

Iron Ore

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SUMMARY

Global demand for iron ore grew in 1994 due to a revival of the steel industries in Western Europe and the United States as well as the continued growth of steel output in China and other Far Eastern countries. Internationally traded iron ore also reached a new record of 430 Mt. A tight supply situation developed for iron ore pellets and lump ore, although the fines and concentrate market continued to be well supplied. Major iron ore producers and consumers apparently believe the situation will persist in 1995 since price increases were negotiated for all iron ore products on the international market.

The steel industries of the European Union did so well that they needed to increase iron ore imports by 30% over the previous year. More importantly for Canadian mines, the long-awaited shift to pellets from sinter use at European mills finally arrived. Two sinter strings in Belgium closed and other European steel producers sought agglomerated ores on the world market rather than increasing sinter production to meet the increased demand of the current economic cycle.

Iron ore prices dropped again in 1994 and, for some contracts, reached the lowest level in five years. Negotiations for 1995 deliveries, however, proceeded relatively quickly with some settlements in both the European and Japanese markets in December 1994. Based on those settlements, it appears that the price for concentrates and fines will increase by 5.8%; for lump ore, by 7.9%; and for pellets, by 12.6%.

Canadian iron ore producers increased production and shipments to reach the highest levels since 1990 but prices, which are negotiated on an annual basis, were at a five-year low. As a result, the mines continued to take cost-cutting measures in spite of operating at capacity for much of the year.

CANADIAN DEVELOPMENTS

The four Canadian iron ore mines and ancillary plants increased production and shipments by about 10% in 1994. They produced 37.6 Mt of concentrate, pellets and sinter from hematite and siderite ores during the year. The production of concentrate that was not further processed to pellets or sinter rose by about 2 Mt. Ore stockpiles were near the year-end 1993 level. The increase in production permitted the companies to operate all year without summer shut-downs and, in Labrador, employment at the iron ore mines increased 8%. Overall, employment at Canadian iron ore mines, concentrators, agglomerating plants and support services recovered slightly to 5409 from the low of 5171 reached in 1993, the lowest level since 1955.

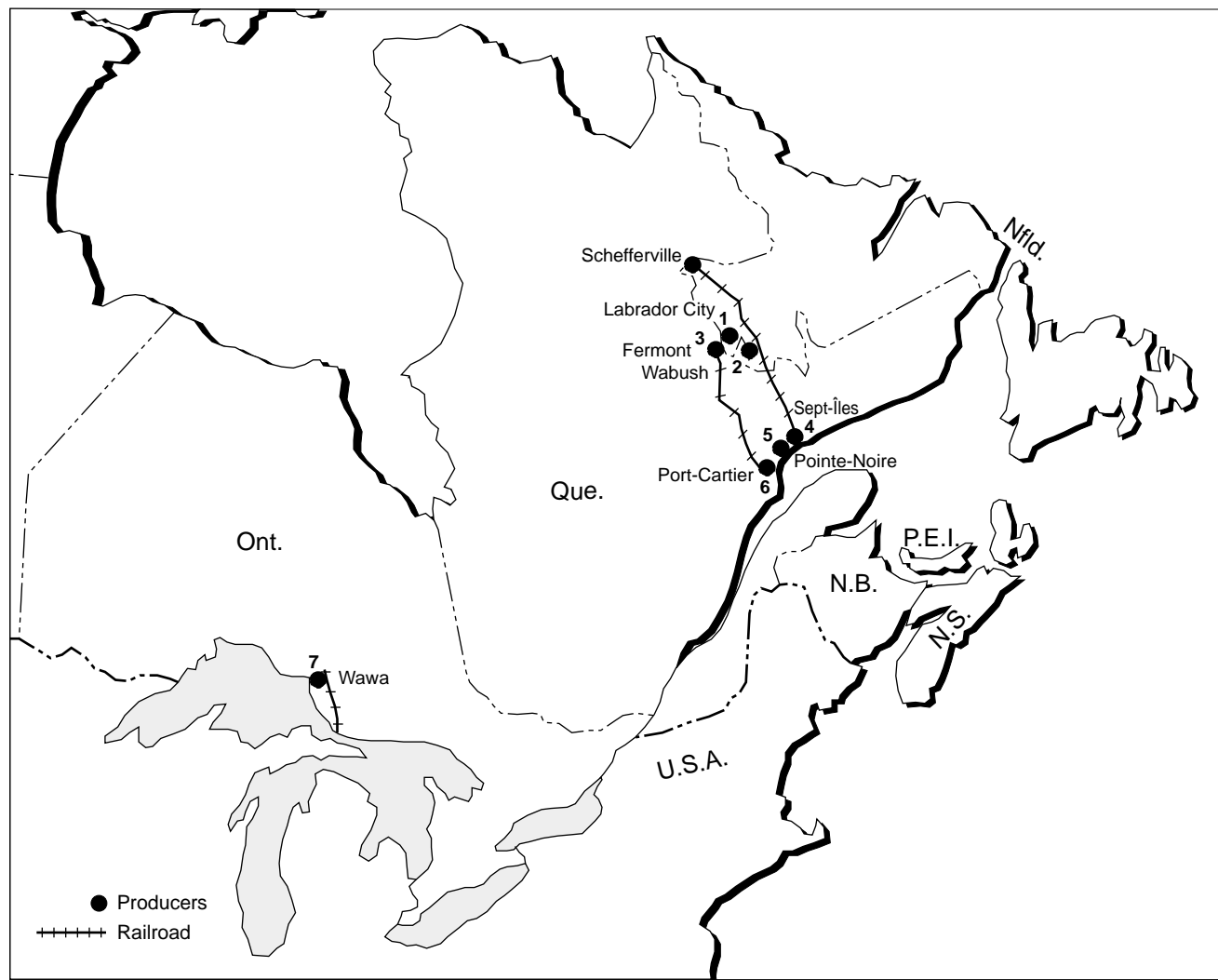
There are three mines in the Labrador Trough area of northern Quebec and Labrador, and these account for over 96% of Canadian iron ore production. The mines belong to Quebec Cartier Mining Company (QCM), Iron Ore Company of Canada (IOC), and Wabush Mines. There is also one mine in Ontario. In British Columbia, by-product iron concentrate production increased due to recovery from a waste dump. QIT-Fer et Titane Inc. makes pig iron from ilmenite mined near Havre-St.-Pierre, Quebec; its production is counted in primary iron statistics (refer to the chapter on Primary Iron).

