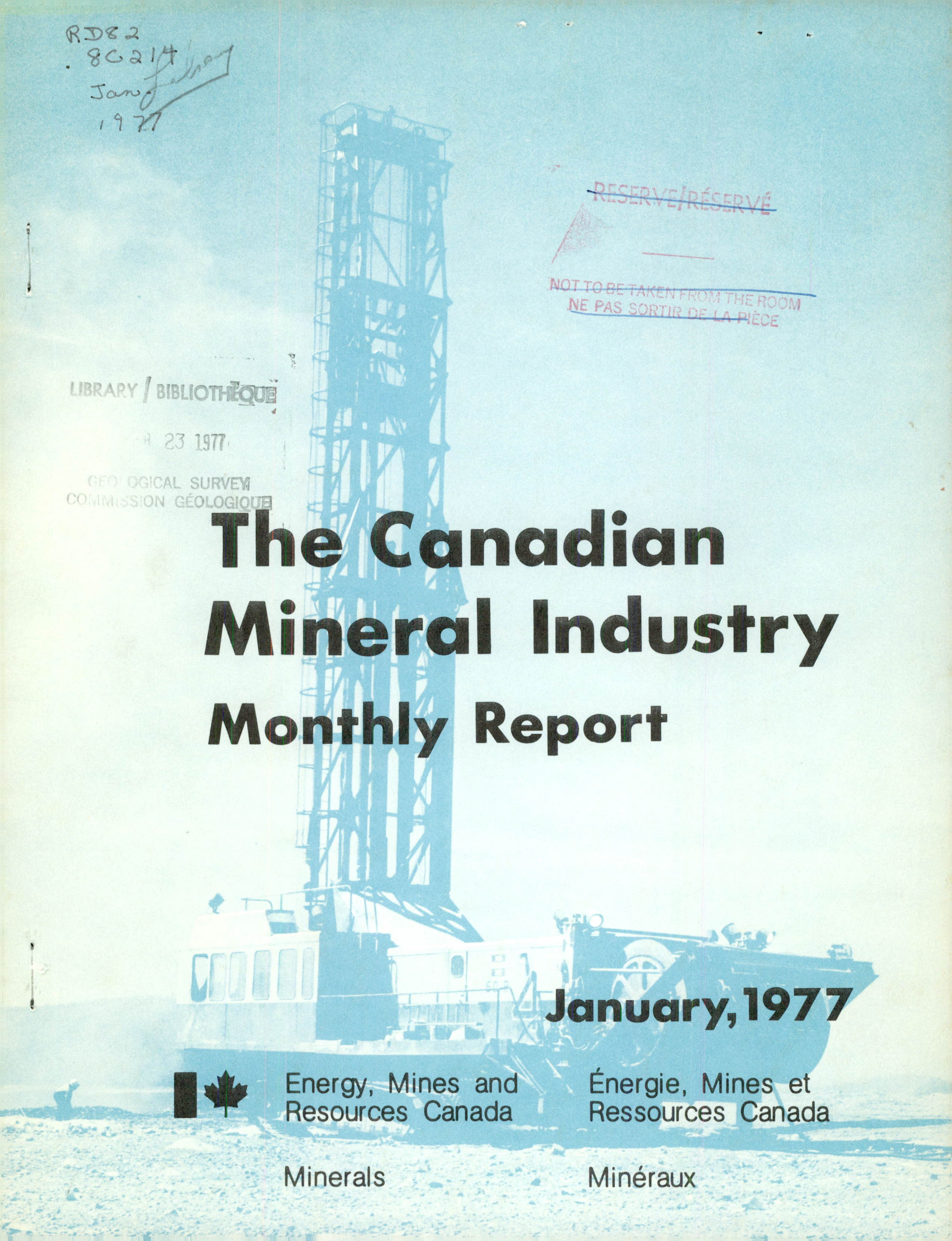

The Canadian Mineral Industry

Monthly Report

January, 1977

Energy, Mines and Resources Canada | Énergie, Mines et Ressources Canada

Minerals | Minéraux

PREFACE

This report is prepared in the Mineral Development Sector of the Department of Energy, Mines and Resources. It is prepared from the best information available to us from many sources, but it is only intended to be a general review of the more important current developments in the Canadian mineral industry and of developments elsewhere that affect, or may affect, the Canadian industry. It should not be considered an authority for exact quotation or an expression of official Government of Canada views.

Ce rapport a été rédigé par le Secteur de l'Exploitation Minérale du Ministère de l'Energie, des Mines et des Ressources. Bien que nous ayons eu recours à de nombreuses sources pour vous fournir les meilleurs renseignements possibles, cet exposé n'a pour objet que de passer en revue les développements actuels les plus importants de l'industrie minière canadienne, de même que les progrès accomplis ailleurs qui peuvent intéresser l'industrie canadienne. On ne doit pas considérer cet exposé comme une source de renseignements précis ou comme l'expression des vues du Gouvernement canadien.

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THE CANADIAN MINERAL INDUSTRY FOR JANUARY

The following constitutes a brief summary of the Canadian mineral industry based upon information that became available in January.

SUMMARY

1. Canada's unadjusted index of Real Domestic Product was 125.6 in November 1976, an increase of 1.1 per cent from October.

2. The November index of Mines, Quarries and Oil Wells was 116.9, an increase of 1.2 per cent from the previous month.

3. The Canada-Newfoundland Mineral Development Agreement, signed December 17, 1976, began on January 1, 1977.

4. As an incentive to boost mining activity, the British Columbia government will allow mining exploration companies to write-off mining exploration expenses to reduce capital subject to tax.

5. The *Employees' Health and Safety Act*, 1976 (Bill 139) was passed by the Ontario Legislature.

6. The Saskatchewan Oil and Gas Exploration, Development and Production Incentive Regulations, 1974, and the Alkali Mining Regulations are amended effective November 1, 1976 and January 1, 1977, respectively.

7. Non-communist world primary aluminum production in 1976 was 10.0 million tonnes compared with 9.7 million tonnes in 1975.

8. Copper prices increased during January.

9. The volume of Canadian gold production increased by 1.9 per cent, the first such increase since 1961.

10. Companhia Vale do Rio Doce of Brazil will supply 376 million tonnes of iron ore over 15 years to a group of Japanese steel mills.

11. Willroy Mines Limited will close its zinc-copper-lead-silver mining operations at Manitouwadge, Ontario.

12. Falconbridge Nickel Mines Limited is proceeding on its Sudbury area capital expenditure programs.

13. Canadian production of the platinum group metals for 1976 is estimated at 13 374 000 grams compared with 12 417 099 grams in 1975.

14. Canex Placer Limited will take a 30 per cent interest in Equity Mining Corporation to assist in the development of the Sam Goosly silver-gold-copper property in British Columbia.

15. Several major European primary zinc producers announced production cut-backs in January.

16. The Ontario Mineral Aggregate Working Party has made its report in "A Policy for Mineral Aggregate Resource Management".

