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THE MINERAL INDUSTRY OF MEXICO

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Mexico was the 11th most populated country in the world with 103.1 million people in 2005. Its nominal gross domestic product (GDP) was $768.4 billion[1] ($1,073 billion based on purchasing power parity). The real GDP increased by 3.0% compared with that of 2004 after a 4.2% increase in 2004 (revised). Mining (including petroleum extraction) grew by 1.5% after a 3.4% increase in 2004. The construction sector increased by 3.3% after a 6.1% increase in 2004 (Instituto Nacional de Estadística, Geográfica e Informática, 2006a§,[2] b§; International Monetary Fund, 2006§; World Bank, The, 2006§).

Mining investment in 2005 was $911.8 million; this was a significant increase from that of 2004, when investment was about $458 million. The largest portion of investment in 2005 ($349.2) was destined for development of new projects. Expansion of projects took $167.8 million of the total, and exploration received $120.3 million. Interest in the sector is evident by the increased number of international (mainly Canadian) companies exploring in Mexico (Cámara Minera de México S.A. de C.V., 2006b§).

During the year, 89 new mining companies were registered with the Government. This number was 15% lower than that of 2004, but was still the second highest number of companies registered since 1999. Of the total, 45 had foreign participation and 44 companies were financed with Mexican capital. During the year, 208 of the companies doing mineral exploration in Mexico had foreign participation. The Government issued 2,904 concessions that covered an area of 6.6 million hectares; of the total, 2,113 were for exploration and 791 were for production. The State of Sonora had 547 concessions in an area of 1.29 million hectares (Secretaría de Economía, 2006, p. 40-41, 64–table A14).

Government Policies and Programs

Under the Mexican Constitution, minerals are part of the national patrimony. The mining law, which governs Mexico's mining industry, is under Article 27 of the Constitution. The Mining Law of 1992 became effective in September 1992; it was amended in 1996 and again in April 2005. This law covers exploration for and production and beneficiation of minerals. The Mining Law permits up to 100% private equity ownership in exploration, development, and production even in commodities previously reserved for the Government, such as coal, iron, phosphorus, potassium, and sulfur (Cámara de Diputados del H. Congreso de la Nación, 2006§). Hydrocarbons and radioactive materials are exempt from the Mining Law.

During the year, the Energy Commission of the Chamber of Deputies was working on a project to modify the rules that apply to the production of natural gas from coal production. The intention was to remove this portion of natural gas from the Hydrocarbon Law and to add it to the Mining Law. This would set the rules to allow coal producers to use the natural gas for internal consumption and to transfer the excess natural gas to Petróleos Mexicanos, S.A. de C.V. (PEMEX) and would reduce the amount of the gas being vented in these operations (Gaceta Parlamentaria, 2006).

Production

Mexico was an important mineral producer, ranking among the top world producers in a variety of minerals. On the basis of U.S. Geological Survey production figures, Mexico, which had been the world leader for many years in the production of mined silver, became the second ranked producer of silver (mined) in 2003 (revised) after Peru's production increased significantly and Mexico's production decreased. In 2005, when mine production increased by 12.6% compared with that of 2004, Mexico supplied about 14% of the world's mined silver. Mexico, which had been the world's leading producer of celestite, lost its ranking when Spain increased its production in 2002. In 2004 (revised) and in 2005, Mexico was estimated to be the third ranked producer of celestite after Spain and China. Despite the loss in ranking, Mexico supplied 23% of the world's celestite. It was the world's second ranked producer of bismuth (after China) with about 17% of the world's mine and 8% of the world's refined total. Mexico maintained its position as an important producer of many mineral commodities, which included cadmium, cement, copper, fluorspar, gypsum, manganese ore (metal content), molybdenum, salt, steel, sulfur, and zinc (mine). The country produced 26% of the Latin America and the Caribbean steel output (Instituto Latinoamericano del Fierro y el Acero, undated§).

Fueled by the high prices that persisted in 2005, the value of mineral production (excluding petroleum and natural gas) was $6.59 billion; this was a significant increase compared with that of 2004 when production was $5.87 billion[3] (revised). Of the total value, 56% was from metals and 44% was from industrial minerals. This was significant because the nominal value of industrial minerals had exceeded the nominal value of metal production for years (Servicio Geológico Mexicano, 2006, p. 24).

By far, the value of copper production ranked highest with a nominal value of $1.37 billion, or about 38% of metal production and 21% of total mineral production; the increase was because of increased production and the significant increase in the price of copper during the year. Among metals, silver production ranked second with a nominal value of $607 million, which was a decrease of 9% compared with that of 2004. After a

[1]Where necessary, 2005 values have been converted from Mexican pesos (MEX$) to U.S. dollars (US$) at the rate of MEX$10.8979=US$1.00.

[2]References that include a section mark (§) are found in the Internet References Cited section.

[3]Where necessary, 2004 values have been converted from Mexican pesos (MEX$) to U.S. dollars (US$) at the rate of MEX$11.2648=US$1.00.

significant rise in the price of zinc, which has increased by 70% since 2002, the value of zinc ranked third in the total nominal value of metals produced in 2005 at $597 million; this was a 48% increase from that of 2004. During the year, the value of only four metals (arsenic, lead, silver, and tin) decreased (Servicio Geológico Mexicano, 2006, p. 20).

The nominal value of industrial minerals decreased by almost 7% from that of 2004. Combined, sand and gravel were valued at $840 million; this was the highest value of any industrial mineral and the second highest overall value. More than one-half of the reported industrial minerals decreased in value in 2005, but coal, common clays, fluorspar, kaolin, marble, and vermiculite increased by at least 15% each (Servicio Geológico Mexicano, 2006, p. 11, 19).

