Mines and Minerals Act

Proclaimed April 1st, 1992, the new Mines and Minerals Act is the first legislation in Canada to incorporate the principles of sustainable development. The Mines and Minerals Act which replaces the 60 year old Mines Act, streamlines and updates the legislation to facilitate mineral development.

Exploration Expenditures Deduction (150 Percent)

Effective January 1st, 1992, mining companies significantly increasing their exploration activities in search of new mines in Manitoba are entitled to a new deduction. It is equal to 150 percent of exploration expenditure in a given year that exceeds the average of those expenditures in the previous three years.

Prospectors Assistance Program

The Prospectors Assistance Program, which came into effect in August 1992, will serve as an incentive to increase mineral exploration so as to help replenish the declining ore reserves. The program will be similar to that in other provinces.

4.8 Saskatchewan

Saskatchewan resident geologists carry out an annual survey of mineral exploration expenditures through telephone interviews of mining exploration companies and prospecting groups. In January/February of each project year companies and groups are asked to provide an estimated of their current budgeted exploration expenditures on a commodity and area basis. Since 1987, the survey respondents have also been asked to provide actual expenditures for the previous year.

Although there are about 250 registered disposition holders in the province, not all properties are active. Thirty-nine companies participated in this year's survey. Exploration expenditures are projected to increase by about $1 million, predominantly due to increased diamond exploration activity.

EXPLORATION EXPENDITURES - RESIDENT GEOLOGIST'S SURVEY

	1986	1987	1988	1989	1990	1991	1992	1993p
Precious Metals	19	29	42	20	11	5	6	3
Base metals	2	3	6	7	7	6	4	3
Uranium	22	18	20	21	12	10	8	10
Other	--	--	--	2	2	3	4	7
Total	43	50	68	50	32	24	22	23

p: projected
Other: industrial mineral activity, predominantly diamond exploration

The marked downturn in mineral exploration expenditures in Saskatchewan since 1988 is consistent with the national trend. This trend reflects declining metal prices and changes to flow through financing incentives. Over the past few years junior mining companies have found it increasingly more difficult to raise exploration and development capital. However, this trend appears to be reversing particularly with respect to the current diamond exploration play. The major

companies on the other hand are spending less on exploration projects in Saskatchewan and it appears that they are concentrating more on international exploration ventures.

The total number of claims in good standing at the end of 1992 was 2,963 (2 028 114 ha) compared with 2,844 (1 791 922 ha) at the end of 1991, a 13 percent increase. The increase is due to renewed interest in diamond exploration in Saskatchewan which was prompted by a couple of new players making major land acquisitions.

Saskatchewan remains the focal point for uranium production and exploration in Canada. Saskatchewan's production of 8.35 million kilograms of uranium in 1992 represents 90 percent of Canadian and approximately 35 percent of western world production. Because of depressed market conditions, Saskatchewan mines are only operating at about 70 percent of capacity. Approximately a dozen companies are still involved in exploration in the Athabasca Basin, although most of their efforts are being focused on known deposits. The MacArthur River project has received approval to proceed with an underground exploration program. Five other projects are currently being evaluated by a joint federal provincial panel whose final report is due in October 1993.

Base and precious metal exploration activity continues to decline with only about a dozen projects being proposed. It is hoped that promising drill results from a project in the Wollaston belt will prompt renewed interest in this area. The Contact Lake property in the La Ronge belt is being re-evaluated and Cameco has announced its intent to proceed with a test mining project to confirm the ore grades by mining selected stopes. Anticipated cost of the test mine is $4.5 million and it will take about 8 months to complete. If the results are favourable the company will proceed with commercial production including the construction of a 750 ton per day mill at an estimated cost of $33 million. The Geological Survey's field programs are concentrating on an evaluation of the base and precious metal potential of the Flin Flon - Amisk Lake area.

Diamond exploration is moving to the forefront both in terms of staking and exploration activity. The major play is focussing on the central part of the province in a block extending from Sturgeon Lake to Nipawin. However, there are significant land positions being assembled in southwestern Saskatchewan and recently staking activity moved further north into the Wapawekka Hills. Results released during the year continue to be encouraging with a significant number of diamonds being recovered. However, all the samples collected to date are too small to permit a proper feasibility evaluation.

The Crown Minerals Act was amended to remove sand and gravel from the definition of "mineral" so that this material will now be treated as part of the

surface. Previous amendments to the regulations in 1984 provide a positive investment climate for new mine developers as they are able to recover their capital costs before being placed in a royalty paying position.

It is hoped the 5 percent increase in exploration expenditures being forecast for 1993 will herald the start of a new growth cycle for Saskatchewan's mineral sector.

4.9 Alberta

To date coal has been the primary target of mineral exploration in Alberta. Total mineral exploration expenditure was $4.2 million in 1992 down slightly from $5.1 million in 1991. A commensurate decline in activity was also experienced with 702 drillhole completions in 1992 down from 857 completions in 1991. During 1993 coal exploration spending and activity are expected to improve with expenditures of $7.6 million and drillhole completions of 789.

Mineral exploration activity in Alberta appears to be set for a dramatic increase. There were 30 new exploration permits issued on 346,000 hectares of land in 1992 and there are an additional 3,600 permit applications that are currently pending approval on 33 million hectares. The value of the work commitment on these lands exceeds $160 million. It is expected that most of these permit holders and applicants will focus their activities on diamond exploration.

Alberta exploration expenditures raised by means of flow-through share issues increased to $43 million in the first six months of 1993, up from $6 million over the same period in 1992. This substantive increase is attributable to strong equity market performance and, to federal changes to the Income Tax Act in December, 1992 that facilitate greater use of flow-through shares by oil and gas companies. Flow-through funding in Alberta has to date been used for oil and gas exploration, however, it is likely that increasing amounts will be directed to diamond exploration.

4.10 British Columbia

Exploration in British Columbia - Overview

Exploration activity in B.C. in 1992 continued to reflect the recent Canadian trend of a relative decline in grassroots exploration in favour of an emphasis on reasonably well-advanced deposits - those having known resources in the ground and a higher potential for development and production. The number of mineral claim units recorded in 1992, at 31,160, was 46 percent less than in 1991. Mineral claims activity is considered an indicator of grassroots exploration activity. Much of the spending on exploration in the province continued to be funded by major companies or by junior companies in joint venture with majors. Expenditures on

exploration declined markedly in 1992 and are forecast to fall further in 1993. According to the most recent federal/provincial survey results, overall exploration spending in 1992 is estimated at $70.5 million, down 48 percent from the final 1991 total of $135.7 million. A total of $57.8 million in exploration expenditures is forecast for 1993.

Low international metal prices and a high Canadian dollar resulted in financial losses for producers and sharply reduced exploration budgets for many companies in 1992. While the decline in exploration spending reflected a real drop in exploration activity in the province, the downturn was somewhat overstated by a peak during 1990 and 1991 in large-expenditure work programs which coincided at several major projects. These projects, including those at Eskay Creek, Mount Milligan, Windy Craggy, and Stronsay, accounted for nearly a quarter of all expenditures in 1990.

In the current period of re-adjustment in the exploration industry in British Columbia, operators are evaluating many previously explored targets. A number of major mineral deposits discovered in the pre-1980 period are undergoing serious scrutiny in anticipation of improved metal markets. Sediment-hosted zinc-rich and volcanogenic copper-rich polymetallic massive sulphide deposits offer small to medium tonnage and high-grade potential, particularly those enriched in precious metals. The many copper-bearing porphyry deposits discovered during the 1970s also continue to receive major exploration efforts.

Currently, there are several advanced projects in the Mine Development Assessment Process (MDAP). Imperial Metals Corporation's Mount Polley was certified under the MDAP in October 1992. The company is continuing to negotiate financing arrangements for the project. Stronsay Corporation's Stronsay project received a mine development certificate in December 1992. The company is also attempting to arrange financing for development. However, Stronsay's parent corporation, Curragh Resources Ltd., has experienced financial difficulties and recently sought protection from its creditors through the Company Creditor's Arrangement Act. Kinross Gold Corp. plans to carry out bulk sampling and metallurgical work at its Quesnel River Gold project, having received a mine development certificate in March 1993. Other major projects such as Kemess in north central B.C., and Eskay Creek, Telkwa Coal and Red Mountain in northwest B.C. are currently being reviewed under the Mine Development Assessment Process.

