Availability of Manganese Ore and Future Production of High Carbon Ferromanganese.

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ABSTRACT

Manganese is Nature's twelfth most abundant element and is considered as an strategic material. The world manganese ore reserves amount to more than one billion metric tons distributed in not more than a dozen countries being the most prominent: South Africa, Russia, Gabon, Australia, Brazil, India, China and Mexico.

An international manganese ore trade represented by imports and exports, has suffered a decrease in the last 8 years, as a consequence of the drop in the steel production and of its substitution for manganese ferroalloys by the main importing countries. As a result of the above, the manganese ore price has not moved up but actually decreased in real terms, for the past 7 years.

The manganese ore production capacity, without taking into consideration the Socialist Block, is estimated in around 15 million metric tons per year. The most outstanding manganese producers are: South Africa (7 million tons); Gabon (2.9 million); Australia (2.2 million); Brazil (2.3 million) and Mexico (0.7 million).

For the next 20 years the above countries will most probably to remain the main manganese ore suppliers of the western world.

The high carbon ferromanganese production is focused mainly in: Japan, South Africa, France, Norway and Germany. Other countries with a minor participation are: Australia, Canada, India, Brazil, Mexico and Spain. In the last years the production has shown a tendency to fall down as a consequence of a similar behavior observed in the steel production.

Ever since the high carbon ferromanganese production process was invented it has not undergone any significant modification, however, in the last 3 years a new process called plasma has been developed which, under specific conditions could partially displace the original process.

At the present time the supply of manganese ore as the main raw material is guaranteed with sufficient ore world reserves.

In the high carbon ferromanganese world trade, the largest export countries, are: France, South Africa and Norway with there other smaller exporting countries like: Canada, Mexico, Germany, Australia, Portugal and Brazil. Some others have vanished from the international markets as is the case of Japan, Italy and Spain. As far as ferromanganese imports is concerned, the United States of America has been the market where most of the exporting countries concur. In 1984 it represented 62% of the world total imports.

It is a conclusive factor for international competitivity that certain natural comparative advantages exist in the different producing countries which make it possible their being as exporters: Such comparative advantages combined with the macro-economic and financial policies adopted by some producing countries, measured by the subvaluation of their currencies with respect to the North American dollar, has provided them with an additional competitive advantage thus enabling to ride well through the depressed market situation. Obviously these macro-policies affect the producers countries whithin operate the US dollar zones of influence.

Additionally, the drop in demand caused by the adverse economic situation suffered by the main industrial nations (which since the middle of the 1970's have seen their steel production volumes reduced) has worsened the manganese alloys price situation which since 1979, has practically remained on the same nominal level.

AVAILABILITY OF MANGANESE ORE IN THE WESTERN WORLD

Manganese is nature's twelfth most abundant element mainly in the form of oxides. The most important compounds are known as Pyrolusite, Rhodochrosite, Braunite and Psylomelane.

Manganese is mainly used (95%) in the manufacture of steel. In the chemical industry it is used as fertilizer and fungicide. In the dry cell battery industry it is used mainly as a depolarizer.

Manganese is essential in the steel industry. It is used as an alloy element as well as a deoxidizing and desulfurizing agent. No substitute has been discovered to date and it can be used in the form of ferromanganese, silicomanganese, metallic manganese and directly as manganese ore.

Reserves

Even though manganese ore deposits exist at the bottom of the sea, the present economically exploitable reserves are located in the continental platform. Recognized manganese ore reserves, with Mn contents higher than 35%, are located in South Africa, Australia, Gabon, Brazil, India and China. Manganese ore reserves with lower Mn content are found in Mexico and Ghana.

TABLE 1

WORLD MANGANESE RESERVES
(1000 metric tons - Mn Content)

COUNTRY	RESERVES	%CONTRIBUTION
S. Africa	2'630,000	72.0
USSR	508,000	13.9
Australia	196,000	5.4
Gabon	172,300	4.7
Brazil	62,580	1.7
India	39,900	1.1
China	29,000	0.8
Mexico	7,075	0.2
Ghana	5,985	0.1
Other	1,540	0.1
TOTAL	3'652,380	100.1

Source: Manganese Resources and Reserves

Apparent Ore Consumption (Table 2)

The apparent consumption by the steel industry on which the manganese production is based, has shown a decrease of 12.2% from 1980 to 1985, due mainly to the behavior of the steel industry.

