

THE MINERAL INDUSTRY OF

ARGENTINA

By Ivette E. Torres

The Republic of Argentina, which is located in southern South America, has an area of about 2.77 million square kilometers with a population of about 37 million. The gross domestic product (GDP) in 2000 was \$285 billion.¹ In real terms, the GDP decreased by 0.5% from that of 1999 after a decrease of 3.4% in 1999 from that of 1998. Mining (including petroleum) and quarrying, which, in real terms, represented 2.5% of the GDP, increased by 9.8%. Construction decreased by 11.4%, and manufacturing decreased by 3% (Ministerio de Economía, 2001, Información económica [Economic information], updated June 21, accessed September 20, 2001, at URL <http://www.mecon.gov.ar/infeco/goto.asp?=-apendice1.xls>).

Near yearend, the slow economic growth and high unemployment led the Government to announce economic policies to prevent a crisis; Government deficit exceeded 4% of the GDP (Washington Post, 2000). The International Monetary Fund and the Government of Argentina agreed on a financial package focused on curtailing Government spending and increasing revenue. The package was intended to encourage business investment and consumer confidence. The package could exceed \$15 billion (Financial Times, 2000). This economic recession and the global economic slowdown had a great impact in curtailing mining exploration in Argentina, which had attracted as many as 80 foreign companies in the 1990s. In 2000, only about 10 foreign mining and exploration companies were operating in the country (Industrial Minerals, 2001), but exploration expenditures increased to \$110 million; this was a 38% increase compared with 1999 (Industrial Minerals, 2001; Mining Journal Ltd., 2001a).

Government Policies and Programs

Argentina's Legal Framework for Mining covered an abstract of the Mining Code, the Legal Framework for Investment in Argentina, Mining Investment Law No. 24.196, Regulating Law of Mining Investment (Decree No. 2.686/93), Mining Reorganization Law No. 24.224, Federal Mining Agreement Law No. 24.228, VAT Funding Law No. 24.402, Regulation of Law No. 24.402 (Decree No. 779/95), Mining Updating Law No. 24.498, and Environmental Protection for the Mining Industry Law No. 24.585.

The Mining Code, which was approved by the Argentine Congress on November 25, 1986, regulates the rights, obligations, and procedures for the acquisition, exploration, exploitation, and use of mineral substances. At yearend 2000,

¹Where necessary, values have been converted from Argentine pesos (Ang\$) to U.S. dollars at the rate of Ang\$1.00=US\$1.00.

Argentina's Senate was considering the modification to law No. 24.196, with the purpose of promoting investment and development in the mining sector through a series of tax incentives (Panorama Minero, 2001, April 5, Fue sancionada por unanimidad en el Senado de la Nación la Ley de Actualización Minera [Argentina's Senate sanctioned unanimously the Law of Mining Actualization], accessed October 12, 2001, at URL <http://www.panoramaminero.com.ar/zuccardi.htm>).

In January, the Chilean Lower House approved the bilateral mining treaty between Argentina and Chile; the treaty, which already had been approved by the Argentinean Senate, needed the approval of the Chilean Senate. The goal behind the treaty was to facilitate exploration and mining of deposits that extend along the Argentina-Chile frontier. Free flow of equipment and personnel between the two countries would be possible. Officials believed that the treaty has the potential to boost investment in the mining and energy sectors by as much as \$20 billion in 10 years. Three large projects in different stages of exploration in the border area would benefit from the treaty—El Pachón, Pascua-Lama, and Veladero. The Governments of both countries identified 370 mineral deposits in the border area. On July 5, Chilean Senate Commissions on Mining and Foreign Investment approved the treaty, and in August, the Chilean Senate approved the treaty. In December, the Presidents of Argentina and Chile ratified the treaty (Metals & Minerals Latin America, 2000b-e, 2001).

In an effort to attract mining, the Government of the Neuquén Province submitted a proposal for changes in mine royalties to the National Congress. The reduction would not affect the calculation of royalty for crude ores (3% at mouth of mine), but would reduce the royalty for concentrate to 2% and for refined metals to 1% (Metals & Minerals Latin America, 2000a).

Environmental Issues

The Environmental Protection Mining Code, law No. 24.585, which was enacted on November 21, 1995, provides investors with the appropriate legal framework and requires that each provincial government create an enforcement authority within their jurisdiction.

