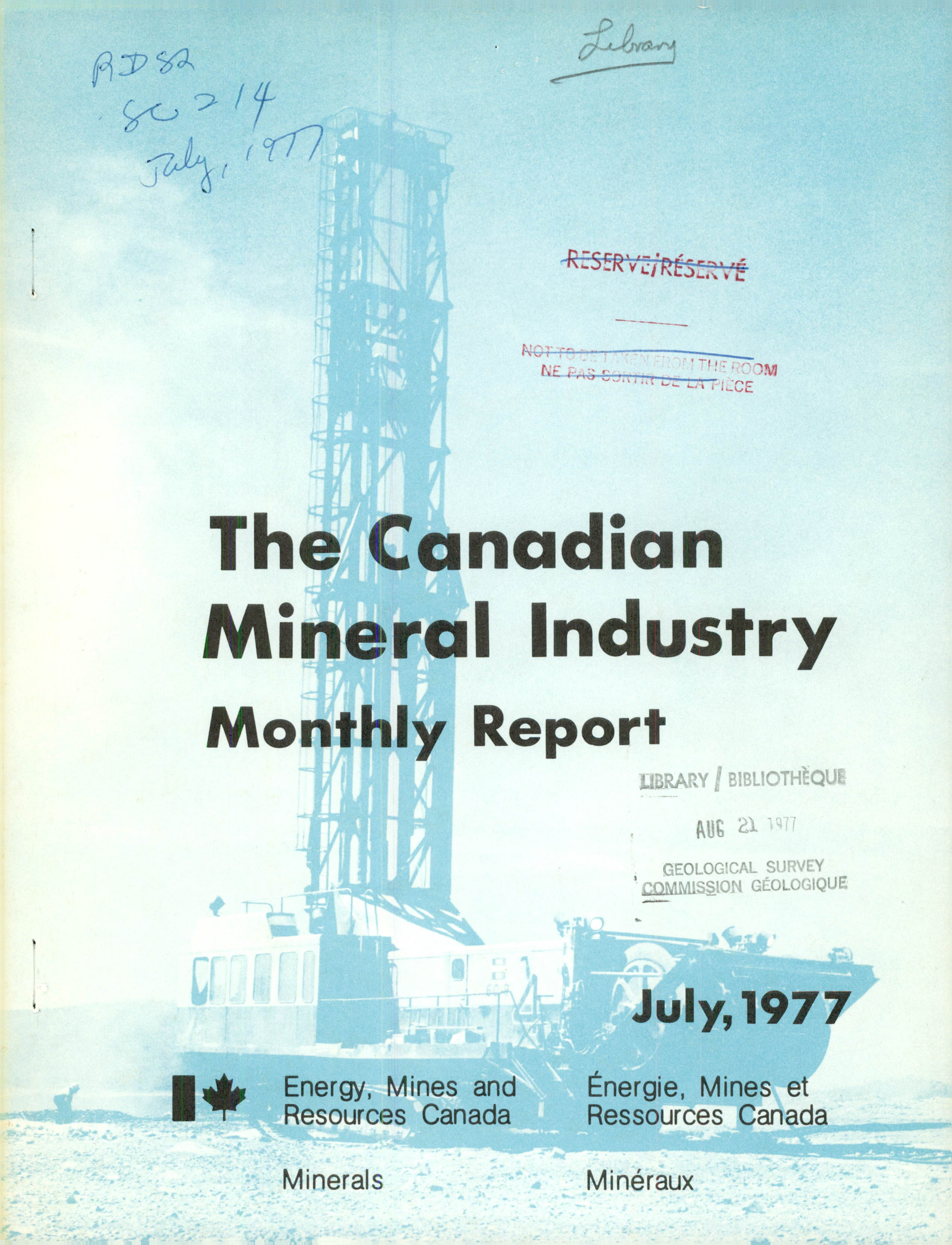

The Canadian Mineral Industry

Monthly Report

July, 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 JULY

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

SUMMARY

1. Canada's unadjusted index of Real Domestic Product was 129.3 in May 1977, an increase of 1.4 per cent from April 1977.

2. The May index of Mines, Quarries and Oil Wells was 118.0, an increase of 4.1 per cent from the previous month.

3. Kaiser Aluminum & Chemical Corporation raised ingot and mill product prices effective July 1.

4. Minas de Almaden y Arrayanes, whose Almaden mine in Spain is the largest producer of mercury in the world, has withdrawn from the mercury market.

5. Inco Limited's new nickel prices (which have until now been used as a bench mark for other producers) are now being considered as confidential information.

6. The Commodity Futures Trading Commission of the United States approved the trading of platinum futures contracts on the Chicago Mercantile Exchange.

7. Several companies reduced production levels of zinc during the month of July and further announcements are anticipated.

8. The Department of Fisheries and the Environment has established new asbestos emission regulations to become effective in December 1978.

9. Fiberglas Canada Limited has installed the largest known electric melt furnace for production of glass fibre at its Sarnia, Ontario plant.

10. The Aluminum Company of Canada, Limited will postpone closure of their fluorspar mines and beneficiation plant until February of 1978.

11. The Potash Corporation of Saskatchewan has reached agreement in principle with Alwinsal Potash of Canada Limited to purchase the company's potash mine at Lanigan.

12. Nova Scotia will launch a $5.5 million drilling program off the coast of Sydney on August 1.

13. Alberta will increase its price of a barrel of crude oil in four one dollar stages between July 1977 and January 1979.

ECONOMIC TRENDS

Table 1 shows Canada's unadjusted indexes of Real Domestic Product in terms of 1971=100. The overall RDP index in May was 129.3, an increase of 1.4 per cent from April 1977.

The May RDP index for mines, quarries and oil wells was 118.0, up 4.1 per cent from 113.3 in April. The metal mines index increased by 5.0 per cent over the month, due in part to an increase of 5.9 per cent for iron mines. An increase of 1.5 per cent and 5.2 per cent was recorded for mineral fuels and nonmetal mines respectively.

The May index for primary metal industries was 1.9 per cent above that of April. An increase of 15.3 per cent was recorded for nonmetallic mineral products industries.

Table 2 compares volume of production in major Canadian minerals. Output increased significantly in May compared with April for copper (58.8 per cent), gold (20.0 per cent), iron ore (53.9 per cent), uranium (61.9 per cent) and cement (43.7 per cent). Output decreased significantly for lead (21.5 per cent), zinc (23.2 per cent), potash (21.9 per cent) and salt (20.6 per cent).

