MINERAL INDUSTRY SURVEYS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241

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Iron Ore, Monthly

IRON ORE IN APRIL 1986

U.S. mine production of iron ore in April was 14% higher than that in March, according to the Bureau of Mines, U.S. Department of the Interior. Mine shipments increased sharply because ore shipping was underway at all seven U.S. ports on the upper Great Lakes as of April 12. U.S. imports of iron ore were substantially higher than those of the previous month and almost 1½ times those of April 1985. Stocks at consuming plants and U.S. receiving/transfer docks decreased 10% during the month to 11.0 million long tons. Consumption was slightly lower than that of March. On April 30, 48 blast furnaces were in operation, 1 less than on March 31.

On April 7, the Erie Mining Co. resumed operations at its Hoyt Lakes taconite plant and began recalling the first of 1,100 workers. The operation, idle since November 30, was the last of northern Minnesota's seven taconite producers to reopen this year after a succession of winter shutdowns. Current plans call for the plant to operate 16 of its 24 pellet furnaces. The Erie Mining Co. is now managed by Pickands Mather & Co. solely for the LTV Steel Co.

In mid-April, the Minnesota State Department of Natural Resources, United States Steel Corp., and Korf Engineering GmbH submitted a joint proposal to the Department of Energy, requesting $50 million to help build a commercial-size KR-Process plant to smelt iron ore at Mountain Iron, MN. If approved, the money would come from the $400 million fund established under the Clean Coal Technology Act. The 363,000-ton-per-year KR furnace would be constructed next to United States Steel's Minntac pellet plant and cost more than $100 million. U.S. Steel and the State of Minnesota would provide the other $50 million.

The KR Process uses coal instead of coke to reduce lump iron ore, sinter, pellets, and other ferruginous materials. It also produces an export gas that can be used for heating, to produce oxygen, or to generate electrical energy. Sponge iron is melted in a melter-gasifier vessel to produce the hot metal. The reduction of the iron ore, pellets and sinter occurs in a separate shaft furnace. Korf Engineering, a unit of the Austrian Voest Group, already has a 60,000-ton-per-year demonstration KR plant at Kehl, Federal Republic of Germany, and has just begun constructing a commercial-size plant at the steel complex of South African Iron & Steel Industrial Corp. Ltd. (ISCOR) near Pretoria in the Transvaal.

In a related action, Pellet Technology Corp. (PTC) of Pittsburgh announced that it would begin operating its new 80,000-ton-per-year ironmaking demonstration plant in July. The demonstration plant, located at Eagle Mills on the Marquette iron range of Michigan, is a joint venture of Michigan Technological University and the Oxide

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Recycle Corp. The patented PTC hot metal process produces molten iron from cold bond carbon-bearing, iron oxide pellets in a hot blast cupola. Laboratory tests show that the cold bond, carbon pellets can be completely reduced in 5 to 15 minutes at 2,400°F compared to hours for conventional iron oxide pellets. The PTC process is designed to utilize a wide variety of iron oxide source materials, including waste oxides from iron and steelmaking operations. The PTC hot metal facility has the potential to replace the conventional coke oven and blast furnace complex in some parts of the United States and Europe if the savings in energy, raw material costs, and capital costs can be scaled up. The plant was made possible by a $5.75 million grant from the State of Michigan and the donation of facilities at the Eagle Mills Research Center by the Cleveland-Cliffs Iron Co.