17. Johns-Manville Corporation will delay intended capital expenditures of $64.5 million at its Jeffrey mine complex at Asbestos, Quebec.

18. Kaiser Celestite Mining Limited has discontinued the manufacture of strontium chemicals at Point Edward, Nova Scotia.

19. Tenneco Atlantic Pipeline Co. is seeking permission to construct a 498-mile gas pipeline from the Maine-New Brunswick border to Milford, Pennsylvania.

20. Eldorado Nuclear Limited plans to build a new uranium refinery and waste management complex at Port Granby, Ontario.

ECONOMIC TRENDS

Table 1 shows Canada's unadjusted indexes of Real Domestic Product (RDP). The overall RDP index in November was 125.6, an increase of 1.1 per cent over October.

The RDP index for mines, quarries and oil wells was 116.9, representing a percentage increase of 1.2 from October. The metal mining index decreased by 0.1 per cent to 112.3, while mineral fuels and non-metal mines each increased by 2.2 per cent to 118.4 and 135.5 respectively.

Table 2 compares Canadian production of nineteen major minerals for October and November 1975 and 1976 in volume terms. For the first eleven months of 1976, production increased for thirteen of these over the same period in 1975. The most substantial increases were recorded in asbestos (50.5 per cent), uranium (31.3 per cent) and iron ore (29.2 per cent) production. Lead production decreased by 22.5 per cent.

TABLE 1

Canada, Indexes of Real Domestic Product, by Industries Unadjusted (1971=100)

Industry or Industry Group	1975 Oct	1975 Nov	1975 Average 1st 11 Months	1976 Oct	1976 Nov	1976 Average 1st 11 Months	Percentage Changes Oct 1976 / Oct 1975	Percentage Changes Nov 1976 / Nov 1975	Percentage Changes Nov 1976 / Oct 1976	Percentage Changes 1st 11 Months 1976 / 1975
Real Domestic Product	118.4	120.0	117.4	124.2	125.6	123.6	4.9	4.7	1.1	5.2
Primary Industries										
Agriculture	15.8	26.6	90.8	14.3	32.8	104.3	-9.5	23.3	129.4	14.9
Forestry	85.9	81.4	97.9	127.2	134.1	107.0	48.1	64.7	5.4	9.3
Fishing and Trapping	61.8	51.3	74.3	77.8	64.9	98.2	25.9	26.5	-16.6	32.2
Mines, Quarries and Oil Wells	108.7	114.9	109.3	115.5	116.9	110.0	6.3	1.7	1.2	0.7
Metal Mines	97.5	108.1	102.5	112.4	112.3	109.0	15.3	3.9	-0.1	6.3
Placer and Gold Quartz Mines	77.2	69.6	71.7	72.3	70.0	73.3	-6.3	0.6	-3.2	2.2
Iron Mines	127.1	139.1	113.4	162.6	153.2	142.4	27.9	10.1	-5.8	25.6
Other Metal Mines	91.2	102.3	101.3	101.9	104.3	102.5	11.7	2.0	2.4	1.2
Mineral Fuels	120.4	121.0	118.9	115.9	118.4	110.8	-3.7	-2.1	2.2	-6.8
Coal Mines	198.3	203.7	201.5	225.9	228.2	192.4	13.9	12.0	1.0	-4.5
Crude Petroleum and Natural Gas	114.0	114.2	112.1	106.9	109.4	104.2	-6.2	-4.2	2.3	-7.1
Nonmetal Mines	100.3	123.6	101.0	132.6	135.5	114.0	32.2	9.6	2.2	12.8
Asbestos Mines	65.0	100.5	65.4	107.3	106.7	97.8	65.1	6.2	-0.6	49.4
Secondary Industries										
Manufacturing	117.0	119.6	114.1	121.1	122.5	119.5	3.5	2.4	1.2	4.8
Nondurable Manufacturing	112.4	115.2	112.2	121.6	120.7	117.7	8.2	4.8	-0.7	4.8
Petroleum and Coal Products Industries	115.6	130.3	122.8	114.5	132.2	124.9	-1.0	1.5	15.5	1.7
Durable Manufacturing	121.7	124.1	115.9	120.5	124.4	121.5	-1.0	0.2	3.2	4.8
Primary Metal Industries	105.5	108.3	107.6	99.0	103.4	104.7	-6.2	-4.5	4.4	-2.8
Iron and Steel Mills	106.3	109.9	112.0	108.1	115.8	115.0	1.7	5.4	7.1	2.7
Steel Pipe and Tube Mills	144.1	137.8	144.6	109.3	136.1	117.5	-24.1	-1.2	24.5	-18.8
Iron Foundries	127.3	132.2	104.5	107.4	112.6	104.9	-15.6	-14.8	4.8	0.3
Smelting and Refining	93.4	96.0	97.7	76.1	73.2	84.2	-18.5	-23.8	-3.8	-13.8
Nonmetallic Mineral Products Industries	140.5	132.5	119.8	131.1	129.3	121.2	-6.7	-2.4	-1.4	1.1
Cement Manufacturers	147.9	140.0	120.0	146.7	127.0	121.7	-0.8	-9.3	-13.4	1.4
Ready-mix Concrete Manufacturers	148.0	128.4	114.6	137.8	136.9	118.6	-6.9	6.6	-0.7	3.5
Construction Industry	134.4	130.0	113.2	140.7	131.9	125.0	4.7	1.5	-6.3	10.4
Transportation, Storage, Communication	125.7	122.3	124.2	133.5	133.3	129.7	6.2	9.0	-0.1	4.4
Electric Power, Gas and Water Utilities	114.3	123.8	124.8	121.6	130.0	132.5	6.4	5.0	6.9	6.2
Trade	128.8	136.5	123.3	137.6	143.5	130.8	6.8	5.1	4.3	6.1
Finance, Insurance, Real Estate	124.0	124.4	122.4	130.6	131.1	127.9	5.3	5.4	0.4	4.5
Community, Business and Personal Service	123.1	122.8	119.0	128.0	128.5	123.8	4.0	4.6	0.4	4.0
Public Administration and Defence	118.3	118.1	118.8	121.9	121.4	122.8	3.0	2.8	-0.4	3.3

TABLE 2

Canada, Production of Leading Minerals
('000 tonnes except where noted)