Table 3 compares average weekly wages and hours of hourly-rated employees for selected industries for 1970 and 1973 through to 1976. Significant increases in average weekly wages were recorded for all industries in 1976 compared with 1975.

TABLE 1

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

Industry or Industry Group	1976 Apr	1976 May	1976 Average 1st 5 Months	1977 Apr	1977 May	1977 Average 1st 5 Months	Percentage Changes Apr 1977 / Apr 1976	May 1977 / May 1976	May 1977 / Apr 1977	1st 5 Months 1977 / 1976
Real Domestic Product	125.3	126.5	120.4	127.5	129.3	124.3	1.8	2.2	1.4	3.2
Primary Industries										
Agriculture	155.0	132.1	81.1	126.2	123.1	69.2	-18.6	-6.8	-2.5	-14.7
Forestry	97.0	79.4	89.2	99.6	81.5	107.1	2.7	2.6	-18.2	20.0
Fishing and Trapping	47.4	116.3	59.5	58.9	86.3	52.8	24.3	-25.8	46.5	-11.2
Mines, Quarries and Oil Wells	108.0	113.4	109.2	113.3	118.0	115.7	4.9	4.1	4.1	6.0
Metal Mines	108.0	117.7	107.5	116.4	122.2	116.2	7.8	3.8	5.0	8.1
Placer and Gold Quartz Mines	72.7	70.6	74.3	77.7	71.9	77.4	6.9	1.8	-7.5	4.3
Iron Mines	132.7	152.9	121.9	136.4	144.5	128.2	2.8	-5.5	5.9	5.2
Other Metal Mines	103.7	111.3	105.5	113.3	119.1	115.1	9.3	7.0	5.1	9.0
Mineral Fuels	106.7	109.1	111.3	108.4	110.0	114.9	1.6	0.8	1.5	3.2
Coal Mines	216.2	162.2	210.0	212.3	212.7	222.2	-1.8	31.1	0.2	5.8
Crude Petroleum and Natural Gas	97.7	104.7	103.2	99.9	101.6	106.1	2.3	-3.0	1.7	2.8
Nonmetal Mines	115.8	114.7	117.7	128.5	135.2	133.2	11.0	17.9	5.2	13.2
Asbestos Mines	108.0	113.4	103.6	105.3	113.3	112.2	-2.5	-0.1	7.6	8.3
Secondary Industries										
Manufacturing	122.7	123.9	119.1	125.1	125.4	122.3	2.0	1.2	0.2	2.6
Nondurable Manufacturing	118.2	120.3	114.6	122.4	122.9	119.0	3.6	2.2	0.4	3.9
Petroleum and Coal Products Industries	115.7	124.2	124.4	126.2	127.8	133.2	9.1	2.9	1.3	7.1
Durable Manufacturing	127.3	127.4	123.8	127.9	127.9	125.5	0.5	0.4	0.0	1.4
Primary Metal Industries	114.4	112.1	111.3	113.1	115.2	113.7	-1.1	2.8	1.9	2.2
Iron and Steel Mills	120.5	118.8	117.6	123.2	124.1	122.8	2.2	4.5	0.7	4.4
Steel Pipe and Tube Mills	133.0	123.0	132.4	104.1	117.5	120.3	-21.7	-4.5	12.9	-9.1
Iron Foundries	145.1	134.5	133.9	123.6	117.8	125.2	-14.8	-12.4	-4.7	-6.5
Smelting and Refining	97.9	96.3	95.0	97.7	102.4	97.9	-0.2	6.3	4.8	3.0
Nonmetallic Mineral Products Industries	115.7	130.5	106.3	119.8	138.1	110.9	3.5	5.8	15.3	4.4
Cement Manufacturers	106.6	150.4	95.6	103.7	148.4	91.5	-2.7	-1.3	43.1	-4.3
Ready-mix Concrete Manufacturers	112.3	137.4	89.0	112.1	154.6	90.8	-0.2	12.5	37.9	2.0
Construction Industry	107.3	114.9	104.6	102.8	112.5	101.6	-4.2	-2.1	9.4	-2.8
Transportation, Storage, Communication	129.6	132.3	126.1	134.6	137.3	132.1	3.9	3.8	2.0	4.7
Electric Power, Gas and Water Utilities	134.9	128.9	145.4	141.6	133.3	155.0	5.0	3.4	-5.9	6.6
Trade	134.9	137.9	123.8	133.7	140.6	126.7	-0.9	2.0	5.2	2.4
Finance, Insurance, Real Estate	126.0	127.0	125.8	132.5	133.1	132.5	5.2	4.8	0.5	5.3
Community, Business and Personal Service	127.4	128.4	126.8	133.7	133.7	133.0	4.9	4.1	0.0	4.9
Public Administration and Defence	119.9	123.5	119.8	122.2	125.3	123.3	1.9	1.5	2.5	2.9

TABLE 2

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

		1976			1977			Percentage Changes		
		April	May	Total 1st 5 months	April	May	Total 1st 5 months	May 77 / May 76	May 77 / April 77	1st 5 months 1977 / 1976
Metals										
Copper		57.4	66.4	302.2r	50.3	79.9	338.0	+20.3	+58.8	+11.8
Gold	kg	4 278.3	4 244.8	21 766.5	4 219.5	5 064.1	22 516.1	+19.3	+20.0	+3.4
Iron ore		4 767.0	6 371.5	15 705.0	3 648.4	5 615.2	14 130.8	-11.9	+53.9	-10.0
Lead		22.5	20.9	107.0	31.2	24.5	117.6	+17.2	-21.5	+9.9
Molybdenum	t	1 086.3	1 148.0	6 096.7	1 403.6	1 310.1	6 463.6	+14.1	-6.7	+6.0
Nickel		21.3	21.9	108.0	20.8	20.2	106.0	-7.8	-2.9	-1.9
Silver	t	115.8	123.2	563.7r	119.5	118.6	591.4	-3.7	-0.8	+4.9
Uranium(1)	t	211.1	431.9	1 582.5	320.2	518.4	1 928.8	+20.0	+61.9	+21.9
Zinc		82.7	95.1	425.1	108.4	83.3	425.0	-12.4	-23.2	0.0
Nonmetals										
Asbestos		122.1	129.3	624.9	122.6	117.7	601.3	-9.0	-4.0	-3.8
Gypsum		409.7	428.7	1 782.0r	569.7	644.3	2 274.0	+50.3	+13.1	+27.6
Potash K_2O		580.4	311.3r	2 217.6r	606.7	473.6	2 482.8	+52.1	-21.9	+12.0
Salt		422.2	353.6	2 520.3	394.0	312.8	2 471.0	-11.5	-20.6	-2.0
Cement		732.8	992.9	3 112.5r	724.1	1 040.3	3 108.6	+4.8	+43.7	-0.1
Clay products	\$000	7,696.1	8,292.2	28,111.3	..	..	..	..	..	..
Lime		154.8	155.2	703.4	146.8	165.1	742.4	+6.4	+12.5	+5.5
Fuels										
Coal		2 051.8	1 758.2r	10 780.8	2 342.4r	2 504.0	12 733.4	+42.4	+6.9	+18.1
Natural gas	000 m^3	7 386 931.7	7 981 330.7r	39 005 186.6r	7 609 757.0r	7 528 657.5	39 572 401.4r	-5.7	-1.1	+1.5
Crude oil and equivalent	000 m^3	6 024.0	7 132.2r	33 284.3r	6 233.4r	6 712.8	33 823.1	-5.9	+7.7	+1.6