New contracts between two of the three iron ore companies and the United Steelworkers of America (USWA) were signed in 1993. Negotiations with Wabush Mines were not completed until March 1994.

QCM produced 16 Mt of ore in 1994, which was 3.2 Mt more than in 1993 and was the highest level since 1991. The increase in production was mainly accomplished through the elimination of the shut-down periods. An all-inclusive quality management process has been introduced at QCM which, in large measure, accounts for the improvement in productivity.

QCM shipped 16.4 Mt of ore, of which 8.2 Mt was concentrate destined mainly for Europe. The remaining shipments were low-silica pellets for direct reduction, acid pellets and fluxed pellets. Forecast sales for 1995 are 16.2 Mt.

Figure 1
Iron Ore in Canada, 1994



Numbers refer to locations on map above.

PRODUCERS

1. Iron Ore Company of Canada, Carol Division (mine/concentrator/pellet plant)
2. Wabush Mines (mine/concentrator)
3. Quebec Cartier Mining Company (mine/concentrator)
4. Iron Ore Company of Canada (port)
5. Wabush Mines (pellet plant/port)
6. Quebec Cartier Mining Company (pellet plant/port)
7. Algoma Ore, division of Algoma Steel Inc. (mine/concentrator/sinter plant)

IOC's production for 1994 was about 15.9 Mt compared to 13.5 Mt in 1993. As a result, there was no summer shut-down and average employment for the year increased by several percentage points. There was a lockout at the Sept-Îles terminal from February 23 to May 23, 1994, due to a dispute over the local that would represent the affected employees. The mine, concentrator, pellet plant and railway continued to operate. Due to the changes in market conditions, IOC's pellet production increased from 7.5 Mt to 10.4 Mt. There was little change in the

production of concentrate for sale, 5.5 Mt in 1993 vs. 5.2 Mt in 1994.

However, the increase in demand did not stop the progressive erosion of prices which significantly affected IOC's profits. As a result, cost reduction continued to be a priority in order to offset the inflationary increases in operating costs. Longer-term development projects were postponed until economic conditions improve.