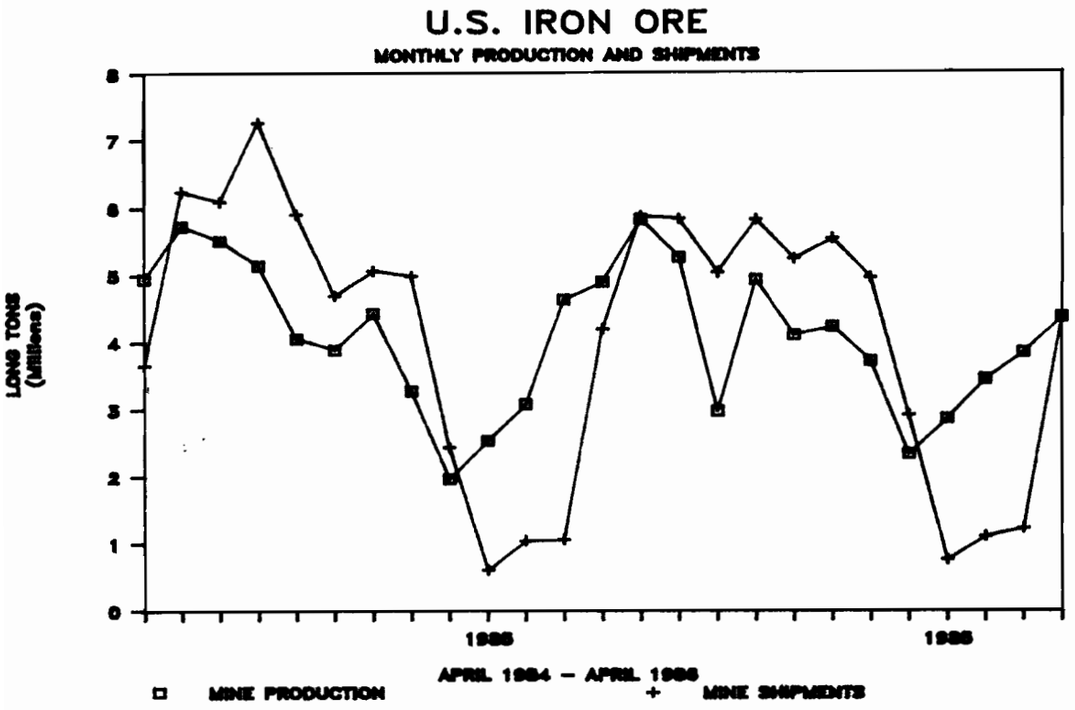

Table 1.--U.S. production and shipments of iron ore, by districts 1/
(Exclusive of ore containing 5% or more manganese)
(Thousand long tons)

Period	Lake Superior	Other U.S.	Total 2/	
			1986 3/	1985
Production:				
1985 p/	47,394	1,105	--	48,499
1986:				
1st Quarter	9,853	292	10,144	10,246
April	4,309	54	4,363	4,894
Shipments:				
1985 p/	46,709	1,408	--	48,114
1986:				
1st Quarter	2,832	257	3,087	2,718
April	4,288	68	4,356	4,197

p/ Preliminary.
1/ Excludes byproduct ore, except where noted.
2/ Data may not add to totals shown because of independent rounding.
3/ Includes estimated data.

Table 2.--U.S. mine production, shipments, and stocks of iron ore 1/
(Exclusive of ore containing 5% or more manganese)
(Thousand long tons)

District	Production April		Shipments April		Mine Stocks April 30	
	1986	1985	1986	1985	1986	1985
Lake Superior:						
Michigan	1,003	1,140	960	1,045	4,177	4,449
Minnesota	3,306	3,704	3,328	3,134	8,570	8,560
Other U.S.	54	49	68	18	288	401
Total 2/	3/4,363	4,894	3/4,356	4,197	3/13,035	13,410

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

Table 3.--U.S. exports of iron ore
(Thousand long tons)

Period	Canada	Other	Total 1/	
			1986	1985
1985 p/	5,034	1	--	5,034
1986:				
1st Quarter	156	(2/)	156	276
April	218	(2/)	218	198

p/ Preliminary.
1/ Data may not add to totals shown because of independent rounding.
2/ Less than one-half unit.

Source: U.S. Bureau of the Census.