In the last six years, the manganese unit consumption per ton of steel has decreased 3.4% annual average.

TABLE 2

MANGANESE ORE PRODUCTION VS. STEEL PRODUCTION
(Million metric Ton/year)

	1980	1981	1982	1983	1984	1985(p)
Steel Production	716.2	707.5	645.2	563.4	709.9	719.5
Mn ore production	26.73	23.76	23.67	21.51	21.90	22.5
Growth	100.0%	89,9%	88.5%	80,5%	81,9%	87,8%
Unitay consumption Kgr/ A. T. Steel	37.59	33.58	36.69	38.18	30.85	31.26

(p) Preliminary
Source: Manganese Centre.

Manganese Ore Production (Table 3)

The present manganese ore annual production capacity amounts to 31.0 million tons, concentrated mainly in the Soviet Union, South Africa, Brazil and Australia.

Manganese ore mining is performed largely through highly-mechanized open pit operations and from underground mines by means of traditional mining techniques.

The metallurgical processes employed by producers which ore reserves have a low manganese content includes not only ore crushing screening and washing but also highly elaborated systems such as sink float, jigging, tabling and flotation.

Nodulizing, sintering and pelietizing method are being used to semireduce and to aglomerate the ore. Rotary kilns are used for roasting and nodulizing the manganese ore carbonates.

Those producers holding high-grade manganese ore reserves compare advantageously in cost over those which own lower grade manganese ore reserves which require other treatment than crushing, screening and washing representing additional costs.

TABLE 3

MANGANESE ORE PRODUCTION CAPACITY
(1000 metric tons)

	VOLUME	ESTIMATE Mn CONTENT %
USSR	12,000	35
S. Africa	7,000	40 - 50
Gabon	2,900	50 - 53
Brazil	2,300	38 - 50
Australia	2,200	37 - 53
China	1,900	20 - 30
India	1,600	10 - 54
Mexico	500	35 - 40
Ghana	300	32 - 50
Morocco	100	50 - 53
Other	600	
TOTAL	31,400	

Source: The Economics of Manganese.

Manganese Ore Production (Table 4)

Production is divided between the Western world (55%) and the Socialist Block (45%).

From the total production, 51% corresponds mainly to South Africa, Gabon, Australia, Brazil, Mexico and India and 44% is concentrated mainly in the Soviet Union and China.

The annual average manganese production growth in the last years was a negative 3.4% which is coincident with the steel industry behavior.

TABLE 4

MANGANESE ORE PRODUCTIION
(1000 metric ton)

	1980	1981	1982	1983	1984	1985(e)
USSR	9,700	9,150	9,821	9,876	9,800	9,860
S. Africa	5,290	5,396	5,216	2,885	2,860	2,900
Gabon	2,147	1,450	1,490	2,030	2,020	2,050
Brazil	2,177	2,150	2,020	1,898	1,900	1,930
Australia	1,961	1,375	1,199	1,250	1,717	1,740
China	1,600	1,480	1,520	1,525	1,530	1,640
India	1,645	1,530	1,470	1,260	1,200	1,215
Mexico	447	507	420	318	457	355
Ghana	252	197	140	145	250	255
Morocco	150	140	150	155	150	150
Other	1,360	390	230	170	20	400
TOTAL	26,729	23,765	23,676	21,512	21,904	22,495

(e) Estimated
Source: Manganese Centre.

Imports Manganese Ore (Table 5)

Manganese ore imports have shown a very unstable behavior tending to take a downwards direction. From 1980 to 1985 an average negative growth rate of 3.3 per year was observed.

