

# IRON ORE

By William S. Kirk

Iron ore is essential to the economy and national security of the United States. As the basic raw material from which iron and steel is made, its supply is critical to any industrial country. Scrap is used as a supplement in steelmaking, but is limited as a major feed material because there is a limited quantity of high-quality scrap.

Domestic production reached its highest level since 1981, as the domestic iron ore industry operated at close to peak capacity. Consumption and shipments also rose from 1994 levels. The increases were attributed to an increase in crude steel production.

Internationally, iron ore remained in tight supply throughout the year, in spite of record world output, which exceeded 1,000 million metric tons for the first time, and a 5% increase in seaborne iron ore trade to more than 400 million tons (another record).

## Legislation and Government Programs

The Minnesota Department of Natural Resources began the construction of a research site, in Hibbing, MN, for the prediction, prevention, and control of problematic mine waste drainage.

Actions taken by the Government of the State of Western Australia have resulted in circumstances that have made the production of direct reduced iron (DRI) in that State much more likely. First, in the 1960's, the Government made value added processing a condition for granting mining leases. To fulfill that requirement Broken Hill Pty. Co. Ltd. (BHP) decided to construct a 2.5 million metric tons per year hot briquetted iron (a form of DRI) plant at Port Hedland, Western Australia. (See Australia in the World Review Section.) Second, the State Government passed legislation deregulating the energy markets in the Pilbara region of Western Australia. This legislation became effective in January 1995 and resulted in the rapid decline of gas prices to about one-half their pre-1995 values. Gas was used by 92.6% of the world's DRI plants in 1995.

## Production

Domestic iron ore production in 1995 reached 62.5 million tons, its highest level since 1981.

The nine Taconite mining operations in Michigan and Minnesota accounted for virtually all domestic iron ore production. These were, on the Mesabi iron range in northeastern Minnesota, Eveleth Mines, Hibbing Taconite Co. (Hibbtac), Inland Steel Mining Co., LTV Steel Mining Co., National Steel Pellet Co., Northshore Mining Corp., and the US Steel Group USX (Minntac). The two taconite operations on

the Marquette iron range in the Upper Peninsula in Michigan were the Empire and Tilden Mines.

U.S. production data for iron ore are developed by the U.S. Geological Survey (USGS) from two separate, voluntary surveys of domestic operations. The annual "Iron Ore" survey (1066-A) provides the basic data used in this report. All 19 addressees to whom the 1066-A form was sent responded, representing 100% of total production shown in tables 1 through 4. In past years, production for nonrespondents to the annual survey was estimated from monthly surveys (1066-M), from railroad reports, or from reported production levels in prior years. This information may be supplemented by employment data, mine inspection reports, and information from consumers. The American Iron Ore Association (AIOA) provided data on ore shipments from loading docks on the upper Great Lakes as well as receipts at transfer docks and furnace yards nationwide. The dock and steel plant data were compiled jointly by AIOA and the American Iron and Steel Institute (AISI).

Although iron ore was produced by 18 companies, 9 of them accounted for 99.2% of all domestic production. The 18 companies operated 18 mining operations, 10 concentration plants, and 10 pelletizing plants. Of the 16 mining operations, 15 were open pit and 1 was an underground operation. Virtually all ore was concentrated before shipment, and 98.3% was pelletized.

Combined U. S. and Canadian production represented about 9.8% of the world output of usable ore in 1995. At least 53 countries mined crude ore during the year. The leading producer was Brazil, which accounted for 23.2% of world output in terms of metal content, followed by Australia, with 15.7%. Trends in world mine production since 1991 are shown on a country basis in table 17.

Domestic iron ore production, at 62.5 million tons, was 7.0% higher than that of 1994. Productivity for usable ore in the Lake Superior District improved as usual. Nine mines produced ore for the iron and steel industry, while the remainder shipped ore mainly to cement plants. An average of 3.4 tons of crude ore was mined in 1995 for each ton of usable ore produced. This does not include the quantity of waste rock or overburden removed. When the quantity of crude ore is added to that of overburden and waste rock, the ratio of total materials moved to usable ore produced was 6.2. Low-grade ores of the taconite type mined in Michigan and Minnesota accounted for 9.7 % of total crude ore production. U.S. production of pellets totaled 6.4 million tons. The average iron content of usable ore produced was 63.3%.

**Michigan.**—Michigan accounted for 22.9% of the output of usable ore in 1995. All of the State's production was from the Empire and Tilden Mines near Ishpeming in Marquette County

and nearly all was pelletized. Both mining ventures are managed by Cleveland Cliffs Inc.'s (Cliffs) Cleveland-Cliffs Iron subsidiary.

On October 1, the Tilden Mining Partnership became Tilden Mining Company LC. Tilden received a shovel with a 38-cubic yard bucket and three 240-ton haulage trucks.

**Minnesota.**—Minnesota produced 76.3% of the national output of usable ore in 1995. All of the State's production came from open pit mines on the Mesabi Range. Production of pellets totaled 47.1 million tons.

Eveleth Mines, Eveleth, MN, signed an electrical power contract that significantly reduced its production costs. Eveleth reached agreement with Minnesota Power on a contract that went into effect on January 1, 1995 and was to continue through October 1999. In return for signing a long-term contract, Eveleth Mines took advantage of an interruptible power provision resulting in savings equivalent to \$0.10 per ton of pellets. Eveleth expected to see a total reduction in its production costs of \$1,000,000 to \$2,000,000 per year depending on the annual production level.

Eveleth produced its 100 millionth ton of pellets since it began pellet production in 1965.

Northshore Mining Co. at Silver Bay, MN, completed a \$6.1 million expansion that increased the plant's annual production capacity by more than 900,000 metric tons. The expansion was accomplished by activating one of Northshore's idle pelletizing lines and the renovation of the pelletizing plant's number 6 furnace. This brought Northshore production capacity to 4.2 million tons per year.

USX planned to extend its West Pit to the old Rana and Midway natural ore mines in the area of Kinney, MN. If the permitting is completed successfully, work would begin in January 1997. The extension would be 2.82 kilometers (1.75 miles) long.

National Steel Pellet Co. received two 240-ton haulage trucks.

**Missouri.**—The Pea Ridge Iron Ore Co. produced iron oxide powder at its mining complex near Sullivan, MO. The company has the only active underground iron mine in the country. In January 1991, the company ceased pellet production and began concentrating on specialty iron oxide products, which had formerly been coproducts.