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

r Revised; .. Not available.

TABLE 3

Canada, Average Weekly Wages and Hours of Hourly-rated Employees

	1970	1973	1974	1975	1976	Percentage change 1976/1975
Mining						
Average hours per week	41.0	40.9	40.4	40.0	40.3	0.75
Average weekly wage	152.10	196.89	225.25	260.74	298.37	14.43
Metals						
Average hours per week	40.3	39.6	39.4	39.4	39.6	0.51
Average weekly wage	154.68	195.89	222.80	260.33	296.66	13.96
Mineral fuels						
Average hours per week	42.0	41.0	40.6	39.7	40.6	2.27
Average weekly wage	146.68	198.08	231.51	264.98	297.28	12.19
Nonmetals						
Average hours per week	41.3	41.3	41.1	40.1	40.5	1.00
Average weekly wage	139.21	173.10	191.51	230.84	273.56	18.51
Manufacturing						
Average hours per week	40.0	39.6	38.9	38.6	38.7	0.26
Average weekly wage	119.69	152.77	170.03	195.12	222.61	14.09
Construction						
Average hours per week	39.2	39.5	38.9	39.0	38.9	-0.26
Average weekly wage	165.04	223.86	251.08	293.96	337.39	14.77

Provincial

British Columbia

Mineral Resource Tax Regulations, have been established as B.C. Reg. 189/77. The regulation is of particular interest to operators who operate more than one mine within the Province.

Some new concepts are defined:

"general pool" means a special account reflecting the allowed expenses which were not incurred as a result of operating a specific mine;

"specific pool" means a special account reflecting the allowed expenses which were incurred as a result of operating a specific mine;

"permissive deductions" means capital cost allowances, exploration expenses, development expenses, earned depletion and processing allowances, and excludes any other costs and expenses allowed under section 5 of the Act;

"processing allowance" means the return on capital equal to 8 per cent of the undepreciated capital cost of the depreciable assets used in processing minerals after removal from the mine; but the deduction shall be not more than 65 per cent nor less than 15 per cent of the income remaining after deducting the amounts deductible under section 5 of the Act.

Where an operator smelts, refines or otherwise beneficiates, in his own facilities, minerals produced from his own mines within the Province, the allocation of incomes and expenses to each mine shall be subject to the approval of the Commissioner.

Where an operator operates more than one mine in the Province and has residual capital costs or development expenses under the Mining Tax Act, the Commissioner may agree to the allocation of the 1975 year-end balances to each of the operator's mines on a reasonable basis. Under certain circumstances, the head-office overhead may also be allocated subject to the approval of the Commissioner.

For computing income under section 5 of the Act, permissive deductions may be claimed in the following order and amounts:

(a) *"Capital Cost Allowance"* in amounts not exceeding the aggregate of the sums of the allowances for each class of assets under the Income Tax Act (Canada) and the Income Tax Regulations (Canada) but not to exceed the available income from the mine after deduction of all allowed costs and expenses exclusive of permissive deductions.

(b) *"Exploration Expenses"* in an amount not exceeding the lesser of:
  (1) available income as in (a) above, exclusive of permissive deductions, except amounts claimed under clause (a) above; or
  (2) the remaining unclaimed balance of the owner's exploration expense general pool.

(c) *"Development Expenses"* in an amount not exceeding the lesser of:
  (1) available income as in (a) above, exclusive of permissive deductions, except amounts claimed under clauses (a) or (b) above; or
  (2) 30 per cent of the remaining unclaimed balance of the owner's development expense general and specific pools.

(d) *"Earned Depletion"* in an amount not exceeding the lesser of:
  (1) 25 per cent of the available income in (a) above, exclusive of permissive deductions, except amounts claimed under clauses (a), (b) or (c) above; or
  (2) the remaining unclaimed balance of the owner's earned depletion general and specific pools.

(e) *"Processing Allowance"* as defined above.
The operator shall pay interest at 10 per cent per annum on any underpayments of tax; and overpayments of tax shall be refunded to the operator with interest at $9\frac{1}{2}$ per cent per annum.

The Coal Act Regulations, B.C. Reg. 436/75, are amended by B.C. Reg. 193/77 to provide for the submission, examination and sampling of core. Upon request of the Chief Geologist of the Mineral Resources Branch, cores must be forwarded prepaid within 60 days to a designated core storage facility together with lithologic descriptions, all geophysical logs, a topographic map showing corresponding drill hole locations at a scale of 1:12500 or larger, and the results of the analyses made of the core.

Core boxes are to be of standard sizes as prescribed and must be properly labelled.

Provision is made for core examination at the core storage facility upon payment of a daily fee of $20 per person for each drill hole and a handling charge of $0.50 per box of core.

Saskatchewan

Potash Reserve Tax Regulations, 1974, S. Reg. 290/74 is amended by S. Reg. 173/77, effective and retroactive to July 1, 1974. Both the formula for determining the value of the potash ore reserves, mine and refining plant, and the formula for the *"capital investment factor"* are amended, and Table I, Mill Rate Table, is replaced in full.

Mineral Disposition Regulations, 1961 have been amended by S. Reg. 165/77 by the addition of Part VIC - Graphite Royalties. This amendment imposes a basic graphite royalty at the rate of 8 per cent of the income before basic royalty, computed as follows:

(a) determine the gross sales in accordance with section 99F.

(b) deduct from the gross sales the following items as defined in section 99B.

