REPORT ON MINERAL EXPLORATION EXPENDITURES AND FLOW-THROUGH SHARE FUNDING

BY THE

INTERGOVERNMENTAL WORKING GROUP
ON THE MINERAL INDUSTRY

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Report on
MINERAL EXPLORATION EXPENDITURES AND FLOW-THROUGH SHARE FUNDING

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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 in 1988, 1989, 1990 and 1991, 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 totalled $775 million for the year 1990, down from the $828 million spent in 1989. Senior companies spent $534 million of the $775 million and junior companies spent the remaining $241 million. Out of this $775 million, a total of $662 million was spent on general exploration. The remaining $113 million was directed to minesite exploration, which is defined as the search for new mines on the properties of existing mines.

The preliminary estimate of exploration expenditures for 1991 by the Federal-Provincial Survey shows a decline in the level of expenditures to about $595 million, mainly due to a sharp decline in junior exploration spending. Senior companies spent $467 million of the $595 million and junior companies spent the remaining $128 million.

The forecast of exploration expenditures for 1992, according to the Federal-Provincial Survey, reveals that the decline in expenditures will likely continue, dropping to some $497 million, as a result of reduced senior spending compared to 1991. Senior companies are expected to spend $367 million while juniors intend to spend $130 million, an amount about equal to the preliminary amount of $128 million reportedly spent by juniors in 1991.

EMR's own view, while still preliminary, is that exploration spending for 1992 will likely be in the area of $450 - $500 million. In the previous recession, Canadian exploration expenditures reached a low (in 1983) of about $620 million in constant 1991 dollars.

EMR now estimates that the amount of money raised by flow-through shares in 1991 was about $40 million, down approximately $210 million from the $250 million level raised in 1990. EMR estimates that flow-through share funding for 1992 will remain at somewhere around $40 million.

The provinces and territories indicate that grass-roots exploration is down and exploration is more focused on advanced projects. They further indicate that junior exploration is low and that exploration is being planned and carried out mainly by seniors or by juniors that have received funding from seniors. Exploration expenditures directed at gold have declined by over 50 percent in the past two or three years and the amount directed at base metals has increased slightly.

CONTENTS

CONTENTS (Continued)

FIGURES

TABLES

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 1992

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.

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

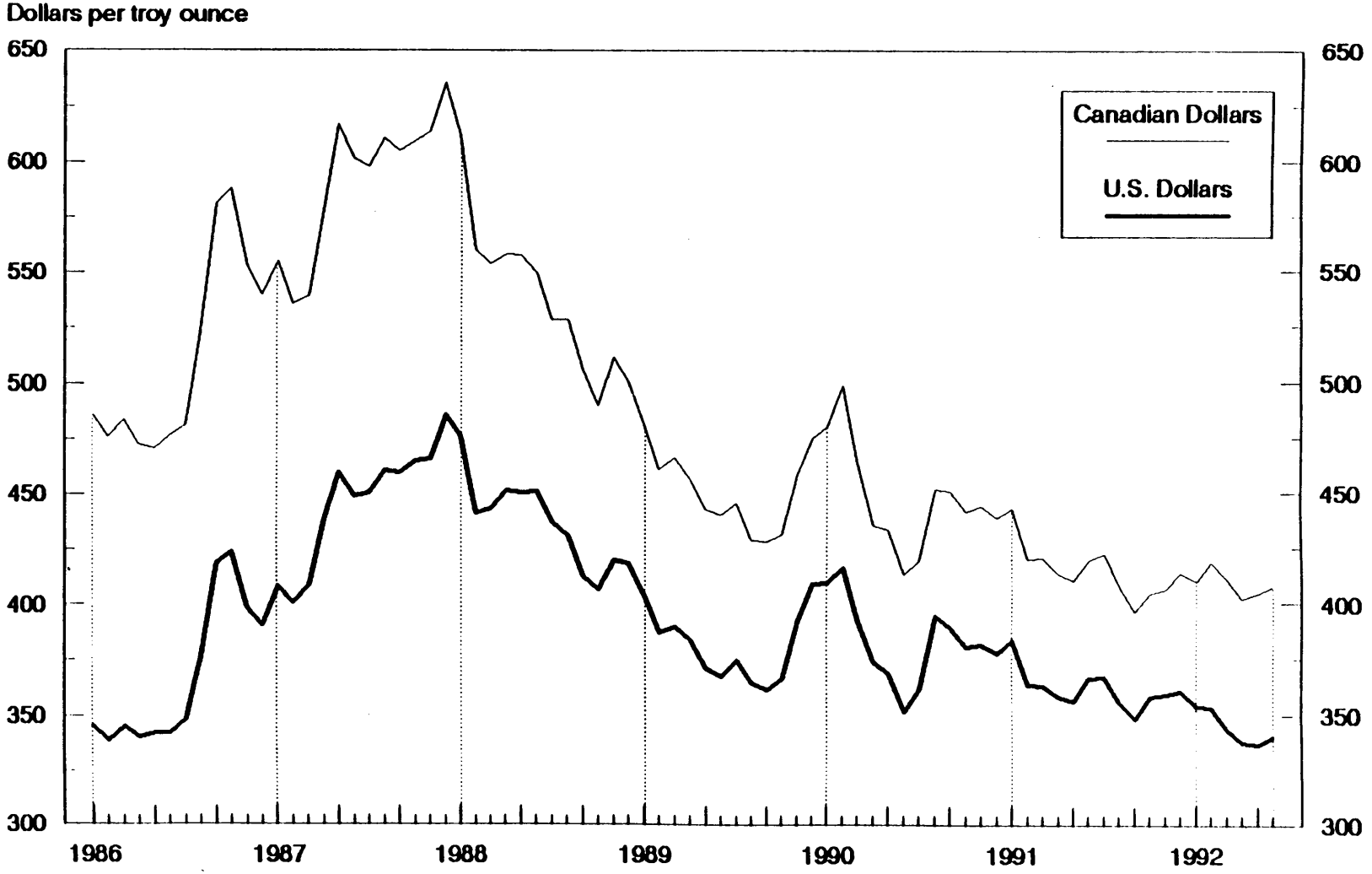
The first half of 1992 has seen senior equity markets look relatively attractive, driven by an abundant supply of cash made available by investors taking money out of low interest rate savings deposits and investing in equities. So far, well-known companies have had a better chance of tapping the equity market, but good quality second-tier companies needing equity capital have also successfully used the market. Unfortunately, this phenomenon has not extended to the junior resource sector, except for a few specific companies.

Stock market conditions for junior equities remain weak. The Vancouver Stock Exchange (VSE) index -- if taken as a proxy for the measure of investor interest in junior stocks -- peaked at 2015 points in May 1987 (1987 was the year in which the volume of flow-through share financing peaked). In January 1991, the index fell below the 500-point level for the first time in its eight-year history. This continued the downward trend that started following the 1987 stock market crash.

Figure 1

MONTHLY AVERAGE GOLD PRICE

JANUARY 1986 TO JUNE 1992



Source: Metals Week, Handy and Harman quote.

On July 1, 1992, the index stood at 608, showing only a marginal recovery from its lowest point, and only some 28 points above the July 1, 1991 level of 580.

VSE officials have indicated that financings strongly shifted toward high technology and industrial companies in the fiscal year ended March 31, 1992. In a news release, the exchange said that in "1991-92 nonresource financing accounted for more than 55 percent of total financing, compared with under 28 percent in the previous year".

Statistics provided by the VSE indicate that some $10.8 million of flow-through share financing had been raised on the exchange through 25 private placements during the first six months of 1992. The $10.8 million includes $0.5 million that will be used for oil and gas exploration, which leaves $10.3 million available for mining exploration.

Data from the Montreal Exchange (ME) and the Toronto Stock Exchange (TSE) -- excluding over the counter sales -- indicate that, excluding amounts raised by interlisted companies, some $9.8 million of flow-through share financing has been raised on these two exchanges over the first six months of the year. $5.8 million of this amount was for mineral exploration.

1.4 Outlook

The amount of flow-through share funds raised for mining on the three stock exchanges totalled $16.1 million at July 1, 1992. Assuming that an equal amount of funds will be raised in the second half of 1992 would lead to the conclusion that $32.2 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 $40 million represents a reasonable estimate for 1992. The fact that three financings accounted for $8.7 million, representing 54 percent of total flow-through share financings completed during the first six months, may make EMR's estimate for the year too optimistic. On the other hand, recent 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 and thus make EMR's extrapolation too pessimistic. Further, EMR's estimate does not count much on the traditional late fall and year-end tax shelter "take-up" activity that increased the total amount of funds available for juniors in recent years. This trend seemed to have been broken in 1991, although the second half of 1991 was still slightly stronger than the first half.

2. Outlook for Exploration in 1992

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 1992 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 1991-March 1992 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 - 1992

Methodology

On October 31, 1991, Statistics Canada sent 307 questionnaires to mineral producing firms. EMR has assumed responsibility for the collection of data from the nonproducing firms and sent out close to 2450 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 646, down from 761 in 1991 and 936 in 1990. 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, 1992 and March 31, 1993.

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 1992 (Statistics Canada catalogue 61-216). The Statistics Canada intentions total published for minesite exploration for 1992 is $79 million. This total was revised at $71 million by EMR as of April 1992. Statistics Canada is currently conducting a revised Forecast 1992 Survey and the results should be available soon.

EMR released the results of its survey in the June 1992 issue of the Mineral Industry Quarterly Report and in the Canadian Minerals Yearbook 1991 Review and Outlook. The first indication suggests that "general exploration" (off-property exploration) would be $426 million.

Accordingly, on the basis of company intentions in the December 1991-March 1992 period, total exploration (both on- and off-property) for 1992 would be expected to total about $497 million ($426 million plus $71 million).

Interpretation

The Statistics Canada and EMR surveys of intentions provided an indication of the late 1991 industry view of total exploration spending expectations for 1992. However, because intentions expressed in late 1991 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 such as the current recession 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 1992.

Table 2 shows intentions, as well as preliminary and actual expenditures, for minesite and general exploration for the years 1984 to 1992. 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.

TABLE 2. Comparison of intentions, preliminary and actual exploration expenditures, 1984-92

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	
General	548.3	514.5	
Total	646.2	594.9	N/A
1992			
Minesite	71.2		
General	426.3		
Total	497.5	N/A	N/A

Source: Statistics Canada and Federal-Provincial Survey of Mining and Exploration Companies. The 1991 actual survey is currently in progress, and the 1992 preliminary and actual questionnaires will not be sent out until late 1992 and early 1993, respectively.

N/A: Not available.

2.3 Senior Firm Exploration Spending for 1991 and 1992

Methodology

Information on exploration spending by type of company (1990 actual, 1991 preliminary and 1992 intentions) is now available from the Federal-Provincial Survey of preliminary and forecast exploration expenditures. About 174 active senior companies in 1991 and 163 in 1992 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, but to a smaller extent. The actual amount for 1990 ($533 million) was down only 4 percent from 1989 while the preliminary estimate for 1991 ($467 million) is down 12.4 percent from 1990. However, the intentions for 1992 ($367 million) point to a steep 21.5 percent decrease from the preliminary estimate for 1991. Expenditures by seniors made up 52 percent of the total exploration expenditures in 1988, 67 percent in 1989, 69 percent in 1990, an estimated 78.5 percent in 1991 and an expected 74 percent in 1992.

Overall intentions for 1992 of $497 million and senior intentions of $367 million implies a value for junior intentions of $130 million. However, junior exploration spending levels are determined more by availability of financing than company intentions.

2.4 Outlook for Exploration Based on Metals 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 metals prices. This may be because companies assess exploration expenditures like any other investment, with expected returns being dependent on expected revenues from the subsequent mining of discovered deposits. These expected future revenues would depend on future commodity prices. It is likely that current commodity prices figure prominently in the minds of investors in exploration when predicting the course of future 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 metals 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.

Due no doubt to the large increase in the use of flow-through shares by junior companies over the 1986-88 period, the correlation between total exploration spending and metal prices was less pronounced during that interval.

Results

The relationship between exploration expenditures and metals prices observed over the period 1969 to 1991 would predict a level of total exploration expenditures in 1992 in the neighbourhood of $580 million (see Figure 2). A similar estimation for senior exploration expenditures predicts a level of about $445 million in 1992 (see Figure 3).

The difference between these two figures would imply a projection of about $135 million for junior spending. However, no attempt was made to predict junior exploration spending by this method, since junior exploration is largely determined by the availability of financing from equity markets.

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, 1985-92), Figure 5 (quarterly,

1985-92) and Figure 6 (annual, 1973-91) 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 1989, 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.