## Consumption

Data on consumption and stocks of iron ore and agglomerates at iron and steel plants were provided by the AIOA. Data on consumption of iron ore for nonsteel end uses were compiled from information gathered from USGS surveys. Virtually all iron ore (98.8%) is consumed by the steel industry. Reported consumption of iron ore for manufacture of cement, heavy-medium materials, animal feed, ballast, ferrites, pigments, and other nonsteel products was 0.9 million tons.

Iron ore consumption rose from 80.2 million tons in 1994 to 83.1 million tons, a 3.6% increase over that of 1994. Pig iron production grew by 3.1% and crude steel production rose by

4.3%. U.S. production of hot metal and pig iron totaled 50.9 million tons. The number of blast furnaces in operation during the year ranged from 39 to 41.

Consumption of iron ore and all types of agglomerates reported to the AISI by integrated producers of iron and steel totaled 81.5 million tons. This included 67.6 million tons of pellets; 12.6 million tons of sinter, briquettes, etc.; and 1.3 million tons of natural coarse ore. Of the ore consumed, 79% was of domestic origin, 11% came from Canada, and 10% came from other countries. Other materials consumed in sintering plants included mill scale, flue dust, limestone and dolomite, slag and slag scrap, and coke breeze. Other iron-bearing materials charged to blast furnaces included steel-furnace slag, mill scale, and slag scrap.

There are four consumption numbers as shown in tables 1, 6, 7, and 8. The following explains why there is more than one consumption number and how each of them is derived.

The first consumption number (83,070 thousand tons in 1995) appears in table 1 and is the sum of the AISI consumption number (81,462) plus reported consumption of iron ore in direct reduced iron production and nonsteel uses.

The second consumption number (74,171 thousand metric tons in 1995) appears in table 6 and is the quantity of ore consumed at U.S. iron and steel plants by originating area as reported by the AIOA. The number has been converted from thousands of long tons, as it appears in the AIOA annual report, to thousands of metric tons.

The third consumption number (81,462 thousand tons in 1995) appears in table 7 and is the quantity of ore consumed in U.S. iron and steel plants by type of ore as reported by the AISI. The number has been converted from thousand short tons, as it appears in the AISI annual report, to thousand metric tons.

The fourth consumption number (75,780 thousand tons in 1995) appears in table 8 and is the sum of the AIOA consumption number (74,741) and two other numbers. These are the quantities of ore consumed in direct reduced iron production and nonsteel uses as reported to the USGS.

In summary, iron ore consumption for steelmaking is reported by the AIOA and the AISI. To obtain iron ore consumption for steelmaking and other uses, iron ore consumption for other end uses must be added to AIOA and AISI reported consumption, thereby generating four consumption numbers.

## Prices

Most iron ore prices are negotiated between buyer and seller. About 80% of domestic ore is produced by captive mines (mines producing for company smelters) and therefore does not reach the open market. The average f.o.b. mine value of usable ore shipped in 1995 was \$27.93 per ton, considerably higher than that of 1994. This average value should approximate the average commercial selling price less the cost of mine-to-market transportation.

Although international iron ore producers won price increases for 1995, when adjusted for inflation, prices were

much lower than in 1990. Using Carajas and Eastern Canadian fine ores as examples, their 1995 prices were 25% lower than those of 1990. The inflation adjustment factor used was the Consumer Price Index (CPI) for Urban Consumers from the Bureau of Labor Statistics. The CPI was rebased to 1990.

## Transportation

Because virtually no iron ore is consumed near where it is produced, the ore must be transported, often great distances. Most iron ore leaves the mine by rail and much is then transferred to ships. In 1995, 38.6% of world production was transported by sea.

Iron ore continued to be the mainstay of U.S.-flag Great Lakes shipping. Including transshipments, U.S.-flag carriers moved 53.8 million tons of iron ore, an increase of 1.1% compared with the 1994 season. Transshipments of iron ore occur on the way to steelworks in Cleveland, OH. These steelworks must be reached via the Cuyahoga River, which cannot accommodate vessels longer than 635 feet with a beam of 68 feet. Few Great Lakes vessels are this small, so the ore carried by most lakers must be taken to nearby Lorain, OH, offloaded onto smaller vessels, and transshipped to Cleveland.

International iron ore exports reached a record high of 443.0 million tons in 1995, up from 423.9 million tons the previous year. International seaborne trade rose from 383 million tons in 1994 to 400 million tons in 1995.

## Foreign Trade

U.S. exports of iron ore were 5.8% higher than those of 1994. Virtually all exports consisted of pellets shipped via the Great Lakes to Canadian steel companies that are partners in U.S. taconite projects in Michigan and Minnesota. U.S. imports of iron ore at 17.5 million tons were virtually identical to those of 1994.

Net imports averaged 11.4 million tons from 1989 through 1995. In 1995 net imports were 12.2 million tons, equivalent to 13.7% of U.S. ore consumption, down from 14.0% in 1994. Canada's share of imports was 51.7%; Brazil's was 27.5%.

## World Review

**Production.**—Internationally, iron ore production exceeded 1 billion tons for the first time. Although iron mining was widespread, with production in 56 countries in 1995, a relatively small number of countries accounted for the bulk of world production. Eleven countries (Australia, Brazil, Canada, China, India, Russia, South Africa, Sweden, Ukraine, the United States, and Venezuela) accounted for more than 90% of world production. China was the largest producer, in terms of gross weight, accounting for 24.1% of world production, but, because of its low ore grades, was third in world iron ore production, with only 13.3% of the total.

**Consumption.**—World pig iron production, the best indicator of iron ore consumption, rose 2.3% in 1995, reaching

its highest level since 1990. In 1992, China surpassed Japan in pig iron production and has since been the world's leading producer. In 1995, China surpassed the European Union in pig iron production and became the first country to produce more than 1 million tons of pig iron in a single year. Four countries or regions (Asia, 43.9%; Europe, 23.8%; North America, 12.1%; and the former Soviet Union (FSU), 11.4%) accounted for 91.2% of world pig iron production in 1995. Asian production of pig iron was dominated by China, 44.1%; and Japan, 32.5%.

**Trade.**—In 1995, 42.9% of world iron ore production was exported. Australia was the leading exporter of iron ore, shipping 133.0 million tons to world markets, followed closely by Brazil, which exported 131.4 million tons. Together, the two countries accounted for 59.6% of exports in 1995. The next largest exporter was India, at 7.2%. Total exports were 443.9 million tons, up from 422.6 million tons in 1994. Australia's principal export customer, Japan, accounted for 44.2% of its exports, with Asia as a whole accounting for 79.7%. Brazil's primary export customers were Western Europe (44.9%) and Asia (40.2%).