		1975			1976			Percentage Changes		
		October	November	Total 1st 11 months	October	November	Total 1st 11 months	November 76 / November 75	November 76 / October 76	1st 11 months 1976 / 1975
Metals										
Copper		53.1	62.9	652.3	68.9	59.3	669.8	- 5.7	-13.9	+ 2.7
Gold	kg	4 548.9	3 676.8	46 246.7[r]	4 234.3	4 459.0	47 850.1	+21.3	+ 5.3	+ 3.5
Iron ore		3 960.8	4 581.2[r]	40 402.9[r]	4 996.2	5 258.4	52 187.1	+14.8	+ 5.3	+29.2
Lead		35.3	22.8[r]	293.3[r]	21.5	29.0	227.4	+27.2	+34.9	-22.5
Molybdenum	t	1 304.5	934.8[r]	11 731.4[r]	1 088.7	1 215.6	12 649.3	+30.0	+11.7	+ 7.8
Nickel		16.4	19.8	222.2	21.6	19.7	219.6	- 0.5	- 8.8	- 1.2
Silver	t	105.5	96.4[r]	1 121.4[r]	114.5	98.5	1 192.4	+ 2.2	-14.0	+ 6.3
Uranium[(1)]	t	194.6	413.1	3 514.8	396.1	527.7	4 614.4	+27.7	+33.2	+31.3
Zinc		61.3	108.5[r]	948.7[r]	97.4[r]	105.4	973.5	- 2.9	+ 8.2	+ 2.6
Nonmetals										
Asbestos		89.4	138.1	928.4	134.3	136.0	1 397.3	- 1.5	+ 1.3	+50.5
Gypsum		549.4	530.5	5 242.4	714.4	544.0	5 390.1	+ 2.5	-23.9	+ 2.8
Potash K_2O		493.8	343.5	4 302.0	465.6[r]	419.4	4 746.7	+22.1	- 9.9	+10.3
Salt		398.7	406.2	4 665.8	493.5	578.9	5 194.5	+42.5	+17.3	+11.3
Cement		1 063.2	833.7	9 220.6	989.0	895.5	9 310.1	+ 7.4	- 9.5	+ 1.0
Clay products	$000	8 625.9	7 433.5	67 457.2	9 577.5	..	..	..	..	..
Lime		119.3	120.6[r]	1 415.7	149.6[r]	149.1	1 623.8	+23.6	- 0.3	+14.7
Fuels										
Coal		2 289.8	2 178.8	22 929.1	2 498.3	..	..	..	..	..
Natural Gas	000 m^3	7 277 940.2	7 522 201.3[r]	79 154 289.0[r]	7 151 703.6[r]	7 362 381.0	78 725 826.8	- 2.1	+ 3.0	- 0.5
Crude oil and equivalent	000 m^3	7 908.2[r]	7 504.8[r]	83 499.5[r]	7 344.4[r]	7 742.7	76 044.7	+ 3.2	+ 5.4	- 8.9

(1) Tonnes uranium (1 tonne U = 1.2999 short tons U_3O_8).

r Revised; .. Not available.

FEDERAL-PROVINCIAL MINERAL AGREEMENTS

Newfoundland

On December 17, 1976, Canada and Newfoundland signed a five-year Mineral Development Agreement, subsidiary to the General Development Agreement between Canada and the province. It began on January 1, 1977 and will run until December 31, 1981. Signing for Canada were the Honourable Marcel Lessard, Minister of Regional Economic Expansion (DREE), and the Honourable Alastair Gillespie, Minister of Energy, Mines and Resources (EMR).

The objectives are to upgrade basic geoscientific data, to recognize and promote development opportunities, and to develop and evaluate policies and strategies for mineral resource management -- all designed to encourage exploration and development by the private sector for the maximum social and economic benefit to the province. The total estimated cost is $12.458 million, 90 per cent to be funded by Canada through equal sharing by DREE and EMR.

The program consists of three major projects, the design of which was carried out with extensive collaboration among officers of the DREE-Newfoundland office in St. John's, the Newfoundland Department of Mines and Energy, and the Mineral Development Sector (MDS) and Geological Survey of Canada (GSC), both of EMR. This collaboration will continue in the ongoing planning and monitoring of the projects. An officer of MDS will coordinate the EMR involvement and serve as EMR's representative on the management committee. Many components of these projects will continue work begun under the Canada-Newfoundland Mineral Exploration and Evaluation Agreement, which terminated on March 31, 1976.

1. Regional Mineral Potential Evaluation, at a total estimated cost of $8 847 000 will embrace geological mapping and geochemical surveys. In excess of $7 million will be spent on an average of 18 field parties a year doing detailed geological mapping in selected regions with the greatest potential for the discovery and exploitation of mineral deposits. The result will be 1:50 000 geological maps and reports covering about 40 per cent of the Island and 15 per cent of Labrador, an aid to exploration that the province sorely needs. The basic plan was developed in close collaboration with the GSC. The GSC will field complementary parties in both insular Newfoundland and Labrador during this period and will be closely involved with the ongoing planning and monitoring. Regional geochemical surveys will use the balance of the funds and provide maps and reports for use in conjunction with the geological maps and reports in the selection of exploration targets. In the first two to three years these surveys will emphasize uranium and will be carried out as part of the GSC's Uranium Reconnaissance Program.

2. Mineral Development Strategies, at an estimated cost of $2 582 000, will incorporate a variety of activities aimed at creating the basis for identifying opportunities and promoting appropriate development action. Mineral-potential maps, integrating data from all parts of the program, will be published. The mineral inventory file, a product of the previous agreement, will be improved and computerized. Core storage facilities will be built in four locations in the province. Crown-controlled mineral deposits will be evaluated, selected market studies will be carried out, and certain mineral commodity studies will be done with the purpose of identifying and promoting opportunities for development of specific minerals.

3. Mineral Resource Management, at an estimated cost of $1 089 000, will involve a continuation of the mineral development planning project under the previous agreement, which pointed up the advantages of carefully planned studies of the circumstances which bear on opportunities for and constraints to mineral development. Studies under the previous agreement resulted in new policies of mineral land tenure and mineral taxation. These will be reviewed in the light of some experience. Studies of other policy matters will be carried out, all with the aim of improving the climate in which industry functions and providing greater benefit to the province.

TAXATION AND LEGISLATION AFFECTING MINING AND ALLIED INDUSTRIES IN CANADA

Provincial

British Columbia

Corporation Capital Tax Act. As an incentive to boost mining activity, the provincial government announced in its recent budget that it will allow mining exploration companies to write off mining exploration expenses to reduce capital subject to tax under this Act.

Under the present Act, no tax is imposed on a corporation whose taxable paid-up capital, as defined, is less than $100 000. A corporation with taxable paid up capital of $100 000 or more is liable for a tax of one-fifth of one per cent of the amount taxable. The before and after taxes are compared below:

Taxable Capital	$1 000 000		
Tax before budget		$2 000	
Exploration Expense	100 000		
Tax after budget		1 800	
Tax saving			$200

Ontario

The *Employees' Health and Safety Act*, 1976 (Bill 139) was passed by the Ontario Legislature. It provides that an employee may refuse to work where he believes an unsafe condition exists. In such cases, the employer must investigate and should the employee still refuse to return to work, an inspector or an engineer must be called in to make a decision on the matter. The Act also empowers the Minister of Labour to order an employer to establish joint (i.e., worker/management) health and safety committees in the workplace and provides guidelines for the operation of these committees.

The Act also consolidates responsibility for health and safety programs in the Ministry of Labour by transferring to that Ministry the administration of Part IX of the *Mining Act* (which deals with the operation of mines) from the Ministry of Natural Resources, and the *Silicosis Act* from the Ministry of Health.