There has been considerable progress in the quality area. IOC is continuing with the work of developing new products in response to customers' needs. It shipped high basicity pellets for blast furnace tests and started to produce 4% SiO₂ grade pellets. Work is being carried out to further reduce SiO₂ levels in pellets.

For 1995, IOC is projecting total production of 15.8 Mt, or 5.4 Mt of concentrates and 10.4 Mt of pellets. Shipments to Europe are expected to remain strong. Sales in North America may be affected by the re-opening of National Steel's pellet plant, but they are expected to approach the 1994 level. The contract with Japanese steel mills for 2.3 Mt/y plus or minus 15% runs until April 1998.

Wabush Mines had six products in 1994: fluxed pellets and acid pellets, each available with either 1% or 2% manganese content, concentrate, and chips. Wabush shipped 4.8 Mt of pellets and 368 000 t of concentrate. The increased production required a small increase in the number of employees. Shipments for 1995 are forecast at close to 5.5 Mt.

Wabush signed a contract with its employees at the end of March 1994, a year after the previous contract had expired. The terms were similar to those in the contracts negotiated by the union with IOC and QCM in 1993.

LTV Steel Co. and Finsider International S.A. withdrew from the Wabush Mines partnership; therefore, beginning in January 1994, the participants were Stelco Inc. (37.9%), Dofasco Inc. (24.2%), Acme Steel Company (15.1%), Inland Steel Company (15.1%), and Cliffs Mining Company (7.7%).

Wabush and the Canada Centre for Mineral and Energy Technology (CANMET) completed test work on a process to recover a 60% manganese concentrate from iron ore. The manganese would be removed in a proposed rare earth separator circuit which would be installed at the mine's iron ore concentrator. Wabush's owners were considering the project at year-end.

The Algoma Ore Division (AOD) of Algoma Steel Inc. produced 739 323 t of sinter at its plant at Wawa, Ontario. This was about a third lower than in 1993 due to a trial on the company's blast furnace of a new product, Low Base sinter. The plant used siderite ore from the adjacent mine, but about 40% of the feed was recycled material from steel mills. The products were 479 318 t of superfluxed sinter, 216 395 t of Low Base sinter, and 43 610 t of sinter produced on a tolling basis for other mills. Shipment figures in Table 1 show only the volume of sinter that can be attributed to the iron ore mined in Canada. The high level of recycled material has improved prospects for keeping the sinter plant and mine open for several more years. The forecast production for 1995 is about 945 000 t.

Canadian iron ore exports increased 15% to 30 Mt in 1994. Nearly all of the increase was in iron ore pellets, of which the United States took 2 Mt more than in 1993. Belgium, Germany, the Netherlands and the United Kingdom also increased their imports of Canadian iron ore pellets by more than 500 000 t each.

WORLD DEVELOPMENTS

World iron ore production for 1994 is estimated to have been 935 Mt, a very small increase from the previous year. China, Brazil and Australia are the world's largest iron ore producers, accounting for over half of the total.

World trade reached 430 Mt for the year. Australia and Brazil, both with 120 Mt of exports, were the largest exporters of iron ore. For both countries this was a record year. The next largest exporters were India (33 Mt), Canada (30 Mt), the Republic of South Africa (20 Mt) and Sweden (18 Mt). Exports from the Ukraine are estimated to have been between 15 and 29 Mt. Japan's and South Korea's imports of iron ore held steady at the 1993 level of 115 Mt and 35 Mt respectively. The European Union increased its imports by 15% to 134 Mt.

China, the largest producer of iron ore in the world, has tremendous reserves of low-grade iron ore but has been importing ore to supplement domestic supplies for its steel industry. It continued to import iron ore at the 33-Mt/y level. Its steel industry continued on the previously forecast growth trend, producing 91.5 Mt of steel in 1994, up 3.2% from 1993. Technical problems are keeping the domestic iron ore industry from expanding fast enough to meet demand. To ensure future supplies, China has invested in mines in Australia and Peru in recent years. At the end of 1994, Citic Australia Pty Ltd., a Chinese state-owned enterprise, agreed to take a 52.2% share of Portman Mining Ltd. for iron ore production in Western Australia.

Brazil's largest iron ore producer, Companhia Vale do Rio Doce (CVRD), took advantage of market conditions to pursue its strategy for continued growth. Domestically, it increased sales by 13% based on the Brazilian steel industry which increased production 2.3%. Export sales increased by nearly 9% to bring overall shipments for the company to nearly 100 Mt for the year. A ship sank at CVRD's Ponta de Madeira port and interrupted the loading of ore from the Carajas mine for 36 days, but total annual shipments were not affected.