Japan was, by far, the world's largest importer, accounting for 27.4% of all iron ore imports in 1995. The next largest was Germany, which took 9.7% of total world imports. Australia supplied 48.8% of Japan's iron ore needs, followed by Brazil (22.9%) and India (15.2%).

**Australia.**—The country continued to be the world's leading exporter of ore in 1995.

Having met its obligation to the Western Australia Government to process iron ore, BHP planned to increase production capacity at its Yandi Mine from 15 to 25 million tons per year. BHP's decision to construct a 2.5 million tons per year hot briqueted iron plant at Port Hedland, Western Australia, fulfilled the company's obligation to process iron ore, a condition set when the original leases were granted.

BHP opened its Yandi Mine in March 1992 with an initial production capacity of 5 million tons per year. Capacity was doubled to 10 million tons per year through the installation of additional crushing and screening equipment, which began in 1992 and was completed in 1994. Some time later, production reached 15 million tons per year. For the increase to 25 million tons per year, a new mining area, Central Mesa 1, was to be developed. The expansion was to include the construction of a processing plant, trainloading facilities, and an additional 8-kilometer (5-mile) rail spur. The new plant would have an initial capacity of 10 million tons per year and would be capable of expansion beyond this level. The construction was expected to be completed by mid-1996.

RTZ Corp. PLC, London, England, and CRA Ltd., its 49%-owned Australian associate, agreed to combine their businesses in a dual listed companies (DLC) merger, in which corporate identities will be retained, but the boards of directors and management structures were to be unified. Hamersley Iron Pty. Ltd. is a wholly owned subsidiary of CRA. About 12% of the combined income was expected to come from iron ore. The vast majority of the iron ore business was in Western Australia, in

the wholly owned Mount Tom Price, Paraburdoo, Brockman and Marandoo Mines and in the 60%-owned Channar Mine. RTZ's non-CRA iron ore activities were minuscule in comparison, consisting of a 49% stake in Mineracao Corumbaense, a 400,000 ton per year mine in Brazil. The DLC structure was expected to make RTZ and CRA almost impregnable to takeovers.

Hamersley Iron Pty. Ltd. began operating its Marandoo Mine in October 1994 at one-third of its 12 million tons per year production capacity. The mine reached its full capacity in November 1995.

Hamersley also commissioned, in December, its fine ore processing plant. When operating at capacity, the plant was expected to upgrade 13 million tons per year of fines from the Paraburdoo and Channar Mines through the removal of ultrafine material.

Robe River Mining Co., the country's third largest producer, increased its production capacity by 2 million tons per year, upon the completion of its Cape Lambert crushing plant augmentation project.

**Austria.**—The country's only iron mine was slated for closure after having been operated for more than 1,200 years. Voest-Alpine Erzberg GmbH, the wholly state-owned company, was to receive state aid to enable the mine to continue operating at a loss. The open-pit mine produced about 4.5 million tons per year at its peak.

**Brazil.**—The Brazilian Government decided to privatize Companhia Vale do Rio Doce (CVRD), by selling its 51% interest in the company. CVRD, the world's largest iron ore producer, was valued at \$8 billion. The Government announced its intention to sell CVRD as a single unit to a large and diverse group of investors rather than selling the controlling interest as a block to a conglomerate or a consortium of companies. This would prevent international competitors from gaining control of CVRD and dismembering it by selling off subsidiaries.

CVRD's Carajas iron mine in northern Brazil produced 43.2 million tons of ore in 1995. This was up from 39.5 million tons in 1994 and close to its capacity of about 44 million tons per year, which was expected to be reached in 1996. Production could not exceed this level without heavy investments in both mine facilities and the Carajas railway. At the mine, investments in new crushing, grinding, and beneficiation facilities would be required to increase production capacity. At the port of Ponta de Madeira, through which Carajas ore is shipped, the addition of a second pier in 1994 increased the shipping capacity from 35 to 50 million tons per year of iron ore, thereby removing a bottleneck that had existed previously. However, the railway that linked Carajas and the port continued to be a bottleneck. The 890-km (550-mile) railway had only one track and would need either a second complete track or more transfer stations for the volume of ore flow to increase. CVRD's southern system, on the other hand, was capable of increasing production without major investments. Although its production had averaged about 48 million tons per year from 1990 through 1994, it had produced 68 million tons of ore as recently as 1985. In fact, CVRD planned to increase production

by 5 million tons per year to supply feed for the Kobrasco pellet plant. (See next paragraph.)

CVRD and Pohang Iron and Steel Co. (Posco) signed an agreement to form a 50-50 joint-venture company called Kobrasco to construct and operate a 4 million ton per year pelletizing plant in Brazil. Posco, Pohang City, Korea, is one of the world's largest steelmakers. The plant was to be built at Tubaro, a Brazilian port, from which CVRD shipped much of its iron ore and that already had six pelletizing plants.

Posco was a buyer of iron ore and pellets from CVRD and was the company's second largest customer in Asia. The company was to take 2.3 million tons per year from the new pellet plant for use at its Kwangyang steelworks, where a fifth blast furnace was expected to begin operation by the end of 1998. Posco's need to procure additional direct charge raw material came about after the company decided not to build extra sintering facilities at Kwangyang. The plant was expected to begin production in 1998.

CVRD was investigating the possibility of building another 4 million tons per year pellet plant, this one in conjunction with two Brazilian steelmakers and in the city of Itabira in Minas Gerais State, where the two steelworks were located.

At its Timbopeba Mine, CVRD completed the construction of a 3.5 million tons per year flotation plant. Expansion at CVRD's Conceicao Mine was underway. Upon completion in April 1996, the mine was to have a production capacity of 10 million tons per year of pellet feed.

Joint owners, S.A. Mineracao da Trindade (Samitri), (51%) and BHP Minerals of Australia, (49%), of Samarco Mineracao SA committed US\$230 million to build a 5.5 million tons per year pellet plant. The new plant, to be built at the company's port and processing facility at Ponta do Ubu in the State of Espirito Santo, was to double Samarco's pellet production capacity. The mine was producing about 9.5 million tons per year, of which about 6 million tons per year was converted to pellets and the rest sold as concentrates. Operation of the new plant, expected in the first half of 1997, would enable Samarco to produce pellets exclusively.

**Canada.**—The three mining operations in the Labrador Trough area of northern Quebec and Labrador accounted for 96% of Canadian iron ore production. These were the Iron Ore Company of Canada (IOC), Quebec Cartier Mining Co. (QCM) and Wabush Mines. Canadian production, at 37.9 million tons, rose 4.1% from that of 1994.