Saskatchewan

The Oil and Gas Exploration, Development and Production Incentive Regulations, 1974, are amended effective November 1, 1976, as follows:

A new formula replaces the table formerly used in the calculation of the mineral income tax or royalty surcharge reduction.

The section granting a credit has been revised to include the authorization of a payment from the Energy and Resources Development Fund.

For new oil production the reduction in the mineral income tax or royalty surcharge applies to the oil produced during 72 consecutive months commencing with the first month of production. The amount of reduction is to be determined using a deduction modifier factor of 0.55 in the case of mineral income tax and 0.65 in the case of royalty surcharge.

The same factors are to be used in the determination of the deductions for incremental oil production.

A new section is added concerning a deduction for workovers, repairs and maintenance.

The Alkali Mining Regulations are amended effective January 1, 1977, by changing 3.9 to 10 in the formula for calculating the royalty. The royalty formula now reads:

$$R = \frac{10}{100} \times \text{value received for the products} \times F$$

where F is variable according to the tonnage of products sold during the year. The year is changed to the calendar year.

METALLIC MINERALS AND PRODUCTS

Aluminum

Preliminary statistics published by the International Primary Aluminum Institute show that non-communist world primary aluminum production in 1976 was 10.0 million tonnes compared with 9.7 million tonnes in 1975. Producer stocks of primary aluminum were reduced from 3.1 million tonnes at the start of the year to about 2.3 million tonnes at the end of the year. These stocks are now down to within a half month's supply of what producers consider to be normal.

A $1.9 billion aluminum complex in Libya, slated for production by 1980, has been announced by a Yugoslav consortium. The group will construct an aluminum plant, a petroleum coke facility and a thermal power station. Another $150 million will be spent expanding bauxite mining and alumina refining capacities in Yugoslavia to supply the Libyan complex.

Alcan Aluminium Limited estimates the cost of strikes at its Canadian smelters in 1976 at $90 million before tax. This includes the fixed charges of idle plant, the extra cost of purchased metal to supply customers, and about $30 million in start-up costs at potlines closed by the strikes. Alcan expects to be operating at full capacity by mid-February at all its smelters except its Shawinigan smelter where workers had been on strike since November 3, 1976. This strike was settled January 28 and employees started back to work January 31.

Copper

Copper prices increased during January. London Metal Exchange (LME) prices for copper wirebar increased from 62 (U.S.) cents a pound at the beginning of the month to 64 (U.S.) cents a pound at month-end. In a number of price moves late in January, United States copper producers effectively raised their price by 3 cents a pound. Canadian producers followed. The new prices as of February 1, 1977 were: 68 (U.S.) cents a pound in the U.S. and 69.375 cents a pound in Canada for cathode; 68.625 (U.S.) cents a pound in the U.S. and 70.0 cents a pound in Canada for wirebars.

LME and New York Commodity Exchange (COMEX) warehouse stocks of copper rose further during January. On Friday, December 31, 1976, stocks were 603 475 tonnes in LME warehouses and 182 352 tonnes in COMEX warehouses. By January 28, 1977 these stocks had increased to 614 076 and 183 625 tonnes respectively.

Sherritt Gordon Mines Limited has approved a plan to develop the Ruttan underground mine, subject to arrangements for suitable financing. Diamond drilling carried out last year permitted a redetermination of the ore reserves in the underground mine to the 1 400-foot level. It is estimated that development to this level would cost approximately $30 million. Sherritt hopes to have an orderly transition to underground mining from the current open pit operation. Production from the underground mine is planned to start in 1979, while open pit production is expected to cease in 1982. The underground mine will have the capacity to produce 1.8 million tonnes of ore per year.

Six Japanese copper smelters will start negotiations shortly with three major concentrate suppliers for an increase in smelting and refining charges. This increase in charges is claimed to be necessary to cover increases in the cost of Japanese labour, power and supplies. One of the suppliers, Lornex Mining Corporation Ltd., delivers approximately 45 000 tonnes of copper in concentrate from the Lornex mine in British Columbia. Granisle Copper Limited will negotiate a new copper concentrate sales contract early in 1977. Granisle's present contract with two Japanese smelting companies expires at the end of March.

Canex Placer Limited, a subsidiary of Placer Development Limited, has signed a letter of intent with Equity Mining Limited for the purchase of a 30 per cent interest in Equity Mining for $2.3 million. Consideration is being given to developing the Sam Goosly property by the late 1970s. For additional information see report on "silver".)

It is reported that Bell Canada is in the forefront of the practical application of fibre optics in the field of communications. Bell is reported to have estimated the world market for fibre optics at $1.6 billion by 1990. These developments will displace copper usage from one of its most important markets. The advantages offered by fibre optics compared with copper include greatly reduced bulk and weight, and a more stable price structure.

Gold

At the sixth auction a total of 780 000 ounces of gold offered by the International Monetary Fund (IMF) in Washington, D.C. on January 26, 1977 was sold at a common price of $133.26 (U.S.) an ounce. Successful bids ranged from $142.00 (U.S.) an ounce to the common price of $133.26. In all, bids were received for 2 003 200 ounces - much below the total of 4 307 200 ounces bid at the fifth auction in December. The successful bid price was also lower than the $137.00 an ounce obtained at the fifth auction. The afternoon fixing price on the London Gold Market on January 26 was $132.15 an ounce, slightly below the common bid price. The successful bidders were primarily Swiss and German banks and London and North American bullion dealers.

The IMF announced that the bid format on future gold auctions will be altered. Auctions will take place on the first Wednesday of each month and 525 000 ounces of gold will be offered for sale at each bid. The next auction will take place on March 2, 1977.

At the meeting of the twenty Finance Ministers of the IMF Interim Committee held in Jamaica on January 7-8, 1976, an agreement was reached on the disposition of part of the IMF's official gold reserves. It was agreed that 25 million ounces would be auctioned over a four-year period and that an additional 25 million ounces would be restituted over the same four-year period to member nations at the official gold price. The restituted gold would be made available in four equal parts of $6\frac{1}{4}$ million ounces at or near the end of each year. The first program in the planned restitution began on January 10, 1977 and by the end of the month had been completed. In all, 5 998 431 ounces of gold were sold to 112 member countries. Seventeen countries did not receive any gold. Some countries elected to take the option of purchasing their share of the gold for their currencies after the IMF's Articles of Agreement are amended.

In 1976, gold production in Canada was estimated at 53 400 000 grams (1 686 000 ounces) valued at $207.8 million, compared with 51 433 114 g (1 653 613 ounces) in 1975 valued at $270.8 million. Volume of production increased by 1.9 per cent, the first increase in Canadian gold output since 1961. The sharp drop in the price of gold reduced the dollar value of Canadian output by 23.3 per cent. It is expected that gold production in Canada will continue its long-term downward trend in 1977. The average price of gold for 1976, based on the afternoon fixing price on the London Gold Market, was $124.84 (U.S.) ($123.16 Cdn.) an ounce compared with $161.02 (U.S.) ($163.78 Cdn.) in 1975.