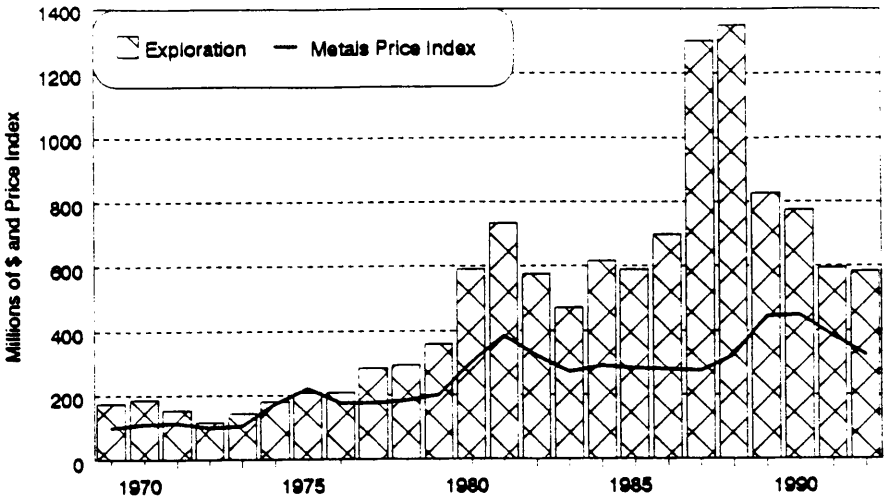
	Diamond Drilling			Other Drilling[1]		
Year	Metres Drilled (million)	Total Cost ($ million)	Cost Per Metre (dollars)	Metre Drilled (million)	Total Cost ($ million)	Cost Per Metre (dollars)
1985	2.531	185	73	.270	10.8	40
1986	3.616	249	69	.055	3.4	62
1987	6.221	510	82	.262	18.4	71
1988	6.206	478	77	.211	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 (used to sample overburden for gold), 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 past 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. From 1988 to 1991, 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

Figure 2

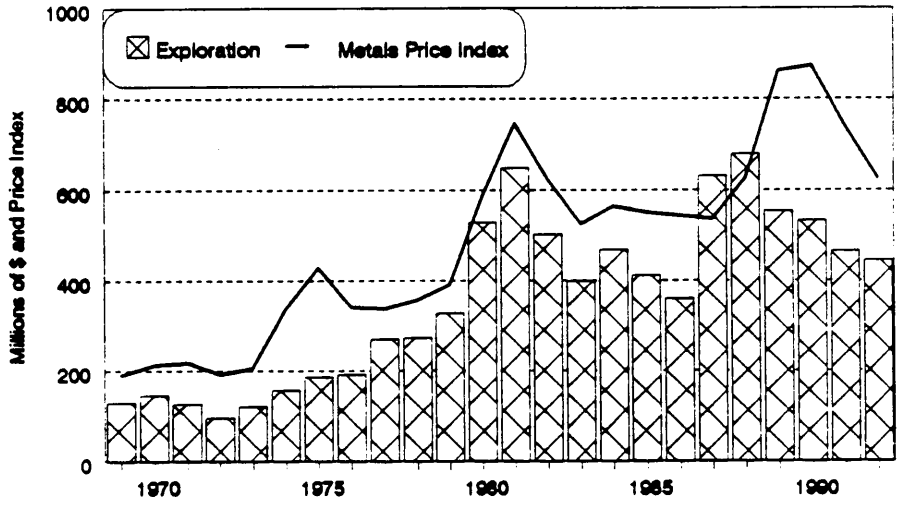
TOTAL EXPLORATION EXPENDITURES AND METALS PRICE INDEX LAGGED ONE YEAR



Sources: Statistics Canada 61-007 and 61-216 for 1969-91 exploration data;
EMR for Metals Price Index.
1992 exploration forecast by EMR model.

Figure 3

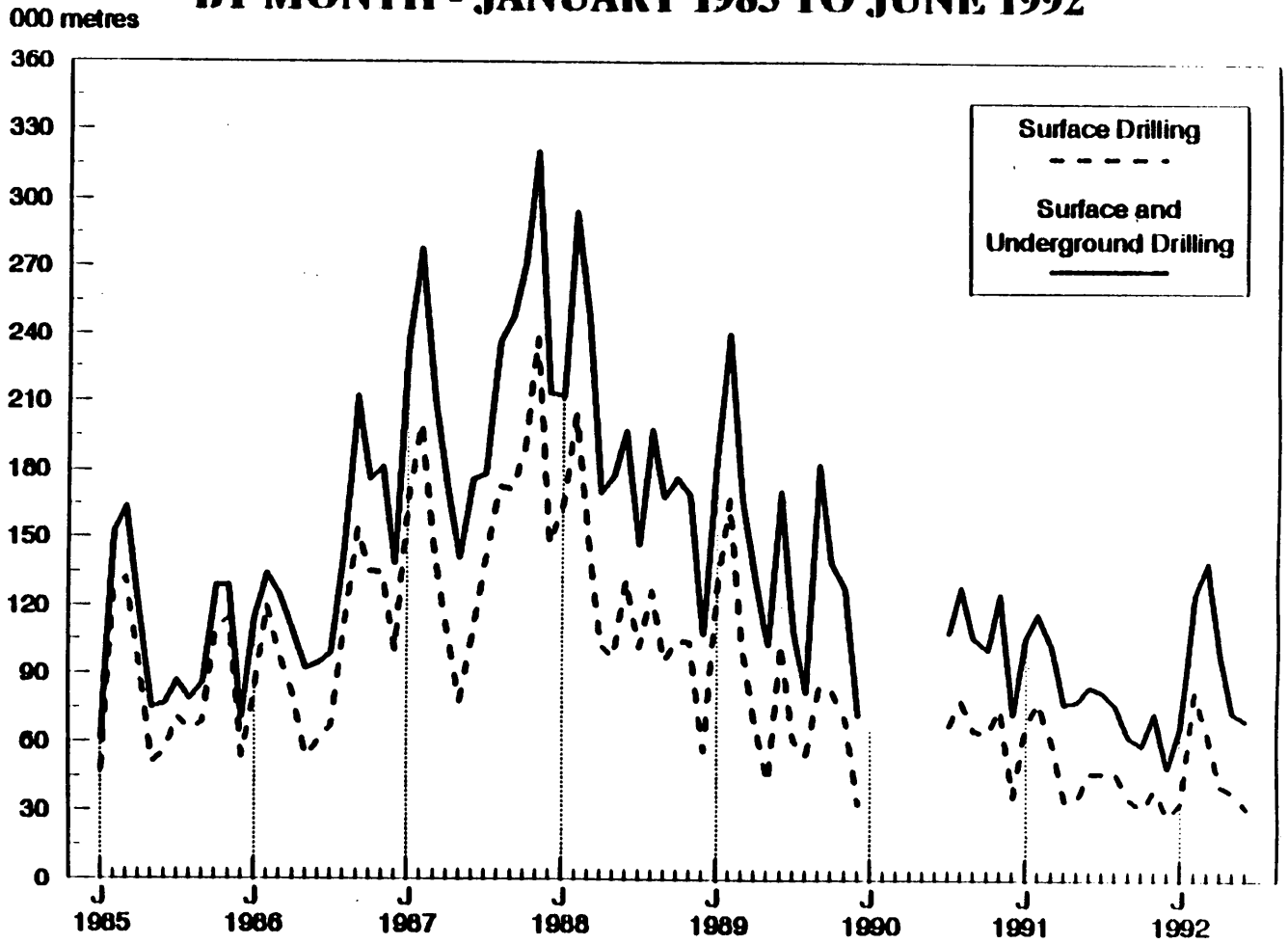
SENIOR EXPLORATION EXPENDITURES AND METALS PRICE INDEX LAGGED ONE YEAR



Sources: Statistics Canada 61-007 and 61-216 for 1969-91 exploration data
EMR for Metals Price Index
1992 exploration forecast by EMR model

Figure 4

SURFACE AND UNDERGROUND DRILLING BY MONTH - JANUARY 1985 TO JUNE 1992

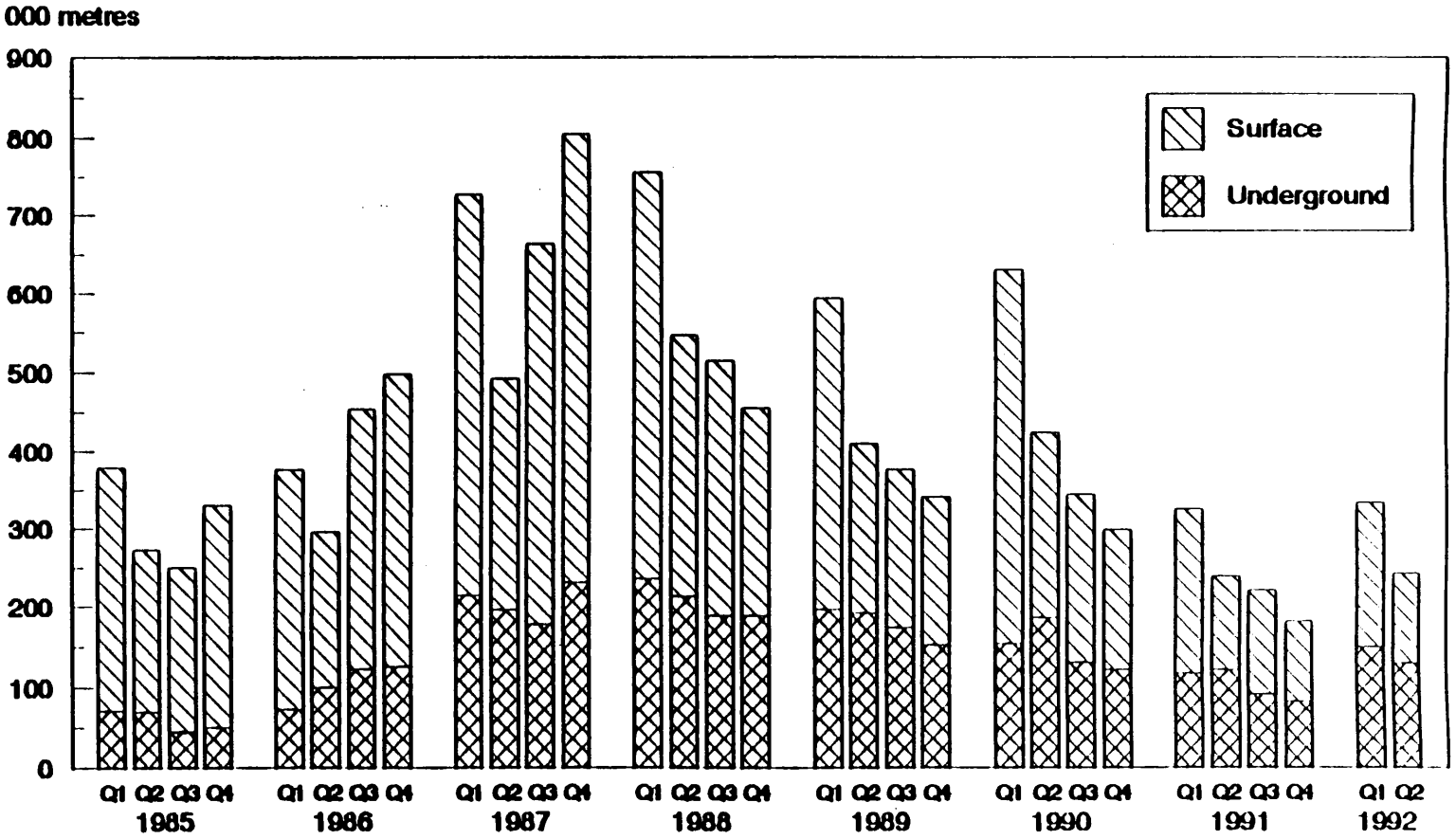


Source: Canadian Diamond Drilling Association.