M.A. Hanna Co., Cleveland, sold its 8.14% share in IOC back to IOC. Hanna was to continue to act as the managing agent for IOC through 1996 and also retained its 50% ownership of IOC Ore Sales Co., which marketed IOC's pellets and concentrate throughout the world. The remaining partners increased their relative shares in IOC so that ownership was divided as follows: Bethlehem Steel International Corp. (a wholly owned subsidiary of Bethlehem Steel Corp.), 37.58%; Mitsubishi Corp., 21.77%; National Steel Corp., 21.73%; Labrador Mining and Exploration Co. Ltd. (a wholly owned subsidiary of Norcen Energy Resources Ltd.), 11.97%; and Dofasco Inc, 6.95%.

QCM became the first iron mine in the world to obtain ISO 9001 certification. ISO 9001 covered design and development as well as quality assurance for production, installation, and servicing defined for ISO 9002, which IOC received in 1991.<sup>1</sup>

**Chile.**—Mitsubishi Corp., Japan, and the Chilean iron and steel group Cía. de Acero del Pacífico S.A. de Inversiones (CAP) signed an agreement in September, to expand iron ore production at the Los Colorados Mine, owned and operated by CAP's mining affiliate Companhia Minerá Pacifico SA (CMP). The new mine, about 700 kilometers (435 miles) north of Santiago, was to supply concentrate to CMP's Huasco pellet plant. The Huasco plant was producing about 4 million tons per year, requiring about 5 million tons per year of concentrate. Most of the concentrate had been coming from the Algarrobo Mine, which was nearly depleted. The Los Colorados Mine began production in January 1995, to supplement the supply of feed for the pellet plant. Production at the Los Colorados was running at 1 million tons per year, but under the agreement, CAP and Mitsubishi were to form a joint venture to increase the production rate to about 5 million tons per year. The expansion was expected to be completed by mid-1998, when the Algarrobo was expected to be depleted. The cost of the expansion was estimated at \$107 million.

**France.**—Iron ore production fell from 2.4 million tons in 1994 to 1.5 million tons in 1995. The ARBED Mine at Terres Rouges is the only one in operation. It is slated for closure in late 1997 or early 1998.

**Mauritania.**—Société Nationale Industrielle et Minière (SNIM), in the first full year of production at its M'Houdat iron mine, exported 11.5 million tons of ore. This included ore from mines in the Kedia d'Idjil and the Guelb project.

**Sweden.**—Luossavaara Kiirunavaara AB (LKAB) continued its massive project to expand and upgrade its Kiruna operation. The company officially opened its new concentration and pellet plants in April, although they had been in operation much earlier in the year. The opening of the plants increased LKAB's pellet production capacity by 4 million tons per year. The major part of the impetus for LKAB to increase pellet capacity stemmed from the fact that two of the company's long-time customers closed their sintering plants in 1995 and began using pellets exclusively.

LKAB was once again wholly owned by the Swedish Government. Four entities, which had purchased 1.7% of LKAB on January 3, 1994, sold their holdings back to the Government in 1995.

**Venezuela.**—Hanbo Steel Group, Republic of Korea, and CVG's Ferrominera Orinoco (FMO), Venezuela, signed an agreement to conduct a feasibility study on the construction of an iron ore pelletizing plant in Venezuela. The feasibility study was being sponsored by Hanbo Steel & General Construction's sister company Hanbo Energy, with FMO providing data and personnel when necessary. The study was to focus on the viability of constructing a 3.9 million tons per year concentrating plant and a 3.3 million tons per year pelletizing plant at Puerto Ordaz, and the mine development required to provide feed for the plants. The cost was estimated at \$300

million.

## Outlook

At present consumption rates, known world iron reserves are sufficient to meet world demand well beyond the 21st century.

The domestic iron ore industry is totally dependent on the steel industry for sales. This dependence is not expected to change in the near future. Because of this relationship, the reader is referred to the outlook section in the "Iron and Steel" chapter.

It is difficult for the United States to compete elsewhere in the world iron ore market because of the inland location of its mines and high labor and energy costs. Only 8% of the iron ore produced from 1989 through 1995 was exported, with virtually all of it being pellets going to steelworks in Ontario.

For the near term, growth of the U.S. iron ore industry is tied to the growth of the integrated steelworks along the Great Lakes. The hope for the domestic iron ore industry is that one or more of the new direct reduction processes will prove to be economic for Lake producers. If this occurs, the domestic industry can supply the rapidly expanding minimill sector of the steel industry. Electric arc furnaces currently account for more than one-third of total crude steel production. Steel products require lower residual alloy content than can be readily achieved with scrap. This indicates a role for imported DRI in the coastal regions of the United States. The growth of gas-based DRI production capacity outside North America has been spectacular in recent years. Although a large part of this growth has occurred in Venezuela, the bulk of the construction has been spread evenly through a variety of countries that have surplus natural gas. It is too early to tell whether coal-based DRI production will be economically feasible in the United States. No matter how spectacular DRI growth is over the next decade, it will not be able to replace more than a fraction of the world's blast furnace production because of technological restrictions. The blast furnace is expected to remain the mainstay of the iron and steel industries in most developed countries over the next 25 years.

World pig iron production levels have remained flat since 1990, with 1995 production virtually the same as in 1990. During this period five areas or countries, (China, Europe, the FSU, Japan and North America) have accounted for 82% of the world's pig iron production. In three of these (Europe, Japan and North America) pig iron production has remained virtually constant. Production fell considerably in the FSU and rose dramatically in China. Production has also increased substantially in other parts of Asia, particularly India, Korea, and Taiwan. Asia's share of world pig iron production rose from 34.4% in 1990 to 41.2% in 1995. This trend is expected to continue.

The increase in consumption in Asia is expected to benefit Australia, primarily. Australia and Brazil are the leading exporters of iron ore; each accounts for about 30% of the world total, while the next closest exporter, India, accounts for 7.2 % of the world total. Of the two, Australia appears to be better

positioned to take advantage of growth of iron ore consumption in Asia because of Australia's proximity and the consequent lower freight rates. This is somewhat offset by the fact that the Japanese steelmakers are reluctant to obtain a majority of their raw material supplies from one country or company.

There was a trend in the international market away from sintering of iron ore toward pelletization. As an example, LKAB's sales of pellets in 1995 constituted 61% of total ore sales, the highest figure ever and up from 53% in 1994. In LKAB's case the main reason for increasing its pellet production capacity was the certainty of losing its traditional market for high phosphorous ore. Reducing the phosphorous content meant grinding the ore very finely at which point it made sense to pelletize. The trend toward pelletization elsewhere, however, was driven by environmental considerations and the growth in DRI production.