Japan has been the leading manganese importing country in the last 6 years, having imported 33% of the total manganese imports in 1985, followed by France with 15%. As far as manganese ore import transactions per country is concerned, the U.S.A. has been distinguished for having decreased its imports from 1980 to 1985 to by an average annual rate of 11% which is higher than the drop in the steel production which amounted to 3.8% within the same period. West Germany follows with a decrease of 6.7% on its manganese ore imports, calculated as an average annual rate while its steel production decreased by 1.3% in the same period.

TABLE 5

IMPORTS MANGANESE ORE
(1000 metric tons)

	1980	1981	1982	1983	1984	1985
Japan	2,905	2,499	2,157	1,641	2,142	2,182
France	1,226	848	943	746	1,007	1,039
Norway	808	485	764	623	700	703
W. Germany	488	587	374	412	517	345(p)
U. S. A.	633	579	215	333	297	349
Italy	409	341	331	385	271	265(e)
Spain	433	254	261	214	417	440(e)
Belgium/Lux.	300	245	227	163	208	231
Canada	235	260	160	100	180	173(p)
South Korea	205	279	233	190	249	260(e)
Portugal	174	110	122	35	52	60(e)
U. Kingdom	129	278	179	368	270	393(p)
Mexico	99	64	59	32	23	35
Others	403	246	390	338	223	230(e)
TOTAL	8,447	7,075	6,395	5,580	6,556	6.705(e)

(p) Preliminary (e) Estimated
Sources: Manganese Centre.

Exports of Manganese Ore

Exports performed similarly to imports, having obtained in general terms, from 1980 to 1985, an annual average growth rate of only 0.3%.

TABLE 6

EXPORTS OF MANGANESE ORE
(1000 Metric Tons)

	1980	1981	1982	1983	1984	1985 e)
S. Africa	3,300	3,100	2,878	2,170	3,006	3,050
Gabon	2,310	1,450	1,413	1,930	2,370	2,530
Australia	1,328	900	906	1,003	1,460	1,480
Brazil	1,037	1,018	846	747	780	785
India	871	698	430 e)	350 e)	350 e)	360
Ghana	241	204	138	139	250	255
Mexico	151	195	128	107	163	109
Other	288	295	191	186	220	151
TOTAL	9,526	7,860	6,930	6,632	8,599	8,720

e) Estimated
Source: Manganese Centre

Market Share

As can be observed from the preceding Tables, there are only a few countries which supply the demands of the manganese world market and their market share evolution is shown in the Table 7.

The relative importance of the suppliers of the first exporting four countries (Sud-Africa, Gabon, Australia and Brazil) raises a question of substance: Whether anyone of these countries could take the place of other any in case of emergency.

At present, Australia has an annual production capacity of 2.2 million tons of manganese ore which could be increased to 3.0 million; however, this expansion project has been temporarily suspended. South Africa has a production capacity of 7.0 million tons of manganese per year; in 1985 the utilization capacity was only 40%. Gabon's production capacity amounts to 2.9 million tons per year which could be easly increased to 4 or 5 million tons provided, however that the railroad construction is completed. Brazil could increase its manganese exports to the same volumes obtained in preceding years.

Therefore, the production of any of the countries mentioned above, could be readily substituted in order to continue supplying in a short term the manganese ore demand although additional investments would be required.

TABLE 7

MARKET SHARE OF MANGANSE ORE
(In Percentage)

	1960	1970	1980	1981	1982	1983	1984	1985 e)
S. Africa	15.5	23.3	34.6	39.4	41.5	32.7	34.9	35.0
Gabon	N.D.	22.9	24.2	18.4	20.4	29.1	27.6	29.0
Australia	N.D.	9.2	13.9	11.4	13.1	15.1	17.0	17.0
Brazil	17.5	16.7	10.9	13.0	12.2	11.3	9.1	9.0
India	22.5	N.A.	9.1	8.9	6.2	5.3	4.1	4.1
Ghana	10.7	N.A.	2.5	2.6	2.0	2.1	2.9	2.8
USSR	17.5	N.A.	--	--	--	--	--	--
Morocco	8.5	N.A.	1.2	1.2	1.2	1.0	0.7	0.6
Mexico	--	1.0 e)	1.6	2.5	1.8	1.6	1.9	1.3
TOTAL	92.2	72.1	98.6	87.0	90.1	91.0	91.5	91.8