The environmental framework that relates to mining activities was completed with the establishment of Provincial Environmental Management Units, which are responsible for assisting the provincial enforcement authorities in all aspects relating to the code, specifically in assessing the environmental impact reports presented and monitoring mining projects.

Production

The value of Argentina's mineral production (excluding petroleum) was estimated to be \$1.1 million, which was a 5.7% decrease from that of 1999. Metal mine production, which represented 58% of the total, decreased by 9.7% to \$632 million. The value of nonconstruction industrial minerals increased by 13% to \$110 million, and the value of construction materials production decreased by 2% to \$333 million. The value of semiprecious stones and that of coal increased by 9% and 1.7%, respectively (Lic. César Massaccesi, Dirección Nacional de Minería, written commun., September 4, 2001).

Argentina, which was the third largest producer of aluminum and lead in Latin America, accounted for about 12% and 3%, respectively, of the region's output. The country produced a small amount of cadmium as a byproduct of zinc. Although it produced less than 3% of Latin America's copper mine output, it was the fourth largest producer in the region. Despite a decrease in copper production from that of 1999, output level has increased almost fivefold since 1997 when production began.

With 8% and 7% of regional production, Argentina was the third and fourth largest producer of steel and primary iron (pig and sponge iron), respectively (Instituto Latinoamericano del Fierro y el Acero, 2001, accessed July 7, 2001, at URL <http://www.ilafa.org/estadis/anuales/004i.htm>; <http://www.ilafa.org/estadis/anuales/005i.htm>).

Argentina was Latin America's fourth largest producer of silver, although it produced less than 2% of the region's total. With 7% of gold and 2% of the zinc regional mine output, it was the sixth largest producer of both mineral commodities in Latin America.

Despite the year's decrease of overall value of metal mining production and the country's relatively low percentage of mine output in Latin America, production of mine lead, silver, and zinc increased from that of 1999. Although production of copper and gold decreased during the year, their output has increased significantly from 1996 when copper production was nil and gold production was minimal. Production of lead and silver have also increased significantly during the 5-year cycle (table 1).

Trade

Brazil was Argentina's largest trading partner, followed by the United States. In 2000, Argentina's exports totaled \$26.4 billion. One of the largest component of export was fuels, with 18.6% of the total. The value of mineral exports totaled \$710.9 million; of that, \$626 million was from metals (Ministerio de Economía, Cuadro resumen de indicadores macroeconómicos seleccionados, [table of selected macroeconomic indicators], [undated], accessed July 7, 2001, at URL <http://www2.mecon.gov.ar/infoecon/cuadrosresumen.xls>, Lic; César Massaccesi, Dirección Nacional de Minería, written commun., September 4, 2001).

Imports in 2000 totaled \$25.2 billion. About 75% of imports were of capital goods, intermediate products, and parts and accessories. For the year, imports of minerals totaled \$558.6

million, of which metals represented 75% of the total (Ministerio de Economía, Cuadro resumen de indicadores macroeconómicos seleccionados, [table of selected macroeconomic indicators], [undated], accessed July 7, 2001, at URL <http://www2.mecon.gov.ar/infoecon/cuadrosresumen.xls>; Lic. César Massaccesi, Dirección Nacional de Minería, written commun., September 4, 2001).

Structure of the Mineral Industry

The mineral industry in the private sector comprised several mining and manufacturing companies, such as Aluminios Argentinos S.A.I.C. (ALUAR), Cementos Loma Negra C.I.A. S.A., Cía. Boroquímica S.A.M.I.C.A.F., Cía. Minera Aguilar S.A., Cía. Minera Tea S.A.M.I.C.A.F., Sulfacid S.A.C.I.F., Minera Alumbreira Limited, FORMICRUZ-Cerro Vanguardia S.A., FMC Minera del Altiplano S.A., and others (table 2).

At the beginning of the year, 10.9 million people were employed nationwide, 36,000 of whom worked in metallurgical plants; 21,000, in the oil and gas industry; 16,000, in the mining sector; and 7,000, in the cement industry.