Advanced Exploration and Development Projects Highlights

The Dome Mountain gold mine opened in January 1992 near Houston. The operation is a joint venture between Timmins Nickel Ltd. (operator) and Habsburg Resources Ltd. Ore from the mine was processed at Equity Silver and

Premier Gold on a custom milling basis in 1992. Mining was temporarily suspended in April 1993, while details of a new operating plan are worked out between Timmins Nickel and Habsburg Resources.

At the Golden Bear gold mine, Homestake Canada Ltd. overcame enormous start-up problems to make the transition from major losses in 1991 to a modest profit in 1992. The company has also had successful exploration programs at several prospects on the property, including the Bear, Deep South and Fleece A and B zones. Underground mining was discontinued in February 1993. However, the mine was sold to Wheaton River Minerals Ltd. which is planning to reopen the mine.

Gibraltar Mines Ltd. carried out two extensive drilling programs on the Gibraltar North copper deposit discovered in 1990-91. The new zone is northwest of the Gibraltar East pit. A potential geological resource is believed to be in the order of at least 50 million tonnes grading more than 0.4 percent copper, together with gold, silver and zinc values. The company carried out detailed reserve and engineering evaluations in 1992.

Westmin Resources Ltd. (Myra Falls Operations) has a particularly successful exploration program. Several new zones are now, or soon will be, potentially available for development; the Lynx "G", Ridge, Battle, Gap, H-W Extension, H-W 42 and 43 blocks and the newly discovered Trumpeter Zone on Thelwood Creek.

The Eskay Creek project, now owned by Homestake Canada Ltd. (formerly by International Corona Corp.), continued with geophysical surveys and diamond drilling on the Eskay stratigraphic horizon. In addition, a 15-tonne bulk sample was taken from the 21B zone for metallurgical test work. Feasibility studies are currently in progress on the project. Once completed, the company intends to submit an application to the Mine Development Assessment Process by August 1993.

One of the best known and most controversial advanced exploration projects in British Columbia has been the Windy Craggy project, operated by Geddes Resources Ltd. In 1991 this project completed Stage 1 of the Mine Development Assessment Process. In 1992, however, review of the project was suspended for an evaluation of land use options by the provincial Commission on Resources and the Environment (CORE). Following Cabinet's review of the report submitted by CORE, and consideration of a number of perspectives on this complex issue, the government announced in June of this year it had decided to designate the entire Tatshenshini-Alsek region a provincial park and to preclude further mining activity.

The Tulsequah Chief copper-lead-zinc-gold-silver project, operated by Redfern Resources Ltd., is located 75 kilometres northeast of Juneau, Alaska. Redfern continued underground drilling in 1992 to test up-dip and down-dip extensions of the deposit, and was particularly encouraged that the H lens has been extended to depth.

A few kilometres southwest of the Tulsequah Chief property, Suntac Minerals Corporation and Rembrandt Gold Mines Ltd. proceeded with drilling on the Polaris-Taku deposit. The companies hope to double reserves with infill and stepout drilling.

Prospecting and trenching on the Northair Mines Ltd. Brucejack Lake (Bruceside) gold project at Sulphurets Creek turned up several new gold prospects, the best known is the "SG" zone. The company is currently evaluating the possibility of shipping ore from the Brucejack West zone to Westmin's Premier mill, north of Stewart.

At the Kemess South project, El Condor Resources Ltd. (60 percent) and St. Philips Resources Inc. (40 percent) have delineated a gold-copper deposit of approximately 207 million tonnes grading 0.23 percent copper and 0.65 gram per tonne gold. Much of the definition drilling and metallurgical testwork planned for 1992 was deferred. El Condor will submit an application under the Mine Development Assessment Process for its wholly-owned Kemess North property in the fall of 1993 and has begun environmental impact studies. Estimated capital costs for development are $350 million.

The Telkwa coal project has been acquired by Manalta Coal Ltd. from Shell Canada Resources Ltd. and is in the Mine Development Assessment Process. Production of one million tonnes per year is planned, at a capital investment of $80 million. Reserves of 57 million tonnes occur in two zones. In 1992, Manalta completed a 5000-metre drilling program to upgrade reserves in the North Zone deposit.

At the Fish Lake porphyry copper-gold project, Taseko Mines Limited has completed an extensive program of some 69 000 metres of diamond drilling. As a result of this program, Taseko has announced an over-all geological reserve of 1.08 billion tonnes grading 0.23 percent copper and 0.41 gram per tonne gold, applying a 0.52 percent copper equivalent cut-off grade. At approximately $7.0 million in exploration expenditures, this was the largest single exploration project in the province during 1992.

In the southern interior of the province, near Merritt, Fairfield Minerals Ltd. has submitted the Elk project for Mine Development Assessment. The Siwash North zone is a small, high-grade gold-silver vein deposit with current reserves of

308 400 tonnes grading 22.18 grams per tonne gold and 24.68 grams per tonne silver. Fairfield initiated a bulk sampling program in 1992, and is expected to spend in the order of $3.5 million on further bulk sampling and underground development in 1993.

On northern Vancouver Island, Jordex Resources Ltd. continued work on Expo/Hushamu porphyry copper-gold project. The current strategy is to increase reserves by outlining additional tonnages between the zones to facilitate the design of a larger pit. Ultimate production plans would probably see ore from this deposit shipped to the Island Copper operation for milling.

The Crystal Peak garnet project, near Hedley in southern British Columbia, is being proposed by Polestar Exploration Ltd. and is still in the Mine Development Assessment Process. Concern was raised in 1991 over this project because of possible impacts on other land uses in the area, particularly on the adjacent Apex Mountain ski area. A report commissioned by government early in 1992 to examine marketing prospects, cost-benefit analysis and aboriginal concerns, determined that the project would, in general, not have major impacts on other activities in the area. A number of measures to harmonize land uses with the project were proposed. The company is engaging in further study on garnet marketability.

Northeast of Stewart, Lac Minerals Ltd. had a successful exploration program on the Red Mountain project in 1992. The Marc zone has preliminary geological resources of 840 000 tonnes grading 12.68 grams per tonne gold. Detailed geological work added new potential reserves to the North zone and refined the deposit model.

In central B.C., New Canamin Resources Ltd. has undertaken a re-evaluation of the Huckleberry porphyry copper-molybdenum deposit, completing two phases of diamond drilling. The objective is to establish a higher grade starter pit of about 30 million tonnes averaging 0.5 to 0.6 percent copper.

Industrial Minerals

Exploration interest in industrial minerals has shown a significant increase recently, with the slow-down in metallic minerals activity. In southern British Columbia, particularly, applications to develop various types of construction stone products have been on the rise. Among these are projects to produce marble, limestone, granitic dimension stone, feldspar and silica sand. In the southern Fraser Canyon, Cromlech Ltd. has applied to recover unconsolidated silica and feldspar sand deposits at Scuzzy Creek; at Sumas Mountain, near Abbotsford, Quality Mineral and Industry Supply Co. Ltd. proposes to develop a sodic feldspar deposit.

4.11 Northwest Territories

Production Summary

In 1992, the Northwest Territories (NWT) produced:

Percent (%)	Canada's Total Production
15.1	Zinc
8.8	Gold
12.3	Lead
2.0	Silver

The total value of the NWT's metal shipments continued to decline from a high of $935 million in 1989 to, according to preliminary figures, $476 million in 1992. This amount represents 4.7 percent of the total value of Canada's 1992 mineral production.

World zinc prices improved slightly in 1992, but lead and gold prices decreased from 1991 levels. Despite this fact, production continued at the NWT's four operating gold mines at close to 1991 levels. Production at NERCO Con mine increased from 1991 although work was suspended in the upper levels until gold prices improve. The mine produced 3915 kg of gold and 955 kg of silver. NERCO's $20 million autoclave circuit was completed during the year and began operating, discontinuously at first, in late August.

Interruptions in production at Royal Oak's Giant Mine resulted from a strike that began May 23. Work continued at the mine with the use of replacement workers. The mine was shut down temporarily following the death of nine miners in an underground explosion on September 18. Total production from Giant declined from the previous year to 2,975 kg of gold and 565 kg of silver.

Echo Bay Mines Ltd.'s Lupin Mine celebrated its 10th anniversary in 1992. Production at the mine was down slightly from the previous year, totalling 6670 kg of gold and 1080 kg of silver. The mine broke all their previous production records in the second quarter of 1992 despite a 4 percent reduction in ore grade from 1991 grades.