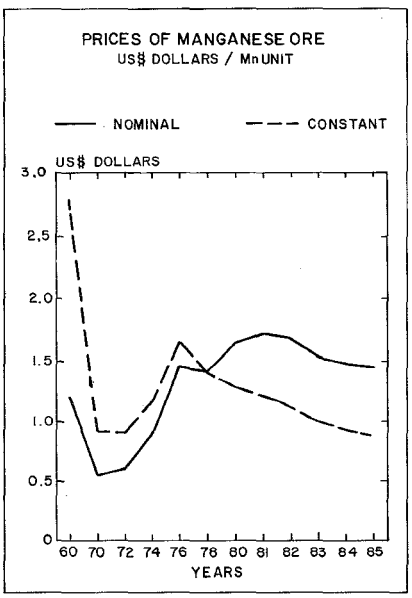
e) Estimated
Source: Manganese Centre
Manganese Resources and Reserves
The Economics of Manganese

Prices of Manganese Ore (Graph 8)

Manganese ore prices are established principally through direct negotiations between seller and buyer, which include: amount, delivery terms, chemical analysis, manganese content, etc.

At the end of 1986, the price of 1.42 USCy. per long ton unit was at the same nominal level as in 1976.

GRAPH 8



Now, based on constant dollars, manganese prices have suffered up to 1985 a real decrease of 38% with respect to the 1978 prices, and 69% with respect to the prices prevaling in 1960.

From the foregoing it can be affirmed that the manganese production has maintained a behavior similar to that of the steel production and that notwithstanding that the manganese unit demand has decreased the total demand will continue growing only at the same rate as the manganese ferroalloys productions grows.

The depression in the manganese price reflects the large manganese oversupply and the highly aggresive marketing strategies followed by the leading exporting countries.

Production Capacity of H.C. Ferromanganese (Table 9)

The world manganese ferroalloys production capacity is estimated in about 8.0 million metric tons per year of which 1.5 million tons are produced by the Socialist Block. The above production is divided accordingly to the following percentages:

HIGH CARBON FERROMANGANESE	64%
MEDIUM AND LOW CARBON FERROMANGANESE	10%
SILICOMANGANESE	26%
TOTAL CAPACITY	100%

TABLE 9

MANGANESE FERRO-ALLOYS PRODUCTION CAPACITY

BY COUNTRY

(100 Metric Ton/Year)

	H.C. FERRO-MANGANESE	FERROMANGANESE LOW AND MEDIUM CARBON	SILICO-MANGANESE
Japan	700	200	600
U.S.A.	500	100	170
USSR	1050 e)	N.A.	315 e)
S. Africa	560	200	125
France	550	50	40
Norway	380	50	240
India	230	5	15
Spain	180	40	100
U.K.	160	--	--
Brazil	150	30	110
Belgium	150	30	50
Mexico	144	28	55
Canada	110	--	20
Australia	100	--	25
Other	446 e)	67	145 e)
TOTAL	5410 e)	800 e)	2010 e)

e) Estimated

Source: The Economics of Manganese

Production of H.C. Ferromanganese (Table 10)

The high carbon ferromanganese production which represents 64% of the total capacity, consumes 70 to 75% of the total manganese ore used in the ferroalloys production.

High-carbon ferromanganese can be produced either in blast furnace or in electric furnace. At the present time, 85 to 90% of the world high-carbon ferromanganese is produced in electric furnaces. Two main advantages are obtained by the electric furnace:

1. They can be installed in medium sized unit thereby reducing capital investment.

2. They have the ability to use the slag from high-carbon ferromanganese production in the production of silicomanganese.

In the last 3 years a new process called plasma, has been developing, which consequently, under specific conditions could have a main contribution in the high carbon ferromanganese production in the years to come.