Commodity Review

Metals

Aluminum.—The sole producer of primary aluminum in Argentina was ALUAR with a smelter in Puerto Madryn, Chubut Province. The smelter capacity was increased to 260,000 metric tons per year (t/yr) in 1999 from 187,000 t/yr. In 2000, production increased by almost 27% to 261,800 metric tons (t), which was slightly above capacity. Further expansion of the smelter was being evaluated by ALUAR. The expansion, which would cost an estimated \$600 million, would increase production capacity to 375,000 t/yr. The company was also assessing the construction of a 250,000 t/yr primary smelter in Patagonia. Construction of this smelter would require an investment of \$1.4 billion. No definite site had been selected, but an adequate port and closeness to natural gas fields to guarantee the competitiveness of the operation would be essential (Cámara Argentina de la Industria del Aluminio y Metales Afines, 2000).

Copper and Gold.—Mine production of copper and gold decreased by 31% and 33%, respectively, in 2000. The Bajo de la Alumbreira mine, which was the only copper producer during the year, produced 145,197 t; this was a 27% decrease compared with that of 1999 when the company production level exceeded its designed capacity of 180,000 t/yr. The mine, which began commercial production in 1998, was operated by Minera Alumbreira Limited. The production decrease in 2000 was due, in part, to lower grade and mill throughput. In the last quarter of the year, recovery of gold and silver improved, and production levels increased. Company ownership changed in 2000 when the 25% share of North Ltd. and the 25% share of Rio Algom Ltd. held in Minera Alumbreira were acquired by Rio Tinto plc and Billiton plc, respectively, as results of company takeovers.

Gold and Silver.—A relatively new producer of gold and silver in Argentina Cerro Vanguardia S.A., located in the Santa Cruz Province, Patagonia, was a joint venture of AngloGold plc (46.25%), Perez Companc S.A. (46.25%), and the Government of the Santa Cruz Province (7.5%). The open pit mine was commissioned in 1998. In 2000, production from the Cerro Vanguardia mine was affected by bad weather during the second quarter. As a result, gold output decreased to 8,800 kilograms (kg) in 2000 from about 10,100 kg in 1999. Production of silver decreased to about 49,100 kg in 2000 from 112,600 kg in 1999. Almost 34% of the gold and about 63% of the silver produced in Argentina during the year were from the Cerro Vanguardia mine. The mine's total construction cost was \$270 million. The company has the right to exploit the deposit for 40 years. Reserves at yearend 2000 were 8.5 million metric tons with 9.4 grams per ton (g/t) gold and 130 g/t silver at a cutoff grade of 4 g/t gold (Mining Journal, 2001b; AngloGold, 2000, December 2000 quarterly report, resources and reserves, accessed October 10, 2001 via URL <http://www.anglogold.com/InformationForInvestors>).

Exploration work continued at the Veladero project in the San Juan Province. The project was a joint venture between Homestake Mining Company (60%) and Barrick Gold Corp. (40%). Homestake, the operator, announced that the joint-venture budget for 2000-01 (ending on August 31, 2001) was \$30 million, which would significantly reduce the level of activity in the project. The goal of the partners was to complete the first feasibility study by that time (Panorama Minero, March 14, 2001, Veladero concluirá su primer estudio de factibilidad para agosto del 2001 [The first feasibility study for Veladero will be completed by August 2001], accessed October 12, 2001, at URL <http://www.panoramaminero.com.ar/zuccardi.htm>). Resources at yearend 2000 totaled 118.3 Mt with 1.58 g/t gold (reported as 0.046 ounce per ton gold) and 24 g/t silver (reported as 0.7 ounce per ton silver) (Homestake Mining Company, 2001, Veladero (60%), accessed October 10, 2001, at URL http://www.homestake.com/operations_sublevels/argentina_mid.html).

At yearend, Barrick Gold announced that because of the gold and silver prices, it would not begin immediate construction of the Pascua-Lama property on the Argentina-Chile border (Barrick Gold Corporation, 2000a). Early in the year, plans had called for production to begin in 2003 with an initial output of 24,900 kilograms per year (kg/yr) of gold (reported as 800,000 ounces per year of gold), with an expansion to 31,100 kg/yr (reported as 1 million ounces of gold per year) by 2005. The company estimated a cash cost of \$100 per ounce for the life of the mine (Barrick Gold Corporation, 2000b). Despite placing construction on hold, the company continued with the engineering work and was going ahead with submitting the tailings design, which was the last requirement to complete the permitting process (Barrick Gold Corporation, 2000a). At yearend 2000, Pascua-Lama's proven and probable reserves were 269 Mt with a grade of 1.95 g/t gold and 66 g/t silver at a 1.1 g/t gold cutoff grade (Mining Journal, 2001a).