Minerações Brasileiras Reunidas SA (MBR), Brazil's second largest iron ore producer, achieved sales of 25.5 Mt in 1994 and plans to increase production to 35 Mt/y by the turn of the century.

Australian iron ore production capacity is being increased and consolidated at about 140 Mt/y. During 1994, progress was made as production increased by 5 Mt to 127 Mt. In August, Hamersley Iron Pty Ltd. opened the Marandoo deposit where it plans to produce 12 Mt/y. Production continued at its four other mines at the 50-Mt/y level. BHP Iron Ore Pty Ltd. opened its Yarrie deposit at a production level of 6 Mt/y, but closed its Koolan Island mine after 43 years of operation. Net production from all BHP mines increased by 3 Mt for the calendar year. To increase sales in China, BHP announced it would open sales offices in six more cities in China, bringing the total to 12. BHP also sought approval to build a 2-Mt/y direct reduction plant near Port Hedland on the coast of the Pilbara region. The plant would produce hot briquetted iron which would be shipped to electric arc steel furnaces anywhere in Southeast Asia. Savage River Mines, operating since 1967 in Tasmania, announced it would close in 1997.

Exports account for more than three quarters of Canada's iron ore shipments and, although the largest single customer is the United States, European destinations account for 50% of all shipments of Canadian iron ore. The Canadian industry is, therefore, very sensitive to competition from U.S. mines in the North American market and to competition from countries that ship to the European market. Pellet demand improved because of a continued upturn in the steel sector in Canada's traditional markets. The North American market experienced tight supply conditions which were exacerbated by the temporary shut-down of National Steel's pellet plant in the United States. The Western European steel industry experienced a dramatic recovery which at year-end appeared to be strengthening.

U.S. steel production ran about 1.5% ahead of production in 1993 and, consequently, iron ore demand increased proportionately to nearly 80 Mt. National Steel's pellet plant closed from August 1993 to August 1994 which, coupled with the improved steel situation, obliged steel mills to increase imports of iron ore pellets from Canada and other countries. Canadian exports of iron ore to the United States reached 9.8 Mt, an increase of 2.5 Mt from the previous year. Brazil also profited from the high demand in the United States by increasing exports there to 3.6 Mt. The operating U.S. mines were able to increase production by 2.5 Mt to help meet the demand.

Mauritania, which in 1992 had suffered its worst year since 1983 in terms of iron ore sales, recovered in 1993 and 1994 to export over 10 Mt this past year. The recent opening of the M'Haoudat mine has increased the national mining company's capacity to produce lump ore, a product which is expected to be in short supply in the medium and long term.

Shougang Hierro Peru SA produced 5.8 Mt of iron ore in 1994, an increase of 300 000 t in one year. The

company expects to be producing at the rate of 10 Mt/y in 2000. Further south, a consortium led by Pan World Minerals International Inc. is planning to open a mine for the direct shipping of hematite ore.

India, the fifth largest iron ore producer in the world and also a major exporter, has warned its foreign customers that exports may be curtailed at some time in the future to conserve the best Indian ore for domestic steelmaking. The Indian government wants to save reserves from two mines, Bailadila and Donimalai, which are producers of high-grade lump ore suitable for direct reduction. For Japanese steel-makers it is especially important since these mines supply about 17 Mt/y to them, and some of the contracts will be up for renewal in 1996. Discussions among the concerned companies and the Indian government were continuing at year-end.

The Venezuelan iron ore producer C.V.G. Ferrominera Orinoco C.A. opened a new 3.3-Mt/y pellet plant in October 1994. The plant brings Venezuelan pellet capacity to almost 10 Mt/y.

UNCTAD WORK ON IRON ORE

In 1994, the Trust Fund Project on Iron Ore Information, a separately funded project under the United Nations Conference on Trade and Development (UNCTAD), published two statistical reports and a market report. The reports are a unique source of iron ore trade data, tracing the flows among the major importing and exporting countries. The economic analysis that is included provides an independent global picture of the state of iron ore industries in all countries.