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<sup>1</sup>Part of the information on Canada was taken from the Natural Resources Canada, Canadian Minerals Yearbook, 1995.

## **OTHER SOURCES OF INFORMATION**

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TABLE 1  
SALIENT IRON ORE STATISTICS 1/

(Thousand metric tons and thousand dollars unless otherwise specified)

	1991	1992	1993	1994	1995
United States:					
Iron ore (usable, 2/ less than 5% manganese):					
Production	56,761	55,593	55,661	58,382	62,489
Shipments	56,800	55,600	56,300	57,600	61,100
Value	\$1,900,000 r/	\$1,730,000 r/	\$1,570,000 r/	\$1,600,000 r/	\$1,900,000
Average value at mines, dollars per ton	\$33.40 r/	\$31.10 r/	\$27.90 r/	\$27.70 r/	\$31.00
Exports	4,050	5,060	5,060	4,980	5,270
Value	\$156,000	\$187,000	\$167,000	\$163,000	\$184,000
Imports for consumption	13,300	12,500	14,100	17,500	17,500
Value	\$437,000	\$396,000	\$419,000	\$499,000	\$485,000
Consumption (iron ore and agglomerates)	66,400	75,100	76,800	80,200 r/	83,100
Stocks, Dec. 31:					
At mines, plants and loading docks 3/	4,850	3,780	2,500	2,790 r/	4,340
At receiving docks 4/	2,980	2,980	2,290	2,230	2,140
At consuming plants	17,600	16,100	16,500	16,300	17,100
Total 5/	25,400	22,900	21,300	21,300	23,600
World: Production	955,618	924,887 r/	953,098 r/	969,435 r/	1,034,847 e/

e/ Estimated. r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Direct-shipping ore, concentrates, agglomerates, and byproduct ore.

3/ Excludes byproduct ore.

4/ Transfer and/or receiving docks of Lower Lake ports.

5/ Sum of stocks at mines, consuming plants, and U.S. docks.

TABLE 2  
EMPLOYMENT AT IRON ORE MINES AND BENEFICIATING PLANTS, QUANTITY AND TENOR OF ORE PRODUCED,  
AND AVERAGE OUTPUT PER WORKER-HOUR IN THE UNITED STATES IN 1995, BY DISTRICT AND STATE 1/

District and State	Average number of employees	Worker-hours (thousands)	Production (thousand metric tons)				Average per worker-hour (metric tons)		
			Crude ore	Usable ore	Iron contained (in usable ore)	Iron content, natural (percent)	Crude ore	Usable ore	Iron contained
Lake Superior:									
Michigan	1,950	3,840	43,600	14,300	8,910	62.1	11.30	3.73	2.32
Minnesota	5,340	10,000	166,000	47,700	30,400	63.8	16.50	4.75	3.03
Total or average	7,290	13,900	209,000	62,000	39,300	63.4	15.10	4.47	2.83
Other States 2/	86	198	631	479	265	55.3	3.18	2.42	1.34
Grand total or average	7,380	14,100	210,000	62,500	39,600	63.3	14.90	4.44	2.81

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes California, Missouri, New Mexico, South Dakota, Texas, and Utah.

TABLE 3  
CRUDE IRON ORE 1/ MINED IN THE UNITED STATES IN 1995,  
BY DISTRICT, STATE, AND MINING METHOD 2/

(Thousand metric tons unless otherwise specified and exclusive of ore containing 5% or more manganese)

District and State	Number of mines	Open pit	Underground	Total quantity
Lake Superior:				
Michigan	2	43,600	--	43,600
Minnesota	8	166,000	--	166,000
Total	10	209,000	--	209,000
Other States:				
Missouri	1	--	466	466
Other 3/	6	165	--	165
Total	7	165	466	631
Grand total	17	210,000	466	210,000

1/ Excludes byproduct ore.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes California, New Mexico, South Dakota, Texas, and Utah.

TABLE 4  
USABLE IRON ORE PRODUCED IN THE UNITED STATES IN 1995, BY DISTRICT,  
STATE, AND TYPE OF PRODUCT 1/

(Thousand metric tons and exclusive of ore containing 5% or more manganese)

District and State	Direct shipping ore	Concentrates	Agglomerates 2/	Total quantity
<b>Lake Superior:</b>				
Michigan	10	--	14,300	14,300
Minnesota	355	256	47,100	47,700
<b>Total</b>	<b>365</b>	<b>256</b>	<b>61,400</b>	<b>62,000</b>
<b>Other States:</b>				
Missouri	20	238	14	245
Other 3/	152	55	--	235
<b>Total</b>	<b>172</b>	<b>292</b>	<b>14</b>	<b>479</b>
<b>Grand total</b>	<b>537</b>	<b>549</b>	<b>61,400</b>	<b>62,500</b>

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data may include pellet chips and screenings.

3/ Includes California, New Mexico, South Dakota, Texas, and Utah.

TABLE 5  
SHIPMENTS OF USABLE IRON ORE 1/ FROM MINES IN THE UNITED STATES IN 1995 2/

(Exclusive of ore containing 5% or more manganese)

District and State	Gross weight of ore shipped (thousand metric tons)				Average iron content, natural (percent)	Value (thousands)
	Direct shipping ore	Concentrates	Agglomerates	Total		
<b>Lake Superior:</b>						
Michigan	17	--	13,500	13,500	62.1	W
Minnesota	370	17	46,600	47,000	63.8	\$1,460,000
<b>Total reportable or average</b>	<b>387</b>	<b>17</b>	<b>60,100</b>	<b>60,600</b>	<b>63.4</b>	<b>1,460,000</b>
<b>Other States:</b>						
Missouri	17	278	14	309	67.0	W
Other 3/	186	55	--	241	55.3	3,190
<b>Total reportable or average 3/</b>	<b>203</b>	<b>332</b>	<b>14</b>	<b>550</b>	<b>63.3</b>	<b>3,190</b>
<b>Total withheld</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>433,000</b>
<b>Grand total or average</b>	<b>591</b>	<b>350</b>	<b>60,200</b>	<b>61,100</b>	<b>63.3</b>	<b>1,900,000</b>

W Withheld to avoid disclosing company proprietary data; included in "Total withheld."

1/ Includes byproduct ore.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes California, New Mexico, South Dakota, Texas, and Utah.