Note: These data include approximately 50 - 60 percent of total drilling activity.
Monthly data are 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

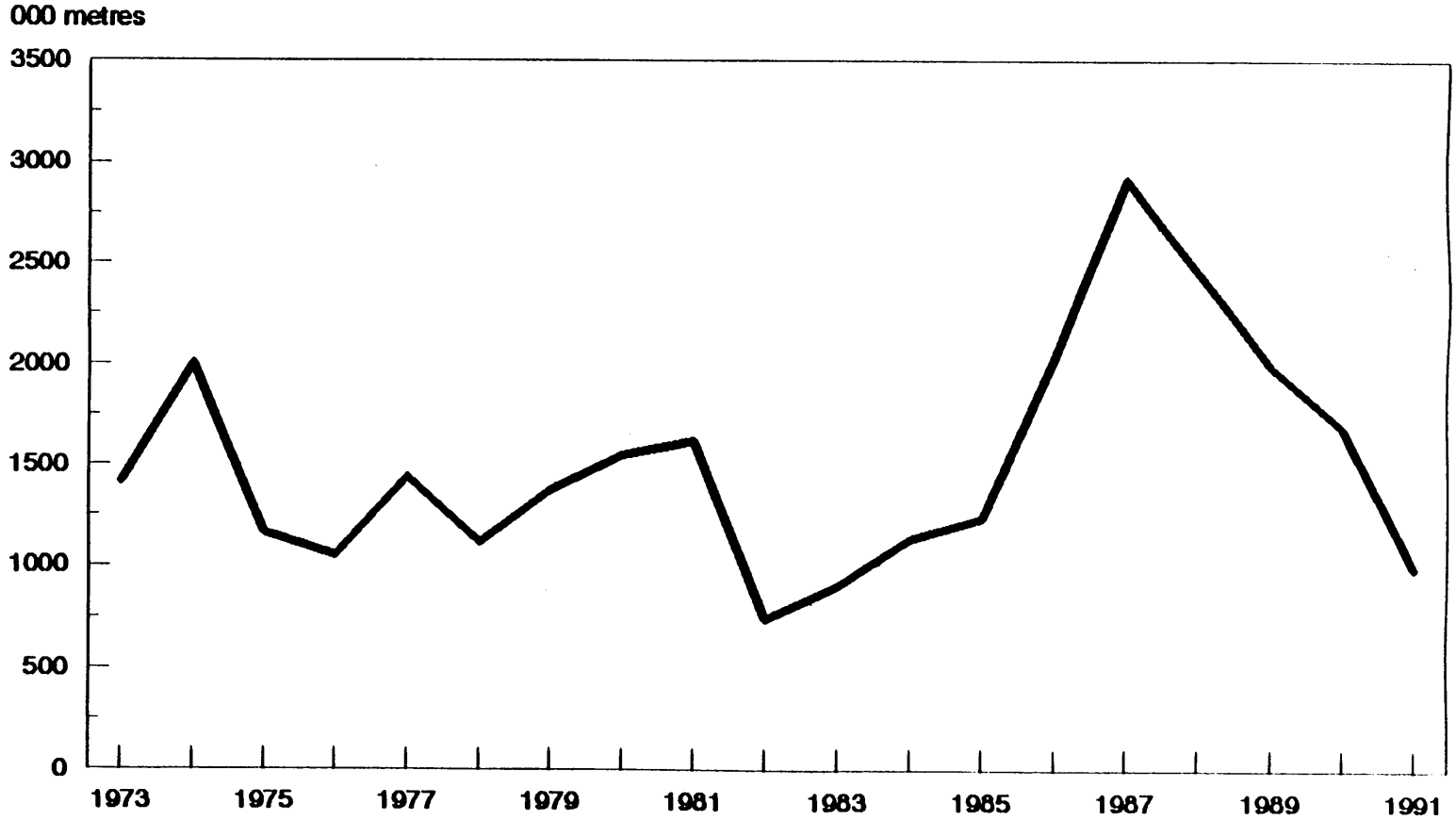
SURFACE AND UNDERGROUND DRILLING BY QUARTER - 1985 TO 1992



Source: Canadian Diamond Drilling Association.
Note: These data (as reported to CDDA) include approximately 50-60% of total drilling activity.

Figure 6

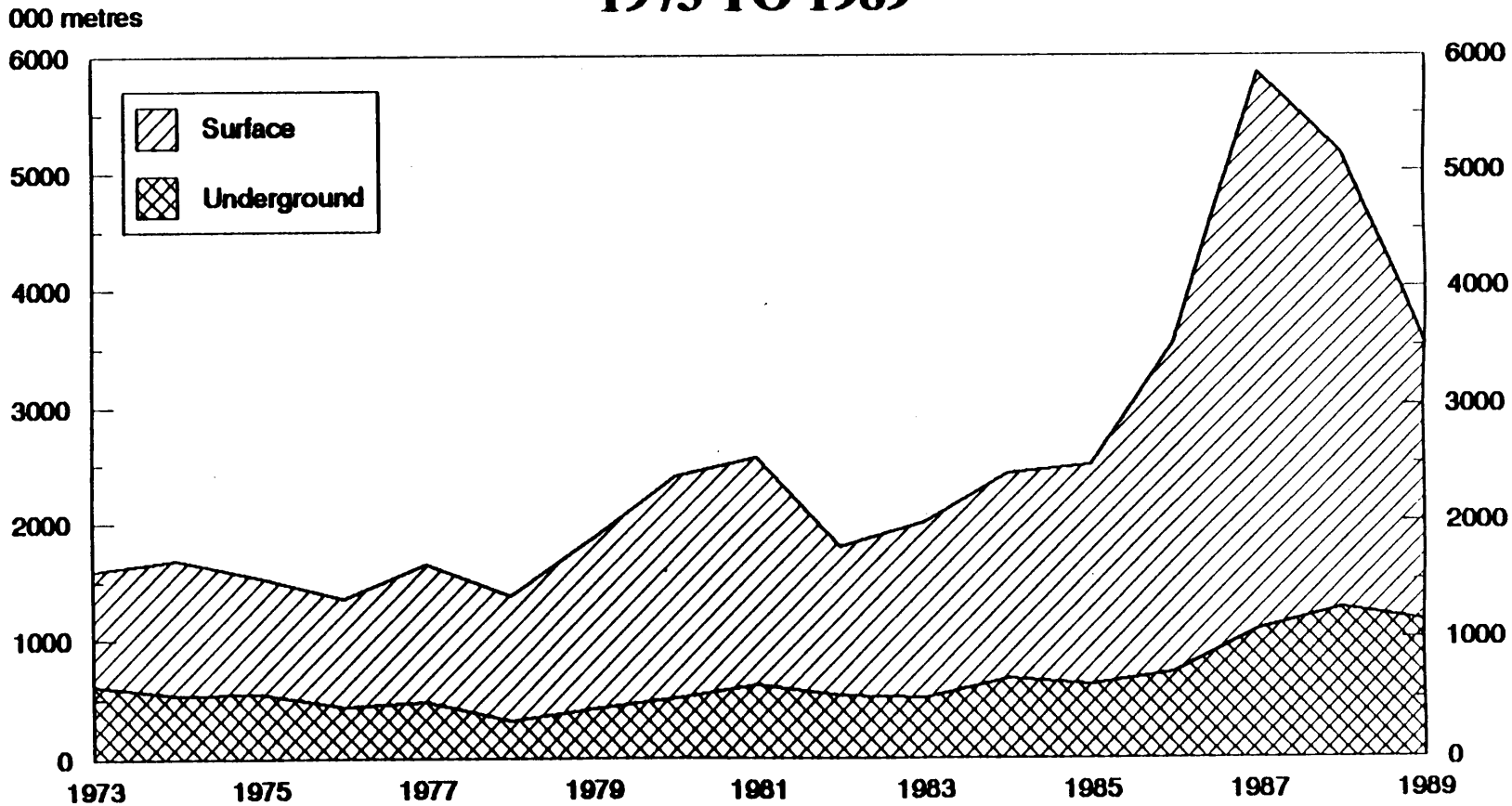
SURFACE AND UNDERGROUND DRILLING BY YEAR - 1973 TO 1991



Source: Canadian Diamond Drilling Association.
Note: These data include approximately 50-60% of total drilling activity.

Figure 7

SURFACE AND UNDERGROUND DRILLING CONTRACT DIAMOND DRILLING OPERATIONS 1973 TO 1989



Source: Statistics Canada, Catalogue 26-201.
Note: Data refer to SIC 0921; 1989 is the latest year for which data are available.

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 1992

The Exploration Intentions Survey indicated that exploration spending in 1992 would be about $497 million, with senior exploration at about $367 million and junior exploration at about $130 million. During the 1985 to 1988 period, actual expenditures were somewhat higher to much higher than the earlier intentions. During that period, companies actually spent more than they originally intended to spend, probably because they raised more flow-through share financing than they had originally expected. Since 1989, this trend has reversed, probably because of the reduced availability of flow-through share financing. Preliminary 1991 figures seem to confirm the trend to lower actual spending (see Table 2). If this trend continues in 1992, then the $497 million forecast could turn out to be on the high side.

From a different perspective, as discussed in section 2.4, a regression model based on metals prices predicts an overall spending level of about $580 million for 1992.

Although both forecasting sources indicate a clear downward trend in exploration spending levels, the regression analysis estimate of $580 million is about $83 million more than the Intentions Survey estimate of $497 million. This difference is largely in expected senior exploration spending, i.e. $367 million under the Intentions Survey versus $447 million under the regression analysis. However, it is likely that the slower than anticipated economic recovery and the resultant slow recovery in metals prices caused senior companies to cut their exploration budgets in late 1991 and early 1992. EMR is discounting the level of total exploration obtained by the regression analysis because current information does not support that level of exploration for 1992.

Another approach to developing estimates of total exploration expenditures for 1992 is by adding junior common equity financing (including flow-through shares) to senior company intentions. The $367 million for senior exploration spending, obtained from the Intentions Survey, 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 and following our past practice of arbitrarily reducing the estimate for senior companies in order to avoid double counting, we have reduced the estimate of $367 million to $350 million. This $17 million reduction is much smaller than the reductions of previous years. While some overlap most likely still exists, it has been much reduced because of lower overall exploration levels, improved reporting by respondents and better monitoring of joint venture projects.

The level of junior exploration spending is more difficult to forecast because it relies to a large extent on the availability of financing and, in recent years, particularly on flow-through share financing.

One indicator of the possible amount of junior exploration spending is the Federal-Provincial Survey of Intentions for 1992 which was carried out in late 1991 and early 1992. According to this survey, juniors intend to spend about $130 million in 1992, about equal to the preliminary amount of $128 million spent by juniors in 1991. However, this $128 million preliminary figure for 1991 turned out to be much less than the $184 million of earlier intentions and EMR believes that this preliminary figure might well be further adjusted downward to the $100-$120 million range when actual figures are released later on this year. Nevertheless, junior spending could be as much in 1992 as it was in 1991 (in the $100-$120 million range).

As discussed in Section A, it is estimated that about $40 million of flow-through share financing could be raised in 1992 by junior companies listed on Canadian Stock Exchanges. Assuming $100-$120 million of junior exploration spending, there would be some $60-$80 million of additional financing left to be raised. 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 $60-$80 million may be reasonable. This additional $60-$80 million would come mainly from non-flow-through share financing but would also include uncompiled flow-through share financings realized by unlisted companies. In the past, the vast majority of the flow-through share financing was raised by listed companies. However, with the very depressed level of flow-through share funds raised by listed companies, the amount raised by unlisted companies has gained more importance.

Given a range of junior exploration between $100 million and $120 million and an expected $350 million of senior exploration spending, EMR believes that total exploration expenditures in 1992 could be in a range of $450 to $470 million. This range reflects EMR's downward adjustments to the survey results. However, if the results of the exploration intentions survey turn out to be more accurate than expected, the high end of the range could be as much as $497 million.

On the basis of the above, it is felt that 1992 exploration expenditures will fall in the range of $450 to $500 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 1992.

4.2 Newfoundland and Labrador

Mineral exploration in Newfoundland during 1991 continued to decrease from the record setting levels in 1988 and 1989.

The total expenditures on mineral exploration in 1991 is approximately $12 million, down from $23.2 million in 1990. Expenditures for 1992 are forecast to be down slightly at approximately $10 million. The 1990/1991 statistics for claims staked (10 508/7986), claims in good standing (44 833/33 615) and diamond drilling (93 346m/43 927m) also reflect the decline in mineral exploration in the province since 1989. First half 1992 claim statistics stand at 2500 claims staked and 28 500 claims in good standing.

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 and with the notable exception of Labrador, very little grass-roots exploration is anticipated for 1992. Of particular concern is the amount of exploration dollars flowing to the local service sector. This amount has decreased from a high of 70 percent of the $41 million total exploration effort in 1988 to a low of 37 percent of the $12 million total for 1991.

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.

Amendments to The Mineral Act and Regulations are proposed for 1992. Some of the more important issues to be addressed include changes to land tenure, assessment requirements and environmental regulations. A number of the fees charged in connection with administration of the Mineral Act, in particular, the annual rental for extended exploration licences were eliminated with the provincial budget on March 27, 1992.