The Intergovernmental Group of Experts on Iron Ore (IGE), also under UNCTAD, met in Geneva October 24-26, 1994, with representation from 32 countries and 20 major importing and exporting companies. The meeting correctly forecast a price recovery for the 1995 contracts and specifically identified the probable strength of the pellet market. Guest speakers from a Swedish consulting group, Batelle Institute and Lurgi Metallurgie, informed the meeting about control and ownership in the industry; they also forecast the evolution of iron ore demand based on changes in steelmaking and emerging ironmaking technologies.

The UNCTAD Secretariat, working for the IGE, also published iron ore statistics that were complementary to the trust fund project publications. The UNCTAD reports cover more countries, include the iron content of the ore, and provide forecasts on iron ore, pig iron and steel production, consumption and trade. The Secretariat has contacts in 87 countries covering all significant producers and consumers.

The IGE is scheduled to meet again October 23-25, 1995, to discuss developments in the production, marketing and consumption of iron ore.

PRICES

As expected, iron ore prices were cut in 1994 for all internationally traded iron ore. For most grades, the decreases were in the range of 7.8-9.5% for fines and concentrates, 4.2-5.9% for lump, and about zero for pellets. Some lower-quality ores, such as Robe River fines, suffered price cuts of 14.5%. A strengthening demand for pellets was recognized during negotiations and the spread in price between concentrates and pellets increased from US\$11.75c/Fe unit¹ to US\$13.85c/Fe unit.

Negotiations for 1995 deliveries reached the point of several settlements in both Europe and Japan before the end of 1994. After three years of price reductions, iron ore exporters negotiated higher prices for all grades. Concentrates and fines will cost between 5.8% and 7.2% more; lump, 7.9% more; and pellets, 12.6% more. The premium for iron ore pellets over fines and concentrates also increased to US\$22.19c/Fe unit.

OUTLOOK

Two technical trends may bring benefits to the Canadian iron ore industry. First, the steel industry in Europe closed two sinter lines in 1994, which may signal the beginning of the long-awaited shift from using sinter to using pellets in European blast furnaces. If so, the Canadian mines will be able to operate their pellet plants at capacity with the commensurate savings in operating costs per tonne. Wabush Mines also has the capability of returning its pellet plant to its former capacity of 6 Mt/y. In addition, IOC has an idle pellet plant that, with significant investment, could be re-opened. These capacity additions would be cheaper than new pellet plant construction in other countries.

The second trend is to direct reduction of iron ore (DR) and other alternatives to blast furnaces and basic oxygen furnaces for ironmaking and steelmaking. The growth in direct reduction capacity has fallen far short of the predictions made when the technology was first commercialized, but new projects in India, Venezuela and Australia indicate now that the rate of additions to capacity is accelerating. DR and new technologies often have different specifications for iron ore than has been acceptable for blast furnace use. Canadian companies have the experience and equipment for making pellets and concentrates engineered to customer specifications which will give them an advantage over exporters of run-of-mine ore. QCM already produces a DR-grade pellet that is used by Sidbec Dosco Inc., and IOC is engaged in tests to produce a suitable pellet in the near future.

Canadian companies in the next year or so will benefit from recent exchange rate changes for both Canadian and other currencies relative to U.S. dollars. Contracts for iron ore sales, even within Canada, are written in U.S. dollars so each change in the exchange rate has a direct effect on company revenue. In the price negotiations for 1995 deliveries to Europe and Japan, both Australia and Brazil needed increases due to factors outside the mining companies' control. In Australia, the Australian dollar strengthened during 1994, which meant the mines needed price increases at least equivalent to the change in exchange rate to maintain income. The Brazilian government during the year took effective measures to fight inflation and stabilize the value of its new currency, the Real. Without high inflation, the Brazilian exporting companies needed higher prices to cover the real costs at the mines as well as the debt servicing costs. With these incentives, Australian and Brazilian exporters had to negotiate price rises for 1995. Since price leadership is the norm for international sales of iron ore, Canadian companies were given US\$/t increases similar to those negotiated by Australia and Brazil.

The Canadian industry will continue to face challenges to remain competitive because of the lower grade of Canadian ore relative to several competitors on the international market. So far, however, the companies have been able to meet the challenge through quality programs and restructuring. In the near term, Canadian mines will benefit from the price increases for deliveries in 1995. In the longer term, the opportunities will be related to market niches often associated with new technologies.

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 60. (2) Information in this review was current as of February 1, 1995.