Exploration continued at the Vicuña gold project 24,000-hectare property, which lies along the Argentina-Chile border. In March, Tenke Mining Corp. received approval from the Governments of Argentina and Chile to work on both sides of

the border. Also in March, the company began extensive geophysical work to define the targets in preparation for drilling (Tenke Mining Corp., 2000b). In November, the drilling program of 5,000 meters (m) of reverse circulation drilling began on five targets—Co. Vicuña, Filo del Sol, Flamenco, Gemelos, and Maranceles, (Tenke Mining Corp., 2000a).

Yamana Resources Inc. received approval for the environmental impact report for its Santa Martha mine from the Santa Cruz Government, and the company signed a development and mining contract with Geovitta S.A., which was a mining contractor (Yamana Resources Inc., 2000). Construction was scheduled to start in September, and production of ore, in December. Production, however, was delayed until January 2001. Production was planned in four phases. The first phase of operation from one of four bonanza pockets would produce about 100,000 kg of silver equivalent (reported as 3.25 million ounces of silver) at an average grade of 20,249 g/t (Yamana Resources Inc., 2001). Results from assaying initial production from pocket 2 at 35 m indicated 7,200 g/t silver. The company planned to ship the production to Noranda Inc.'s Horne smelter in Quebec, Canada.

Iron and Steel.—Argentina was the third largest producer of crude steel in Latin American and the Caribbean with almost 8% of the region's total. Production in 2000 increased by almost 18% to 4.5 Mt (table 1).

In December, Acindar Industria Argentina de Aceros S.A. (Acindar) and Companhia Siderurgica Belgo Mineira (BELGO MINEIRA) announced that Acindar and Belgo-Mineira Uruguay S.A. (BMU) (a company controlled by BELGO MINEIRA) signed an agreement to form a strategic alliance; Acindar was Argentina's main producer of long products and had a capacity of 1.3 million metric tons per year (Mt/yr). Under this agreement, BMU acquired 14.61% of Acindar (Acindar Industria Argentina de Aceros S.A. and Companhia Siderurgica Belgo-Mineira, 2000). Acindar, which was a vertically integrated steel company, sold 1.13 Mt of steel products in 2000, which included 353,700 t to export markets (Acindar, 2000, [untitled financial information], accessed October 19, 2001, at URL <http://www.acindar.com/finanzas/cp30-06-00.pdf>; Acindar, 2001, Acindar anuncia los resultados del primer semestre cerrado el 31 de diciembre de 2000 [Acindar announces results of the first semester ending on December 31, 2000], accessed October 19, 2001, at URL <http://www.acindar.com/finanzas/cp09-02-01.pdf>). BELGO MINEIRA was to invest \$100 million in Acindar, which had a debt of \$360 million (Metal Bulletin, 2000a).

The ferrous scrap producer Scrap Service S.A. began a car shredding operation in Nicolás near Buenos Aires. The company, which produced about 400,000 t/yr in 2000, planned to produce 150,000 t of additional scrap from the shredder. In 2000, Argentinian steel producers imported a significant amount of iron ore from Brazil. The scrap would reduce iron ore dependency from Brazil (Metal Bulletin, 2000b).

Industrial Minerals

Cement.—Production of cement in Argentina remained at about the same level as that of 1999 with 7.2 Mt despite a

decrease of 11.4% in the construction sector. Clinker production capacity was about 11 Mt. Cement production came from Cementos Avellaneda, Grupo Minetti, Loma Negra C.I.A. S.A., and Petroquímica Comodoro. Loma Negra was the leading producer with about 60% of the country's clinker capacity. It operated integrated cement works at Barker, Catamarca, Olavarría, Pipinas, San Juan, Sierras Bayas, and Zapala, as well as two grinding plants at Paraná and Ramallo. The company held a 50% share of Argentina's domestic market (International Cement Review, 2001, p. 52-54).