The gold price was comparatively stable during the month. The high price of $136.10 (U.S.) an ounce on the London Gold Market for the month of January was obtained at the month's opening fixing and the low price of $129.40 (U.S.) an ounce was reached on January 11. The monthly average of the afternoon fixing gold price on the London Gold Market for January 1977 was $132.20 (U.S.) ($133.64 Cdn.) compared with $133.88 (U.S.) ($136.41 Cdn.) an ounce in December.

Iron Ore

Companhia Vale do Rio Doce (CVRD) of Brazil will supply a total of 376 million tonnes of iron ore having a sales value of $6.7 billion at current prices to a group of Japanese steel mills over a 15-year period commencing in 1977. This sale, considered the largest in the international iron ore market, includes the supply of 285 million tonnes of direct-shipping ore having a value of $4 billion and a contract for the sale of 91 million tonnes of iron ore pellets valued at $2.7 billion. Some 40 per cent of the quantities sold will be transported by Docenave, the shipping subsidiary of the CVRD group, for an additional $1 billion in maritime freight receipts.

The Japanese industry currently consumes 140 million tonnes of iron ore a year, of which Brazil supplies about 12 per cent. With the signing of the new contract, Brazil will be supplying approximately 25 per cent of total Japanese iron ore requirements by 1980.

Lead

Willroy Mines Limited announced that it will close its zinc-copper-lead-silver mining operations at Manitouwadge, Ontario. Annual production of copper, lead and zinc contained in concentrates is about 1 500, 500 and 10 000 tonnes respectively. The annual output of silver was about 10 000 kilograms. The closure will take about six months to complete.

The Indian government has decided to establish a stockpile containing up to 27 000 tonnes of lead. The country consumes about 55 000 tonnes of metal a year while only producing about 5 000 tonnes of refined metal.

Two secondary lead smelters owned by Refined Metals Corporation, a subsidiary of ESB Incorporated (itself a wholly-owned subsidiary of Inco Limited), are presently being expanded to twice their existing capacity by year-end 1977. The plants, in Jacksonville, Flordia, and Memphis, Tennessee, will have new capacities of 15 400 to 16 300 and 16 300 to 18 100 tonnes a year respectively.

In a unanimous decision the Federal Trade Commission (FTC) in the United States ruled that the acquisition by RSR Corporation, the country's second largest producer of secondary lead, of Quemetco, Inc., the fifth-ranking producer, was anticompetitive. RSR originally purchased Quemetco in 1972 from St. Joe Minerals Corporations. The FTC has instructed RSR to divest itself of three of the four Quemetco plants obtained in the merger. Quemetco's Seattle, Washington plant will remain under RSR ownership. An appeal of the FTC ruling is under consideration by RSR.

Continuing strong market trends resulted in a two-step price increase in the Canadian and U.S. market during the month. In Canada, Noranda Mines Limited opened the month by withdrawing its December price increase to match Cominco Ltd.'s price of 25.5 cents a pound (56.2 cents a kilogram). Cominco then announced a price increase to 26.5 cents and Noranda quickly followed on January 10. A second price increase was instituted by Cominco at the end of the month to 28.0 cents a pound (61.7 cents a kg). Noranda has given notice to the Anti-Inflation Board and will move to the 28.0 cent price in the first week of February. The producer price in the United States also increased during the month; opening at a split price of 25.5-26.0 cents a pound and closing at a split price of 28.0-29.0 cents a pound.

Prices on the London Metal Exchange (LME) were strong during the month. The spot price for lead opened at £299 a tonne (23.3 cents a pound/49.8 cents a kg) and moved to an all time high of £343.5 a tonne (27.1 cents a pound/59.7 cents a kg) on January 24. The LME price on January 31 was equivalent to 26.3 cents (Cdn.) a pound. Inventories of lead on the LME increased moderately during the month to a level of 66 975 tonnes on January 21 (1 100 tonnes above the level of January 1).

Nickel

Falconbridge Nickel Mines Limited reports that work is proceeding rapidly on its capital expenditure programs in the Sudbury area. This work was suspended in November 1975 and restarted in August 1976. Its $95 million smelter environmental project which will effect a significant reduction in the emission of sulphur dioxide to the atmosphere as well as improve working conditions within the plant is expected to be completed in April 1978. A second major project, the sinking of its new Fraser shaft, is expected to be completed in April 1977. This will be followed by the sinking of a 3 624-foot circular, concrete-lined ventilation shaft at the Fraser mine. The mine is expected to be producing at a rate of about 550 000 tonnes annually in 1981.

Some producers feel that fourth quarter 1976 buying for inventory has swelled consumer inventories of nickel. As a result, producers' stocks of nickel have probably fallen. Consumer buying for inventory was high in the last few months of 1976 as a result of the pending expiration at the end of the year of the price protection plans offered by the major producers last September.

Platinum Group Metals

In 1976, Canadian production of the platinum group metals - platinum and palladium (the major metals) and rhodium, iridium, ruthenium and osmium - was estimated at 13 374 000 grams valued at $48 790 000, compared with 12 417 099 g in 1975 valued at $56 493 077. The dollar value declined 13.6 per cent, largely because of the low price obtained for platinum and palladium in 1976. At year-end the dealer price for platinum was quoted in the area of $150 (U.S.) an ounce and the producer price was $162 to $172 (U.S.) an ounce. The producer price for palladium at year-end was $55-$60 (U.S.) an ounce and the dealer price was about $2-$3 lower. The development of rhodium as part of a three-way catalyst in catalytic converters for automobiles to control emission pollutants sparked a sharp rise in the price of this metal and at year end the producer price was quoted at $400-$410 (U.S.) an ounce. The dealer price was in the area of $385 (U.S.) an ounce. At the end of May 1976, the producer and dealer prices had been $300-$310 (U.S.) and $230-$235 (U.S.) an ounce, respectively.

An increase in demand for platinum, reportedly in the chemical and electronic area, was responsible for a rise in the dealer price in January 1977 of about $9 (U.S.) an ounce and the quoted price at the end of the month was approximately $159 (U.S.) an ounce. Increased demand for palladium and rhodium moved the price of these metals upward about $5 (U.S.) for the month.

Note: It is not uncommon to have a wide spread between the price quotations of producers and dealers for this group of metals. Long-term contracts and producer (and on occasion, dealer) discounts are also common and partly explain this phenomenon.