¹ Price is reported in cents, U.S. currency, for each percentage point of iron in a tonne of ore, e.g., at 30c/Fe unit, ore grading 65% iron would bear a price of $65 \times 30c = US\$19.50/t$.

TABLE 1. CANADA, IRON ORE PRODUCTION AND TRADE, 1993 AND 1994p

Item No.	1993		1994p	
	(tonnes) ¹	(\$000)	(tonnes) ¹	(\$000)
PRODUCTION (mine shipments)				
	18 238 578	614 387	20 417 000	701 973
Newfoundland				
Quebec	14 404 857	x	16 046 000	x
Ontario	527 791	x	317 700	x
British Columbia	56 850	1 280	72 910	1 663
Total ²	33 228 076	1 054 364	36 853 610	1 110 795
IMPORTS				
2601.11	Iron ore concentrates, non-agglomerated			
	12 864	395	71 834	1 727
United States				
Brazil	-	-	35 884	1 296
Russia	-	-	72	2
India	-	-	58	1
Japan	-	-	52	1
Germany	-	-	5	...
Other countries	-	-	12	...
Total	12 864	395	107 917	3 031
2601.12	Iron ore, agglomerated			
	5 032 369	202 871	4 847 070	209 145
United States				
Brazil	389 106	13 847	280 845	10 929
Venezuela	6 215	939	-	-
Total	5 427 690	217 658	5 127 915	220 075
EXPORTS				
2601.11	Iron ore concentrates, non-agglomerated			
	2 392 434	55 185	2 815 416	62 820
Germany				
United Kingdom	2 626 010	56 247	2 769 873	58 987
France	1 712 362	36 256	2 222 314	44 377
United States	960 098	23 907	1 297 149	33 713
Netherlands	1 645 256	31 789	1 416 166	25 819
Japan	1 146 826	18 097	1 095 091	17 083
South Korea	940 634	16 011	795 560	12 410
Italy	303 820	6 582	339 099	8 909
Belgium	263 404	6 584	304 626	8 620
Philippines	476 690	8 063	432 782	6 751
Spain	326 797	7 633	179 311	4 170
Finland	69 402	1 266	137 246	2 652
Sweden	286 734	6 545	94 583	2 152
Australia	-	-	88 765	1 470
Austria	-	-	54 969	934
Taiwan	-	-	25 078	718
Portugal	38 330	790	29 500	633
South Africa	33	...	-	-
Switzerland	75 757	1 664	-	-
Total	13 264 587	276 628	14 097 528	292 227
2601.12	Iron ore, agglomerated			
	6 433 144	289 331	8 907 813	406 361
United States				
Germany	1 697 109	61 404	2 169 447	79 748
Belgium	1 316 790	46 786	1 816 592	58 631
Netherlands	945 445	30 441	1 291 703	37 428
United Kingdom	305 427	10 592	824 365	25 827
Spain	506 566	18 231	424 863	17 527
Portugal	203 191	7 170	290 440	9 834
Italy	766 458	37 194	125 440	5 960
Austria	-	-	85 816	2 445
France	308 645	10 342	57 524	2 264
Australia	-	-	33 774	962
Venezuela	681	83	86	21
Turkey	223 803	9 201	-	-
Sweden	105 836	3 810	-	-
People's Republic of China	121 868	4 184	-	-
Total	12 934 963	528 776	16 027 863	647 012

TABLE 1 (cont'd)

Item No.	1993		1994 ^p	
	(tonnes) ¹	(\$000)	(tonnes) ¹	(\$000)
EXPORTS (cont'd)				
Total exports, all classes				
United States	7 393 242	313 239	10 204 962	440 074
Germany	4 089 543	116 590	4 984 863	142 568
United Kingdom	2 931 437	66 839	3 594 238	84 814
Belgium	1 580 194	53 370	2 121 218	67 251
Netherlands	2 590 701	62 231	2 707 869	63 247
France	2 021 007	46 598	2 279 838	46 641
Spain	833 363	25 864	604 174	21 697
Japan	1 146 826	18 097	1 095 091	17 083
Italy	1 070 278	43 777	464 539	14 870
South Korea	940 634	16 011	795 560	12 410
Portugal	241 521	7 961	319 940	10 468
Philippines	476 690	8 063	432 782	6 751
Austria	—	—	140 785	3 380
Finland	69 402	1 266	137 246	2 652
Australia	—	—	122 539	2 433
Sweden	392 570	10 356	94 583	2 152
Taiwan	—	—	25 078	718
Venezuela	681	83	86	21
Switzerland	75 757	1 664	—	—
Turkey	223 803	9 201	—	—
South Africa	33	. . .	—	—
People's Republic of China	121 868	4 184	—	—
Total	26 199 550	805 405	30 125 391	939 240
Consumption of iron ore at Canadian iron and steel plants	13 540 232	. .	12 682 000	. .