The Strategic Economic Plan, released on June 18, 1992, contains a number of new initiatives relevant to mineral exploration. Most notable is the establishment of an exploration assistance program to provide for cost sharing on drilling and other advanced exploration projects by local prospectors and Newfoundland junior exploration companies.

NEWFOUNDLAND AND LABRADOR EXPLORATION STATISTICS

	1988	1989	1990	1991p	1992f
			(dollars)		
Annual Exploration Expenditures	41 155 481	36 252 686	23 275 000	12 000 000	10 000 000
Claim Staking					
Claims Staked	26 199	17 190	10 508	7 986	5 000
In Good Standing	65 822	63 596	43 833	33 615	25 000
Exploration Field Expenditures					
BM-PM	17 559 585	10 970 673	10 339 710	7 385 312	N/A
Gold	18 698 498	14 895 933	7 344 583	1 701 298	N/A
Other	457 370	1 364 328	1 520 051	550 502	N/A
			(metres)		
Diamond Drilling					
Production/Development	17 449	16 355	8 884	6 850	N/A
Exploration	217 382	106 497	84 462	37 077	N/A
Total	234 831	122 852	93 346	43 927	

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
1991p	12 000	37	17	20

Source: Dept. of Mines and Energy

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

4.3 Nova Scotia

Total mineral exploration expenditures for Nova Scotia in 1991 were $4 300 000 (preliminary estimate). A forecast for 1992, derived from the survey of company intentions at the end of 1991, indicates that 1992 expenditures may only reach the $2-3 million range.

This continues a pattern of drastic cuts in levels of exploration activity that have occurred each year since 1988. Each successive year has witnessed an approximate halving of expenditures from the previous year.

Expenditures in 1992 may therefore only reach 5 percent of the amount spent in 1988. To put this into context however, 1987 and 1988 were exceptionally good years for the exploration industry, particularly in Nova Scotia, and it is likely that the bottom of the down-cycle will be reached this year. In 1988, exploration expenditures in Nova Scotia represented 4 percent of the national total, whereas the more normal percentage is around 1-2 percent, a figure more commensurate with Nova Scotia's physical area (0.6 percent of Canada).

To look back over the longer term, 1991 and 1992 expenditures of less than $5 million a year are lower than for the worst years of the previous downturn in 1982 and 1983, and represent approximately 50 percent less activity after dollar values are adjusted for inflation. Although comparable statistics are not available for earlier periods, it is very likely that exploration activity in Nova Scotia is currently at the lowest level experienced for at least 20 years.

Mineral rights held under exploration, development and special licences occupied about 713 300 acres in 1991, substantially less than the last low point in 1984 when roughly 1 100 000 acres were held. The number of claims in effect (preliminary figures) at the end of 1991 was 17 825, down substantially from 1988 (43 127 claims) and also much lower than the 27 109 claims in effect at the end of 1984.

The greatest emphasis in mineral exploration in Nova Scotia during 1991 was in the search for base metals and polymetallic mineral deposits, principally by senior mining companies and partnerships between senior and junior companies where the activity carried out by the junior was funded by the senior company. Some of the projects were grass-roots in nature, testing geological ideas derived from previous industry and government results, while others concentrated on adding grade and dimension to previously known mineral deposits. Exploration for industrial minerals (particularly limestone and silica) also continued at moderate levels.

NOVA SCOTIA MINERAL EXPLORATION INDICATORS 1988-1992

	1988	1989	1990	1991	1992
New Claims (Exploration Licences)	20 132	11 397	10 910	7 963	2 303 (4 mos)
Areas held under Exploration, Development and Special Licences (x 000 acres)	1 725	994	897	713	705 (preliminary)
Total claims in good standing	43 127	24 850	22 425	17 825	17 628 (preliminary)
Exploration expenditures field & overhead ($ million)	49.0	21.4	11.0	4.7	2.4 (forecast)
Diamond drilling (x 000m)	110.0	25.0	16.7	11.0	N/A

N/A: Not Available.

4.4 New Brunswick

New Brunswick continued to see an increase in exploration activity and expenditures in 1991. Preliminary results from a joint EMR-NB exploration expenditure survey indicate that there was a 12.5 percent increase in expenditures in 1991 from 1990 figures and that this trend may continue on into 1992. Data collated from 63 individuals and companies indicated that approximately $18.8 million was spent on general plus minesite exploration in New Brunswick in 1991.

Other exploration indicators such as claims recorded and renewed also recorded increases, by 5 percent and 11 percent, respectively. Year-end results showed that 4571 claims were recorded in 1991 resulting in a total of 21 350 claims in effect.

Assessment work reported in the first six months of 1992 totalled approximately $2.5 million. Preliminary figures for projected exploration expenditures for 1992 indicate that $17.0 million should be spent.

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 tin deposits of the Mount Pleasant area of southern New Brunswick has been revived because of the indium content of the ores. Indium is a valuable specialty metal used in coatings, solders, electronics and the automotive industry.

4.5 Quebec

Flow-Through Share Financing and Exploration Expenditures in Quebec

Flow-Through Share Financing

Flow-through share financing of exploration expenditures fell sharply in 1991, dropping to $10.2 million.

It is difficult to estimate the amount that will be raised in 1992. New tax measures introduced by the Quebec government and announced in the May 14, 1992 budget should, however, stimulate fund raising. The economic recovery should also have an impact on new equity financing. In fact, about $6.75 million of flow-through shares have been offered through small private placements for the first six months of 1992.

Flow-Through Share Financing and Exploration Expenditures in Quebec

	1989	1990	1991[1]	1992[2]
		($ Millions)		
Flow-through shares	73.2	44.4	10.2	N/A
Exploration expenses	196.5	206.3	164.2	136.4
Off-property	164.7	167.5	137.4	116.7
On-property	31.8	38.8	26.8	19.7

Source: Service de la statistique et de l'économie minérale, M.E.R.

1. Preliminary data.
2. Data estimates derived from the survey carried out in the fall of 1991.

N/A: Not Available.

Exploration Expenditures

In 1991, mining companies spent $164.2 million on exploration. Some $137.4 million of the $164.2 million was spent on off-property expenses and $26.8 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.

According to the survey carried out in the fall of 1991 on the spending intentions of mining companies, the decrease should continue in 1992. Total spending should amount to $136.4 million, $116.7 million on off-property expenses and $19.7 million on on-property expenses, representing another 17 percent decrease from 1991. However, the new Quebec tax measures may bring a change of direction in exploration activity during the year.

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 1991, drilling reached 1 000 000 metres compared to 1 300 000 metres in 1990, a decrease of 27 percent. For the first four months of 1992, the number of metres drilled is 314 000, a decrease of 31 percent from the corresponding period in 1991.

As for recorded claims, the number is 18 000 in 1991 compared to 16 000 in the previous year, representing an increase of 12½ percent. From the beginning of the year to the end of April 1992, 4400 claims have been recorded, for a decrease of 31 percent compared to the corresponding period in 1991.

Tax Measures For Flow-Through Share Financing

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

- 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 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 May 1992, 31 exploration projects had been approved by SOQUEM for a total amount of $4.8 million of assistance; 29 junior companies have qualified. 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.*

4.6 Ontario

Mineral exploration and development expenditures in Ontario are forecast to be $301 million in 1992. These expenditures are down from an estimated $308 million in 1991 and $575 million in 1990. 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 $98 million in 1992, down from $108 million in 1991 (estimated) and $153 million in 1990. Minesite development expenditures are anticipated to be $203 million in 1992 compared to $201 million in 1991 and $422 million in 1990. The above data includes both field and overhead expenditures.

The number of claims/claim units in good standing in Ontario at the end of May 1992 was about 125 160, up 7 percent from 117 170 claims in May 1991. 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 1991 was about 118 000, the lowest number since 1982. The number of claims in good standing peaked in 1988 at over 171 000.

Senior mining companies were responsible for approximately 87 percent of the off- and on-property field exploration expenditures of $123 million in 1990, compared to 72 percent in 1989 and 56 percent in 1988. Thus, junior companies made 13 percent of exploration expenditures in 1990, down from 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. Note that for all years the percentage of expenditures attributed to senior companies may be somewhat high because funds received from joint-venture partners, often junior companies, are reported by the senior companies.

Exploration activity continues to be highest in northeastern Ontario. In 1989, 80 percent of exploration and development expenditures were made in northeastern Ontario, 72 percent in 1988. Of the 20 advanced underground or open-pit exploration projects active in the province in 1991, 12 were located in the northeast. Four mines were in development stage (production decision announced) in the northeast in 1991.

In 1990, 65 percent of general and minesite exploration dollars was spent on precious metals exploration, primarily gold, and 32 percent was spent on base-metal exploration. This indicates an increased emphasis on base-metal exploration compared to 1989 when 73 percent was spent on precious metals exploration and 23 percent on exploration for base metals.

In 1990, 41 percent of minesite development expenditures were on base-metal projects and 38 percent on precious metals projects. This compares with 40 percent and 35 percent, respectively, in 1989.

In 1991, 16 of the 20 advanced exploration projects in Ontario were gold projects. However, three of the four mines in development stage were nickel-copper mines in the Sudbury area.

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. This funding, together with certain amendments to OMIP, is intended to lessen the impact of the discontinuation of CEIP in February 1990.

A total of 4300 Ontario prospectors received OPAP grants of up to $10 000 for the 1992-93 fiscal year. The financial assistance provided under OMIP takes the form of grants up to $300 000 a year covering 30 percent (50 percent in Northern Ontario) of eligible exploration expenditures. In 1991, $7 million was disbursed under the program to 150 projects.

4.7 Manitoba

Mineral exploration expenditures for 1991 are estimated at $35 million and surface diamond drilling is estimated at 197 000 metres. The total area of claims recorded in Manitoba during 1991 was 101 636 hectares while the total mineral dispositions in good standing, including claims, permits and leases, was 2 037 303 hectares.

The forecast for 1992 is positive. The provincial government has implemented a number of measures to encourage exploration and investment in Manitoba. As a result, it is anticipated that exploration levels will be at least as high as in 1991, 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 Paleozoic cover. In the major greenstone belts of Flin Flon-Snow Lake, Lynn Lake, Gods Lake and Rice Lake, exploration for gold continues.

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 were 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 or 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

Effective January 1st, 1993, qualifying mining operators will not be required to pay the mining tax until their profit for mining tax purposes equals their capital outlay in opening the 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 expenditures in a given year that exceed 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 estimate 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. Forty-three companies participated in this year's survey. While actual expenditures were lower than what was projected in 1989 and 1990, they came in on target in 1991.

EXPLORATION EXPENDITURES - RESIDENT GEOLOGISTS' SURVEY

	1986	1987	1988	1989	1990	1991	1992[P]
				($ Millions)			
Precious metals	19	29	42	20	11	5	6
Base metals	2	3	6	7	7	6	4
Uranium	22	18	20	21	12	10	10
Other	-	-	-	2	2	3	4
Total	43	50	68	50	32	24	24

p: Projected.

The marked downturn in mineral exploration expenditures in Saskatchewan since 1988 is consistent with the national trend. In the past few years, junior companies have found it increasingly difficult to raise exploration and development capital

and accordingly the trend is towards more exploration financed by major companies. Projected exploration expenditures for 1992 appear to have bottomed out and are about 35 percent of those experienced in 1988. Precious-metal exploration expenditures in particular have declined significantly and are about 15 percent of what they were in 1988.

The total number of claims in good standing at year end 1991 was 2844 (1 791 922 hectares) compared with 4234 (2 508 288 hectares) the previous year. Much of this decrease can be attributed to claims filed during the diamond staking rush that were allowed to lapse without any assessment work being filed. Some companies appear to be consolidating their land holdings. Exploration activity is concentrating on re-examining known deposits and their environs and proving up reserves. There has been some evidence of parties shifting their emphasis to foreign exploration plays.

Saskatchewan remains the focus for uranium production and exploration in Canada. Output, some 80 percent of Canadian and one quarter of Western World production, was estimated at 6.5 million kg uranium in 1991, despite the fact that only the Key Lake mine operated at capacity. Some dozen companies are still exploring in the Athabasca basin. Six major new mining projects are in various stages of advancement. A joint federal/provincial panel was established to review these project proposals.

Gold exploration and development declined in 1991 and only about a dozen companies are now active compared with over 60 in 1988. Most work continues to be concentrated in the La Ronge and Glennie domains. Mining in the Star Lake gold camp has stopped: the Jolu and Jasper mines have closed on schedule and the Star Lake mill will have processed the last Jasper mine ore before the end of 1991. In the Glennie domain, the first gold bar from Claude Resources' Seabee mill was poured in early December.