As may be observed in Table 10 in 1969 the principal ferromanganese producing countries were also the main steel producing centers, since the ferromanganese production was projected towards supplying the domestic demand. However, in the last 20 years, this pattern has drastically changed and the production is now focused mainly in Norway, South Africa, France, Germany, Mexico, Canada and India, some of which are also strong exporters.

TABLE 10

(1) PRODUCTION OF H.C. FERROMANGANESE

(1000 Metric Tons)

	1960	1970	1980	1981	1982	1983	1984 e)
U.S.A.	797	758	172	70	32	30	--
France	276	486	473	313	333	270	329
W. Germany	278	251	191	205	196	155	288 e)
Japan	156	444	512 e)	468	422	311	337
S. Africa	114	240	490 e)	450	335	200	290 e)
Australia	7	43	77 e)	64	56	50	76
Brazil	19	43	128	98	114	93	98 e)
Norway	49	159	287 e)	195	160	145	140
Mexico	14	56	110	115	123	122	140
Spain	26	59	74 e)	77	62	84	76
Italy	31	28	60 e)	51	57	49	45 e)
Canada	N.A.	N.A.	58 e)	95 e)	55 e)	55 e)	55 e)
India	82	176	180 e)	178	167	148	150 e)
Belgium	N.A.	N.A.	56 e)	22	32	33	30 e)
U.K.	155	155	110 e)	84	61	83	75
Other	N.A.	N.A.	--	496	190	192	191 e)
TOTAL	2,226	3,310	3,100 e)	2,930	2,395	2,020	2,320 e)

(1) Only occidental world

e) Estimated

Source: The Economics of Manganese
Manganese Centre

Such exports (Table 11) have been increased more recently from countries with medium and small size steel industries, such as Brazil, Australia and Mexico. Japan is self-sufficient in ferromanganese production and the United States has now become the largest single importing country.

TABLE 11

CONTRIBUTION BY COUNTRY
IN H.C. Fe Mn PRODUCTION

	1960	1984 e)
U.S.A.	28.0%	--
USSR	22.0%	25.8%
France	10.0%	9.5%
W. Germany	10.0%	8.3%
U.K.	6.0%	2.5%
Japan	5.0%	9.7%
S. Africa	4.0%	8.3%
Norway	1.7%	4.0%
India	2.9%	4.3%
Brazil	0.7%	2.8%
Italy	1.0%	1.3%
Mexico	0.5%	4.0%
Australia	0.2%	2.2%
Other	8.0%	17.3% e)
TOTAL	100.0%	100.0%

e) Estimated.

Source: Manganese Centre
The Economics of Manganese

The present tendency towards producing ferromanganese and other ferroalloys in general, is centered in those countries holding natural comparative advantages (Table 12) such as: Cheap electric power available (Brazil and Norway own enough hydroelectric plants); manganese ore and raw material availability (South Africa, Mexico, Brazil and Australia), and relatively cheap labor availability (South Africa, Mexico and Brazil).

This tendency in the ferromanganese production is very similar to the one observed in the manganese ore production; that is, the production capacity is being increased mainly in those countries possessing importat manganese ore deposits and large manganese ore production capacity.

TABLE 12

COMPARATIVES ADVANTAGES
H.C. Fe-Mn PRODUCTION

	ELECTRIC POWER	Mn ORE	RAW MATERIAL	LABOR	MARKET	SHIPPING COST
S. AFRICA	√ √	√ √ √	√ √ √	√ √ √	√	√
NORWAY	√ √ √				√ √	√ √ √
FRANCE(Gabon)		√ √ √			√ √ √	√ √ √
JAPAN					√ √ √	
BRAZIL	√ √ √	√ √ √	√ √	√ √ √	√	√
AUSTRALIA	√					
MEXICO	√	√ √	√	√ √ √	√ √ √	√ √
U.S.A.					√ √ √	√ √ √
SPAIN				√	√ √	√
W. GERMANY					√ √ √	√ √ √

Consumption of H.C. Ferromanganese (Table 13 and 14)

With respect to ferromanganese consumption it may be observed from the Table 13, that in general terms, it is decreasing since it has been affected by two significant factors:

a) Reduction in the steel production and,

b) Optimizing of ferromanganese use; which brings as a consequence a decrease in the unit consumption per ton of steel produced.