Sources: Natural Resources Canada; Statistics Canada; American Iron Ore Association.

— Nil; . . Not available; . . . Amount too small to be expressed; ^p Preliminary; x Confidential.

¹ Dry tonnes for production (shipments) by province; natural weight for imports and exports. ² Total iron ore shipments include shipments of by-product iron ore.

Note: Numbers may not add to totals due to rounding.

TABLE 2. CANADA, IRON ORE SHIPMENTS, 1991-94

Company and Location	Ore Mined	Product Shipped	1991	1992	1993	1994 ^P
(000 tonnes, natural or wet)						
Algoma Ore Division The Algoma Steel Corporation, Limited Wawa, Ontario	Siderite ¹	Sinter	1 137	1 037	1 074	723
Iron Ore Company of Canada Schefferville, Quebec	Hematite, goethite and limonite	Direct shipping	264	120	65	—
Carol Lake, Labrador	Specular hematite and magnetite	Concentrate	7 076	4 418	5 640	5 475
		Acid pellets	5 927	6 346	6 161	6 547
		Fluxed pellets	1 873	1 467	2 010	3 484
		Chips	106	18	11	—
Quebec Cartier Mining Company Mount Wright, Quebec	Specular hematite	Concentrate	7 655	7 213	7 670	8 206
		Acid pellets	4 630	2 919	3 229	3 763
		Fluxed pellets	1 864	2 467	2 798	3 379
		Low Si pellets	925	1 100	1 055	1 025
Wabush Mines Wabush, Labrador and Pointe-Noire, Quebec	Specular hematite and magnetite	Acid pellets	2 991	3 146	2 847	3 100
		Fluxed pellets	1 693	1 547	1 982	1 700
		Concentrate	106	483	142	368
		Chips	—	—	51	—
British Columbia producers	Magnetite	Concentrate	67	62	57	73
Total			36 314	32 743	34 792	37 843

Source: Natural Resources Canada.

— Nil; ^P Preliminary.¹ Includes about 500 000 t of iron-bearing material not from the mine.**TABLE 3. RECEIPTS, CONSUMPTION AND INVENTORIES OF IRON ORE AT CANADIAN IRON AND STEEL PLANTS, 1993 AND 1994**

	1993	1994
(000 tonnes)		
Receipts imported	5 603	5 846
Receipts from domestic sources	7 929	6 936
Total receipts at iron and steel plants	13 532	12 782
Consumption of iron ore	13 540	12 793
Inventory at docks, plants, mines and furnace yards, December 31	7 040	6 580
Inventory change	-2 451	460

Source: American Iron Ore Association.

TABLE 4. WORLD IRON ORE PRODUCTION, 1992-94

	1992	1993	1994
	(000 tonnes)		
China	195 938	224 730	218 500
Brazil	168 365	173 362	183 500
Australia	117 215	121 429	127 000
Russian Federation	82 100	76 000	70 165
India	54 872	55 820	66 500
United States	54 913	55 661	58 106
Ukraine	74 000	68 600	53 600
Canada	34 449	31 727	36 674
Republic of South Africa	28 226	29 385	30 000
Sweden	19 277	18 728	20 000
Venezuela	18 054	17 479	18 400
Mauritania	8 262	9 565	10 800
Kazakhstan	incl.	12 634	10 223
North Korea	9 500	10 000	10 000
Other countries	75 714	50 154	47 811
Total	940 885	955 265	961 279

Sources: Natural Resources Canada, UNCTAD Intergovernmental Group of Experts on Iron Ore.
incl. Included in other.