(i) production costs;
(ii) marketing expense allowance; (an amount equal to 8 per cent of the gross sales)
(iii) administrative and corporate expenditures;
(iv) working capital allowance.

This amendment also imposes a graduated graphite royalty in accordance with the following table;

Ratio of Operating Profits to Capital Investment
(Expressed as a Percentage)

Bracket	Equal to or Greater than	But less than	Graduated Royalty Payable
(A)	-	15 per cent	Nil.
(B)	15 per cent	25 per cent	20 per cent of the operating profits in this bracket.
(C)	25 per cent	45 per cent	Amount payable in (B) plus 40 per cent of the operating profits in this bracket.
(D)	45 per cent	without limit	Amount payable in (B) and (C) plus 50 per cent of all operating profits in this bracket.

Newfoundland

The Quarry Materials Regulations, 1977, N. Reg. 135/77, have been established under the Quarry Materials Act, 1976.

The regulation provides for three kinds of permits, viz. *"beach quarry permit", "highway quarry permit",* and *"regular quarry permit"* and for a *"quarry lease".*

Applications for permits must be made in the prescribed form. Application for a quarry lease must be made in writing by a holder of a permit, not later than 90 days prior to the expiration of the permit, stating the area applied for (in hectares) and the term of the lease requested. Provision is made for renewal of a lease. Crown Land may be rented for quarry purposes for $15./hectare. The royalty for the removal of quarry material from a beach for commercial purposes is $0.25/cubic metre. For non-commercial removal from a beach for personal use and removal of specific quantities of peat for non-commercial personal use, there is no charge. For the removal of all other quarry material, the royalty is $0.15/cubic metre.

The Mineral Regulations, 1977 have been established as N. Reg. 134/77. The regulation starts with the usual set of definitions, all measurements being given in the metric system.

Certain lands listed in Schedule I are exempted from the application of the regulations.

The regulation makes a distinction between ground staked licences and map staked licences. Areas of the province are designated as being open to either ground staking only or map staking only. The manner of staking out a claim is illustrated in Schedules III to V of the regulations. After staking out a claim, the staker must apply for a ground staked licence. Ground staked claims may be staked as coterminous claims in a square or rectangular block of not less than 16 claims nor more than 64 claims. The maximum length of the block may not exceed four times its width. No interior boundary lines need be marked out and no interior posts need be erected (see illustration in Schedule VI of the Regulations).

The holder of a licence is required to do assessment work as follows:

(a) $200 per claim during the first year
(b) $250 per claim during the second year
(c) $300 per claim during the third year
(d) $350 per claim during the fourth year
(e) $400 per claim during the fifth year

A reserved area licence may be applied for with respect to areas designated as reserved areas. Such a licence may be issued for one to four coterminous quadrangles in Labrador, or blocks in Newfoundland, or portions thereof where preexisting rights would interfere. Portions of a reserved area licence may be surrendered on any anniversary of the licence. Retained areas need not be coterminous. The term of a licence may be extended on application with payment of the required fees and rentals, as listed in Schedule II of the Regulat ons.

Where a mining lease is applied for by the holder of a ground staked licence, the prescribed perimeter survey of the lease area must be filed with the recorder within 6 months. A mining lease may be issued pursuant to a licence for a map staked area or a licence for a reserved area or portions thereof without a ground survey. The annual rental for a mining lease is $40/hectare.

The regulation lists the expenditures which are acceptable for assessment work, and spells out the form and content of reports. Provision is made for preservation of diamond drill core and relevant records. The regulations became effective at 8:15 a.m. on Tuesday, July 12, 1977.

METALLIC MINERALS AND PRODUCTS

Aluminum

Kaiser Aluminum & Chemical Corporation raised ingot and mill product prices by 2 to 6 cents a pound effective July 1. The new base price for 99.5 per cent unalloyed ingot became 53 (U.S.) cents a pound. Pechiney raised ingot prices on orders received after July 25 for deliveries from August 29 to 5,800 from 5,430 francs a tonne.

Alcan Aluminum Limited reported improved earnings in the first half of 1977 compared with the corresponding period of 1976. Smelting operations improved significantly in Canada. Sales of fabricated products increased and profit margins improved.

A rapidly expanding new industrial use for alumina is the production of a fibrous refractory liner for furnaces in the steel, forging, ceramics and chemical industries. Imperial Chemical Industries Limited (ICI) of the United Kingdom developed this new product in 1974.

A new aluminum smelter project in Brazil received financing during July. The Valesul project, costing an estimated $260 million (U.S.) is to be located near Rio de Janeiro. Production is expected to begin in 1979. Capacity of the smelter will be 80 000 tonnes a year.

The International Primary Aluminum Institute (IPAI) reported that primary aluminum production in the first half of 1977 was 5 474 000 tonnes, compared with 4 862 000 tonnes in the first half of 1976. IPAI figures cover all world primary aluminum producers except those in Yugoslavia and the Eastern Countries.

Copper

Copper prices on the London Metal Exchange (LME) remained in the range of 56-57 (U.S.) cents a pound during July. North American producer prices, which at the start of the month were 12 cents a pound above LME prices, were lowered in two stages. The split price in the United States was ended on July 7 with all producers quoting 68.625 and 68.00 cents a pound for wirebars and cathode respectively. These prices were lowered by a further 3 cents a pound on July 21. Canadian producers followed suit and by month-end were quoting Canadian prices of 69.625 cents (Canadian) a pound for wirebars and 69.00 cents a pound for cathode.

Depressed prices are a result of the continuing oversupply situation in copper. Although metal exchange warehouse stocks of copper declined in July to their lowest levels of the year, it is believed that this reflects hedge buying by consumers against the possibility of a major labour strike against the United States copper producers. At the end of July, LME warehouse stocks of refined copper were 605 475 tonnes, Comex stocks were 205,425 short tons.

Rising stocks of copper and zinc resulted in a proposal by Japanese nonferrous metal producers for the creation of a Separate Emergency Stockpile of about 50 000 tonnes of copper and 100 000 tonnes of zinc.

Production of primary copper in Canada in the first five months of 1977 was 338 000 tonnes, 11 per cent higher than production in the corresponding period of 1976. However, the depressed level of prices and the high level of stocks resulted in two decisions during July to reduce production to below recent levels.

- Union Minière Explorations and Mining Corporation Limited will operate its Thierry copper mine at only 50 per cent of capacity.

- Inco Limited will reduce its Canadian labour force and metal production by unspecified percentages.