Most exploration activity for base metals was confined to the sub-Phanerozoic area south and southwest of Flin Flon. In the Wollaston domain, there has been a resurgence of interest in exploration for sedex type deposits hosted by Wollaston Group metasediments.

Diamond exploration continues with most of the activity being focused in the central portion of the province, although other target areas are also being investigated. Although the results of the bulk sampling done in 1991 indicate the pipes evaluated were not economic, many targets are yet to be tested and further exploration is warranted.

Mineral exploration expenditures in Saskatchewan have plateaued, which is a positive sign, and should show some modest growth when the economy starts to

improve. Changes that were made to the Crown Mineral Royalty Schedule in 1984 provide a positive investment climate as mine developers are able to recover all their capital costs before being in a royalty paying position.

4.9 Alberta

Nonpetroleum mineral exploration expenditures failed to achieve expectations for 1991 reaching only an estimated $5.0 million instead of the originally anticipated $7.1 million. However, 1992 expenditures are forecast to rise to $10.0 million with a continuing focus on coal exploration. The number of coal exploration drillholes is forecast to be 907 for 1992 compared to 857 in 1991 and 723 in 1990.

While Alberta's nonpetroleum exploration spending continues to be concentrated on coal, media reports suggested that 1991 saw the introduction of some diamond exploration activity. Uranium exploration, however, virtually ceased.

The year 1991 produced a marked decline in the number of agreements issued. A total of 125 mineral agreements for 27 720 hectares were renewed and 102 new agreements encompassing 7752 hectares were issued. Only 5 exploration permits covering 3264 hectares were issued. The value of assessment work on the exploration permits is anticipated to be $32 000 in the first year.

The persistence of the recession, coupled with concerns about increasing environmental regulations appear to have produced a growing interest in international opportunities. Although Alberta exploration spending is expected to increase, flow-through share funding cannot be considered a factor in attracting investment. Flow-through funding in 1991 dropped to 5.5 million and is expected to remain at this level in 1992. A negligible portion of this applies to Alberta's mining industry.

4.10 British Columbia

Regional Summary - 1991

While 1991 saw a number of significant developments in British Columbia, it was also a year of severely decreased exploration activity, particularly by junior companies and individual prospectors. A lack of investor confidence, softening base and precious-metal prices, and increased concern over land use issues, all combined to reduce exploration activity. Mineral claim staking fell by over 40 percent in 1991 to 58 174 new mineral units recorded. According to federal/provincial surveys, total expenditures on mineral exploration were also down considerably, to $158 million from $226 million in 1990. Forecasts for 1992 show a further decline to $113 million.

Project Highlights

The **Windy Craggy** copper-gold-cobalt project of Geddes Resources Ltd. is awaiting recommendations expected this fall by the Committee on Resources and the Environment (CORE). Land and water use issues for the Tatshenshini-Alsek region of northwestern B.C. have been referred to the committee by cabinet for public consultation.

International Corona Corp. had good results from a significant underground drilling and development program, and carried out engineering and environmental studies at its rich **Eskay Creek** gold-silver deposit. Construction of the 37 kilometre, multiple resource access road from Bob Quinn Lake to the confluence of Volcano Creek and the Iskut River was virtually completed in 1991. The company has delayed its application for a Mine Development Certificate until 1993, but will be providing an updated prospectus.

A Mine Development Certificate is pending for the **Stronsay** (formerly **Cirque**) zinc-lead-silver project. Once certified, it is expected to process 3500 tonnes of ore per day and employ 300 people for the expected 15 years plus of mine life.

Underground development continued at the **Samatosum** (Minnova Inc. and Rea Gold Corp.) open-pit lead/zinc/silver/gold mine in 1991. Underground drilling discovered a new gold zone in April 1991. However, present reserves will be depleted with the mine expected to close by year-end.

Bethlehem Resources Corp. completed rehabilitation of the **Goldstream** copper-zinc mine near Revelstoke and began production in May 1991.

Westmin Resources Ltd. made two significant discoveries at their Myra Falls copper-lead-zinc-silver-gold mine. The **Gap** zone was discovered in May 1991, and the **Battle** zone in late 1991. A decision to proceed with development of the **Gap** zone was made in August 1991.

Habsburg Resources Inc. (formerly Teeshin Resources Ltd.) and Timmins Nickel Inc. carried out a program of surface and underground drilling and drifting on the **Dome Mountain** project near Smithers. The project began shipments of gold in January 1992.

Exploration Highlights

In spite of reduced activity overall, significant progress was made on several major, large tonnage deposits last year. Activity was primarily in the central and northern parts of the province, in pursuit of precious and base-metal targets. Two projects in particular, **Fish Lake** and **Kemess**, made considerable progress in outlining large

low-grade copper-gold deposits. A successful drilling program on the **Kemess South** copper-gold project (60 percent El Condor Resources, 40 percent St. Phillips Inc.) resulted in indicated reserves of 229 million tonnes, grading .23 percent copper and .651 grams per tonne gold. The **Kemess** project has now entered the Mine Development Assessment Process (MDAP). Taseko Mines Ltd. carried out a substantial 10-hole large diameter drill program at its **Fish Lake** copper-gold porphyry project, resulting in significantly improved grade and continuity of mineralization. This project is also expected to enter the MDAP before year's end.

In the Stikine region, Kennecott Canada Inc. and Hudson Bay Mining and Smelting Co. Ltd. completed a major drilling and extensive re-assaying program, and air and ground geophysics on and around the main **Galore Creek** deposit. Ten kilometres east of **Galore Creek**, Consolidated Rhodes Resources Ltd. completed a trenching program on the **Copper Canyon** and **Copper Penny** properties.

Newhawk Gold Mines Ltd. and Granduc Gold Mines Ltd. carried out an extensive surface exploration program on their **Sulphurets** copper-gold property, located 65 kilometres northwest of Stewart. This work was focussed mostly on porphyry copper-gold zones with bulk mineable potential.

On northern Vancouver Island, Moraga Resources Ltd. carried out further drilling on the **Hushamu** zone of the **Expo** property. It was optioned from BHP-Utah Ltd. which operates the nearby **Island Copper** mine. Moraga and Crew Natural Resources Ltd. also carried out a preliminary mineral inventory and optimized pit study on their nearby **Red Dog Hill** zone. Both deposits are viewed as potential sources of ore for the Island Copper mine where reserves will be depleted in 1997. The **Red Dog Hill** project has now entered the Mine Development Assessment Process. The company submitted a prospectus in April 1992.

Cominco Ltd. and Redfern Resources Ltd. completed another successful drilling program at their **Tulsequah Chief** property, confirming and extending favourable drilling results obtained in 1990 on this volcanogenic massive sulphide deposit.

American Fibre Corp. and Silver Butte Resources Ltd. completed a major diamond drilling program on the **Sib** deposit. Mineralization at Sib is similar in character and geologic setting, and only 5 kilometres southwest of Eskay's precious-base-metal zone.

Granges Inc., in joint venture with Springer Resources Ltd. and Cove Resources Corp., completed a drilling program and obtained significant intersections of gold and silver mineralization on the **Unuk River** project. This property is only five kilometres south of the Eskay Creek deposit and in a similar geologic setting.

Approximately 40 kilometres west of Eskay Creek, along the Iskut River, Eurus Resource Corp. and Thios Resources Inc. completed a program of diamond drilling, air and ground geophysics and geochemistry on the **Rock and Roll** volcanogenic massive sulphide project.

Along the Fraser Valley near Harrison Lake, Minnova Inc. continued detailed geological studies, followed by drilling on the **Seneca** project. Work to date has been rewarded by the discovery of the **Vent** and the **Fleetwood** zones in addition to the original Seneca deposit on this massive sulphide target.

In the southeastern corner of the province, eight kilometres south of the Cominco Ltd. **Sullivan** mine, Chapleau Resources Ltd., Barkhor Resources Inc. and Kokanee Explorations Ltd. (as operator), carried out a drilling program on the **Darlin** project. They encountered five massive sulphide beds from 15 to 60 centimetres thick in stratigraphy similar to that which hosts the Sullivan orebody.

Canarc Resource Corp. and Suntac Minerals Corp. carried out a diamond drilling program at their **Polaris-Taku** property, a gold quartz vein deposit located approximately 100 kilometres south of Atlin.

4.11 Northwest Territories

In 1991, the Northwest Territories (NWT) again ranked fifth in the value of Canada's metallic mineral production, supplying 5.1 percent of all metallic minerals from five gold mines and two zinc-lead mines: 20.7 percent of Canada's zinc, 13.1 percent of its lead, 9.4 percent of its gold and 1.6 percent of its silver. Metal shipments were valued at $529.3 million, a decline of 25 percent from $703.8 million in 1990. Data for 1990 show mining (plus oil and gas) accounted for 26 percent of the NWT Gross Domestic Product; it is estimated that mining alone accounts for 20 percent of GDP.

Approximately 55 percent of the estimated 1850 jobs in the NWT mining sector are held by territorial residents. Participation by native northerners stands at about 7.6 percent of employees. The mining sector paid $100 million or 10 percent of all salaries in the NWT, according to 1990 statistics.

Operating mines in the Northwest Territories have worked hard to meet the challenges of falling metal prices during this recessionary period. The Nerco-Con mine exceeded their previous year's production record by 5 percent, pouring 123 093 ounces of gold in 1991, their mill capacity was expanded to 1200 tons per day and construction on a $20 million autoclave circuit was started. Royal Oak's Giant mine produced 102 400 ounces of gold, cut operating costs and sold their gold future-sale (hedging) contracts to become debt free. The small

(200 tons/day) Ptarmigan mine at Yellowknife experienced financial and operational problems resulting in a cutback to one shift per day. The Lupin gold mine extended their shaft to a depth of 4000 feet, increased mill throughput to 2000 tons/day, restructured some staff work schedules and produced 216 877 ounces of gold. During 1991, the Nanisivik mine produced 108 250 tons of zinc concentrate (60 400 tons of zinc metal) and 550 000 ounces of silver. Cominco's Polaris mine produced 247 465 tons of zinc concentrate (153 467 tons of zinc metal) and 45 207 tons of lead concentrate (35 362 tons of lead metal).

Exploration expenditure levels for 1991 were $29.64 million, compared with $38.03 million in 1990, according to a recent survey conducted by the NWT Chamber of Mines. The NWT has maintained a relatively consistent 6 percent of total Canadian mineral exploration dollars. During the year, 831 mineral claims were recorded for a total of 666 374 hectares, with 824 claims (473 865 hectares) returned to the Crown, bringing the in-good-standing totals to 3859 mineral claims covering 2 519 428 hectares.

The 1991 area under mineral claims in-good-standing is consistent with 1988/1989 values and above the 1990 figures, however, representation (assessment) work filed totalled only $6 533 062, the lowest dollar value recorded since 1977. In light of exploration developments in late 1991 and early 1992, it is anticipated that the 1992 figures for exploration expenditures, claims staked, area under mineral claim and representation work filed will reverse recent (declining) trends.

Advanced exploration in the NWT is on the upswing. The Izok Lake copper-zinc-silver deposit is the target of a detailed drilling program and pre-feasibility analysis. The owners, Minnova Inc. and Metall Mining, are participating with government and other companies in a transportation study to evaluate bulk shipping from tidewater on the Coronation Gulf. At Homestake's George Lake gold deposit, an underground bulk sampling and deep drilling program has been proposed as the next step towards a production feasibility study.

The announcement by Dia-Met Minerals and BHP-Utah that diamonds have been found in the Lac de Gras area of the central Slave geological province has captured the imagination of the public, investors and exploration companies around the world. The first exploration drillhole resulted in the recovery of 81 micro-diamonds from a 59 kg kimberlite sample. This initiated a lot of claim staking.

Of the 666 374 hectares in mineral claims recorded during 1991, 434 844 hectares were submitted to the mine recorder's office in the last two months. From January 1 to April 10, 1992, applications to record mineral claims covering

1 496 703 hectares were submitted. From the time the rush began until May 1992 approximately 4 500 000 hectares (45 000 sq. km) have been staked, centred on the Lac de Gras diamond discovery site.