TABLE 6  
CONSUMPTION OF IRON ORE 1/ AT U.S. IRON AND STEEL PLANTS 2/

(Thousand metric tons)

Year	Iron ore originating areas					Total
	U.S. ores		Canadian ores		Foreign ores	
	Great Lakes	Other U.S.	Great Lakes	Other Canada		
1994	56,100	163	888	6,510	7,820	71,500
1995	58,200	133	1,460	6,660	7,720	74,200

1/ Excludes dust, mill scale, and other revert iron-bearing materials added to sinter.

2/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 7  
CONSUMPTION OF IRON ORE AND AGGLOMERATES AT U.S. IRON  
AND STEEL PLANTS, BY TYPE OF PRODUCT 1/

(Thousand metric tons)

Type of product	1994	1995
Blast furnaces:		
Direct-shipping ore	1,820	1,200
Pellets	64,400 r/	67,600
Sinter 2/	12,100	12,400
Total	78,400 r/	81,200
Steelmaking furnaces:		
Direct-shipping ore	20	54
Pellets	62 r/	44
Sinter 2/	19	175
Total	101 r/	273
Grand total	78,500 r/	81,500

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes briquettes, nodules, and other.

Source: American Iron and Steel Institute.

TABLE 8  
U.S. CONSUMPTION OF IRON ORE AND AGGLOMERATES, BY END USE 1/

(Thousand metric tons and exclusive of ore containing 5% ore more manganese)

Year	Blast furnaces	Steel furnaces	Sintering plants 2/	Miscella- neous 3/	Subtotal integrated iron and steel plants 4/	Direct-reduced iron for steelmaking 5/	Nonsteel end uses 6/	Total
1995	67,600	60	6,490	29	74,200	675	931	75,800

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Excludes dust, mill scale, and other revert iron-bearing materials.

3/ Sold to nonreporting companies or used for purposes not listed.

4/ Data from American Iron Ore Association.

5/ U.S. Geological Survey estimates based on production reports compiled by Midrex Corp.

6/ Includes iron ore consumed in production of cement and iron ore shipped for use in manufacturing paint, ferrites, heavy media, cattle feed, refractory and weighing materials, and for use in lead smelting. Data from U.S. Geological Survey surveys.

TABLE 9  
U.S. EXPORTS OF IRON ORE AND AGGLOMERATES,  
BY COUNTRY OF DESTINATION 1/

(Thousand metric tons and thousand dollars)

Country	1994		1995	
	Quantity	Value	Quantity	Value
Canada	4,970	162,000	5,260	184,000
India	(2/)	5	1	45
Mexico	2	199	--	42
Venezuela	(2/)	48	--	--
Other	2	86	1	50
Total	4,980	163,000	5,270	184,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 10  
U.S. EXPORTS OF IRON ORE AND AGGLOMERATES, BY TYPE OF PRODUCT 1/

Type of product	1994			1995		
	Quantity (thousand metric tons)	Value (thousands)	Unit value 2/ (dollars per ton)	Quantity (thousand metric tons)	Value (thousands)	Unit value 2/ (dollars per ton)
Concentrates	15	\$488	\$32.95 r/	25	\$687	\$27.02
Coarse ores	2	54	29.97 r/	23	414	17.97
Fine ores	67	1,000	14.94 r/	51	908	17.69
Pellets	4,890	161,000	32.90	5,160	182,000	35.22
Briquettes	(3/)	13	43.55	--	--	--
Other agglomerates	1	119	80.83 r/	2	108	56.91
Roasted pyrites	3	250	73.54 r/	2	140	80.68
Total	4,980	163,000	32.70 4/	5,270	184,000	34.96 4/

r/ Revised.

1/ Data are rounded to three significant digits, except prices; may not add to totals shown.

2/ Unit values shown are calculated from unrounded data.

3/ Less than 1/2 unit.

4/ Weighted average calculated from unrounded data by dividing total value by total tonnage.

Source: Bureau of the Census.

TABLE 11  
U.S. IMPORTS OF IRON ORE AND AGGLOMERATES, BY COUNTRY 1/

(Thousand metric tons and thousand dollars)

Country	1994		1995	
	Quantity	Value	Quantity	Value
Australia	675	4,760	570	4,150
Brazil	3,610	74,900	4,810	104,000
Canada	10,100	318,000	9,050	278,000
Chile	134	2,480	57	808
Mauritania	124	2,100	317	5,520
Norway	16	663	14	648
Peru	(2/)	6	54	763
Sweden	45	1,430	47	1,710
Venezuela	2,780	94,200	2,450	85,900
Other	11	338	134	3,870
Total	17,500	499,000	17,500	485,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 12  
U.S. IMPORTS OF IRON ORE AND AGGLOMERATES, BY TYPE OF PRODUCT 1/

Type of product	1994			1995		
	Quantity (thousand metric tons)	Value (thousands)	Unit value 2/ (dollars per ton)	Quantity (thousand metric tons)	Value (thousands)	Unit value 2/ (dollars per ton)
Concentrates	1,130	\$18,100	\$16.01	1,510	\$24,500	\$16.26
Coarse ores	1,920	65,100	34.00	1,970	67,700	34.43
Fine ores	3,600	57,300	15.92	3,550	56,800	15.98
Pellets	9,880	331,000	33.46	9,390	311,000	33.17
Briquettes	114	8,310	73.00 r/	--	--	--
Other agglomerates	819	18,800	22.99	1,070	23,900	22.28
Roasted pyrites	10	338	34.18 r/	12	492	41.90
Total	17,500	499,000	28.54 3/	17,500	485,000	27.70 3/

r/ Revised.

1/ Data are rounded to three significant digits, except prices; may not add to totals shown.

2/ Unit values shown are calculated from unrounded data.

3/ Weighted average calculated from unrounded data by dividing total value by total tonnage.

Source: Bureau of the Census.

TABLE 13  
U.S. IMPORTS OF IRON ORE AND AGGLOMERATES IN 1995,  
BY COUNTRY AND TYPE OF PRODUCT 1/

(Thousand metric tons)

Country of origin	Concentrates	Coarse ores	Fine ores	Pellets	Other agglomerates	Roasted pyrites	Total
Australia	--	--	570	--	--	--	570
Brazil	821	146	2,520	1,180	152	--	4,810
Canada	627	234	72	7,200	912	--	9,050
Chile	--	--	57	--	--	--	57
Finland	--	--	--	--	--	12	12
Mauritania	--	--	317	--	--	--	317
Norway	14	--	--	--	--	--	14
Peru	--	--	18	36	--	(2/)	54
Sweden	47	--	--	--	--	--	47
Venezuela	--	1,530	--	911	8	--	2,450
Other	--	59	5	59	--	--	123
Total	1,510	1,970	3,550	9,390	1,070	12	17,500

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 14  
AVERAGE UNIT VALUE FOR SELECTED IMPORTS OF IRON ORE  
AND AGGLOMERATES IN 1995

Type of product	Country of origin	Average unit value 1/ (dollars per metric ton gross weight)
Coarse ores	Venezuela	35.59
Fine ores	Brazil	17.46
Do.	Mauritania	17.44
Pellets	Brazil	34.09
Do.	Canada	33.00
Do.	Venezuela	34.45

1/ Weighted averages of individual Customs values.