Silver

Placer Development Limited announced that its wholly-owned subsidiary, Canex Placer Limited plans to take a 30 per cent interest in Equity Mining Corporation as part of a deal to assist in the development of Equity Mining's Sam Goosly silver-gold-copper property, 40 miles south of Smithers, British Columbia. Equity Mining holds a 70 per cent interest in the property with the remaining 30 per cent interest being held by Kennco Explorations (Western) Limited, a subsidiary of Kennecott Copper Corporation. Reserves of ore mineable by open-pit methods have been estimated at 39.5 million tonnes grading 95.3 grams of silver (3.06 ounces) and 0.9 g of gold (0.029 ounce) a tonne, and 0.33 per cent copper. Under the proposed agreement, Canex Placer will purchase the 30 per cent interest in Equity Mining for $2.3 million. Canex will also assume responsibility for designing, building and commissioning a mine and mill on the property and will provide financial assistance, including a guarantee for $20 million for construction completion and loan repayments. The proposed agreement is subject to financial and concentrate sales arrangements and confirmation of ore reserves. Equity Mining has been considering the feasibility of bringing the property into production at a rate of 2 900 tonnes of ore a day, with later expansion to 4 500 tonnes daily. Capital cost of bringing the property into production has been estimated at $40 to $50 million.

Preliminary statistics for 1976 show primary silver production in Canada at 1 271.7 tonnes, or 37.1 tonnes greater than that of 1975. The increase was mainly attributable to increased production of by-product silver at several base-metal mines, particularly Texasgulf Canada Ltd. (Ontario), Western Mines Limited (British Columbia) and Echo Bay Mines Ltd. and Terra Mining and Exploration Limited (Northwest Territories). In 1976, Canada was the world's third largest mine producer of silver, surpassed by Mexico and the U.S.S.R.

In 1976 the Royal Canadian Mint completed production of all seven series of the Olympic coins commemorating the Olympic Games held in Canada in 1976. The coins contain 92.5 per cent silver. Overall the program consisted of four coins in seven separate series, each series consisting of two $5 face value coins and two $10 face value coins. During the four-year period that the Olympic coins were produced, a total of about 13 655 438 $5 coins and 14 921 909 $10 coins were minted. Total silver content of all coins produced was approximately 975.7 tonnes.

New production of silver in the non-communist world in 1976 was preliminarily estimated by Handy and Harman at 7 589.2 tonnes compared with 7 408.8 tonnes in 1975. The company also estimated non-communist world silver consumption for industrial uses in 1976 at 12 285.9 tonnes compared with 11 362.1 tonnes in 1975. The United States and Japan accounted for most of the increase. Consumption of silver for coinage in 1976 in the non-communist world was estimated by Handy and Harman at 839.8 tonnes compared with 908.2 tonnes in 1975.

The Mexican government announced that it has begun minting new 100-peso silver coins worth about $5 (U.S.) each at the current exchange rate. It is reported that the issue will consist of 2.5 million pieces with each coin containing 20 grams of silver for a total content of 50 tonnes (1 600 000 troy ounces) of silver. Between 1950 and 1954, Mexico minted a similar silver coin. It is expected that the first issue of the new coins will be released within a few months. According to the announcement by the Mexican Treasury Department, the new coin is part of an effort to stem inflation and force Mexicans to save more and buy less. Mexicans are traditional hoarders of silver and gold coins and government economists believe some people will buy the coin rather than dollars. The Mexican peso, which had remained stable at 12.5 pesos to the United States dollar for 22 years, lost almost half its value in relation to the dollar in less than two months in 1976. It now trades at about 20 pesos to the dollar.

Zinc

The widespread reports of price discounting in Europe during late 1976 owing to surplus zinc metal were not without justification. Several major primary metal producers - Metallgesellschaft A.G., Preussag AG, and Societe des Mines et Fonderies de Zinc de la Vieille Montagne - announced in January that they were cutting back production to 65-70 per cent of capacity. Published reports indicate that, in part, the cutbacks are necessary because producers are supplying some lower priced zinc metal from the London Metal Exchange to their customers in an effort to dry up stocks currently overhanging the market in Europe.

The Italian state-owned agency, EGAM, which controls most of the country's nonferrous metal mining and refining was literally bankrupt at year-end 1976. Ammi S.p.A. and Ammi Sarda, representing the zinc sector, were named among other operating subsidiaries designated, for liquidation before the Italian parliament granted EGAM 90 billion lire (equivalent to $105 million) to pay for December and January operating expenses. A reorganization of EGAM has been ordered and a stay on liquidations is in effect until February 28, 1977.

The Canadian zinc price increase announced by Noranda Sales Corporation Ltd. in December was withdrawn on January 3, 1977 leaving the price in Canada for prime western zinc at $799.17 a tonne. Producer prices in Europe and the United States remain unchanged at $795 a tonne and $815.70 a tonne respectively. The cash price on the London Metal Exchange increased nearly $60 during January from the level of $660 a tonne at year-end 1976.

INDUSTRIAL MINERALS AND PRODUCTS

Aggregates

The Ontario Mineral Aggregate Working Party, established by the Minister of Natural Resources, the Honourable Leo Bernier in December 1975, to provide advice and assistance to the Ontario Government on mineral aggregate policy, has made its report to the Minister in "A Policy for Mineral Aggregate Resource Management" a document available through the Ministry of Natural Resources, Toronto.

The Working Party's terms of reference were:

1. To recommend by way of a report to the Minister of Natural Resources an effective and broadly acceptable Mineral Aggregate Resource Management Policy for the Province of Ontario;

2. To consider and recommend ways and means of implementing the said mineral aggregate resource management policy including new legislation requirements;

3. To solicit public viewpoints relating to the above matters by accepting briefs and holding public discussions with such interested persons as the Working Party may select;

4. To consider any such other matters relating to an aggregate resource management policy as may be referred to the Working Party by the Minister of Natural Resources.

In brief the Working Party has recommended that "resource extraction in designated areas will only be acceptable if local interests are considered first."

Asbestos

The Beaudry Commission Report, primarily concerned with the medical, technical, and legal aspects of health and environmental control in the Quebec asbestos industry, was discussed at a large meeting convened in Montreal by the Conseil du Patronat du Québec (C.P.Q.). The C.P.Q., a confederation of management associations, has the general mandate of making known to governments, to intermediary bodies and to the population in general, the points of view of Quebec employers on subjects affecting industry.

Authors of the Beaudry Report recommend a new philosophy toward worker health and a reform in the structures required to monitor and enforce new regulations designed to ensure better environmental conditions in all industries. Labour and management officially agreed on ideas to centralize all jurisdictions in a "Régie de la Santé au Travail".

Recommendations included in the report are expected to influence most legislation and regulations affecting worker health and safety in Quebec over the next several years.

Johns-Manville Corporation announced that it plans to delay the remaining $64.5 million of intended capital expenditures totalling $77 million at its Jeffrey mine complex at Asbestos, Quebec. The remainder of the expenditures were to be made over the next five years for property acquisition and the construction of new mine facilities. The resumption of investment will be considered following results of feasibility studies presently being undertaken by the Quebec government. The studies are primarily concerned with nationalization and with methods that could increase the conversion level of asbestos fibre to finished products before export.

Strontium Products and Sodium Sulphate

Kaiser Celestite Mining Limited, the only producer of strontium chemicals in Canada, has discontinued the manufacture of strontium chemicals at its Point Edward, Nova Scotia, plant. The final shipments of chemicals were made in December 1976. Mining of celestite by Kaiser at Loch Lomond, Cape Breton Island, was discontinued in August 1976.