Treminco Resources' Ptarmigan Mine experienced difficulties during the year as gold grades in the ore mined between summer and year-end declined from 11.9 g/t to 6.8 g/t, and the company had a shortage of broken ore available for milling. Although the company believes there is more ore grade material on the

property, they were unable to access it from existing workings. At the end of the year they were forced to lay off 19 workers. Production at the mine declined to 90 percent of the previous year's production of 430 kg of gold.

Two base metals mines operated in the NWT during 1992. Production from Nanisivik Mines Ltd.'s Nanisivik Mine was 51.2 kt zinc, 1.3 kt lead, and 15.93 t of silver. Cominco Ltd.'s Polaris Mine produced 129 kt of zinc and 40 kt of lead.

All operating NWT mines explored surface leases during 1992.

Exploration Highlights

The declining trend in exploration activity reversed in 1992, due largely to the NWT diamond rush. Exploration expenditures increased from 1991 levels of $29.64 million to $38.14 million in 1992. In 1993, expenditures will likely exceed the $52.2 million predicted by industry surveys. Flow through funds accounted for $2.1 million or 5.5 percent of the total exploration expenditures reported in 1992. During the year, a record number of claims were registered with the DIAND Mining Recorder's office: 7,913 claims covering an area of 7,178,095 ha. At year-end, after 690 claims covering an area of 434,473.03 ha had lapsed, 10,947 claims, covering an area of 9,227,520 ha remained in good standing, almost a four-fold increase from the previous year.

Most diamond exploration activity was centred on the Lac de Gras area which is near the site of Dia Met's initial diamond discovery at Point Lake. Diamond exploration is wide ranging and characterized by its secretiveness and it has been difficult to determine the extent, nature and results of exploration. The total amount of diamond drilling reported in 1992 was only 96,098 metres, less than the previous two years, but the number of line kilometres of airborne geophysical surveys done in the NWT skyrocketed to 57 percent of the Canadian total compared to 1987 to 1991, when the NWT percentage ranged from 4 - 16 percent.

Based on results released from late 1991 and 1992 exploration programs, at least 19 kimberlite pipes, 13 of which are diamond-bearing, had been found in the Lac de Gras diamond play. Other smaller areas of diamond related activity are expanding around the discovery of a diamond-bearing kimberlite diatreme at Outlet Bay of Dubawnt Lake, and diamond finds on Somerset Island.

Minnova Inc (60 percent) and Metall Mining Corp. (40 percent), following their 1992 exploration program, announced recalculated reserves for the Izok Lake deposit, north of Itchen Lake, of 13.6 Mt at 2.5 percent Cu, 14.6 percent Zn, 1.6 percent Pb, 77.7 g/t Ag and 0.1 g/t Au. During the year, the companies also conducted metallurgical sampling, environmental, engineering and transportation studies and evaluations of potential port sites and sea lanes. Investigations at Izok

Lake, and of the feasibility of a deep sea port on the Coronation Gulf, sparked exploration interest in the volcanogenic massive sulphide deposits in the north Slave Province.

Other exploration for base metals included investigations carried out by San Andreas Resources Corp., of the Prairie Creek property near the boundaries of Nahanni Park. The company carried out 3900 m of diamond drilling in 15 holes which expanded known reserves for the #3 Zone which are now calculated at 2 Mt grading 11.75 percent Zn, 10.8 percent Pb, 0.42 Cu and 181.7 g/t Ag.

Despite poor gold prices, gold exploration continued in the NWT. Athabaska Gold Resources Ltd. continued to test the Nicholas Lake deposit north of Yellowknife where previous drilling has identified reserves of 1.04 Mt grading 15.8 g/t Au. BHP Minerals Canada Ltd. continued to explore the ULU claims in the High Lake area, and Asamera Minerals Inc., in a joint venture with Comaplex Minerals Corp., completed ground and airborne geophysical and completed 5000 m of drilling on claims near Meliadine River north of Rankin inlet.

Grassroots exploration was given a boost by the introduction of Prospector Grubstake Grants under the Prospectors Development Initiative of the Canada-NWT Economic Development Agreement. The grants, totalling $40,000, were awarded to eight NWT prospectors.

4.12 Yukon

1992 Production Summary

Production from Curragh Inc.'s Faro lead/zinc/silver mining operations was halted at the end of 1992 following depletion of the existing Faro and Vangorda deposits and stockpiled ore. The company is continuing its efforts to solve its financial problems and raise the capital necessary for pre-production waste rock stripping at the new Grum deposit. Production at the Sä Dena Hes lead/zinc/silver mine operated by Curragh Inc. was also suspended at the end of 1992 due to low metal prices. Gold production from about 150 placer mining operations was about 99,542 troy ounces, down about 11 percent from 1991. There was also minor production of jade. Preliminary estimates by EMR have put the total value of mineral production for 1992 at $468 million, up from the $341 million reported in 1991.

1992 Exploration Summary

Exploration work was carried out on approximately 30 mineral properties in Yukon in 1992. a total of 4,140 quartz claims was staked, down slightly from 1991. The number of placer and hardrock claims in good standing decreased slightly in

1992. According to information compiled by DIAND Exploration & Geological Services Division, total exploration expenditures in 1992 were about $10 million, down significantly from $16 million in 1991. This was the lowest level of expenditures recorded since 1971 in current dollar terms, and probably the lowest level since the second world war in real dollar terms.

The largest exploration projects carried out in 1992 were at the Sä Dena Hes mine (16,460 m of diamond drilling in 79 holes), at the Williams Creek copper project of Western Copper Holdings and Thermal Exploration (3,781 m of diamond drilling in 11 holes and 2,805 m of rotary drilling in 11 holes), at the Dubin Gulch gold property of Amax Gold (5,639 m of diamond drilling in 46 holes), and at the Clear Lake zinc/lead/silver property of Total Energold and Mitsui Kinzoku Resources (3,100 m diamond drilling in 10 holes).

Forecast for 1993

A survey conducted by the Yukon Chamber of Mines in March 1993 indicated forecast expenditures of about $15 million for 1993. Pacific Sentinel Gold Corp. has committed to spending at least $7.2 million at the Casino porphyry copper/molybdenum/gold project, and this is believed to be the largest exploration project being conducted in Canada this year. A new company called Ivanhoe Goldfields has been formed to continue exploration of the Dublin Gulch gold property ($1.5 million and the nearby Clear Creek gold property ($750,000), and Western Copper Holdings and Thermal Exploration are continuing work on the Williams Creek copper property with a program of bulk sampling, a heap leaching pilot plants, environmental and feasibility studies ($600,000). It is apparent that new life has been breathed into the Vancouver Stock Exchange in recent months, because for the first time in several years spending by junior companies will exceed that by major mining companies. The level of prospecting activities conducted by individuals remains at a high level.

SECTION C. HISTORICAL PERSPECTIVE ON MINERAL EXPLORATION ACTIVITY IN RECENT YEARS

5.1 Introduction

This section presents an overview of various aspects of mineral exploration in recent years. Patterns of exploration spending are shown by region, by commodity sought and by type of company. The 1992 and 1993 levels of exploration activity are described on a preliminary and forecast basis, respectively. The data for these two years were collected between December 1992 and March 1993.

5.2 Exploration Expenditures by Region

Tables 3a, 3b and 4 are based on the federal-provincial survey of mining and exploration companies.

Table 3a shows current dollar expenditures on mineral exploration in Canada, by province, for the 1985 to 1993 period. Table 3b reports the same information, but in 1992 dollars. The numbers for "fieldwork" do not include overhead expenses. Table 4 presents these data as percentages.

In recent years the most active exploration areas were Ontario and Quebec. In 1988, these two provinces jointly accounted for 58 percent of total Canadian mineral exploration expenditures. In 1988 and 1989, exploration expenditures in Ontario exceeded those in Quebec for the first time since 1977. In 1990, British Columbia exploration expenditures exceeded those in Quebec for the first time since 1981 with Ontario in third place. In 1991, Quebec lead total amounts spent on exploration followed closely by British Columbia. For 1992 and 1993, it is likely that exploration expenditures in British Columbia will drop by more than half of the 1991 expenditures. Ontario will then follow Quebec, in second place.

Total Canadian exploration expenditures appear to have decreased by 21 percent between 1991 and 1992 but are not expected to decrease further in 1993 as a result of the general upsurge in Canadian diamond exploration. Claims staking has been hectic in the Northwest Territories, Saskatchewan and Alberta due to this diamond rush.