The offer by Cominco Ltd. to purchase shares of Bethlehem Copper Corporation was extended late in July to August 8. At the end of July, Cominco owned over 38 per cent of Bethlehem. Gulf Resources & Chemical Corporation also acquired a 26 per cent interest in Bethlehem during July from Granges Essem of Sweden at an average price of almost $20 a share.

The labour contracts of the majority of U.S. copper producers expired at the end of June. Three major producers, Kennecott Copper Corporation, Magma Copper Company and The Anaconda Company agreed to new contract terms but the other producers had not. It is estimated that lost production in the United States during July amounted to about 150 000 tonnes.

Strikes also affected production of copper in Peru late in July. The work stoppage at Centromin Peru followed protests against the rising cost of living in Peru.

Gold

The International Monetary Fund held its eleventh gold auction on July 6, 1977 under the common price method and awarded 524,800 troy ounces of gold to the successful bidders at a price of $140.26 (U.S.). The bids submitted by the successful bidders ranged from the common price of $140.26 (U.S.) to $145.00 (U.S.) an ounce of gold and averaged $140.85 (U.S.) an ounce. Comparable figures for the tenth auction held on June 1, were: 524,800 ounces of gold awarded to the successful bidders at the common price of $143.32 (U.S.) an ounce of gold; the price range of successful bids ranged from the common price of $143.32 (U.S.) to $150.00 (U.S.) an ounce of gold and averaged $144.19 (U.S.) an ounce. The afternoon fixing gold price on the London Gold Market on July 5 was $141.25 (U.S.) an ounce and it remained near this level until July 12 when it began to improve. In all, 83 final bids were received for a total of 1,358,400 ounces of gold compared with 72 final bids for a total of 1,014,000 ounces at the tenth auction. The largest number of bids submitted were in the price range of $139.00 (U.S.) to $141.00 (U.S.) for an ounce of gold. A total of 35 bids submitted by 15 bidders, mainly international bullion dealers and European banks, were accepted. All bidders submitting final bids were awarded sales contracts. The twelfth gold auction will be held on August 3, 1977 in which 525,000 troy ounces of gold will be offered for sale under the common price method and will be delivered in London.

To commemorate the 25th Anniversary of Queen Elizabeth II's accession to the throne, Canada is issuing a maximum of 300,000 proof gold coins of $100 legal tender. The coins are being struck by the Royal Canadian Mint. The coins are 22 carat, 27 millimetres in diameter, 2.15 millimetres in thickness and weigh 16 965 grams (of which 15.551 grams (0.5 ounces) are gold and the remainder silver). The gold coins will be available from September 1977 at a price of $140 each. The reverse side of the coin will feature the flowers of the Provinces and Territories.

The gold price declined slightly in the first half of July but improved in the latter half. On the London Gold Market the gold price varied from a low of $140.55 (U.S.) an ounce on July 4 to a high of $146.40 (U.S.) an ounce on July 25 and closed for the month at $144.10 (U.S.) compared with an opening price of $143.05 (U.S.) an ounce. The monthly average of the afternoon fixing gold price on the London Gold Market for July 1977 was $143.39 (U.S.) (152.14 Cdn) an ounce compared with $140.78 (U.S.) (148.84 Cdn) an ounce in June.

Lead

The Arab Mining Co. has purchased a 25 per cent interest in the new 75 000 tonne a year lead refinery to be built at Meknes in Central Morocco. The plant is estimated to cost 200 million Dirham equivalent to $45 million in U.S. funds.

Phelps Dodge Corporation and Gold Fields of South Africa Ltd. have agreed in principal to develop the Broken Hill lead-zinc-copper deposit at Aggeneys, South Africa. A feasibility study has indicated that some R 150 million equivalent to $172 (U.S.) million will be required to produce 1 125 000 tonnes of ore annually with recovery of 22 000 tonnes of copper concentrates, 35 000 tonnes of zinc concentrates and 132 000 tonnes of lead concentrates. Underground development will continue while infrastructure and financing arrangements are being worked out.

ASARCO Incorporated has dropped its *force majeure* declaration on lead from its Glover, Missouri refinery effective August 1, 1977. The plant had been on strike between September 1, 1976 and May 30, 1977. The company's El Paso smelter is closed due to a copper strike and its Omaha refinery which treats bullion from El Paso may be next to reduce refined lead output. Workers at the Kellogg, Idaho lead plant of Bunker Hill have been on strike since May 6, 1977 and management personnel are now operating the plant at 40 per cent of capacity. Producer lead inventories in the United States dropped to 13 700 tonnes in June and have decreased 60 per cent since the beginning of the year.

Lead stocks on the London Metal Exchange declined 1 050 tonnes from June to 63 375 tonnes on July 29, 1977, as prices increased £3.5 a tonne to £326.5 a tonne or 25.7 cents a pound (U.S.). Producer prices of lead in the United States remained unchanged at 31¢ a pound. However, in Canada the producer price increased 1.25¢ a pound on July 1, 1977 to 32.25¢ a pound to compensate for the floating devaluation of the Canadian dollar from par with the U.S. dollar and maintain equivalent price structures in both markets.

Mercury

Minas de Almaden y Arrayanes, whose Almaden mercury mine in central Spain is the largest mercury producer in the world, has withdrawn from the market because of the continuing fall in mercury prices to very low levels. However, Almaden will continue to produce and stockpile its excess mercury production. It is also believed that the company will honour its long-term sales commitments. The New York mercury price, as quoted by Metals Week, dropped sharply from a range of $170 to $180 (U.S.) a flask (76 pounds) in mid-March 1977 to a low of $103 to $108 a flask in mid-July 1977. Because of depressed demand and high worldwide stocks held by both producers and consumers, the Spanish withdrawal will have little effect on the market. World inventories of mercury have been rising in recent years and at the end of 1976 were estimated at 260,000 flasks, with the combined total held by Spain and Italy alone reported to have been in excess of 150,000 flasks.

In the 10-year period (1966-1975) world production of mercury exceeded consumption by some 10,000 flasks annually, which accounted for the substantial increase in stocks. In 1976, world production and consumption were approximately in balance at some 245,000 flasks each. In 1977, however, it is expected that production will again be somewhat in excess of consumption.