Discussions are continuing with Cape Breton Development Corporation and other government authorities in an attempt to interest other companies or groups in continuing the operation.

MINERAL FUELS AND PRODUCTS

Petroleum and Natural Gas

Tenneco Atlantic Pipeline Co., a division of Tenneco Inc., has filed an application with the Federal Power Commission of the United States for permission to build a 498-mile pipeline from the Canadian border at Maine to Milford, Pennsylvania. It would then tie into the Tennessee Gas system at three points: Concord, New Hampshire; Albany, New York; and Milford. The pipeline is part of a $2 billion project to bring Algerian liquified natural gas to Saint John, New Brunswick, where a regasification plant would be built and a 70-mile pipeline would be constructed to the United States border. From there, 390 miles of 36-inch diameter line to Albany and 108 miles of 30-inch line to Milford would be constructed. Floor price of the gas under the 20-year contract with Algeria's Sonatrach is $1.30 per million Btu fob Algerian ports and to escalate at a rate based on competitive fuel costs in New York harbour. In its application to the National Energy Board for facilities in New Brunswick, Tenneco said it had signed a preliminary agreement with Canadian Pacific Ltd. to design, construct and operate the terminal facilities and regasification plant at Saint John. Tenneco has also signed a preliminary agreement with Trans-Canada PipeLines Limited to build the 70-mile pipeline from Saint John to the Maine-New Brunswick border. TransCanada is preparing its facilities application which it expects to present to the National Energy Board by the end of January.

The Alberta government has introduced a program designed to stimulate the application of sophisticated and costly techniques for increasing the recovery of Alberta's known deposits of crude oil. The program will permit companies instituting advanced enhanced recovery schemes such as thermal methods or the use of chemical agents, under the approval of the Alberta Energy Resources Conservation Board (AERCB), to deduct certain incremental costs of the operations from their revenues before calculating the royalty payable to the Alberta government. In announcing the program, it was pointed out that the AERCB estimates that there are 23 billion barrels of known or proved crude oil in Alberta which will not be recovered by the producing methods now being used. Hopefully, the new program will provide the stimulus needed to institute these tertiary recovery methods and in so doing add substantially to Alberta's known proven oil reserves and thereby contribute to Canada's objective of energy self-reliance.

Uranium

Eldorado Nuclear Limited is planning to build a new uranium refinery and waste management complex at an estimated cost of $80 million. The refinery portion of the complex will allow for the conversion of natural uranium (U) to uranium hexafluoride (UF_6) at a rate of 10 000 tonnes of U annually. Eldorado would like to establish the complex on its 657-acre property at Port Granby, nine miles west of Port Hope, Ontario. The project will be subject to a broad array of governmental approvals.

Eight Canadian nuclear equipment manufacturers have formed a consortium, CNEX Ltd., which they hope will handle direct contractual responsibilities for export sales of Canadian nuclear reactors. Member companies include Babcock & Wilcox Canada Limited, Foster Wheeler Ltd., Canadian Vickers Ltd., Dominion Bridge Company, Limited, Canadian General Electric Company Limited, Standard-Modern Tool Co. Ltd., Bingham-Willamette Ltd. and Canatom Ltd.

The Government of Saskatchewan announced that it would set up a board of enquiry to investigate the implications of Amok Ltd.'s Cluff Lake uranium mining project. The board will be looking at the environmental, occupational health and safety aspects of the project as well as reviewing the overall implications of expanding uranium mining in Saskatchewan. The Atomic Energy Control Board gave conditional authorization to Amok but the company evidently will not make any further commitments and has suspended work on the project.

The Australian Atomic Energy Commission believes it has made a significant new uranium discovery in the Alligator River area some 28 km west of the Ranger and Jabiluka deposit. While the full significance of the discovery can only be determined by additional deeper drilling, mineralization discovered so far is at depths of from 1.5 to 13.4 metres.

SPECIAL ITEM

Report on Potash

Saskatchewan

The Saskatchewan government is pursuing its program to become the major producer of potash in North America. In October the Potash Corporation of Saskatchewan Cory Limited began operating the former Duval mine and has made sales in excess of the contracts inherited from the former owner. Two mines, the Sylvite of Canada Division of Hudson Bay Mining and Smelting Co. Limited and Alwinsal Potash of Canada Limited, were evaluated in May 1976 and a decision on whether negotiations for purchase will begin is expected shortly from Potash Corporation of Saskatchewan Head Office Limited (PCS). In addition, evaluation of Central Canada Potash Co. Limited began in December 1976 and PCS announced that APM Operators Ltd. will be evaluated this year.

An integral part of the Saskatchewan government plan is expansion of the industry and, to this end, PCS proposes to increase the capacity of the Cory mine within the next few years. If PCS purchases all the mines that it is evaluating it will own 44 per cent of total theoretical production capacity. If it proceeds with expansions at the Cory mine and one or more other mines, it will reach its objective of owning 51 per cent of the potash industry (see Table 1). This action would leave the remaining private industry sector overwhelmingly dominated by United States interests as can be determined from the accompanying chart on financial interest.

The legislation that Saskatchewan has enacted to implement its policies for potash in the past has led to a plethora of litigation. In 1972, Central Canada Potash Co. Limited (CCP), later joined by the Attorney General of Canada, challenged the Saskatchewan legislation related to prorationing. In May 1975, the Court of Queen's Bench in Regina declared the prorationing scheme *ultra vires* and awarded Central Canada $1.5 million in damages. The other potash companies in the province then filed a suit to require the Saskatchewan government to return prorationing fees paid over the previous four years. In the meantime, the Saskatchewan government appealed to the Saskatchewan Court of Appeals and the May 1975 decision was reversed on January 7, 1977. CCP has announced that it intends to take the case to the Supreme Court of Canada.

Eleven companies filed a claim in July 1975 to have the reserve tax declared *ultra vires*. The companies also stopped paying the tax because a provincial statute, *Proceedings Against the Crown Act*, provided that taxes collected need not be returned even if the tax is disallowed. To bypass this provision of the Act, the companies petitioned the Court of Queen's Bench to set up a trust for reserve tax payments and guarantee return of the taxes if the reserve tax was declared *ultra vires*. The Court did not set up the trust. The companies then attacked the bothersome provisions of the *Proceedings Against the Crown Act* and on October 5, 1976 the Supreme Court of Canada ruled that the provisions which would have prevented the province from refunding the taxes, are *ultra vires*.

In May 1976 nine companies approached the reserve tax and proration fee problem from a different angle and took a case to the Court of Queen's Bench claiming that the two imposts were in fact royalties in breach of the contracts between the Saskatchewan government and the companies. The contracts guarantee no change from the royalties in place when the contracts were made (1960-1971) until 1981. The case is still before the Court.