In 1991, exploration expenditures decreased in all provinces and territories. When measured in constant 1992 dollars, exploration expenditures in 1991 were at their lowest level since 1985.

TABLE 3A. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985-93

Province	Field Work Only				Total Exploration(1)				
	1985	1986	1987	1988	1989	1990	1991	1992p	1993f
	($ Millions)								
Newfoundland	11.9	12.3	27.7	37.7	36.2	23.3	12.1	9.8	9.5
Nova Scotia	7.8	17.2	41.6	46.7	21.4	11.0	4.5	2.8	3.2
New Brunswick	12.1	10.8	9.1	13.8	13.6	16.5	15.8	16.9	16.6
Quebec	135.2	241.4	415.5	328.2	185.0	196.4	138.1	111.4	141.0
Ontario	93.2	136.8	308.1	343.6	217.8	152.6	109.7	94.6	93.7
Manitoba	33.7	26.3	40.0	30.0	37.0	41.2	29.7	25.5	22.1
Saskatchewan	39.4	36.8	63.5	61.1	63.3	42.2	31.5	39.7	42.4
Alberta	14.7	3.0	2.5	4.3	6.2	10.7	6.6	4.2	7.6
British Columbia	73.0	63.1	142.6	196.8	186.6	226.5	135.7	70.5	57.9
Yukon Territory	22.7	27.9	29.0	38.6	15.1	18.4	16.5	9.7	8.3
Northwest Territories	46.8	35.8	59.0	66.5	45.7	36.0	31.6	34.7	32.4
Total Field Work (Excluding Overhead)	490.5	611.4	1138.6	1167.3	703.5	660.3	439.2	na	na
Total Exploration (Including Overhead)	605.8	723.3	1300.0	1350.0	827.9	774.7	531.8	419.7	434.6

Source: Federal-Provincial Survey of Mining and Exploration Companies.
(1) "Total Exploration" includes related overhead expenditures; for the years 1985-88, totals with overhead were calculated by multiplying the federal-provincial field expenditures by the ratio total/field from Statistics Canada.
p Preliminary estimate; f Forecast; na Not available.
Figures may not add to totals due to rounding.

GDP Deflator (1992=100)	0.794	0.812	0.851	0.89	0.933	0.963	0.99	1	1

TABLE 3B. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985-93

Province	Field Work Only				Total Exploration(1)				
	1985	1986	1987	1988	1989	1990	1991	1992p	1993f
	(1992 $ Millions)								
Newfoundland	15.0	15.1	32.5	42.4	38.8	24.2	.12.2	9.8	9.5
Nova Scotia	9.8	21.2	48.9	52.5	22.9	11.4	4.5	2.8	3.2
New Brunswick	15.2	13.3	10.7	15.5	14.6	17.1	16.0	16.9	16.6
Quebec	170.3	297.3	488.2	368.8	198.3	203.9	139.5	111.4	141.0
Ontario	117.4	168.5	362.0	386.1	233.4	158.5	110.8	94.6	93.7
Manitoba	42.4	32.4	47.0	33.7	39.7	42.8	30.0	25.5	22.1
Saskatchewan	49.6	45.3	74.6	68.7	67.8	43.8	31.8	39.7	42.4
Alberta	18.5	3.7	2.9	4.8	6.6	11.1	6.7	4.2	7.6
British Columbia	91.9	77.7	167.6	221.1	200.0	235.2	137.1	70.5	57.9
Yukon Territory	28.6	34.4	34.1	43.4	16.2	19.1	16.7	9.7	8.3
Northwest Territories	58.9	44.1	69.3	74.7	49.0	37.4	31.9	34.7	32.4
Total Field Work (Excluding Overhead)	617.8	753.0	1338.0	1311.6	754.0	685.7	443.6	na	na
Total Exploration (Including Overhead)	763.0	890.8	1527.6	1516.9	887.4	804.5	537.2	419.7	434.6

Source: Federal-Provincial Survey of Mining and Exploration Companies.
(1) "Total Exploration" includes related overhead expenditures; for the years 1985-88, totals with overhead were calculated by multiplying the federal-provincial field expenditures by the ratio total/field from Statistics Canada.
p Preliminary estimate; f Forecast; na Not available.
Figures may not add to totals due to rounding.

TABLE 4. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985-93

Province	Field Work Only				Total Exploration				
	1985	1986	1987	1988	1989	1990	1991	1992p	1993f
	(Percentage distribution)								
Newfoundland	2.4	2.0	2.4	3.2	4.4	3.0	2.3	2.3	2.2
Nova Scotia	1.6	2.8	3.7	4.0	2.6	1.4	0.8	0.7	0.7
New Brunswick	2.5	1.8	0.8	1.2	1.6	2.1	3.0	4.0	3.8
Quebec	27.6	39.5	36.5	28.1	22.3	25.4	26.0	26.5	32.4
Ontario	19.0	22.4	27.1	29.4	26.3	19.7	20.6	22.5	21.6
Manitoba	6.9	4.3	3.5	2.6	4.5	5.3	5.6	6.1	5.1
Saskatchewan	8.0	6.0	5.6	5.2	7.6	5.4	5.9	9.5	9.8
Alberta	3.0	0.5	0.2	0.4	0.7	1.4	1.2	1.0	1.7
British Columbia	14.9	10.3	12.5	16.9	22.5	29.2	25.5	16.8	13.3
Yukon Territory	4.6	4.6	2.5	3.3	1.8	2.4	3.1	2.3	1.9
Northwest Territories	9.5	5.9	5.2	5.7	5.5	4.6	5.9	8.3	7.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Federal-Provincial Survey of Mining and Exploration Companies.
p Preliminary estimate; f Forecast.
Note: The percentages from 1985-88 are calculated on field work only, but those from 1989-93 are based on total expenditures, which include related overhead.
Figures may not add to totals due to rounding.

Preliminary indications are that exploration expenditures were down in most exploration areas in 1992, with the exception of Saskatchewan, New Brunswick and the Northwest Territories. Exploration intentions indicate that exploration activity in 1993 is likely to increase in Nova Scotia, Quebec, Saskatchewan and Alberta. Although exploration activity in the Northwest Territories is expected to remain flat according to the intentions survey, current information on diamond exploration points to a major exploration resurgence in the Northwest Territories in 1993.

5.3 Exploration Expenditures by Type of Company

Figure 8a depicts field exploration expenditures by type of company from 1985 to 1991 (final field work expenditures for 1992 and 1993 are not available). Total exploration expenditures (fieldwork plus overhead) by type of company for 1991, 1992 (preliminary) and 1993 (intentions) are portrayed in Figure 8b. Such data are not available for 1985 to 1988.