Source: Bureau of the Census.

TABLE 15  
U.S. IMPORTS OF IRON ORE AND AGGLOMERATES, BY CUSTOMS DISTRICT 1/

(Thousand metric tons and thousand dollars)

Customs district	1994		1995	
	Quantity	Value	Quantity	Value
Baltimore	4,480	106,000	4,430	103,000
Charleston	289	8,970	600	20,000
Chicago	2,290	46,300	2,890	64,800
Cleveland	1,040	33,600	1,670	53,800
Detroit	1,890	73,000	342	13,500
Houston-Galveston	38	1,140	43	1,010
Mobile	3,170	104,000	3,720	127,000
New Orleans	1,820	44,700	1,410	25,900
Philadelphia	2,450	80,900	2,390	76,100
Other	5	150	14	220
Total	17,500	499,000	17,500	485,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 16  
U.S. IMPORTS OF PELLETS, BY COUNTRY 1/

(Thousand metric tons and thousand dollars)

Country	1994		1995	
	Quantity	Value	Quantity	Value
Brazil	263	9,090	1,180	40,200
Canada	8,330	283,000	7,200	238,000
Peru	--	--	36	507
Venezuela	1,290	38,900	911	31,400
Other	--	--	59	1,630
Total	9,880	331,000	9,390	311,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 17  
IRON ORE, IRON ORE CONCENTRATES, AND IRON ORE AGGLOMERATES: WORLD PRODUCTION, BY COUNTRY 1/

(Thousand metric tons)

Country 2/	Gross weight 3/					Metal content 4/				
	1991	1992	1993	1994	1995 e/	1991	1992	1993	1994	1995 e/
Albania e/ 5/	750	200 6/	150	--	--	350	88	85	--	--
Algeria	2,344	2,523 r/	2,311 r/	2,047 r/	2,000	1,170 e/	1,250 e/	1,250 r/ e/	1,000 r/ e/	1,000
Argentina	259	6	2 r/	43 r/	(7/)	169 r/	4	1 r/	28 r/	(7/)
Australia	117,134	112,101	120,534	128,493	142,836 6/	68,732	69,761	74,767	80,900 e/	88,653 6/
Austria	2,130	1,627	1,435	1,655	2,116	481	515	452	520 e/	660
Azerbaijan	XX	400	300 e/	200 e/	150	XX	220	165	110 e/	83
Bolivia	102	55	51	3 r/	--	66 r/	35	32	2 r/	--
Bosnia and Herzegovina e/	XX	500	250	200	150	XX	150	100	70	52
Brazil	151,500	146,447	150,000 r/	167,900 r/	186,000 6/	98,800 r/	95,200 r/	98,000 r/	108,800	120,900 6/
Bulgaria	600 r/ e/	800 e/	880 r/	800 e/	850	182	239	304 r/ e/	250 r/ e/	250
Canada 8/	39,307 r/	33,167 r/	31,830 r/	37,703 r/	38,560 6/	24,920 r/	21,183 r/	19,990 r/	24,235 r/	24,651
Chile	8,692	7,643	7,010 r/	8,341 r/	8,174 6/	5,650 r/	4,970 r/	4,390	5,223 r/	5,119 6/
China e/	176,070	197,600	234,660	240,200	249,350	52,820	59,300	70,400	72,050	75,000
Colombia	450	674	546 r/	610	734 6/	234 r/	350 r/	283 r/	317 r/	382
Czechoslovakia 9/	1,738	1,414	XX	XX	XX	526 e/	412	XX	XX	XX
Egypt	2,144	2,287 r/	2,229 r/	3,870 r/	4,000	1,200 r/ e/	1,260	1,250 r/ e/	2,100 r/ e/	2,100
France	7,472	5,707	3,520	2,550	2,000	2,316 e/	1,697	1,055	706 r/	600
Germany	120	109	146	146 r/	145	17 r/	15	23 r/	21 r/	20
Greece e/ 5/	2,024 6/	1,500	1,416	1,350	1,400	815 6/	610	575	550	600
Guatemala	5	1	3 e/	3 e/	3	3	1	2 e/	2 e/	2
India	56,880	54,870	57,375 r/	58,388 r/	59,000	36,403	35,117	36,720 r/	37,368 r/	37,800
Indonesia	173	288	341	335 e/	340	100	145	198	194 e/	197
Iran 10/	4,890	5,647	9,870	8,690	9,080 6/	2,700 e/	3,000 e/	4,800 e/	4,300 e/	4,500
Japan	31	40	11	3	3	19	25 r/	6	1 r/	1
Kazakstan e/	XX	17,300	13,000	10,400 r/	14,900	XX	9,500 6/	7,200	5,700 r/	8,200
Korea, North e/	10,000	10,500	10,500	11,000	11,000	4,700	4,900	4,900	4,900	5,100
Korea, Republic of	222	222	219	191	190	134	134	122	107 r/	106
Liberia	1,100	1,742	-- e/	-- e/	--	710	1,000	-- e/	-- e/	--
Macedonia e/	XX	20 r/	20 r/	20 r/	20	XX	6 r/	6 r/	6 r/	6
Malaysia	376	320	246 r/	243 r/	202 6/	229	195	150 r/	148 r/	123 6/
Mauritania	10,246	8,202	9,360 r/	11,400 r/	11,500	6,500 e/	5,330 e/	5,900 e/	7,000 r/ e/	7,000
Mexico 11/	9,994 r/	10,964 r/	11,435 r/	8,538 r/	8,523	6,496 r/	7,127 r/	7,433 r/	5,516 r/	5,540 6/
Morocco	99	83	66	65 r/	65	60	51	41 e/	41 r/ e/	40
New Zealand 12/	2,265	2,934	2,389	1,100 e/	2,000	1,300 e/	1,300 e/	1,300 e/	600 e/	900
Nigeria e/	398 6/	400	400	300 r/	200	200	200	200	150 r/	100
Norway	2,209	2,152	2,162	2,364 r/	2,200	1,435	1,403	1,360	1,532 r/	1,430
Peru	3,593	2,850 r/	4,930 r/	7,430 r/	7,500	2,331	1,845	3,205 r/	4,830 r/	4,900
Poland	(7/)	--	--	--	--	(7/)	--	--	--	--
Portugal 13/	16	15	16 e/	16 e/	16	6	5	6	5 r/	6
Romania	1,400 e/	1,250	904	951 e/	950	199	180	130	198 r/	184 6/
Russia e/	XX	82,100 6/	76,100 6/	73,300	78,300	XX	45,000	42,000	40,000	43,200
Serbia and Montenegro	XX	551	106	32 e/	--	XX	176	34	10 e/	--
Slovakia e/	XX	XX	920 r/	860 r/	900	XX	XX	250 r/	230 r/	230
South Africa 14/	29,075	28,226	29,385	30,489 r/	31,946 6/	18,900	18,347	19,100 e/	18,903 r/	19,806 6/
Spain 15/	3,885	2,967	2,475	2,500 e/	2,000	1,744	1,334	1,109	1,100 e/	900