The activities in Saskatchewan have led to reactions outside Canada. In June 1976, a United States Grand Jury indicted six U.S. companies for price fixing co-ordinated with the Saskatchewan prorationing system. As a consequence, many Canadians in government and industry were among a list of 157 unindicted co-conspirators named by the prosecution. The trail began January 3, 1977. The Anti-Trust legislation includes provisions for treble compensation to anyone who suffered from price fixing. Under these provisions a suit to recover damages has been filed by the State of Illinois on behalf of farmers.

New Brunswick

In New Brunswick, International Minerals & Chemical Corporation (Canada) Limited (IMC) announced that the drilling program in the Salt Springs area has brought encouraging results. To date, ten holes have been drilled in addition to the original hole put down in a program funded by the provincial and federal governments. Intersections in seven of the eleven holes averaged about 29 per cent K_2O equivalent over an average thickness of 21 metres, in an area 1 200 metres by 3 600 metres at depths of 600 to 1 000 metres (1 foot = .304 8 metre).

TABLE 1

Canada Potash Mines and Production Capacities

Company	Theoretical Production Capacity (tonnes K_2O equivalent per year)	Per Cent of Total Capacity	Cumulative Per Cent of Total Capacity
Potash Corporation of Saskatchewan Cory Ltd.	664 000	8.3	8.3
(proposed expansion)	166 000	2.1	10.4
*Hudson Bay Mining and Smelting Co., Limited	664 000	8.3	18.7
*Alwinsal Potash of Canada Limited	544 000	6.8	25.5
*Central Canada Potash Co. Limited	817 000	10.2	35.7
*APM Operators Ltd.	828 000	10.3	46.0
Cominco Ltd.	653 000	8.2	54.2
International Minerals & Chemical Corporation (Canada) Limited	2 400 000	30.0	84.2
Potash Company of America	417 000	5.2	89.4
PPG Industries Canada Ltd.	850 000	10.6	100
Total	8 003 000		

Source: Mineral Development Sector.

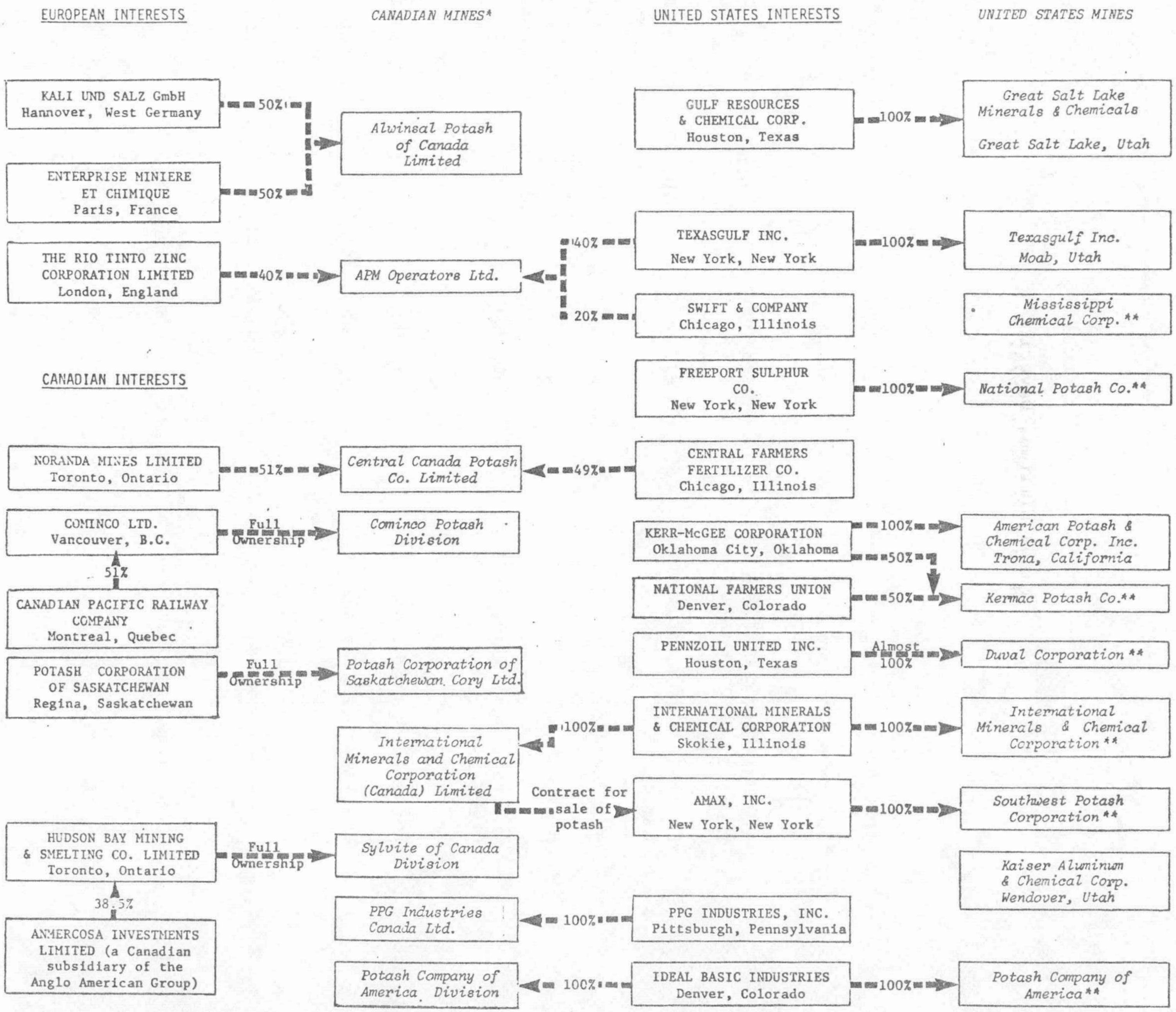
* Companies that have been or are presently being evaluated.

STRUCTURE OF NORTH AMERICAN POTASH INDUSTRY

SHOWING PERCENTAGE OF INTERCORPORATE FINANCIAL INTERESTS, 1976

Mineral Development Sector

Department of Energy, Mines and Resources



* All are in the Province of Saskatchewan. ** All are at Carlsbad, New Mexico.

RECENT MERGERS AND AMALGAMATIONS

(as recorded from the Gazettes)

Van Silver Mines Ltd. was formed by the amalgamation of Van Silver Explorations Ltd. and Tedi Resources Ltd. on 30 November 1976. Source BC.23-12-1976.

Forefront Consolidated Explorations Ltd. was formed by the amalgamation of Forefront Uranium Mines Limited, Daverich Minerals Limited and Eldex Minerals Limited on 2 December 1976. Source Ont. 8-1-1977.

NEW PUBLICATIONS

The following publications were prepared in the Mineral Development Sector, Department of Energy, Mines and Resources and released for distribution in January.

Preprints, *Canadian Minerals Yearbook 1975*, Lightweight Aggregates; Bentonite; Gold; Titanium and Titanium Dioxide.

The above publications are available from Publishing Center, Department of Supply and Services, Ottawa, for 50¢ a copy.

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