Nickel

The intense competition in the world nickel market brought further price developments during July. AMAX Nickel, Inc. announced that it will continue to market its briquettes at a price of $2.11 a pound during the third quarter of 1977. On July 25, INCO Metals Company, the Canadian metals producing arm of Inco Limited, announced that it had recinded the nickel price increases of October 1, 1976. Before that date, the electrolytic cathode price charged by Inco was $2.20 (U.S.) a pound. Class II nickel prices ranged from $2.07 (U.S.) to $2.19 (U.S.) a pound. New prices to be charged by Inco will be considered as confidential business information. This highly significant move has altered the basic price structure of the world nickel market. Inco's published prices have until now been used as a bench mark by other producers. The increasing competition in the nickel market will probably bring lower prices in relation to costs and possibly less price stability than has been experienced in the past.

Inco reported lower metal deliveries in the first half of 1977 compared with the corresponding period of 1976. Inventories of nickel rose as a result, and the company announced that it will reduce Canadian employment and metal production.

At Inco's Indonesian operations, delays experienced in the start-up will result in less production than previously planned for the second half of 1977. Inco's Japanese buyers of Indonesian nickel matte do not expect the first shipment until late October, four months behind schedule. As a result, matte will be imported temporarily from Canada.

The latest nickel consumption data from the United States, for April 1977 showed an 8 per cent drop compared with the previous month. The cumulative total nickel consumption for the first four months of 1977 was 3 per cent below the corresponding figure for 1976.

Machine tool orders for June in the United States dropped 5.1 per cent from May. These orders are one of the lead indicators of future nickel consumption.

Platinum

On July 19, the Commodity Futures Trading Commission of the United States approved the trading of platinum futures contracts on the International Monetary Market, a division of the Chicago Mercantile Exchange. At present, trading in platinum futures contracts in the United States takes place only on the New York Mercantile Exchange. The futures contract unit to be traded is 100 troy ounces of platinum metal with a minimum purity of 0.999 fine. The delivery unit calls for two ingots, neither of which contains less than 49 troy ounces nor more than 51 troy ounces of platinum. Delivery units may vary up to 2 per cent of the specified 100 troy ounce contract but payment will be based on the contained platinum metal. The opening date for trading of contracts and other future trading requirements has yet to be determined.

Silver

About mid-July the Indian government announced that it had abolished its latest fixed floor price of $4.60 (U.S.) a troy ounce applicable to exports of silver. In its place the State Trading Corporation, which handles sales of Indian silver, is expected to set up a flexible floor price linked to international silver price fluctuations. Earlier this year, the Indian government had established a floor price of $4.80 an ounce and later lowered it to $4.54 after finding that there was no demand at the higher price. At the lower figure, which was almost equivalent to market prices at the time, a large volume of inquiries was apparently forthcoming and the floor price was reset at $4.60 an ounce. Indian exports of silver amounted to about 1 135 tonnes (36.5 million ounces) in 1976. Exports in 1977 are expected to be somewhat lower than in 1976, but higher than earlier anticipated, as a result of the change in the Indian government's pricing policy applicable to silver exports.

Zinc

In addition to the metal production cutbacks reported last month, Metallurgie Hoboken-Overpelt S.A. in Belgium and Outokumpu Oy:n in Finland have reduced production to 65 per cent of capacity; Norzink A.S. in Norway will shutdown for the month of July; Commonwealth Smelting Ltd. in the U.K. has reduced production levels to 80 per cent of normal levels; and Asturiana de Zinc in Spain has cutback production to 67.5 per cent of capacity. Further announcements are anticipated although some producers may act without formal notices.

Société Miniere et Metallurgique de Penarroya S.A. in France has reported that it will increase the zinc capacity of its imperial smelter at Noyelles-Godault from 105 000 tonnes to 130 000 tonnes during summer vacation in 1977.

The Government of Peru has formally approved loans of $90 million from Belgium and D.M.-95 million (about $37 million) from West Germany for construction of the 100 000 tonne a year zinc refinery at Cajamarquilla in Peru. The zinc plant, estimated to cost $200 million, will be built by the Belgium firm Sybetra. The loan capital is being provided by Sybetra and the West German Development Bank.

Zinc price levels quoted by producers remained unchanged from June and stood at \$700.00 (U.S.) a tonne overseas, \$749.56 (U.S.) a tonne in the United States and \$782.63 (Cdn) a tonne in Canada. Likewise, the London Metal Exchange closed the month at \$546.60 (U.S.) a tonne compared to levels of about \$550.00 (U.S.) a tonne in June and as such remained at a substantial discount to producer quotations.

INDUSTRIAL MINERALS AND PRODUCTS

Asbestos

Mr. Bernard Landry, Minister of State for Economic Development in Quebec, stated on July 3, 1977 that the government will announce its industrial strategy relating to asbestos, energy and pulp and paper in late fall.

Uncertainties surrounding the nature of the new industrial strategy appear to be at least partially responsible for delays in a go-ahead decision by two prospective producers in Quebec. Talks between Abitibi Asbestos Mining Company Limited and Lake Asbestos of Quebec, Ltd., a unit of ASARCO Incorporated, concerning development of Abitibi's Amos, Quebec property, remain suspended. Estimates are that the cost to establish a 200 000 tonne-a-year plant would be \$300 million. Brinco Limited continues to direct Abitibi under a management agreement remaining in force until 1978. McAdam Mining Corporation Limited is awaiting a report on the economics of the Roberge Lake, Chibougamau area deposit under option to Rio Algom Limited. This property is in the advanced feasibility stage.

The Department of Fisheries and the Environment has established new asbestos emission regulations to become effective December 31, 1978. Regulations will allow a maximum of 2 fibres greater than 5 microns in length per cubic centimeter to be emitted to the air from dry rock storage and surrounding crushing, drying and milling operations. Monitoring at individual plants begins immediately to identify problem areas.

Construction Materials

Gulf Oil Canada Limited is reviewing its decision to close its Shawinigan, Quebec chemicals plant by early 1978. The Departments of Industry, Trade and Commerce and Regional Economic Expansion will invest \$2 million to assist in plant modernization. Government assistance, the prospect of new markets and a new labour agreement at the plant that will assure improved productivity, could permit continued operation of the plant which employs 390. The plant produces calcium carbide and acetylene black. As well, calcium hydroxide produced as a byproduct is also marketed.

At a cost of $7 million, Fiberglas Canada Limited has installed the largest known electric melt furnace for production of glass fibre at its Sarnia, Ontario plant. It is capable of producing 200 tons of glass fibre a day, or enough to insulate the ceilings of 1,000 new homes to the recommended R-20 value ($5\frac{3}{4}$" to $7\frac{1}{4}$").