In May 2000, Loma Negra completed the construction of a new distribution center in Vicente Casares near Buenos Aires at a cost of \$36 million (International Cement Review, 2001, p. 52-54). The silo has a capacity of 18,000 t, and the mixer can produce 250 metric tons per hour of cement; the mixer can produce different types of cement and can change from one to another in 30 minutes. The center receives the cement base (clinker plus gypsum), slag, and limestone from the plants at Bayas, Olavarría, Ramallo, and Sierras (Lomas Negra C.I.A. S.A., 2001, [untitled], document, accessed October 18, 2001, at URL <http://www.lomanegra.com/servicios/entregas/supercentro.htm>).

Nitrogen (Ammonia).—Ammonia production in Argentina increased significantly to 198,900 t from 87,700 t in 1999 (table 1).

Commercial production from a new \$650 million to \$680 million ammonia and urea complex located in Bahía Blanca, Buenos Aires, which had been scheduled for commercial startup at mid-2000, was delayed (Fertilizer Markets, 2000). The complex, Profertli S.A., was a joint venture between Agrium Inc. of Canada and Repsol-YPF, which was the company resulting from the merge of Spain's oil producer Repsol and Argentina's Yacimientos Petrolíferos Fiscales S.A. in 1999. The complex's urea production capacity was 1.1 Mt/yr. In addition to the ammonia necessary to produce the 1.1 Mt/yr of urea, the complex was scheduled to produce 70,000 t ammonia for sale. The complex, which began production in July, was affected by several events that included a fire during startup and an ammonia leak in August, which stopped ammonia production twice. Prior to the August stoppage, the ammonia plant had been producing at 90% capacity (Agrium Inc., 2000a, c).

Production from the ammonia plant resumed in October, followed by the approval for the startup of the urea plant during the same month. The urea plant, however, was closed by the Secretaría of Política Ambiental, Buenos Aires's provincial environmental agency, as a result of ammonia release in the plant (Agrium Inc., 2000b, d). Commercial production was achieved in January 2001 (Agrium Inc., 2001).

Mineral Fuels

Natural Gas.—In 2000, gross production of natural gas increased by 5.8% to about 44.9 billion cubic meters. The Secretaría de Energía y Minería reported proven reserves of natural gas as 777.6 billion cubic meters, 51.3% of which was located in the Neuquén Basin (Secretaría de Energía y Minería, 2001, Combustibles, reservas probadas, gas natural [Fuels, proven reserves, natural gas] accessed October 9, 2001, via

URL <http://energia.mecon.gov.ar>.) Three companies, YPF S.A. (now Repsol-YPF), Total Austral S.A., and Pluspetrol S.A., produced about 47% of Argentina's natural gas. About 58% of the production was from the Neuquén Basin, followed by the Austral Basin with 20% of the production (Secretaría de Energía y Minería, 2001, Combustibles, producción, gas natural [Fuels, production, natural gas], accessed October 9, 2001, via URL <http://energia.mecon.gov.ar>).

Petroleum.—Argentina was the fourth largest producer of crude petroleum in Latin America, after Mexico, Venezuela, and Brazil, with an output of about 278 million barrels (Mbbbl); this was a 5% decrease from 1999 when production was 293 Mbbbl (U.S. Department of Energy, 2001, Table 4.1b—World crude oil production (including condensate), 1970-2000, accessed October 17, 2001, at URL <http://www.eia.doe.gov/emeu/ipsr/t41b.txt>). Proven reserves of crude petroleum at the beginning of 2000 totaled 2.8 billion barrels (U.S. Department of Energy, August 2000, Argentina—Petroleum, Country Analysis Brief, accessed October 10, 2001, at URL <http://www.eia.doe.gov/emeu/cabs/argentina.html>). These were distributed among 19 sedimentary basins, 5 of which were producers. Most of Argentina's oil is produced in two onshore basins—Neuquén in central Argentina and Golfo San Jorge in the southeast. Other producing basins were Austral, Cuyana, and Noroeste (Northwest). To date, there has been little activity offshore.

The largest producing company was Repsol-YPF (U.S. Department of Energy, 2001, An energy overview of Argentina, accessed September 28, 2001, at URL <http://fe.doe.gov/international/armover.html>). Repsol-YPF produced about 36% of Argentina's production of crude petroleum. The second largest operator was Astra C.A.P. S.A. with 12.3% of the production. Another important producer was Chevron San Jorge S.A. (formerly Petrolera Argentina San Jorge), which produced 82,000 barrels per day in 2000 (Chevron Corporation, 2001, p. 10). The integrated energy producer Perez Companc S.A. was also an important producer of petroleum in Argentina through such companies as PECOM Energy S.A. and Petrolera Perez Companc S.A.