4.12 Yukon

Production Summary

Production from Curragh Resources' Faro underground and Vangorda open-pit mines continued in 1991. The company has experienced great difficulty in raising the capital necessary for waste rock stripping at the new Grum deposit, and it is expected that production will be suspended after the two existing pits are exhausted towards the end of 1992. In July 1991, the Mount Hundere Joint Venture (Curragh Resources and Hillsborough Resources) commenced production at the new Sa Dena Hes mine near Watson Lake. The mine has a projected life of nine years with current reserves of 4.9 million tons with a grade of 4 percent lead, 12.7 percent zinc and 60 g/t silver. Gold production from approximately 150 placer mining operations was about 111 970 crude ounces during 1991, a decline of about 15 percent from the previous year. There was also minor production of jade and rhodonite. Preliminary estimates by EMR have put the total value of mineral production for 1991 at $346 million, down considerably from the $541 million reported in 1990.

Exploration Summary

Exploration work was carried out on approximately 60 mineral properties in the Yukon in 1991. A total of 4767 new quartz claims were staked, down significantly from 1990. At year-end there were 42 268 claims in good standings, a drop of 2972 from the previous year. The number of placer claims in good standing increased slightly in 1991 to about 18 000. According to information compiled by DIAND Exploration & Geological Services Division, total exploration expenditures in 1991 were about $16 million, up from $12 million in 1990. Projects by seven major corporations accounted for 75 percent of the total, and with one major exception all these projects were directed at base-metal properties.

Advanced exploration programs were conducted on two deposits. At the Brewery Creek gold property, Noranda Exploration and Loki Gold completed 34 diamond drill holes and 375 rotary drill holes, and announced drill-indicated reserves of 15 Mt at 1.7 g/t gold. At the Williams Creek copper/gold property, Western Copper Holdings and Thermal Exploration completed 55 diamond drill holes, and revised their reserve figures for the main oxide zone to 13 Mt at 1.06 percent copper. Work towards preliminary feasibility studies at both properties is continuing in 1992.

Forecast for 1992

In May 1992, the Yukon Prospectors' Association released the results of a survey that indicated that only about $8 million would be spent on exploration in 1992. This would represent a 50 percent decline from 1991, and the lowest figure in more than two decades. Once again it is expected that most of the expenditures in 1992 will be made by major corporations, with junior companies having withdrawn almost completely from Yukon. On the other hand, the number of individual prospectors working in Yukon has increased significantly.

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 1991 and 1992 levels of exploration activity are described on a preliminary and forecast basis, respectively. The data for these two years were collected between December 1991 and March 1992.

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 1992 period. Table 3b reports the same information, but in 1991 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, and likely to remain so in 1991 and 1992. Indications are that in 1991, exploration expenditures in Ontario declined by another 30 percent, a decline comparable to that of 1990. In 1991 and 1992 exploration expenditures in British Columbia are expected to be comparable to those in Quebec.

Total Canadian exploration expenditures appear to have decreased by 23 percent between 1990 and 1991 and are expected to decrease by another 16 percent in 1992.

In 1990, exploration expenditures increased somewhat in New Brunswick, Manitoba and the Yukon. Exploration expenditures in Alberta were at their highest level since 1985, largely because of exploration for diamonds. Before 1989, exploration in that province had been primarily for coal. In 1990, exploration expenditures were down significantly in Newfoundland, Nova Scotia (by 50 percent), Saskatchewan and the Northwest Territories.

TABLE 3A. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985–92

Province	Field Work Only				Total Exploration(1)			
	1985	1986	1987	1988	1989	1990	1991p	1992f
	($ Millions)							
Newfoundland	11.9	12.3	27.7	37.7	36.2	23.3	12.2	11.1
Nova Scotia	7.8	17.2	41.6	46.7	21.4	11.0	4.7	2.4
New Brunswick	12.1	10.8	9.1	13.8	13.6	16.5	18.9	17.0
Quebec	135.2	241.4	415.5	328.2	185.0	196.4	156.2	123.3
Ontario	93.2	136.8	308.1	343.6	217.8	152.6	107.6	98.0
Manitoba	33.7	26.3	40.0	30.0	37.0	41.2	30.9	26.2
Saskatchewan	39.4	36.8	63.5	61.1	63.3	42.2	50.0	53.5
Alberta	14.7	3.0	2.5	4.3	6.2	10.7	6.8	6.0
British Columbia	73.0	63.1	142.6	196.8	186.6	226.5	158.5	113.2
Yukon Territory	22.7	27.9	29.0	38.6	15.1	18.4	15.3	10.8
Northwest Territories	46.8	35.8	59.0	66.5	45.7	36.0	33.7	36.0
Total Field Work (Excluding Overhead)	490.5	611.4	1138.6	1167.3	703.5	660.3	na	na
Total Exploration (Including Overhead)	605.8	723.3	1300.0	1350.0	827.9	774.7	594.9	497.5

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 3B. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985–92

Province	Field Work Only				Total Exploration(1)			
	1985	1986	1987	1988	1989	1990	1991p	1992f
	(1991 $ Millions)							
Newfoundland	14.8	14.9	32.1	41.8	38.3	23.9	12.2	10.9
Nova Scotia	9.7	20.9	48.3	51.7	22.6	11.3	4.7	2.4
New Brunswick	15.1	13.1	10.6	15.3	14.4	16.9	18.9	16.7
Quebec	168.3	293.3	482.2	363.5	195.6	201.7	156.2	121.2
Ontario	116.0	166.2	357.6	380.6	230.3	156.7	107.6	96.3
Manitoba	42.0	32.0	46.4	33.2	39.1	42.3	30.9	25.8
Saskatchewan	49.0	44.7	73.7	67.7	66.9	43.3	50.0	52.6
Alberta	18.3	3.6	2.9	4.8	6.6	11.0	6.8	5.9
British Columbia	90.9	76.7	165.5	218.0	197.3	232.6	158.5	111.3
Yukon Territory	28.3	33.9	33.7	42.8	16.0	18.9	15.3	10.6
Northwest Territories	58.3	43.5	68.5	73.7	48.3	37.0	33.7	35.4
Total Field Work (Excluding Overhead)	610.6	742.9	1321.3	1292.9	743.9	678.1	na	na
Total Exploration (Including Overhead)	754.2	878.8	1508.7	1495.3	875.4	795.6	594.9	489.0

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, 1985–92

Province	Field Work Only				Total Exploration			
	1985	1986	1987	1988	1989	1990	1991p	1992f
	(Percentage distribution)							
Newfoundland	2.4	2.0	2.4	3.2	4.4	3.0	2.1	2.2
Nova Scotia	1.6	2.8	3.7	4.0	2.6	1.4	0.8	0.5
New Brunswick	2.5	1.8	0.8	1.2	1.6	2.1	3.2	3.4
Quebec	27.6	39.5	36.5	28.1	22.3	25.4	26.3	24.8
Ontario	19.0	22.4	27.1	29.4	26.3	19.7	18.1	19.7
Manitoba	6.9	4.3	3.5	2.6	4.5	5.3	5.2	5.3
Saskatchewan	8.0	6.0	5.6	5.2	7.6	5.4	8.4	10.8
Alberta	3.0	0.5	0.2	0.4	0.8	1.4	1.1	1.2
British Columbia	14.9	10.3	12.5	16.9	22.5	29.2	26.6	22.8
Yukon Territory	4.6	4.6	2.5	3.3	1.8	2.4	2.6	2.2
Northwest Territories	9.5	5.9	5.2	5.7	5.5	4.6	5.7	7.2
Total	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 1989–92 are based on total expenditures, which include related overhead.
Figures may not add to totals due to rounding.

In 1991, preliminary indications are that, with the exception of Saskatchewan and New Brunswick, exploration expenditures were down. The decrease was most notable in Newfoundland and Nova Scotia where expenditures fell by 50 percent relative to 1990. Exploration intentions indicate that in 1992 a further decrease in exploration is likely except in the Northwest Territories and Saskatchewan.

5.3 Exploration Expenditures by Type of Company

Figure 8a depicts field exploration expenditures by type of company from 1985 to 1990 (1991 and 1992 are not available). Total exploration expenditures (fieldwork plus overhead) for 1990, 1991 (preliminary) and 1992 (intentions) are portrayed in Figure 8b. Such data are not available for 1985 to 1988.

From 1985 to 1992, nonpetroleum exploration by oil companies declined in constant dollars by more than 60 percent and exploration by foreign companies by more than 70 percent. In 1977, oil companies accounted for some 24 percent of the total nonpetroleum exploration. In 1990, they accounted for only 1 percent. Foreign companies accounted for over 18 percent in 1973 and 1979, but now account for only 6 percent.

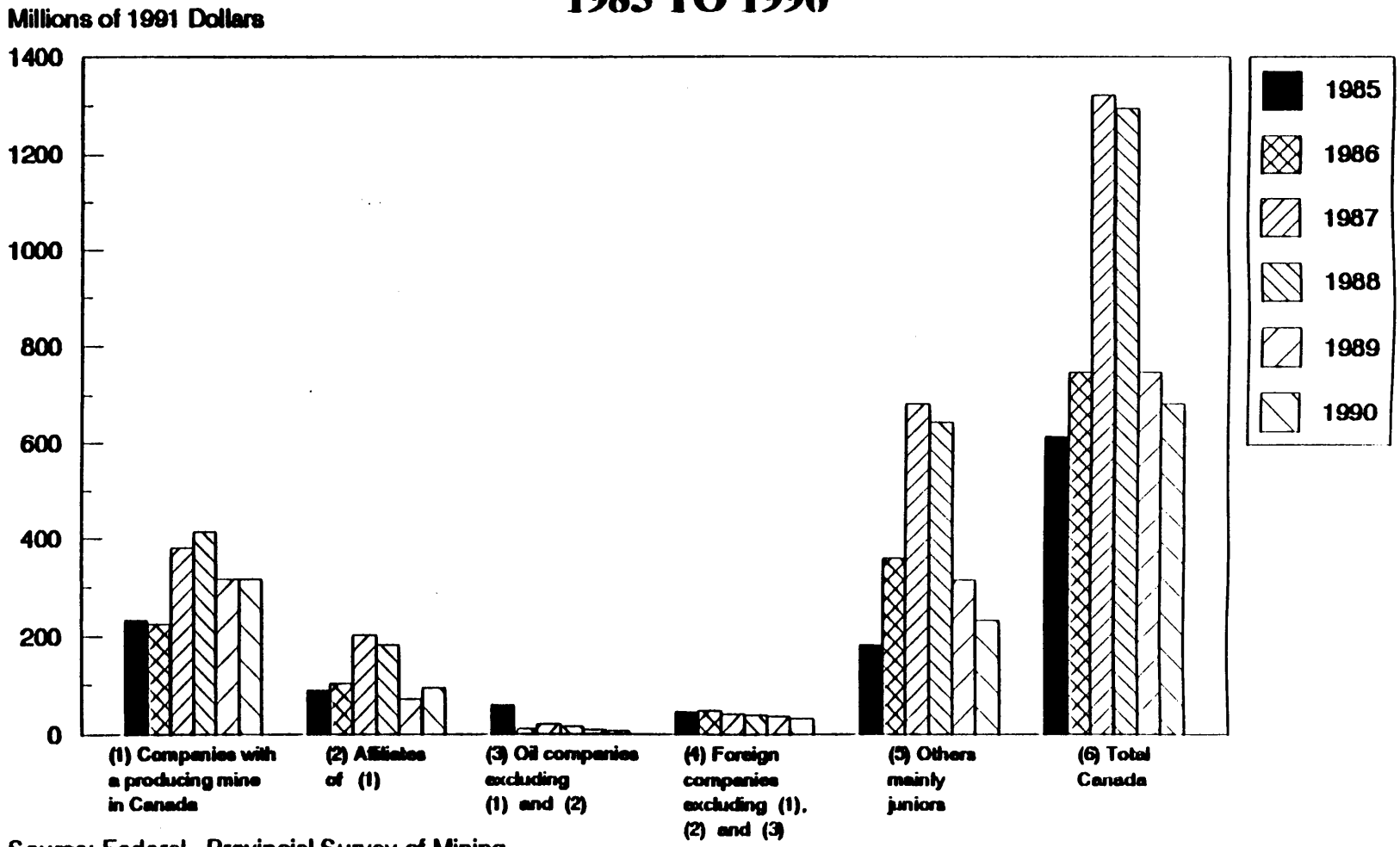
Exploration by producing companies and their affiliates peaked in constant dollar terms in 1987-88 and has declined since. However, this decline may not be as large as it appears because it includes considerable contributions made in 1986-88 by junior companies to joint venture projects mostly operated 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 1991 (Figure 9). Company intentions indicate that the juniors expect a slight increase in their exploration expenditures in 1992. With a decrease in exploration by the seniors, there should be an increase in 1992 in the percentage of exploration funding by the juniors. 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 1992.