Canadian Johns-Manville Company, Limited will lay off 40 employees at its North Bay, Ontario plant between July 25 and September 1, due to depressed market conditions. The plant, employing 230, produces insulating board products and is a large consumer of perlite.

Fluorspar

On June 10, 1977 officials of Aluminum Company of Canada, Limited met with Premier Moores and Mines Minister Peckford of Newfoundland to announce the immediate closure of the company's fluorspar mines and beneficiation plant at St. Lawrence, Newfoundland. The Newfoundland government asked for a postponment of the announcement and after a series of meetings between federal, provincial and company officials, the company issued a press release on July 22, 1977 announcing that the mines would cease production on February 1, 1978.

Reasons cited by Aluminum Company were high costs of production, unsatisfactory grade of product and the ability of the company to purchase high grade material from foreign sources at a cheaper price.

Some 175 workers will be laid off and the community of St. Lawrence will lose its only industry. Approximately 2,150 persons in the community will be affected by the closure.

Potash

The Potash Corporation of Saskatchewan has reached agreement in principle with Alwinsal Potash of Canada Limited to purchase the latter company's potash mine at Lanigan, Saskatchewan. The purchase price is reported to be $86.5 million of which $10 million is unpaid reserves taxes which will be assumed by Saskatchewan. The remaining $76.5 million will be paid - $56.5 million in cash from the Saskatchewan energy and resource development fund and a $20 million promissory note to be repaid with interest over five years.

Transfer of the property is scheduled for the fall of 1977 at which time Potash Corporation will own 24.8 per cent of the rated potash mine capacity in Saskatchewan. Evaluation of APM Operators Ltd.'s Allan mine has been completed and negotiations for purchase are scheduled for this summer. Purchase of this mine would raise Saskatchewan's ownership of installed capacity to 35.8 per cent.

MINERAL FUELS AND PRODUCTS

Coal

British Columbia Hydro and Power Authority (B.C. Hydro) recently awarded three contracts that will lead to further evaluation of the potential of the Hat Creek coal deposits, 125 miles northeast of Vancouver. The first contract for a preliminary mining engineering study, is to be conducted by two Canadian companies, Cominco Ltd. and Montreal Engineering Co. Ltd. Information from a preliminary study is essential to a decision on a proposed 2,000 megawatt thermal generation station. The second contract is for a trenching program to excavate a 20,000-ton sample of coal from the Upper Hat Creek valley. The trenching program may serve as a model to develop criteria for full-scale mining operations. The third contract is for a $600,000 study of methods of producing gas and electricity from coal. The latter study will provide conceptual designs for demonstration plants using pressurized fluid bed combustion and gasification combined cycle technology on low Btu coals. The investigation of such techniques for Hat Creek coal was recommended in a jointly funded B.C. Hydro and Energy, Mines and Resources study completed in 1976. The construction of a demonstration plant would permit new processes to be tested for burning low grade coals and provide technical experience for full scale plants. The contract included environmental studies of potential sites for demonstration plants.

Nova Scotia will launch a $5.5 million drilling program on August 1, 1977. The program's objective is to confirm coal reserves off Sydney, Nova Scotia and will involve the drilling of 11 holes within a five mile radius of the Sydney coast. The drilling program is an essential step in the recently announced provincial plan to encourage production of coal for thermal and metallurgical markets. The goal of the program is to prove the existence of substantial coal reserves in the underwater deposits.

The Energy Resources Conservation Board of Alberta announced a public hearing on an application to extend a surface coal mine in northwestern Alberta. McIntyre Mines Limited has applied to extend its No. 9 mine which is located near Grand Cache. The expanded mine area contains an estimated 60 million tons of coal reserves which could be mined over a period of 30 years. McIntyre's production is marketed to Japan's iron and steel industry and to Canada's industry in Ontario and Nova Scotia.

A unique mode of transportation for coal miners is to be developed for the new Luscar Sterco Ltd. mine near Edson, Alberta. The new mine is being developed to supply Ontario Hydro with thermal coal. The workers will be flown, by helicopter, from Edson to the minesite at Luscar, 40 miles to the southeast. The service, the first of its kind, is being developed as an alternative to building a new town near the mine or to upgrading highway or rail facilities. A 28 passenger helicopter flown by Obanagan Helicopters will take 20 minutes to make the flight and will eventually ferry 250 workers a day to the minesite.

Petroleum and Natural Gas

TransCanada PipeLines Limited has applied to the National Energy Board to remove limits on six natural gas export licenses to allow the company to increase short term gas exports. If the limitations were lifted, there would not be any increase in authorized volumes, but pre-deliveries on existing contracts would be possible. In effect, TransCanada would try to export as much of the developing Alberta gas surplus as existing facilities could handle during the period before Alaska gas becomes available. The additional exports would be subtracted from long term export commitments, so total exports authorized would not increase. To support deliveries of this extra gas (as much as 600 MMcf/d) TransCanada has initiated a major natural gas purchasing program to acquire some 4 trillion cubic feet of reserves in Alberta.

Alberta will increase its price of a barrel of crude oil in four - one dollar stages between July 1977 and January 1, 1979. The one dollar per barrel increases will be effective on July 1, 1977; January 1, 1978; July 1, 1978; and January 1, 1979. The new price schedule reflects the successful oil pricing negotiations between the federal and provincial governments and reaffirms the objectives of both Alberta and federal governments that Canadian crude oil prices move toward international levels. In respect to natural gas, the Toronto city gate price will be subject to a two-step automatic increase in the full Btu equivalent of one dollar per barrel on each of August 1, 1977 and February 1, 1978. This will bring the Toronto city gate price for 100 per cent load factor to $1.68 and $1.85 per million Btu on the respective dates. During the second quarter of 1978, the price of natural gas will again be reviewed.

Lorneterm Ltd., a consortium headed by Canadian Pacific with Paktank Corp. and TransCanada PipeLines, and Tenneco LNG Inc. have mutually agreed to terminate negotiations for Lorneterm to build a $650 million LNG terminal at Saint John, New Brunswick. The two companies said they were unable to reach agreement on the terms of the contract. It is believed financial problems may have prompted the breakdown and Tenneco is now looking for a new partner in the project. Lorneterm has withdrawn its application to the National Energy Board.

The terminal would include a regasification plant able to handle about 1 Bcf/d of Algerian LNG and was scheduled for completion in 1981.

Uranium

The Minister of Energy, Mines and Resources has released a report entitled "1976 Review of Uranium Enrichment Prospects in Canada" which concluded that a large uranium enrichment facility build in Canada to serve the export market would give very limited benefits to Canada. Although there will not likely be a need for additional uranium enrichment capacity until about 1990, the Minister noted that there may be potential for future Canadian enrichment facilities based on newer enrichment technologies.