TABLE 13

(1) CONSUMPTION OF H.C. FERROMANGANESE
(1000 Metric Tons)

	1973	1975	1978	1980	e)1981	e)1982	e)1983	e)1984	e)1985
U.S.A.	1100	813	887	828	821	439	446	492	470
Japan	550	450	460	426	415	358	321	338	336
W. Germany	375	325	290	310	293	222	198	228	235
Italy	175	183	194	172	146	125	81	150	147
France	222	159	173	175	160	132	125	137	135
Brazil	57	63	73	81	70	68	78	92	103
U.K.	236	181	164	90	103	90	95	90	93
Canada	80	86	86	90	84	67	70	80	80
Spain	88	91	75	77	77	78	73	75	78
S. Africa	32	37	38	42	40	37	32	34	37
Other (2)	386	1370	287	534	554	1086	1124	869	816
TOTAL	3301	3758	2727	2825	2763	2702	2643	2585	2530

(1) Selected countries which in total account for about 90%.
(2) Mexico, Australia, Belgium, Austria, England, Luxembourg, Netherlands, Sweden.
e) Estimated
Source: The Economics of Manganese

Imports of H.C. Ferromanganese (Table 15)

With respect to ferromanganese imports, in the last 15 years it has been observed that imports have been centered in the main steel producing countries such as: United States, Germany, United Kingdom and Italy.

TABLE 15

IMPORTS OF H.C. FERROMANGANESE
(1000 Metric Tons)

	1974	1980	1981	1982	1983	1984	1985
U.S.A.	399	518	584	406	277	318	284
W. Germany	167	108	85	80	71	57	91 p)
Italy	159	105	63	90	47	87	77 e)
Belgium/Lux	121	59	81	41	41	40	46
France	31	55	38	35	26	45	33
Netherlands	30	17	17	15	9	20	25 e)
U. Kingdom	125	35	37	40	77	15	24 p)
Canada	17	27	37	25	18	31	19 p)
Japan	20	2	6	12	16	14	6
Australia	20	6	6	3	4	4	5 e)
Others	70	67	59	59	66	70	144 e)
TOTAL	1159	999	1013	806	652	701	754 e)

e) Estimated
p) Preliminary
Source: The Economics of Manganese
Manganese Centre

TABLE 14

UNITARY CONSUMPTION OF H.C. Fe Mn
(kg Mn Content/Ton Steel)

	1974	1979	1981	1982	1983	1984 e)
U.K.	5.70	5.56	4.90	4.83	4.70	4.40
Luxembourg	6.40	5.90	6.01	5.2	5.01	4.19
France	4.60	4.32	4.13	3.98	3.91	3.96
Italy	5.30	4.50	3.20	2.84	2.75	3.40
U.S.A.	4.99	4.43	4.30	3.55	3.15	3.18
W. Germany*	4.82	4.08	3.85	3.38	3.02	3.16
Belgium	6.02	3.97	3.82	3.15	2.98	2.70
Japan	2.90	2.69	3.09	2.63	2.44	2.37
Holland	4.03	2.84	2.45	2.3	2.38	2.26

(*) Reported as Blast Furnace HC FeMn
e) Estimated

Exports of H.C. Ferromanganese (Table 16)

As mentioned in preceding paragraphs, the ferromanganese exports have become more relevant from countries which have control over enormous manganese ore deposits. In addition, the comparative advantages of the ferromanganese producing countries are becoming a determinant factor for international market competition.

It is expected that this tendency continues in the next years.