In 1977, exploration expenditures by the junior companies were at their lowest in many years (Figure 10). They rose from then until 1987-88. Although junior company exploration expenditures have subsequently declined, they are still considerably higher than during most of the 1970s. 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

Figure 8a

FIELD EXPLORATION EXPENDITURES BY TYPE OF COMPANY 1985 TO 1990



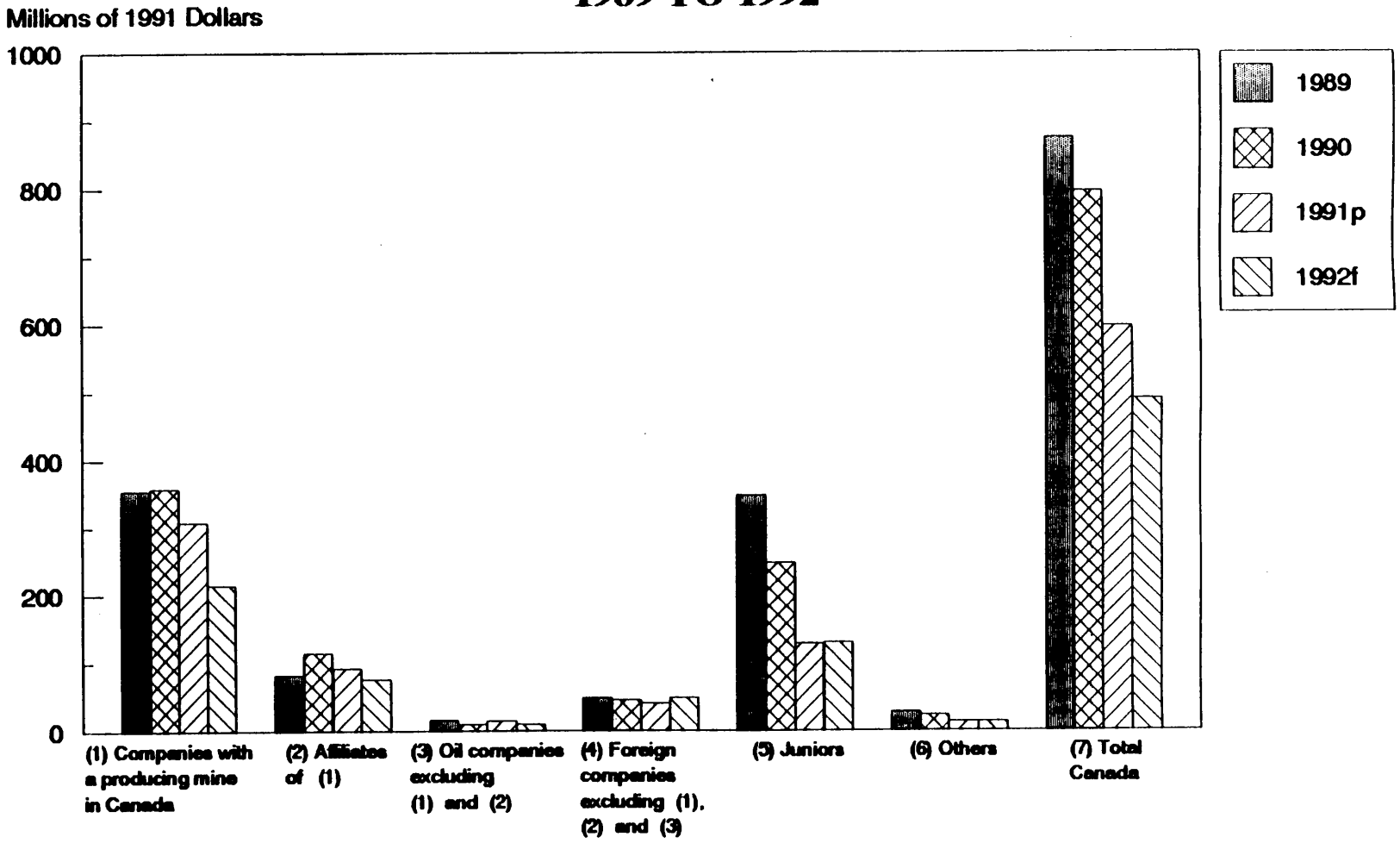
Source: Federal - Provincial Survey of Mining and Exploration Companies.

Note: Overhead expenditures are not included.

Data were adjusted using GDP Implicit Price Deflator.

Figure 8b

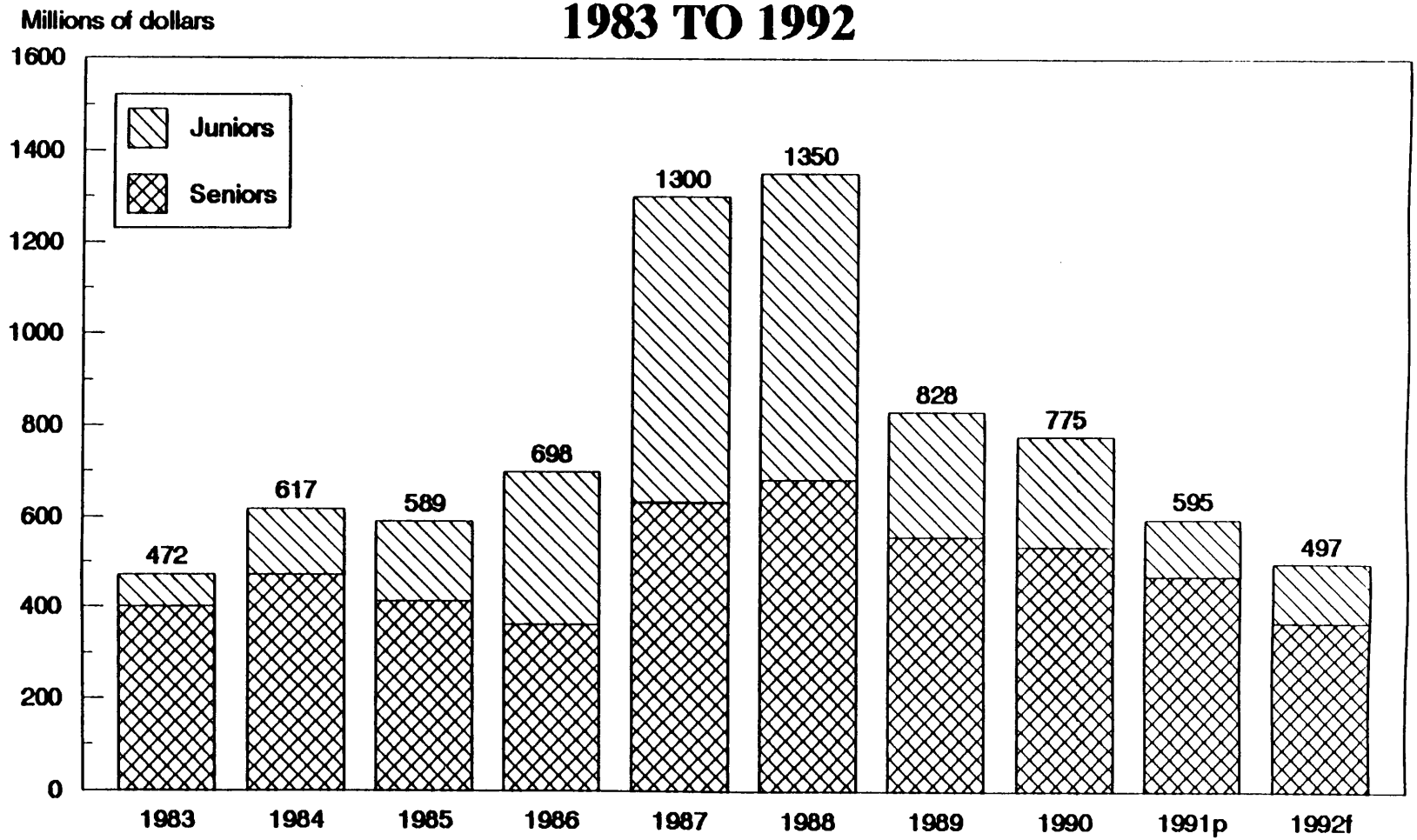
EXPLORATION EXPENDITURES BY TYPE OF COMPANY 1989 TO 1992



Source: 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 Deflator

Figure 9

EXPLORATION EXPENDITURES BY JUNIOR AND SENIOR COMPANIES 1983 TO 1992



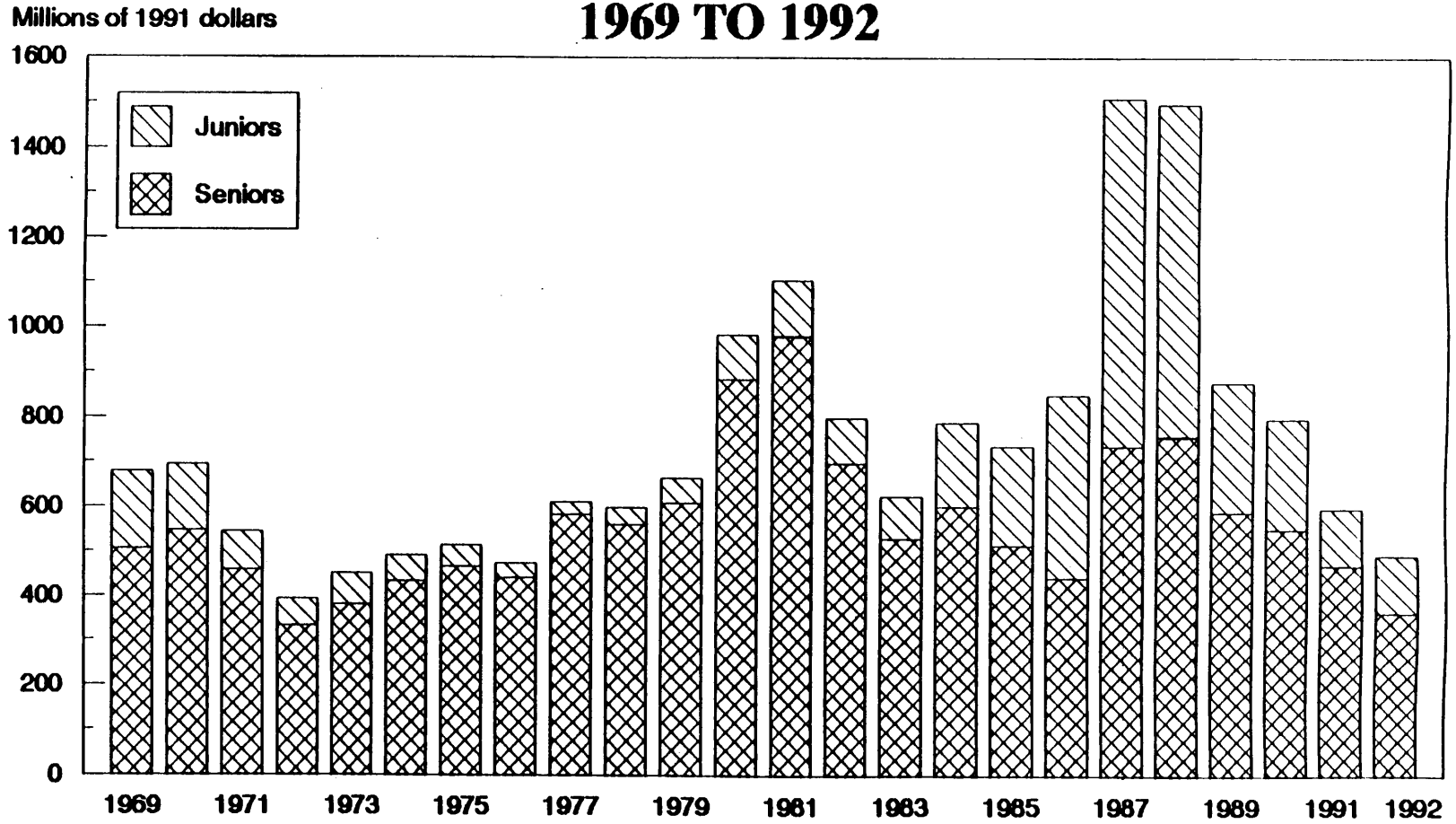
Source: Compiled by EMR Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

p Preliminary estimate; f Forecast.

Note: Overhead expenditures are included.

Figure 10

EXPLORATION EXPENDITURES BY JUNIOR AND SENIOR COMPANIES 1969 TO 1992



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 GDP Implicit Price Deflator.