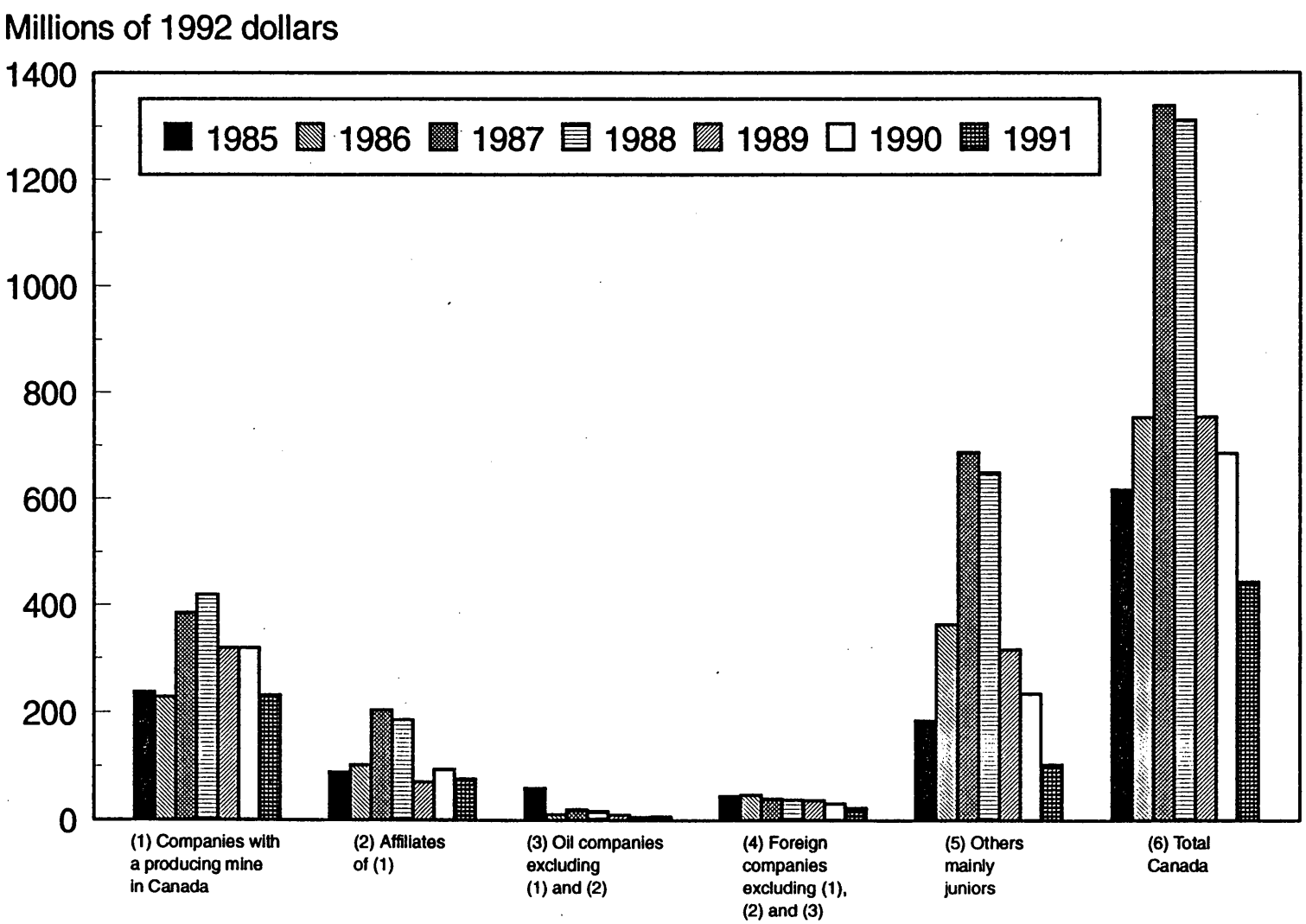
From 1985 to 1993, non-petroleum exploration by oil companies declined in constant dollars by more than 80 percent and exploration by foreign companies by more than 48 percent. In 1977, oil companies accounted for some 24 percent of total non-petroleum exploration. In 1991, they accounted for only 2 percent. Foreign companies accounted for over 18 percent in 1973 and 1979, but now account for only 6 percent.

Exploration by producing companies and their affiliates peaked in constant dollar terms in 1987-88 and has declined since. However, this decline may not be as large as it appears because it includes considerable contributions made in 1986-88 by junior companies to joint venture projects mostly operated by senior companies. Such expenditures are reported in total by project operators (chiefly the seniors).

Exploration by junior companies increased, both in current dollars and as a percentage of total exploration, from 1983 to 1987-88, and then declined until 1992 (Figure 9). As intentions for 1993 show that the level of expenditures by junior companies will increase while expenditures by senior companies will continue to decrease, the percentage of exploration carried out by the juniors should increase in 1993. However, these are only spending intentions, and it may well be that the juniors will not be able to actually raise the funds they hope to spend on exploration in 1993.

Figure 8a

FIELD EXPLORATION EXPENDITURES BY TYPE OF COMPANY 1985-91

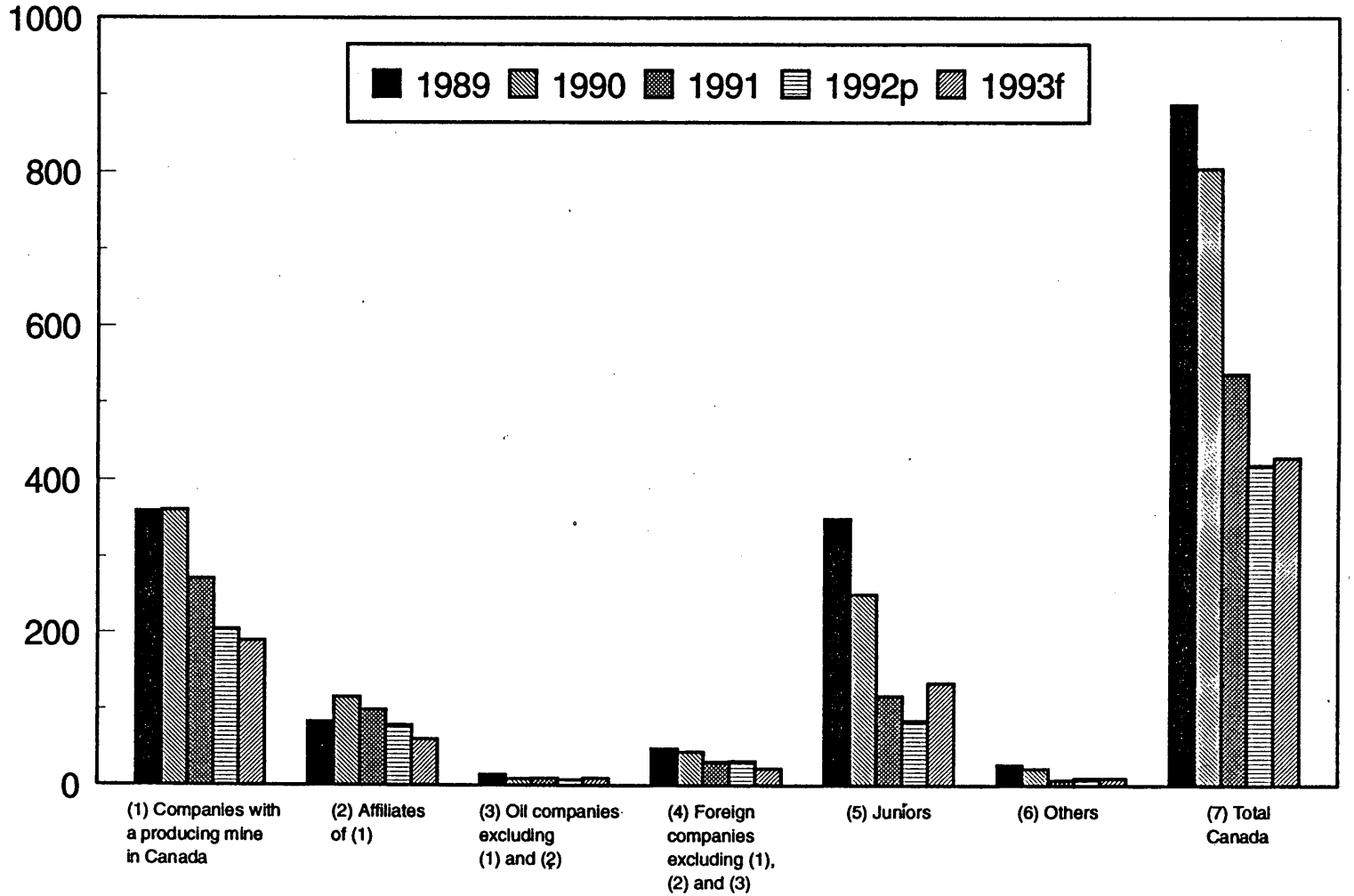


Source: Compiled by EMR Canada from the Federal - Provincial Survey of Mining and Exploration Companies.
Note: Overhead expenditures are not included.
Data were adjusted using GDP Implicit Price Index.