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TABLE 1
ARGENTINA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1996	1997	1998	1999	2000 e/
METALS					
Aluminum:					
Primary	183,900	187,200	186,702 r/	206,400	261,800 3/
Secondary	15,800	15,800	16,000	16,000	16,000
Cadmium:					
Mine output, Cd content	127	136	145	140	137 3/
Refined, primary	40	45	34	-- r/	--
Copper:					
Mine output, Cu content	--	30,421	170,273	210,126	145,197 3/
Refined, secondary e/	16,000	16,000 3/	16,000	16,000	16,000
Gold, mine output, Au content kilograms	723	2,289	20,400	38,515	25,954 3/
Iron and steel:					
Metal:					
Pig iron thousand tons	1,966	2,066 r/	2,122	1,985 r/	2,188 3/
Sponge iron (direct reduction) do.	1,422	1,501 r/	1,538 r/	989 r/	1,420 3/
Total do.	3,388	3,567 r/	3,660 r/	2,974 r/	3,608 3/
Ferroalloys, electric furnace:					
Ferromanganese	7,374	8,381	5,016	5,000 e/	5,000
Ferrosilicomanganese	24,654	26,134	25,388	25,000 e/	25,000
Ferrosilicon	22,452	17,835	11,245	2,568 r/	2,500
Total	54,480	52,350	41,649	32,568 r/	32,500
Steel, crude thousand tons	4,075	4,169	4,216	3,805 r/	4,474 3/
Semimanufactures 4/ do.	4,026	4,258	4,131	3,730	4,174 3/
Lead:					
Mine output, Pb content	11,272	13,760	15,004	14,256 r/	14,115 3/
Smelter, primary	14,100 e/	14,200 e/	14,150	14,200	14,200
Refined:					
Primary	396	3,282	300	500	8,665 3/
Secondary	27,705	28,834	30,057	25,195	21,000 3/
Total	28,101	32,116	30,357	25,695	29,665 3/
Silver, mine output, Ag content kilograms	50,399	52,550	35,768	73,785 r/	78,271 3/
Uranium, mine output, metal content do.	28,000 r/	28,000 r/	7,000 r/	4,000 r/	-- 3/
Zinc:					
Mine output, Zn content	31,093	33,357	35,560	34,192	34,858 3/
Metal, refined:					
Primary	36,392	38,672	38,677	40,223 r/	36,359 3/
Secondary	2,900 e/	3,100	3,100 e/	3,220	2,910 3/
Total	39,292	41,772	41,777	43,443 r/	39,269 3/
INDUSTRIAL MINERALS					
Asbestos	446	264 r/	309 r/	259 r/	254
Barite	14,038	9,532	1,833	4,365 r/	4,500
Boron materials, crude	342,210	422,556	276,811 r/	245,450 r/	580,000
Cement, hydraulic thousand tons	5,117	6,858	7,091	7,187	7,150
Clays:					
Ball clay (plastic clay) e/ do.	90	90	--	--	--
Bentonite	134,588	104,880	131,320 r/	128,809 r/	122,000
Common	4,554,670	3,943,967	2,142,976	2,294,857	2,300,000
Foundry earth e/	100,000	100,000	100,000	100,000	100,000
Fuller's earth (decolorizing clay) e/	1,600	1,500	1,500	1,500	1,500
Kaolin	64,241	47,365	46,832	52,665 r/	50,000
Diatomite	8,647	7,387 r/	25,430 r/	34,056 r/	35,000
Feldspar	72,539	79,988 r/	42,468 r/	62,926 r/	61,000
Fluorspar	5,666	12,172 r/	61,468 r/	12,704 r/	11,200
Gypsum, crude	633,121	729,495	650,356	647,001 r/	514,000
Lithium, spodumene, amblygonite, gross weight e/	400	697	700	700	700
Mica	2,137	2,792 r/	3,480 r/	3,097 r/	3,100
Nitrogen, N content of ammonia	80,000	107,000 e/	86,300	87,700	189,800 3/
Perlite	21,547	27,578	21,495	21,008	17,521 3/
Phosphates, Thomas slag e/ 5/	50	50	50	50	50
Pumice	19,954 r/	10,545 r/	18,000 r/	17,662 r/	16,000
Salt	1,096,321	857,724 r/	871,748 r/	1,263,423 r/	1,000,000

See footnotes at end of table.

