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MINERAL INDUSTRY SURVEYS

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IRON ORE IN MAY 1997

U.S. mine production of iron ore in May 1997 was 14.6% higher than that of April 1997, according to the U.S. Geological Survey. Shipments increased by 11.4% and mine stocks decreased by 10.4%. Consumption and trade data for May 1997 will be included in a subsequent report.

CVRD Sold

In what is easily the sale of the year in the iron ore industry, the Brazilian Government relinquished its controlling interest in Compamhia Vale do Rio Doce (CVRD), the world's largest iron ore producer, selling a 34% share of the company, on May 6 (Kepp, 1997a). Founded in 1942, CVRD produces and exports ore on a massive scale (Companhia Vale do Rio Doce, 1995). In 1996, production was 180 million metric tons (Mt) and exports were 130 Mt (Duisenberg, 1997). CVRD owns and operates two railroads and, in 1962, established a subsidiary, Rio Doce Navegação, which operates a fleet of 20 bulk carriers weighing as much as 310,000 dead weight tons (Mining Journal, 1997).

The company produces iron ore in two integrated mine-rail-port systems known as the Southern and Northern systems. The Carajás iron district, with reported reserves of 18 billion metric tons (Gt) of high-grade (66% Fe) hematite ore, is located in the Northern system. Ore is transported by the Carajás Railroad to the port of Ponta da Madeira, which can accommodate very large freighters. The Southern system reportedly has 17 Gt of reserves. Ore is transported by the Vitória-Minas Railroad to the port of Tubarão, where CVRD has a pelletizing complex that consists of six plants with a combined capacity of 19 million metric tons per year (Mt/yr). A seventh plant, which will add 4 Mt/yr, is under construction. Two of the plants belong to CVRD, and the others are joint ventures with foreign clients.

In 1995, the Brazilian Government announced that CVRD would be privatized (Metal Bulletin, 1995). At the time, the Government controlled 51% of CVRD through the ownership of common and preferred shares. Before the sale, the Government published a prospectus with rules designed to make it impossible for companies whose strategic interests could run counter to those of CVRD, such as large Australian iron ore producers or Japanese steelmakers, to attain individual control of the company. The rules also stated:

- A combination of iron ore consumers and traders could not own more than 45% of the controlling block shares.

- Single large consumers, those which consume more than 8 Mt/yr, and single large traders, those which sell more than 30 Mt/yr, could not own more than 10% of the shares. This rule was to prevent large iron ore consumers from controlling CVRD and selling the ore to themselves at low prices (Kepp, 1997b).

- No single buyer could purchase more than 45% of the controlling block shares; this meant that at least three firms would share control of the company.

The decision to sell the giant iron ore producer was not without its opponents. Operating in 10 Brazilian States, CVRD had played a large role in the social and economic development of large areas of the Brazilian interior and was seen as a national asset. Many Brazilian politicians were reluctant to see CVRD pass into the hands of private enterprise. There were fears that the sale would result in a reduction of jobs. To allay those concerns, the Government has retained a “golden share,” which gave it the right of veto and the Government also announced that one-half of the proceeds of the sale would be put into a new fund, the Economic Reconstruction Fund (FRE). This fund will be used to help fund infrastructure projects at low

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interest rates. The other one-half of the proceeds is to be used to reduce public sector debt. The establishment of the FRE was also intended to help maintain the momentum of Brazilian regional development.

A number of consortia competed for the sale of CVRD. The winner was Valepar, which paid $3.1 billion for a 34% voting share. The Valepar consortium was led by Cia Siderurgica Nacional (CSN), a Brazilian steelmaker, which owns 25%; other members include a block of pension funds (39%), Opportunity (17%), Bndespar (9%), U.S.-based Nations's Bank (9%), and Investvale (1%), an employee stock fund. CSN, which was privatized in 1993, is Latin America's largest integrated steelmaker, and is the only steelmaker that runs its own captive mine, Casa de Pedro in Minas Gerais State; it supplies CSN with 7 Mt/yr of ore—25% as lump and 75% as sinter feed. CSN operates four sinter plants with a combined capacity of 6 Mt/yr. The CSN led consortium is obliged to retain its shares in CVRD for at least 5 years

The amount paid for CVRD was nearly 20% above the Government-set minimum price, due to a bidding war between Valepar and another strong consortium, Consorcio Valecom, which had been thought to be the stronger contender. Consorcio Valecom, which was led by Votorantim, Brazil's largest industrial group, which produces aluminum and paper and pulp, includes Caemi-Mitsui, which is Brazil's second largest iron ore producer. The remainder of the government's interest in CVRD will be sold later this year. About one-fifth is to be sold to CVRD employees and the balance to the public.