Figure 8b

EXPLORATION EXPENDITURES BY TYPE OF COMPANY 1989-93

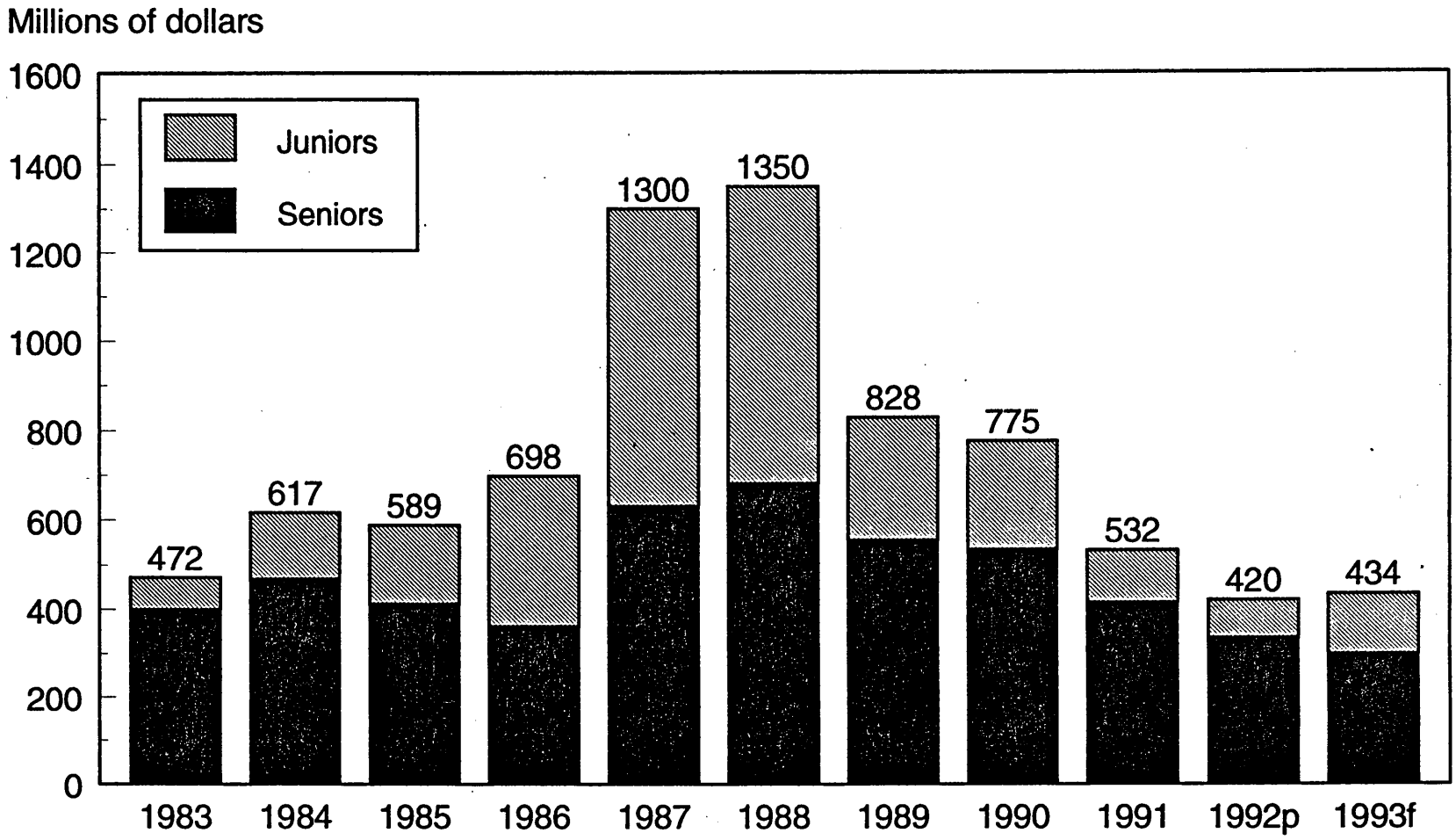
Millions of 1992 dollars



Source: Compiled by EMR Canada from the Federal - Provincial Survey of Mining and Exploration Companies.
p Preliminary estimate; f Forecast.
Note: Overhead expenditures are included.
Data were adjusted using GDP Implicit Price Index.

Figure 9

EXPLORATION EXPENDITURES BY JUNIOR AND SENIOR COMPANIES 1983-93



Source: Compiled by EMR Canada from the Federal-Provincial Survey of Mining and Exploration Companies.
p Preliminary estimate; f Forecast.
Note: Overhead expenditures are included.

Although junior company exploration expenditures have declined from their high levels of 1987-88, they are still considerably higher than during most of the 1970s (Figure 10). Exploration expenditures by the juniors increased almost tenfold from 1983 to 1987, from about $71 million to almost $700 million. In 1983, these companies accounted for about 15 percent of total Canadian exploration expenditures, but by 1987 this proportion has increased to more than two-thirds. In 1988, expenditures by the juniors began to decline. The decline has continued through 1992.

The fact that junior companies provided about two-thirds of total Canadian exploration spending in 1987 and 1988 is not apparent in the bar graphs and may be explained as follows. From 1984 on, a significant amount of exploration money was provided by junior companies for joint venture exploration projects operated by senior companies. Canadian exploration expenditure surveys ask that exploration spending be reported by project operators. Because senior companies generally did not contribute large amounts of money to projects operated by junior companies, the exploration surveys during the mid-1980s have tended to overstate the spending of the seniors and to understate that of the juniors.

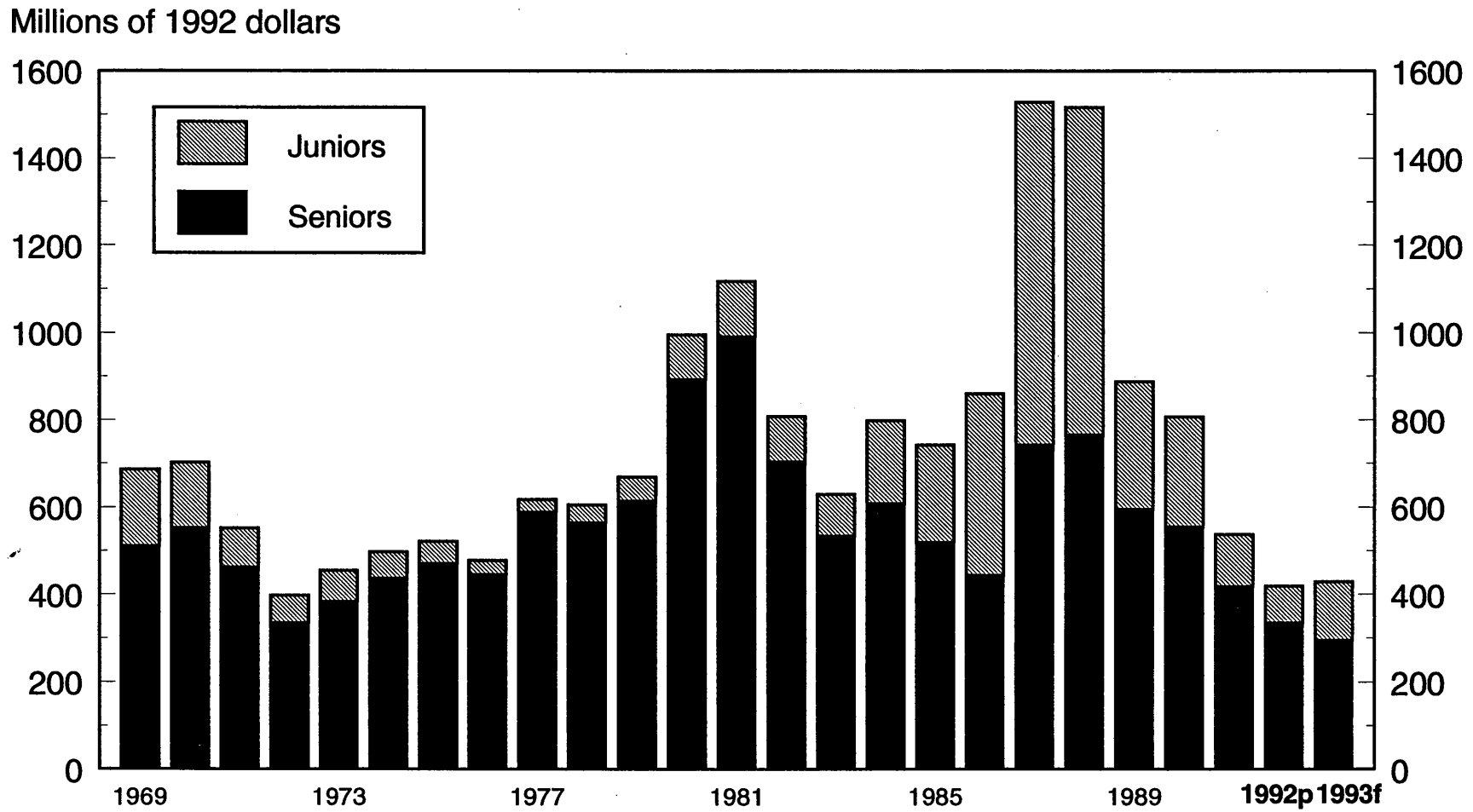
5.4 Exploration Expenditures by Type of Commodity Sought

Exploration for precious metals (95 percent for gold during the second half of the 1980s) peaked in 1987 (Figures 11 and 12) and subsequently declined as the availability of flow-through capital decreased and as the gold price declined after the end of 1987. Exploration expenditures for the base metals have increased each year since reaching a long-term low in 1986. By 1990, base-metal exploration expenditures exceeded the lowest level of the late 1970s (Figure 12). Exploration expenditures for base metals declined in 1991, but still classify as the second highest level since 1985.