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. This decline appears to have continued through 1989, 1990 and 1991.

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

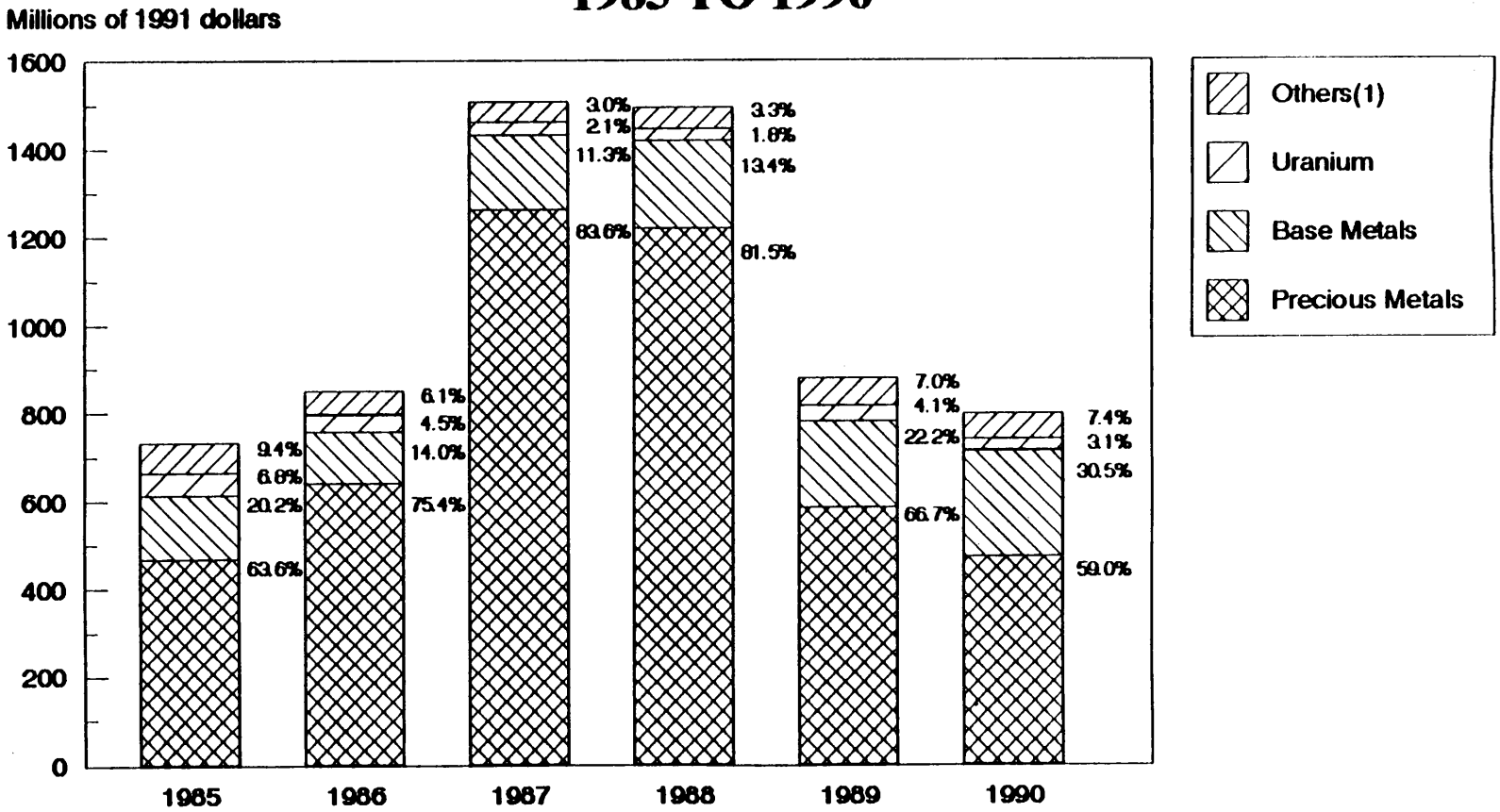
Exploration for precious metals (95 percent for gold during the second half of the 1980s) peaked in 1987 (Figures 11 and 12) and subsequently declined as the availability of flow-through capital decreased and as the gold price declined after the end of 1987. Exploration expenditures for the base metals 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).

In 1987 and 1988, exploration expenditures for all other nonpetroleum 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.

More than $8 million (in current dollars) was spent on exploration for diamonds in 1990 (mainly in Ontario, Alberta and Saskatchewan), an increase from the $5.1 million spent in 1989. It is likely that expenditures in Canada on exploration for diamonds increased further in 1991, and especially in 1992 when good quality gem diamonds were discovered.

Figure 11

EXPLORATION EXPENDITURES BY COMMODITY SOUGHT 1985 TO 1990



Source: Federal - Provincial Survey of Mining and Exploration Companies.

Note: Overhead expenditures are included.

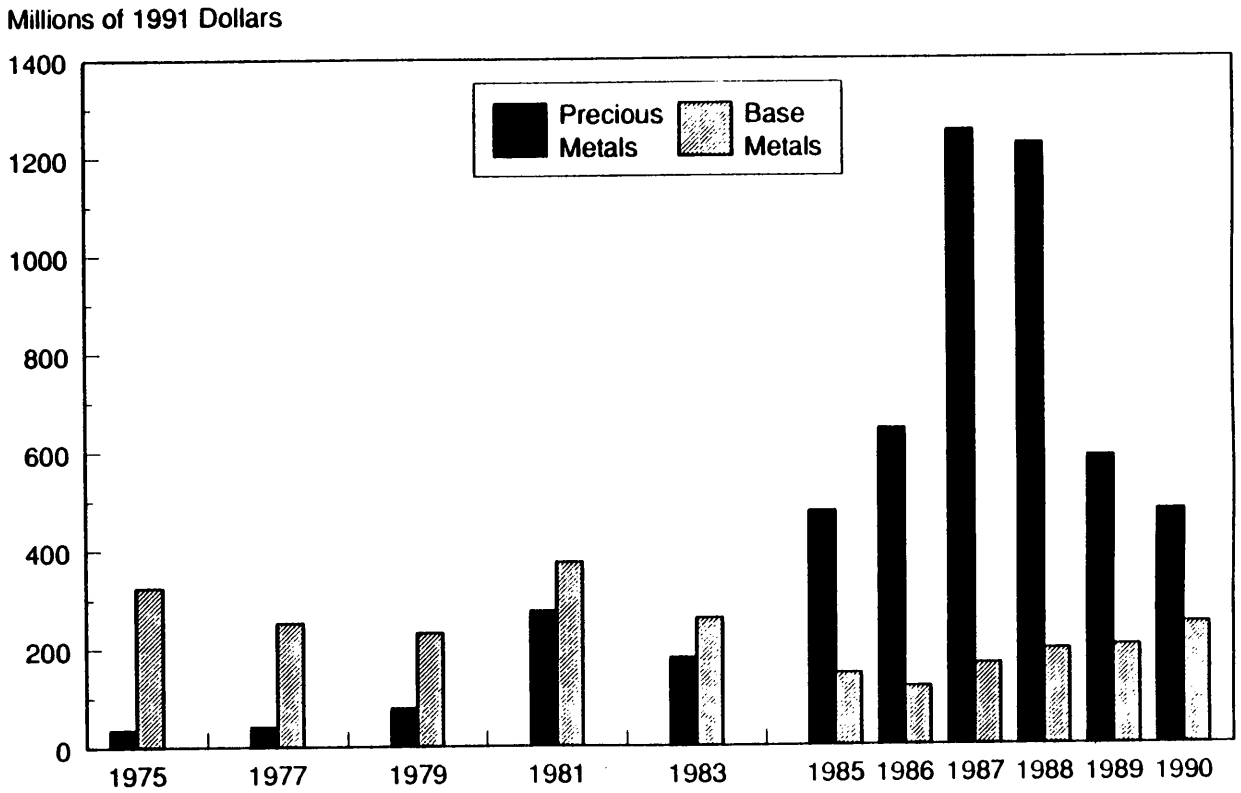
Data were adjusted using GDP Implicit Price Deflator.

(1) Includes ferrous metals, other metals, nonmetals (including coal) and "not specified".

Note: Numbers to the right of bars are percentages of total exploration expenditures directed annually at each commodity group.

Figure 12

CANADIAN EXPLORATION EXPENDITURES FOR BASE METALS AND PRECIOUS METALS 1975 - 90



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 Deflator.

SECTION D. HISTORICAL PERSPECTIVE ON FLOW-THROUGH SHARE FINANCING ACTIVITY 1983-92

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.

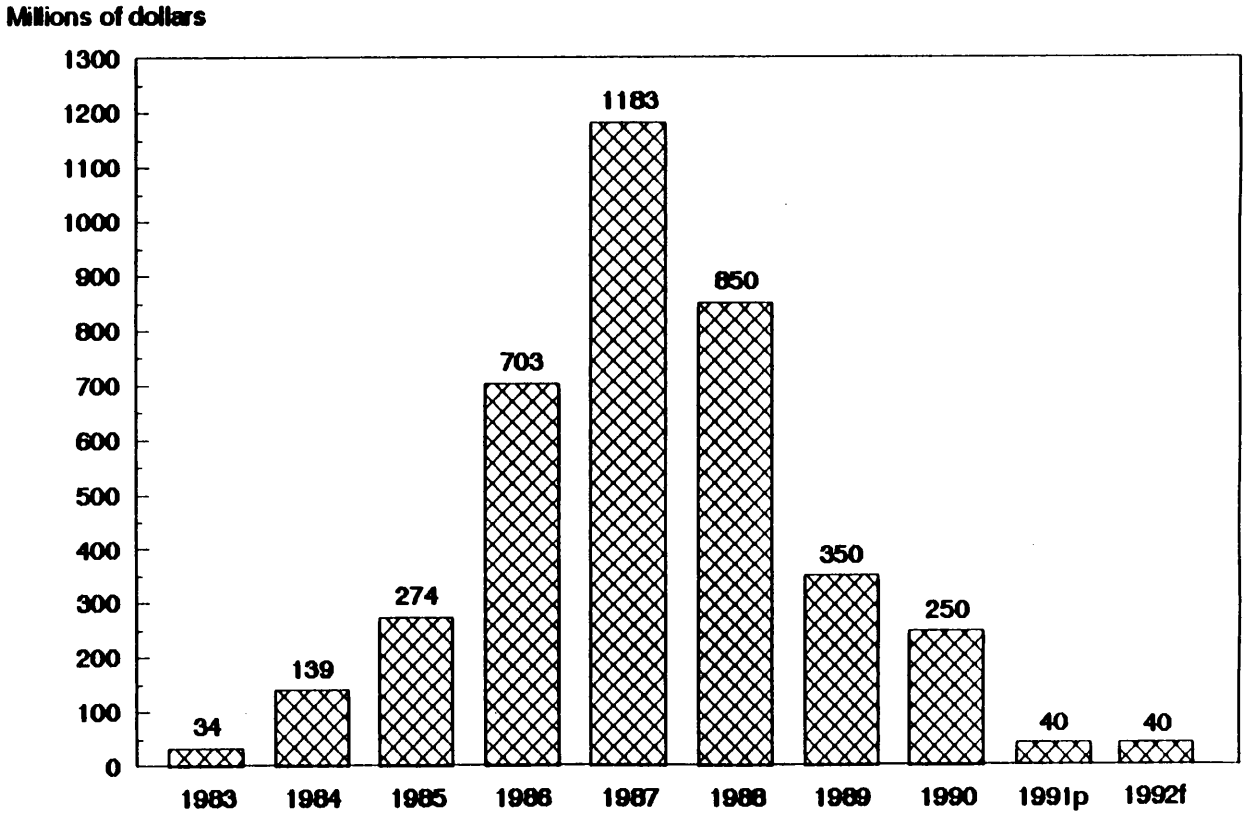
The proportion of total exploration expenditures accounted for by flow-through share financing increased from about 7 percent in 1983 to more than 90 percent in 1986 and 1987. In 1988, however, the level of flow-through financing of mineral exploration declined to approximately 60 percent of total spending, mainly as a result of decreased participation by senior companies in the flow-through share market. The downward trend has continued in 1989, 1990 and 1991 (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 TO 1992



Source: Energy, Mines and Resources Canada.
p Preliminary estimate; f Forecast as of July 1, 1992.

TABLE 5. Ratio of flow-through financing to total exploration expenditures, 1983-92

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[p]	595	40	7[a]
1992[f]	450-500	40	8-9[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 nonpetroleum mineral expenditures.