TABLE 1--Continued
ARGENTINA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1996	1997	1998	1999	2000 e/
INDUSTRIAL MINERALS--Continued					
Sand and gravel:					
Sand:					
Construction	16,626,793 r/	18,557,933 r/	15,291,886 r/	19,424,118 r/	17,000,000
Silica sand (glass sand)	243,681	145,034 r/	461,505 r/	262,640 r/	280,000
Gravel	5,550,000	6,062,000	6,000,000	6,962,668 r/	7,000,000
Stone:					
Basalt	1,133,106	1,774,465	1,800,000 e/	1,025,000 r/	700,000
Calcite	40,011	46,483 r/	31,304 r/	30,000 r/ e/	30,000
Calcium carbonate (chalk) e/	20,000	20,000	20,000	30,000 r/	30,000
Dolomite	1,241,844	802,509 r/	536,667 r/	715,273 r/	759,700
Limestone	12,315,460	13,539,137 r/	13,077,985 r/	12,355,000 r/	13,000,000
Marble, travertine, and onyx	34,455	44,045 r/	305,374 r/	247,040 r/	218,800
Flagstone	102,510	77,128 r/	171,884 r/	85,520 r/	77,000
Granite:					
In blocks	113,456	95,013	56,724 r/	68,350 r/	70,000
Crushed	7,808,806	11,052,012 r/	11,509,002 r/	11,554,211 r/	11,000,000
Quartz, crushed	130,951	117,546 r/	49,704 r/	98,368 r/	95,000
Quartzite, crushed	898,580	954,491 r/	436,084 r/	400,000 r/	400,000
Rhodochrosite	73	14	15	23 r/	25
Gemstones (agate, amethyst, apolo, tourmaline, etc.) kilograms	3,100	13,420	13,500	8,134 r/	7,600
Sandstone e/	200	200	200	200	200
Serpentine, crushed	71,989	141,410	165,372 r/	161,342 r/	142,000
Shell, marl	883,990	233,929 r/	173,601 r/	176,180 r/	175,000
Tuff, (tosca) thousand tons	8,268	6,183	6,300	2,455 r/	1,800
Strontium minerals, celestite	3,775	1,905 r/	2,416 r/	2,141 r/	2,200
Sulfates, natural:					
Magnesium (epsomite)	1,440	7,200	750 r/	6,900 r/	7,000
Sodium (mirabilite)	21,726	9,133	4,992 r/	6,879 r/	7,000
Talc and related materials:					
Pyrophyllite	2,180	3,858 r/	3,480 r/	3,400 r/	3,400
Steatite e/	300	300	300	300	300
Talc	11,777	4,772 r/	14,585 r/	10,542 r/	10,000
Total	14,257	8,930 r/	18,365 r/	14,242 r/	13,700
Vermiculite	-- r/	822	903 r/	2,800 r/	2,800
Zeolite e/	90	90	90	150 r/	150
MINERAL FUELS AND RELATED MATERIALS					
Asphalt and bitumen, natural (asphaltite)	3,476	310 r/	1,917 r/	60 r/	100
Coal, bituminous thousand tons	310	250	300	354 r/	360
Coke, all types, including breeze e/ do.	200	200	200	200	200
Gas, natural:					
Gross million cubic meters	34,651	37,074 r/	38,723 r/	42,425 r/	44,870 3/
Marketed do.	29,121	30,670	33,130 r/	35,000 r/ e/	38,000
Natural gas liquids thousand 42-gallon barrels	16,060	16,100	16,100 e/	16,300 e/	18,200 3/
Peat, agricultural (turba)	2,692	9,073 r/	9,652 r/	10,542 r/	10,000
Crude thousand 42-gallon barrels	275,940 r/	304,410 r/	309,155 r/	292,730 r/	277,765 3/
Refinery products:					
Liquefied petroleum gas do.	16,790	9,490	11,534	11,000 e/	11,000
Gasoline do.	46,720 r/	63,143 r/	45,950 r/	46,000 e/	46,000
Kerosene do.	2,190 r/	1,095 r/	1,522 r/	1,500 r/ e/	1,500
Jet fuel do.	11,315 r/	9,490 r/	11,348 r/	11,000 r/ e/	11,000
Distillate fuel oil do.	68,255 r/	71,380 r/	80,176 r/	80,000 r/ e/	80,000
Residual fuel oil do.	14,235 r/	13,870 r/	18,863 r/	18,500 e/	18,500
Other do.	15,330 r/	28,835 r/	40,121 r/	40,000 r/ e/	40,000
Refinery fuel and losses do.	-- r/	7,665 r/	5,366 r/	5,000 r/ e/	5,000
Total do.	174,835 r/	204,968 r/	214,880 r/	213,000 r/ e/	213,000