In 1987 and 1988, exploration expenditures for all other non-petroleum mineral commodities (Figure 11) accounted for only about 5 percent of total Canadian exploration expenditures. In 1989 and 1990, expenditures directed at those other mineral commodities have more than doubled in percentage terms, but have not actually increased much in constant dollars. In 1991, expenditures for other metals decreased both in percentage and constant dollars. They are at their lowest levels since 1985.

Figure 10

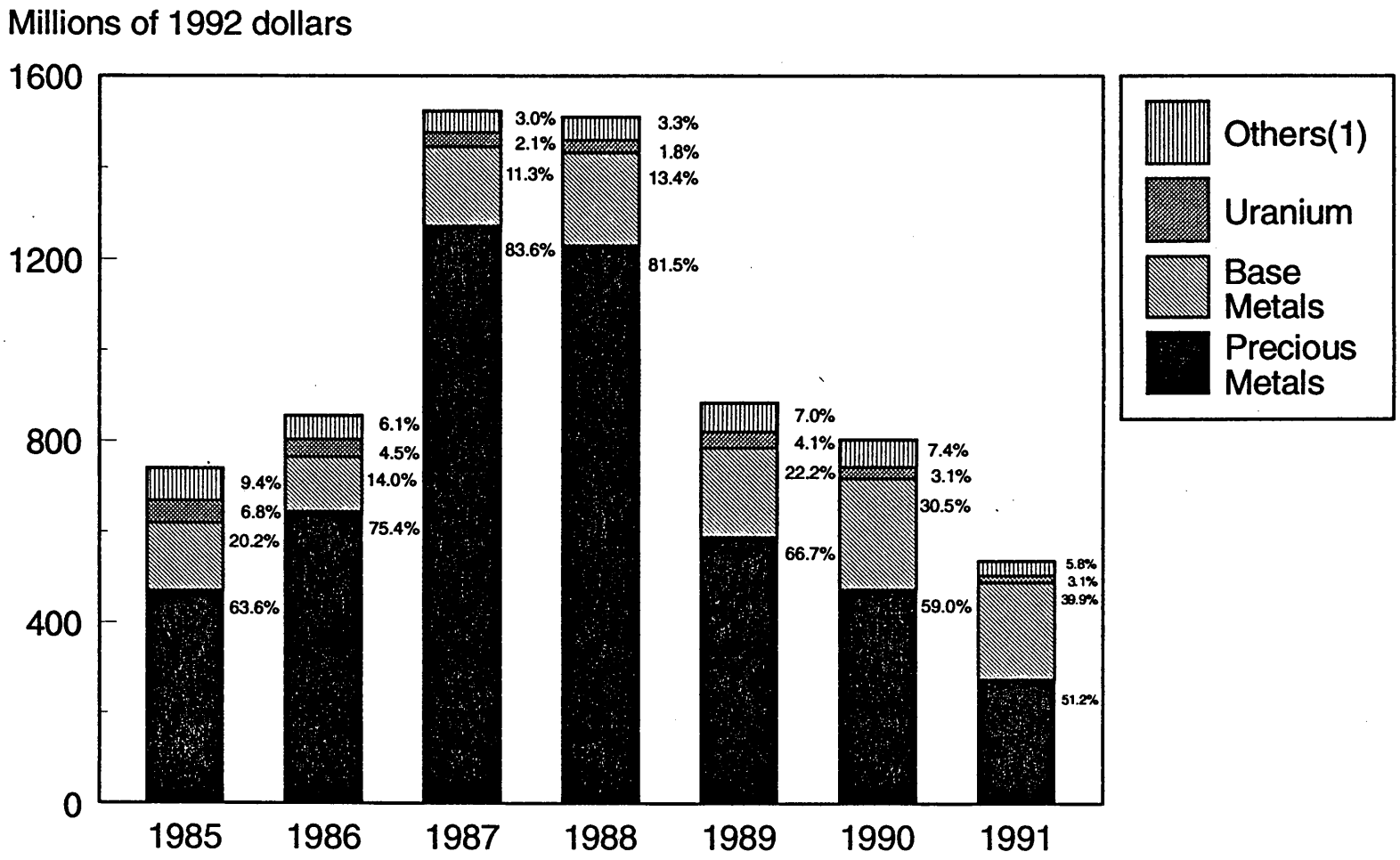
EXPLORATION EXPENDITURES BY JUNIOR AND SENIOR COMPANIES 1969-93



The total exploration expenditures depicted here for 1975 to 1981 are overstated by an average of about 17% relative to earlier and later years because of different methodologies used by Statistics Canada for those years.
Source: Federal - Provincial Survey of Mining and Exploration Companies.
p Preliminary estimate; f Forecast.
Note: Overhead expenditures are included.
Data were adjusted using the GDP Implicit Price Index.

Figure 11

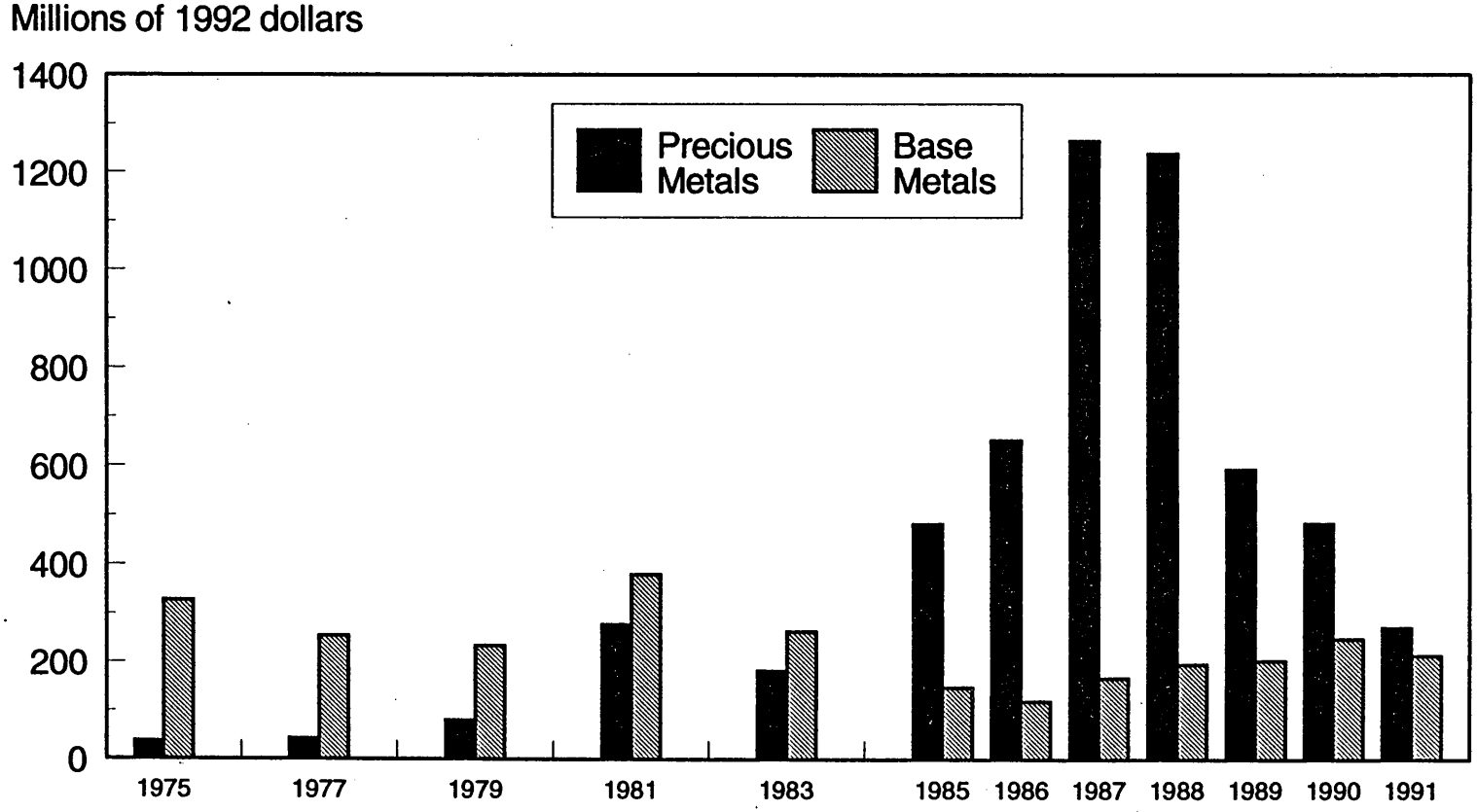
EXPLORATION EXPENDITURES BY COMMODITY SOUGHT 1985-91



Source: Compiled by EMR Canada from the Federal - Provincial Survey of Mining and Exploration Companies.
Note: Overhead expenditures are included.
Numbers to the right of bars are percentages of total exploration expenditures directed annually at each commodity group.
(1) Includes ferrous metals, other metals, nonmetals (including coal) and "not specified."
Data were adjusted using GDP Implicit Price Index.