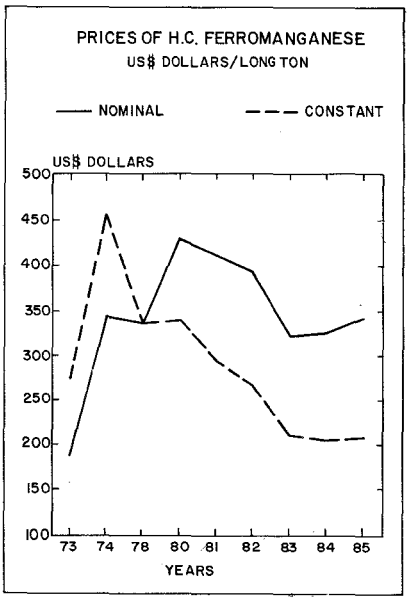
TABLE 16

EXPORTS OF H.C. FERROMANGANESE
(100 Metric Tons)

	1974	1980	1981	1982	1983	1984	1985
France	398	288	342	153	252	282	218
S. Africa	347	285 e)	335 e)	300e)	160 e)	180 e)	185 e)
Norway	270	204	165	148	139	133	111
W. Germany	78	28	37	18	22	38	37
Mexico	--	38	38	16	35	23	26
Brazil	5	38	36	31	45	25 e)	25 e)
Benelux	59	35	10	13	14	23	20
Japan	50	19	20	15	8	8	16
U. Kingdom	1	1	20	22	14	0.3	12
U.S.A. (1)	6	11	13	9	8	6	6
Portugal	N.A.	56	25	14	10	6	3
Spain	36	7	9	--	--	--	--
India	29	--	18	N.A.	N.A.	N.A.	N.A.
Other	131	52	108	35	14	9	26
TOTAL	1410	1062	1176	774	721	733	685

(1) Include low-medium carbon
(e) Estimated
(p) Preliminary
Source: Manganese Centre

GRAPH 17



Prices of H.C. Ferromanganese (Graph 17)

As a consequence of the combined effect of the depressed steel production prevailing in the Western countries in the recent past which reduced its volume at an annual average rate of 1% during the last six years, the supply of High Carbon Ferromanganese has been superior to its demand, thus resulting in a drastic decrease of its nominal price by as much of 22% from 1979 to 1985. The constant price since 1978 has decreased by 45% in the same period. Graphic 17 shows that the ferromanganese price in 1985 is 25% lower that the price obtained in 1979.

A very aggressive marketing policy is being followed at the present time by the main ferro-alloy producers which primary consequence is the depression observed in the international markets.

In addition, the macro economic and financial policies adopted by several countries measured by the subvaluation of their currencies with respect to the U.S. dollar, allows them an additional competitive price advantages depending on the amount of their subvaluation level.

TABLE 18

OVERVALUATION OF U.S. DOLLAR
DECEMBER OF 1985

COUNTRY	PERCENTAGE
Brazil	101.4 e)
S. Africa	89.2
W. Germany	42.5
Portugal	41.9
Norway	31.1
France	27.9
Mexico	21.3
Spain	21.3
Japan	7.4
U. Kingdom	4.3

e) Estimated.
Source: Internation Monetary Fund

CONCLUSIONS

It is unquestionable that manganese is an essential element for the steel industry and that as a consequence the manganese production has maintained and will continue maintaining a similar behavior to that of the steel production. Notwithstanding that the unit consumption has decreased, the total demand will continue growing, though at a less accelerated rythm.

The general tendency implies a concentration of the manganese ore and ferromanganese production and marketing in those countries possessing large manganese ore deposits and energy, labor and raw materials as natural comparative advantages.

The manganese ore and manganese alloy depressed prices are caused by the unbalance of excess production capacity related to lower demand, combined with aggressive marketing strategies conducted by the mayor manganese alloy producers.

Now that the currencies are starting to adjust their parities to more realistic terms of interchange in relation to the U.S. Dollar, it is quite probable that the near term will see a strengthening of the market prices of Manganese ferroalloys, which is long overdue. It is also probable that South Africa and France after having established a sound share of the U.S. market, their producers will benefit from higher prices eventhough the currencies and specially the Rand could continue undervalued.