e/ Estimated. r/ Revised. -- Zero.

1/ Table includes data available through September 2001.

2/ Estimated data are rounded to no more than three significant digits; may not add to totals shown.

3/ Reported figure.

4/ Hot-rolled semimanufactures only; excludes castings and cold-rolled semimanufactures produced from imported hot-rolled semimanufactures.

5/ Thomas slag production was estimated from the Thomas crude steel reported in La Siderurgia Argentina annual, published by the Instituto Argentino de Siderurgia.

TABLE 2
ARGENTINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2000

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Aluminios Argentinos S.A.I.C. (Government, 52.1%; private, 47.9%)	Puerto Madryn, Chubut Province	260.
Boron		Cía. Boroquímica S.A.M.I.C.A.F. (owned by Rio Tinto Zinc Corp. Ltd.)	El Porvenir Mine, Jujuy Province; Tincalayu and Campo Quijano, Salta Province	345.
Cement		Loma Negra C.I.A.S.A. (private, 100%)	Buenos Aires, Córdoba, Corrientes, Salta, San Juan, Mendoza, and Jujuy Provinces	6,000.
Coal		Yacimientos Carboníferos Fiscales (Government, 100%)	Río Turbio, Santa Cruz Province	210.
Copper and gold 1/		Minera Alumbreira Limited (Mount Isa Holding Ltd. of Australia, 50%; Rio Tinto plc, 25%; Billiton plc, 25%)	Bajo de La Alumbreira Mine, Belén Depart- ment, Catamarca Province	180 Cu, 20,000 Au.
Gold and silver	kilograms	Yacimientos Mineros de Agua de Dionisio (Government, 100%)	Farallón Negro, Hualfin, and Belén, Catamarca Province	4,600 Au, 50,000 Ag.
Do.	do.	Small mines (private, 100%)	Various in Jujuy Province	5,000 Ag.
Iron ore		Hierro Patagónico de Sierra Grade, S.A., Minera (Government, 100%) shutdown in 1998	Sierra Grande, Río Negro Province	1,000.
Lead, silver, zinc 1/		Cía. Minera Aguilar, S.A. (owned by Cia. Minera del Sur) (private, 100%)	Estación Tres Cruces, El Aguilar, Jujuy Province	49,800 Ag, 24,000 Pb, 30,000 Zn.
Natural gas	million cubic meters	Transportadora de Gas del Sur, S.A., and Transportadora de Gas del Norte (private, 100%)	Neuquén Santa Cruz, Tierra del Fuego, Salta, and Río Negro Provinces	41,000.
Petroleum	million barrels	Repsol-YPF	Chubut, Santa Cruz, Neuquén, Río Negro, Mendoza, Salta, Tierra del Fuego, Jujuy, La Pampa, and Formosa Provinces	366.
Steel		Aceros Paraná, S.A. (private, 79.9%; Government, 20.1%)	7 kilometers from San Nicolás de los Arroyos, Buenos Aires Province	3,300.
Do.		Acindar Industria Argentina de Aceros, S.A. (private, 100%)	Plant Nos. 1 and 3, Buenos Aires Province; Plant No. 2, near Río Paraná, Santa Fé Province	1,500.
Uranium (ore)		Empresa Nuclear Mendoza, subsidiary Nucleoeléctrica Argentina S.A. (NASA)	Sierra Pintada, San Rafael, Mendoza Province	160.
Zinc, refinery		Cía. Sulfacid S.A.C.I. and Cía Minera Aguilar S.A.	Near Rosario on the Paraná River, Santa Fe Province.	35.

1/ Gold and silver data reported in kilograms.