Figure 12

CANADIAN EXPLORATION EXPENDITURES FOR BASE METALS AND PRECIOUS METALS 1975-91



Source: Compiled by EMR Canada from the Federal - Provincial Survey of Mining and Exploration Companies. Such data were not compiled for 1976, 1978, 1980, 1982 and 1984.

Note: Overhead expenditures are included.
Data were adjusted using GDP Implicit Price Index.

Exploration expenditures for the platinum group of precious metals amounted to $7.8 million in 1991, up from $5.4 million in 1990. In comparison, those expenditures were $8.0 million in 1989 and $19.5 million in 1988 (current dollars).

Exploration expenditures of $7 million for diamonds in 1991 were about the same as the amount spent in 1990 ($7.7 million). The main regions for diamond exploration are the Northwest Territories, Saskatchewan, Alberta and Ontario. We expect that the total amount spent on diamond exploration will increase in 1992 and 1993, for the reason previously mentioned.

SECTION D. HISTORICAL PERSPECTIVE ON FLOW-THROUGH SHARE FINANCING ACTIVITY 1983-93

The evolution of flow-through shares as a source of financing for exploration is shown in Figure 13. Funds raised by flow-through shares peaked at $1183 million in 1987.

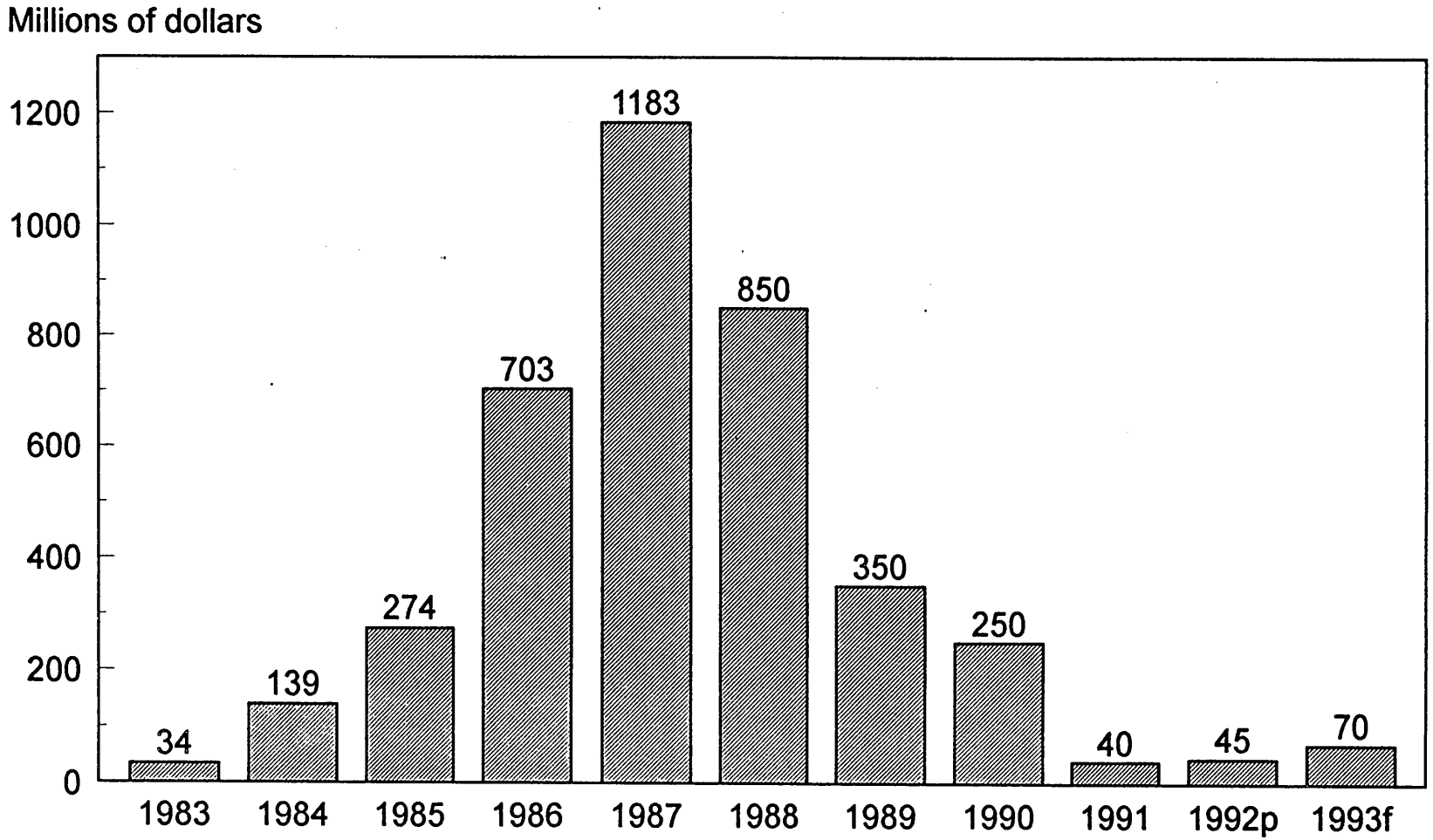
The proportion of total exploration expenditures accounted for by flow-through share financing increased from about 7 percent in 1983 to more than 90 percent in 1986 and 1987. In 1988, however, the level of flow-through financing of mineral exploration declined to approximately 60 percent of total spending, mainly as a result of decreased participation by senior companies in the flow-through share market. The downward trend, which continued in 1989, 1990 and 1991, seems to have stabilized in 1992 and, possibly, could be broken in 1993 (see Table 5).

It should be noted that exploration expenditures and amounts financed by flow-through shares cannot realistically be directly compared. Exploration data are compiled on a calendar-year basis, whereas the amount of flow-through share funds raised is compiled on a taxation-year basis. Since 1986, this latter amount has included money raised for spending in the following January and February, the so-called "look-back period". For example, some of the money raised in 1987 would have been spent in early 1988.

The rise in flow-through share funding witnessed a concurrent increase in the proportion of total exploration by junior mining companies. It is the juniors who made the greatest use of the flow-through share mechanism in 1987 and 1988. It is estimated that juniors accounted for close to 80 percent of the total amount raised by flow-through shares in 1988. As was pointed out earlier in this report, even though juniors continued to account for by far the greatest part of flow-through share funded exploration, it was they who felt the brunt of the reduced level of flow-through share financing since 1989.

Figure 13

FLOW-THROUGH SHARE FINANCING LEVELS 1983-93



Source: Energy, Mines and Resources Canada.
p Preliminary estimate; f Forecast..

TABLE 5. Ratio of flow-through financing to total exploration expenditures, 1983-93

Year	Total Exploration Expenditures	Flow-Through Share Financing	Percentage Flow-Through Financing to Total Exploration Expenditures
	($ Million)	($Million)	(Percent)
1983	472	34	7
1984	617	139	23
1985	589	274	47[a]
1986	698	703	100[a]
1987	1300	1183	95[a]
1988	1350	850	63[a]
1989	828	350	42[a]
1990	775	250	32[a]
1991	532	40	8[a]
1992[p]	420	45	11[a]
1993[f]	400-450	70	15-17[a]

p: Preliminary; f: Forecast.

a: Beginning in 1986, some of the flow-through funds raised were actually spent in January and February of the subsequent year (the so-called "look back" period). Over the period 1983 to 1990 inclusive, flow-through shares will have provided some 57 percent of total Canadian non-petroleum mineral expenditures.