Cleveland-Cliffs Acquires 15% of Wabush Mines

Cleveland-Cliffs Inc. purchased Inland Steel's 15.1% interest in the Wabush Mines iron ore joint venture in Canada, effective January 1, 1997 (Skillings Mining Review, 1997). The $15 million transaction raises Cliffs' interest in Wabush to 22.8%. The additional interest represents about 900,000 metric tons of capacity, which raises Cliffs' Wabush capacity share to 1.4 Mt/yr. Wabush Mines, which started operations in 1965, reportedly has reserves of 270 Mt and a capacity of 6.1 Mt/yr.

The Wabush pelletizing plant is located at Pointe Noire, Quebec, on the southern shore of Sept-Iles Bay. Feed for the pelletizing plant is railed from the company's Scully Mine at Wabush Lake in Newfoundland. A dedicated 61-kilometer (km) [38-mile (mi)] rail line connects the mine to the Quebec North Shore and Labrador Railway at Ross Bay Junction. From there, the iron ore concentrate is hauled an additional 385 km (239 mi) via Sept-Iles to Pointe Noire.

Inmetco DRI System Chosen

The International Metals Reclamation Company (Inmetco) direct-reduced iron (DRI) production system will be used to produce DRI at the Nakornthai Strip Mill (NSM) of Thailand. Although it is the most recent DRI system to be introduced, it is not at all new (Metal Bulletin Monthly, 1997). The technology has been used by Inmetco, at Ellwood City, PA, to reclaim nickel, chromium, and iron from stainless steel wastes since 1978 (U.S. Bureau of Mines, 1994). NSM is expected to install a rotary hearth furnace with a production capacity range of 300,000 to 500,000 t/yr. In 1994, Northshore Mining Co. considered using this technology at its taconite facility in Silver Bay, MN. In the 1980's, Inmetco conducted tests by using its blending and pelletizing circuit and its rotary hearth furnace to produce DRI. Several types of feed and coal were used. The results were described in Conservation & Recycling (1985).

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TABLE 1
U.S. PRODUCTION AND SHIPMENTS OF IRON ORE, BY DISTRICTS 1/
(Exclusive of ore containing 5% or more manganese)

(Thousand metric tons)

Period	Lake Superior		Other U.S.		Total 2/	
	Monthly	Year to date	Monthly	Year to date	Monthly	Year to date
Production:						
1996:						
May	5,479	23,397	20	125	5,500	23,522
June	5,128	28,525	22	147	5,150	28,673
July	5,771	34,296	22	169	5,793	34,465
August	5,752	40,048	119	288	5,871	40,336
September	5,590	45,638	25	313	5,615	45,952
October	5,347	50,985	26	339	5,373	51,325
November	5,503	56,488	24	363	5,527	56,852
December	5,260	61,748	20	383	5,280	62,132
1997:						
January	4,773	4,773	16	16	4,788	4,788
February	4,719	9,492	25	40	4,744	9,532
March	5,149	14,641	27	67	5,176	14,708
April	4,720	19,361	25	92	4,745	19,453
May	5,412	24,773	24	116	5,436	24,889
Shipments:						
1996:						
May	6,317	18,642	21	99	6,338	18,741
June	5,925	24,567	17	116	5,942	24,684
July	6,396	30,963	29	145	6,424	31,108
August	6,230	37,193	29	174	6,259	37,367
September	6,341	43,534	29	203	6,370	43,737
October	6,232	49,766	23	226	6,256	49,993
November	5,674	55,440	31	257	5,705	55,698
December	6,036	61,476	19	276	6,055	61,753
1997:						
January	2,693	2,693	16	16	2,708	2,708
February	1,036	3,729	27	43	1,063	3,771
March	2,310	6,038	23	65	2,333	6,104
April	5,981	12,019	27	92	6,008	12,112
May	6,673	18,692	21	113	6,695	18,806

1/ Excludes byproduct ore.
2/ Data may not add to totals shown because of independent rounding.

TABLE 2
U.S. PRODUCTION, SHIPMENTS AND STOCKS OF IRON ORE IN MAY 1/
(Exclusive of ore containing 5% or more manganese)

(Thousand metric tons)

District	Production		Shipments 2/		Stocks 3/	
	1997	1996	1997	1996	1997	1996 r/
Lake Superior:						
Michigan	1,169	1,304	1,637	1,746	3,364	2,229
Minnesota	4,243	4,176	5,036	4,571 r/	7,292	6,821
Other U.S.	24	20	21	21	109	131
Total 4/	5,436	5,500	6,695	6,338 r/	10,765	9,180

r/ Revised.
1/ Excludes byproduct ore.
2/ Includes rail and vessel.
3/ Includes mines, plants, and loading docks.
4/ Data may not add to totals shown because of independent rounding.