Table 4.--Canada: Shipments of iron ore
(Thousand dry long tons)

Period	Newfound-land	Quebec	Ontario	British Columbia	1986 Total 1/	1985 Total 1/
1985	20,229	14,723	4,220	42	--	39,215
1986:						
January	456	1,222	363	4	2,045	2,216
February	469	1,106	320	2	1,898	2,122
March	545	772	344	2	1,663	r/1,662
April	1,988	1,423	286	2	3,699	r/3,380

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

Source: Energy, Mines, and Resources Canada.

Table 5.--U.S. imports for consumption of iron ore by countries
(Exclusive of ore containing 10% or more manganese)

Country of origin	April 1986		Year to date 1986			Year to date 1985
	Thousand long tons	Value 1/ (thousand dollars)	Thousand long tons	Value 1/ (thousand dollars)	Value 1/ (dollars per ton)	(thousand long tons)
Brazil	206	3,680	1,275	24,683	19.36	875
Canada	2/916	2/32,834	2,048	r/80,108	39.12	1,556
Chile	--	--	--	--	--	54
Liberia	116	1,696	r/505	r/7,381	14.61	749
Peru	--	--	18	526	29.22	--
Sweden	35	746	35	746	21.31	--
Venezuela 3/	170	3,179	r/1,186	r/20,470	17.26	257
Other	--	--	4/--	4/--	4/--	20
Total 5/	1,444	42,134	r/5,066	133,913	26.43	3,514

r/ Revised.
1/ Customs value. Excludes international freight, insurance, and other c.i.f. charges.
2/ Being questioned.
3/ Data for Venezuela includes some shipments of direct-reduced iron reported as iron ore. Verification has been requested.
4/ A shipment of 67,015 tons was erroneously reported in March as having come from Switzerland. The country of origin was actually Liberia.
5/ Data may not add to totals shown because of independent rounding.

Source: U.S. Bureau of the Census data reported under item 601.24 of the Tariff Schedules of the United States.

Table 6.--U.S. consumption and stocks of iron ore and agglomerates at consuming plants and production of pig iron
(Thousand long tons)

State or Region	Consumption			Stocks April 30	
	April 1986	Year to date			
		1986	1985	1986	1985
Alabama, Kentucky, Tennessee, Texas, Missouri	336	1,790	1,953	945	780
California, Colorado, Utah	158	626	632	180	207
Delaware, Maryland, West Virginia	571	2,121	1,883	1,406	1,571
Illinois, Indiana	2,128	8,233	7,762	3,513	4,010
Michigan, Minnesota	419	1,755	2,042	1,246	1,204
New York, Ohio, Pennsylvania, New Jersey, Rhode Island	1,813	7,106	7,333	3,023	5,372
Total 1/	5,425	21,632	21,605	10,312	13,144
Stocks at U.S. receiving/transfer docks				650	1,412

Consuming Sector	Consumption by process			Pig iron produced		
	April 1986	Year to date		April 1986	Year to date	
		1986	1985		1986	1985
Blast furnaces	4,700	18,821	18,727	3,876	r/15,224	15,234
Steel furnaces	22	87	57	--	--	--
Agglomerating plants 2/	673	2,679	2,762	--	--	--
Miscellaneous 3/	30	45	58	--	--	--
Total 1/	5,425	21,632	21,605	3,876	r/15,224	15,234

r/ Revised.
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.

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

Table 7.--U.S. imports for consumption of iron ore, by customs district
(Exclusive of ore containing 10% or more manganese)
(Thousand long tons)

Customs district	April 1986	Year to date	
		1986	1985
Baltimore	662	r/1,609	931
Buffalo	(1/)	(1/)	--
Charleston	--	67	20
Chicago	77	77	307
Cleveland	103	282	174
Detroit	2/--	23	28
Houston	--	7	72
Mobile	229	1,056	862
New Orleans	146	r/625	247
Philadelphia	226	1,321	866
Other	--	--	7
Total 3/	1,444	5,066	3,514

r/ Revised.
1/ Less than one-half unit. Data being questioned.
2/ Excludes 86 long tons of sponge iron reported as iron ore.
3/ Data may not add to totals shown because of independent rounding.