Under the continued ban on exports of Canadian uranium to Japan and the European Community, the German utility Rheinisch-Westfalisches Elektrizitatswerk (RWE) has borrowed a reported 200-300 tonnes of uranium from other German utilities. RWE is reportedly also discussing the possibility of borrowing additional quantities from Britain's Central Electricity Generating Board (CEGB). Japanese utilities may be unable to meet deliveries to United States ERDA enrichment plants should Canadian shipments not be resumed by the end of August.

At its annual convention, Australia's Labour party resolved that, if it were returned to power, it would institute an indefinite moratorium on uranium mining activities and cancel all uranium export contracts which companies might enter into from now on.

Compagnie Generale des Matieres Nucleaires (COGEMA) of France is providing an interest free loan of $103.5 million to South Africa's Randfontein Estates Gold Mining Co. Witwatersrand Ltd. as part of its contract to purchase 770 tonnes uranium per year, over a 10-year period, beginning in 1980. Base prices under the contract are reportedly $27 per pound U_3O_8 ($70/kg U), to be escalated according to the index of average mining costs for gold and uranium, as published by Chamber of Mines of South Africa.

East Rand Gold & Uranium Co. of South Africa is proceeding with a $154 million project to recover uranium and gold from old slimes dams. Some 378 million tonnes of slimes are expected to be treated over a 20-year period with an average annual recovery of 5 400 kg gold and 150 tonnes uranium. The company's first three years of uranium production have reportedly been sold to Iran.

The French uranium conversion company Comurhex will expand its conversion plant in 1978 from the current 8 000 to 11 000 tonnes per year capacity; the company can expand further to some 15 000 tonnes uranium per year, as markets permit.

Spain's Empressa Nacional del Uranio S.A. (ENUSA) has signed an agreement with Colombia's Institute of Nuclear Affairs providing for exploration covering three areas in Colombia totalling some 60 000 sq. km. The agreement also provides for subsequent production activities, with ENUSA as the operator and having 49 per cent of any production, plus first call on the remainder.

In its annual uranium marketing survey, US ERDA reports that United States utilities contracted for 64 160 tonnes uranium during 1976 bringing total forward commitments by domestic producers to domestic utilities to 150 320 tonnes uranium, as of January 1, 1977. Almost half of these new commitments are scheduled to come from production which is controlled by uranium buyers. Average prices for deliveres in 1976 were reported at $16.10 per pound U_3O_8 ($41.90/kg U) compared with $10.70 per pound ($27.80/kg U) in 1975.

US ERDA and the USGS have signed a letter of agreement whereby the USGS will conduct a national study of thorium resources. The first phase of the study will review existing data and prepare a new preliminary estimate of United States throium resources by May 1, 1978. A subsequent second phase of the study will expand the investigations to include both lower-grade resources and frontier areas.

SPECIAL ITEM

EMPLOYEE OWNERSHIP OF VERMONT ASBESTOS GROUP INC.

In January 1974, the GAF Corporation - one of *Fortune* magazine's 500 leading industrials - announced its decision to close its asbestos mine near the town of Lowell, Vermont rather than incur what the Corporation considered the "excessive" costs of meeting U.S. federal anti-pollution requirements. The immediate consequence of the mine's closure would have been the loss of 1978 on-site mining jobs as well as an equal number of jobs in the nearby town of Morrisville. Both Lowell and the area it serves are virtually dependent upon the operation of the mine for economic survival.

Unwilling to allow this to happen, the workers banded together to buy the mining enterprise and become its sole owners. The mastermind behind the formation of the Vermont Asbestos Group Inc. (VAG), as the former division of GAF Corporation is called, was John Lupien, a Canadian and former supervisor of maintenance with the previous owners. It was under his direction that employees raised an initial $78,000 by each purchasing from one to one hundred shares in the joint business venture at $50.00 per share. The remaining $22,000 was raised through the purchase of shares by friends, relatives, local retailers, and the local high school student council.

GAF Corporation had said it could not afford to keep the mine in operation; on March 12, 1975, its former employees became the owners of the mine and, in their first year of operation, produced a profit in excess of one million dollars. In addition, pollution control equipment was installed ahead of schedule and clean air standards were exceeded. As well, there was sufficient money to increase wages and fringe benefits by 19.4 per cent.

A report covering the events of the past and plans for the future of VAG will be published shortly.

RECENT AMALGAMATIONS AND MERGERS PUBLISHED IN THE GAZETTES

The following companies were amalgamated on June 1, 1977 under the name BOW VALLEY RESOURCE SERVICES LTD.

Bow Valley Resource Services Ltd.
Atmos Engineering Sales Ltd.
Bow Helicopters Ltd.
Bow Valley Industries (B.C.) Ltd.
Bow Valley Leasing Ltd.
Connors Drilling Ltd.
Dundee Oils Ltd.
Elworthy & Company Limited
Griffith Bros. Drilling Limited
Mainland Industries Ltd.
Mothercat Industries Ltd.
Mystery Oil Limited
Resolute Construction Ltd.
Vanlorne Oils Limited
Western Research & Development Ltd.

Source: Alberta June 30, 1977

Independent Cement Inc. - Ciment Independant inc. amalgamated with Demix Ltee to form a new company under name of Independent Cement Inc. - Ciment Independant Inc. on April 1, 1977 Source: Quebec gazette 2-7-77

Castlemaine Explorations Ltd. amalgamated with Kapvik Exploration Ltd. to form new company under name Castlemaine Explorations Ltd. on June 3, 1977 Source: British Columbia gazette June 23, 1977.

La Teko Resources Ltd. amalgamated with Agean Explorations Inc. under the name La Teko Resources Ltd. on June 1, 1977. Source: British Columbia June 16, 1977

Sterling-Coal Valley Mining Company Limited, The Sterling Collieries Company, Limited and Curtis Management Co. Limited amalgamated to form a new company under the name Sterling-Coal Valley Mining Company Limited on February 16, 1977. Source: Consumer and Corporate Affairs Bulletin March/April 1977.

NEW PUBLICATIONS

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

Mineral Policy Series:

MR 157F Le Nickel
MR 163 Minerals and the Environment: Current Problems and Policies

The above publications are available from the Publishing Center, Department of Supply and Services, Ottawa at $2.00 a copy.

MH/GK/so'm/df/ka