TABLE 5. CANADIAN CONSUMPTION OF IRON-BEARING MATERIALS BY INTEGRATED¹ IRON AND STEEL PRODUCERS, 1993

Material Consumed	Consumed In				
	Sinter Plants at Steel Mill	Direct Reduction Plants	Iron and Steel Furnaces		
Production of Pig Iron			Steel Furnaces	Total in Furnaces	
	(tonnes)				
Iron ore					
Crude and concentrate	806 898	255 933	—	—	—
Pellets	61 150	867 663	11 377 673	16 883	11 394 556
Sinter	—	—	844 289	—	844 289
Sinter produced at steel plants	—	—	333 505	—	333 505
Direct reduced iron	—	—	—	763 754	763 754
Other iron-bearing materials including flue dust, mill scale, cinder, slag, etc.	694 106	—	2 278 041	102 566	2 380 607
Total	1 562 153	1 123 595	14 833 508	883 202	15 716 711

Source: Company data.

— Nil.

¹ The Algoma Steel Corporation, Limited; Dofasco Inc.; QIT Fer et Titane Inc.; and Stelco Inc.

TABLE 6. NORTH AMERICAN PRICES OF SELECTED ORES AT YEAR-END 1980, 1990, AND 1992-94

	1980	1990	1992	1993	1994
	(US\$/t)				
Mesabi non-bessemer ¹	27.61	29.557-31.03	29.557-31.03	29.557-31.03	29.557-31.03
	(US¢/t iron unit) ²				
Pellets					
Lake Erie base price ³	71.36	71.31-73.47	71.31-73.47	71.31-73.47	71.31-73.47
U.S. Steel ⁴	—	36.756	36.756	36.756	37.756
Upper Lakes ⁵	—	46.10-58.46	46.10-58.46	46.10-58.46	46.10-58.46
Wabush Mines ⁶	62.5	62.5	62.5	62.5	62.5
Northshore Mining Co. ⁷	—	47.99	47.99	47.99	47.99
	(US\$/t)				
Direct reduced iron	—	115-135	115-135	115-135	115-135

Sources: *Skilling's Mining Review; Iron Age.*

— Nil.

¹ US\$/t, 51.5% of iron natural, at rail of vessel, lower lake port. ² One iron unit equals one percentage point of iron content in a tonne of ore; therefore, an ore containing 60% iron has 60 iron units. ³ Cleveland-Cliffs Inc., IOC Ore Sales Co., Oglebay Norton Company at rail of vessel, lower lake port. ⁴ At mine. ⁵ Pickands-Mather & Co. and Inland Steel Mining Co. in hold of vessel, upper lake port. ⁶ f.o.b. Pointe-Noire. ⁷ f.o.b. Silver Bay.

TABLE 7. SELECTED PRICES OF IRON ORE BOUND FOR JAPAN AND EUROPE, 1990-94

Ore	Market	Source	1990	1991	1992	1993	1994
	(US¢/Fe Unit Dmt, f.o.b.)						
Fines (including concentrate)	Europe	CVRD	30.80	33.25	33.10	29.09	26.47
		Iscor	24.75	22.61	20.60
		Kiruna	35.70	37.10	36.50	30.50	28.10
		Carol Lake	31.78	34.60	33.15	28.50	26.15
		Mt. Wright	31.78	34.60	33.15	28.50	26.15
	Japan	CVRD	27.38	30.05	28.11	25.02	22.65
		Iscor	23.62	25.49	24.24	21.57	19.21
		Hamersley ²	30.54	32.96	31.35	27.90	25.26
		Carol Lake	26.11	28.18	27.26	24.26	21.96
Lump	Europe	Hamersley ¹	49.97	50.25	48.28	42.06	40.28
	Japan	CVRD	29.22	30.96	29.00	25.91	24.38
		Iscor	30.21	32.01	30.27	27.60	25.74
		Hamersley ²	38.53	40.83	38.23	34.78	32.74
Pellets	Europe	CVRD	51.60	52.15	48.47	43.64	43.64
		Kiruna	59.00	57.50	53.48	45.70	45.60
		Carol Lake	52.58	53.00	49.35	44.25	44.00
		Mt. Wright	52.58	53.00	49.35	44.25	44.00
	Japan	CVRD					
		(Nibrasco)	48.50	49.03	45.57	41.03	41.03
		Savage River	45.90	46.39	43.12	38.83	38.83

Source: *The Tex Report.*

. . Not available; c.i.f. Cost, insurance and freight; Dmt Dry metric tonne; f.o.b. Free on board.

¹ c.i.f. Rotterdam; ² f.o.b. Dampier.