See footnotes at end of table.

TABLE 17--Continued  
 IRON ORE, IRON ORE CONCENTRATES, AND IRON ORE AGGLOMERATES: WORLD PRODUCTION, BY COUNTRY 1/ 2/

(Thousand metric tons)

Country 2/	Gross weight 3/					Metal content 4/				
	1991	1992	1993	1994	1995 e/	1991	1992	1993	1994	1995 e/
Sweden	19,328	19,277	18,728	19,663	21,700	11,088	9,785	11,901 r/	12,587 r/	13,880
Thailand	240	427	209	143 r/	34 6/	132	235	115	78 r/	17
Tunisia	295	291	299	240	225	156 e/	151 e/	153 e/	129 6/	128
Turkey	5,335	5,917	6,480 r/	5,755 r/	6,300	2,900 e/	3,200 e/	3,324 r/ e/	3,148 r/ e/	3,200
Ukraine e/	XX	75,700 6/	65,000	42,200 r/ 6/	45,000 6/	XX	42,000	35,000	22,700 r/	24,800
U.S.S.R. e/ 16/	199,000	XX	XX	XX	XX	110,000	XX	XX	XX	XX
United Kingdom	59	31	1	1	1	13	7	1	1 e/	(7/)
United States	56,761	55,593	55,661	58,382	62,489 6/	35,801	35,251	35,245	36,762 r/	39,577 6/
Venezuela	21,196	18,070	16,841	18,318 r/	19,484 6/	13,849	11,807	11,010	11,980 r/	12,743
Yugoslavia e/ 17/	2,574	XX	XX	XX	XX	900	XX	XX	XX	XX
Zimbabwe	1,136	1,179	375	4	311	660 e/	710 e/	225 e/	3 r/ e/	160
Total	955,618	924,887 r/	953,098 r/	969,435 r/	1,034,847	518,116	496,724 r/	506,267 r/	517,112 r/	554,846

e/ Estimated. r/ Revised. XX Not applicable.

1/ Table includes data available through Aug. 18, 1996.

2/ In addition to the countries listed, Cuba and Vietnam may also produce iron ore, but definitive information on output levels, if any, is not available.

3/ Insofar as availability of sources permit, gross weight data in this table represent the nonduplicative sum of marketable direct-shipping iron ores, iron ore concentrates, and iron ore agglomerates produced by each of the listed countries. Concentrates and agglomerates produced from imported iron ores have been excluded under the assumption that the ore from which such materials are produced has been credited as marketable ore in the country where it was mined.

4/ Data represent actual reported weight of contained metal or are calculated from reported metal content. Estimated figures are based on latest available iron content reported, except for the following countries for which grades are U.S. Geological Survey estimates: Albania, Azerbaijan, Kazakstan, North Korea, and Ukraine.

5/ Nickeliferous iron ore.

6/ Reported figure.

7/ Less than 500 tons.

8/ Series represent gross weight and metal content of usable iron ore (including byproduct ore) actually produced, natural weight.

9/ Dissolved Dec. 31, 1992.

10/ Data are for year beginning Mar. 21 of that stated.

11/ Gross weight calculated from reported iron content based on grade of 66% Fe.

12/ Concentrates from titaniferous magnetite beach sands.

13/ Includes manganiferous iron ore.

14/ Includes magnetite ore as follows, in thousand metric tons: 1991--5,660; 1992--4,650; 1993--4,340; 1994--3,460; and 1995--2,325.

15/ Includes byproduct ore.

16/ Dissolved in Dec. 1991.

17/ Dissolved in Apr. 1992.

TABLE 18  
SELECTED PRICES FOR IRON ORE IN THE JAPANESE MARKET

(F.o.b. shipping port basis. U.S. cents per dry long ton of iron unless otherwise specified)

	Ore type	(April 1 - March 31)	
		Fiscal year 1994	Fiscal year 1995
Australia:			
Hamersley Iron Pty. Ltd. and Mount Newman Mining Co. Pty. Ltd.	Lump ore	33.30	35.90
Do.	Fines	25.70	27.20
Robe River Iron Associates	do.	20.40	21.90
Savage River Mines Ltd.	Pellets	39.50	44.40
Brazil:			
Cia. Nipo-Brasileira de Pelotizacao (Nibrasco)	do.	41.70	46.90
Cia. Vale do Rio Doce (Carajas)	Fines	23.50	24.80
Do.	Lump ore	28.20	(1/)
Cia. Vale do Rio Doce (Itabira)	do.	24.80	26.70
Do.	Fines	23.00	24.30
Mineracoes Brasileiras Reunidas S.A.	do.	24.20	26.10
Do.	do.	23.50	24.80
Samarco Mineração S.A.	Pellet feed	19.30	20.50
Canada:			
Iron Ore Co. of Canada (Carol Lake)	Concentrates	22.30	23.60
Chile:			
Minera del Pacifico S.A. (El Algarrobo)	Pellets	38.90	43.80
Minera del Pacifico S.A. (El Romeral)	Fines	17.80 r/	18.90
India:			
Minerals and Metals Trading Corp. (Bailadila)	Lump ore	32.10	34.60
Do.	Fines	24.60	26.10
Peru:			
Empresa Minera del Hierro del Peru S.A.	Pellets	17.50	18.50
South Africa, Republic of: 2/			
South African Iron and Steel Industrial Corp. Ltd.	Lump ore	26.20	28.70
Do.	Fines	19.50	20.70

r/ Revised.

1/ No quotation published.

2/ Price per dry metric ton unit.

Source: Trust Fund Project on Iron Ore Information, Iron Ore 1995.