TABLE 3
CANADA: SHIPMENTS OF IRON ORE

(Thousand dry metric tons)

Period	Newfoundland	Quebec	Ontario	British Columbia	Total 1/
1996:					
May	1,343	1,927	45	9	3,325
June	1,653	405	43	7	2,108
July	1,358	995	38	8	2,398
August	2,132	867	40	6	3,045
September	2,755	906	58	8	3,726
October	2,400	1,551	114	9	4,074
November	2,620	1,165	111	8	3,905
December	2,056	1,145	111	8	3,320
Year total	19,959	12,059	733	88	32,839
1997:					
January	924	639	114	8	1,685
February	568	1,045	100	11	1,723
March	293	712	87	8	1,099
April	2,282	889	42	7	3,219
May	NA	NA	NA	NA	NA

NA Not available.
1/ Data may not add to totals shown because of independent rounding.

Source: Natural Resources Canada.

TABLE 4
CONSUMPTION AND STOCKS OF IRON ORE AND AGGLOMERATES AND
BLAST FURNACE PRODUCTION OF HOT METAL AT U.S. IRON AND STEEL PLANTS

(Thousand metric tons)

Consumption of ores and agglomerates				
	April		Year to date	
Consumption by source	1997	1996	1997	1996
United States ores	4,732	4,272	19,082	18,629 r/
Canadian ores	550	609	2,241	2,764 r/
Foreign ores	586	768	2,281	2,792 r/
Total 1/	5,867	5,649	23,605	24,184 r/
Consumption by process				
Blast furnaces	5,321	5,120	21,287	21,805 r/
Steel furnaces	7	7	33	24
Agglomerating plants 2/	530	522	2,246	2,351 r/
Miscellaneous 3/	8	1	38	3
Total 1/	5,867	5,649	23,605	24,184 r/

Stocks of ores and agglomerates		
	April 30	
Storage point	1997	1996
Furnace yards	11,117	8,864
Receiving/transfer docks	1,688	1,221
Total consumer	12,804	10,085

Blast furnace production of hot metal				
	April		Year to date	
	1997	1996	1997	1996
Hot metal and pig iron produced in blast furnaces	4,028	4,019	16,179	16,851 r/
No. of blast furnaces operating on the last day of the month	38	38	XX	XX

r/ Revised. XX Not applicable.
1/ Data may not add to totals shown because of independent rounding.
2/ Iron ore and iron ore concentrates consumed in agglomerating plants not located at the mine site.
3/ Sold to nonreporting companies or used for purposes not listed.

Sources: American Iron Ore Association (consumption of iron ore) and American Iron and Steel Institute (production of hot metal and pig iron).

TABLE 5
U.S. EXPORTS OF IRON ORE AND AGGLOMERATES, BY COUNTRY
OF DESTINATION AND TYPE

(Thousand metric tons)

Country of destination and type	1996		1997			
	3rd quarter	4th quarter	1st quarter	February	March	April
Canada	2,391	1,729	470	109	166	339
Mexico	2	1	(1/)	(1/)	(1/)	(1/)
Other	2	1	1	1	(1/)	(1/)
Total 2/	2,394	1,731	472	110	166	339
Pellets	2,380	1,723	470	108	165	337
Other	14	8	2	2	1	2
Total 2/	2,394	1,731	472	110	166	339

1/ Less than 1/2 unit.
2/ Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF IRON ORE AND AGGLOMERATES,
BY COUNTRY AND TYPE
(Exclusive of ore containing 20% or more manganese)

Country of origin and type of product	April 1997		Year to date 1997			Year to date 1996
	Thousand metric tons	Value 1/ (thousand dollars)	Thousand metric tons	Value 1/ (thousand dollars)	Value 1/ (dollars per ton)	(thousand metric tons)
Australia	68	537	269	2,493	9.27	249
Bahamas, The	--	--	--	--	--	62
Brazil	241	7,937	1,450	40,173	27.71	1,430
Canada	1,027	33,927	1,682	56,478	33.58	1,554
Chile	--	--	12	175	14.58	39
China	40	1,443	40	1,443	36.08	--
Finland	--	--	4	183	45.75	3
Mauritania	--	--	--	--	--	133
Mexico	1	28	7	127	18.14	(2/)
Peru	--	--	130	1,487	11.44	43
South Africa	--	--	4	389	97.25	--
Spain	--	--	--	--	--	11
Uruguay	--	--	--	--	--	24
Venezuela	126	7,670	605	25,221	41.69	900
Total 3/	1,502	51,541	4,202	128,168	30.50 4/	4,450
Concentrates	54	954	54	964	17.85	82
Coarse ores	166	9,113	529	22,932	43.35	332
Fine ores	141	1,902	990	16,272	16.44	1,418
Pellets	1,117	38,656	2,393	82,767	34.59	2,458
Briquettes	--	--	--	--	--	--
Other agglomerates	25	916	233	5,048	21.67	157
Roasted pyrites	--	--	4	184	46.00	3
Total 3/	1,502	51,541	4,202	128,168	30.50 4/	4,450

1/ Customs value. Excludes international freight, insurance, and other c.i.f. charges.
2/ Less than 1/2 unit.
3/ Data may not add to totals shown because of independent rounding.
4/ Weighted average calculated from unrounded data by dividing total value by total tonnage.

Source: Bureau of the Census.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF IRON ORE AND AGGLOMERATES IN APRIL 1997
(Exclusive of ore containing 20% or more manganese)

(Thousand metric tons)

Country of origin	Type of product						
	Concentrates	Coarse ores	Fine ores	Pellets	Briquettes and other agglomerates	Roasted pyrites	Total 1/
Australia	--	--	68	--	--	--	68
Brazil	--	--	73	144	24	--	241
Canada	54	--	--	973	--	--	1,027
China	--	40	--	--	--	--	40
Mexico	--	--	--	--	1	--	1
Venezuela	--	126	--	--	--	--	126
Total 1/	54	166	141	1,117	25	--	1,502

1/ Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF PELLETS, BY COUNTRY

Country of origin	April 1997		Year to date 1997			Year to date 1996
	Thousand metric tons	Value 1/ (thousand dollars)	Thousand metric tons	Value 1/ (thousand dollars)	Value 1/ (dollars per ton)	(thousand metric tons)
Brazil	144	5,683	645	23,133	35.87	502
Canada	973	32,973	1,628	55,514	34.10	1,436
Venezuela	--	--	120	4,121	34.34	520
Total 2/	1,117	38,656	2,393	82,767	34.59 3/	2,458

1/ Customs value. Excludes international freight, insurance, and other c.i.f. charges.
2/ Data may not add to totals shown because of independent rounding.
3/ Weighted average calculated by dividing total value by total tonnage.

Source: Bureau of the Census.

TABLE 9
U.S. IMPORTS FOR CONSUMPTION OF IRON ORE AND
AGGLOMERATES, BY CUSTOMS DISTRICT
(Exclusive of ore containing 20% or more manganese)

(Thousand metric tons)

Customs district	April 1997	Year to date 1997	Year to date 1996
Baltimore, MD (13)	354	1,179	1,239
Buffalo, NY (09)	--	--	(1/)
Charleston, SC (16)	97	234	138
Chicago, IL (39)	161	161	205
Cleveland, OH (41)	53	53	115
Detroit, MI (38)	311	311	278
Duluth, MN (36)	--	--	51
Houston - Galveston, TX (53)	--	--	21
Los Angeles, CA (27)	--	--	(1/)
Mobile, AL (19)	344	1,218	1,047
New Orleans, LA (20)	--	643	695
Nogales, AZ (26)	1	7	(1/)
Ogdensburg, NY (07)	--	(1/)	(1/)
Philadelphia, PA (11)	181	395	648
Portland, ME (01)	--	--	(1/)
San Juan, PR (49)	--	--	11
Total 2/	1,502	4,202	4,450

1/ Less than 1/2 unit.
2/ Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.

TABLE 10
U.S. IMPORTS FOR CONSUMPTION OF PELLETS, BY CUSTOMS DISTRICT

(Thousand metric tons)

Customs district	April 1997	Year to date 1997	Year to date 1996
Baltimore, MD (13)	213	419	372
Charleston, SC (16)	73	138	46
Chicago, IL (39)	107	107	149
Cleveland, OH (41)	53	53	90
Detroit, MI (38)	311	311	278
Duluth, MN (36)	--	--	51
Houston - Galveston, TX (53)	--	--	13
Mobile, AL (19)	301	1,026	715
New Orleans, LA (20)	--	280	287
Philadelphia, PA (11)	59	59	457
Total 1/	1,117	2,393	2,458

1/ Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.