Mexico was the world's 6th ranked producer of crude petroleum and the 12th ranked producer of natural gas. In terms of total sales, the state-owned company PEMEX ranked seventh at $86,163 billion (Petróleos Mexicanos, S.A. de C.V., 2006a, p. 57-59).

Metal production in Mexico was dominated by the large-scale producers, which produced 100% of the country's cadmium, coal and coke, iron, manganese, and molybdenum output, 99% of the zinc, 96% of the lead, 90% of the gold, 80% of the copper, and 79% of the silver. The medium-scale producers, which had a more significant participation in the production of industrial minerals, contributed 100% of the country's production of barite, diatomite, feldspar, fluorspar, gypsum, kaolin, silica sand, and wollastonite. This sector also accounted for 86% of the graphite, 85% of the celestite, and 78% of the dolomite produced. However, large-scale producers dominated the production of magnesium sulfate, salt, and sodium sulfate (Secretaría de Economía, 2006, table A17).

Trade

In 2005, Mexico's exports (free on board) had a nominal value of $213.7 billion. The nominal value of mineral exports (excluding petroleum and natural gas) was $5.2 billion, or 2.4% of the country's total exports. The nominal value of metal exports totaled $4.5 billion, or 87% of total mineral exports (excluding petroleum and natural gas). Total imports (cost, insurance, and freight) had a nominal value of $221.3 billion. Mineral imports (excluding petroleum and natural gas) accounted for $6.0 billion, or 2.7% of the country's total exports. For the second consecutive year, these figures represented a mineral trade deficit (Servicio Geológico Mexicano, 2006, p. 14-16).

Of the total mineral exports (including petroleum and natural gas), iron (in all forms) was the leading source of foreign exchange with $1.4 billion, or about 27% of the total followed by silver ($712 million), copper ($681 million), and molybdenum ($571 million). Industrial mineral exports were led by dimension stone ($149 million), cement ($115 million), and salt ($89 million). Metal imports were led by iron (in all forms) with 23% of the total import value ($1.35 billion) followed by aluminum ($1.27 billion), copper ($456 million), and silver ($251 million). Industrial mineral imports were led by precious and semiprecious stones ($229 million), natural abrasives ($81 million), and graphite ($78 million). Coal and coke imports were valued at $674 million and $101 million, respectively (Servicio Geológico Mexicano, 2006, p. 143-147, 151-155).

Mexico was a net importer of steel products. In 2005, Mexico exported 5.86 million metric tons (Mt) of steel products with a value of $4.3 billion and imported 7.1 Mt with a value of $6.2 billion (Servicio Geológico Mexicano, 2006, p. 453-454).

During 2005, the U.S. share of the Mexican mineral trade (excluding petroleum and natural gas) continued to decrease, although exports (in current dollars) increased by almost 13% to $3.2 billion and imports, by 7%. During the year, about 61% of Mexico's mineral exports went to the United States (compared with 70% in 2004 and 80% in 2003), and 39% of its mineral imports originated from the United States (compared with 48% in 2004 and 48% in 2003). Exports to China increased by more than five times to $337 million and exports to Germany rose to $238 million in 2005 from $19 million in 2004. Exports to Japan more than quadrupled to $445 million. Other important trading partners of minerals (excluding petroleum and natural gas) were Australia, Brazil, Canada, Chile, India, and Spain (Servicio Geológico Mexicano, 2006, p. 148, 156).

Mexico was the world's seventh ranked exporter of crude petroleum. It exported 663 million barrels of crude petroleum with a value of $31.7 billion, which was a 35.5% increase in value and a 3% decrease in volume compared with that of 2004. Mexico, however, was a net importer of natural gas and refinery products. Net exports totaled $23.3 billion. The average price for Mexican crude was $42.69 per barrel, which was a 37.5% increase (revised) in nominal value compared with that of 2004. Of the total crude exports, 78% went to the United States followed by Spain (9%) and the Netherlands Antilles (5%) (Petróleos Mexicanos, S.A. de C.V., 2006a, p. 45-46, 50-51).

Structure of the Mineral Industry

Government responsibilities for the mining sector are held by the Secretaría de Economía. The Secretaría de Energía is responsible for petroleum and electricity. The Coordinación General de Minería is the highest office charged with mining policies with the purpose of fostering new investment and maintaining a healthy mining sector. It is supported by the Servicio Geológico Mexicano (SGM), the Dirección General de Minería, the Dirección General de Fomento Minero, and the Fideicomiso de Fomento Minero. The SGM is responsible for promoting and conducting geologic, mining, and metallurgical research with the purpose of improving the use of the mineral resources within the country, identifying and estimating the development potential of the mineral resources of Mexico, and integrating the inventory of Mexico's mineral resources. With the reorganization of the SGM, the new organization and changes in functions were published in the Diario Oficial de la Federación of April 28, 2005. The main functions of the Dirección General de Minería are to award mining concessions and to maintain the national mining and mapping registers. The Dirección General de Fomento Minero is responsible for promoting the mining sector by using, for example, incentives for domestic and foreign investment in the sector. The Fideicomiso de Fomento Minero is the Government entity

responsible for providing administrative, financial, and technical assistance to the mining sector.

The Cámara Minera de México (Mexico Chamber of Mines) is another important organization in the mining sector. It promotes the interests of the private sector and maintains a dialogue between the private mining sector and the Government. Other prominent mineral-related organizations include the Asociación Nacional de Productores de Cal, the Cámara Nacional de la Industria del Hierro y del Acero, the Federación Nacional de Pequeños Mineros, and the Instituto Mexicano de Aluminio.

Such diversified Mexican companies as Grupo Acerero del Norte, S.A. de C.V., Grupo México, S.A. de C.V., and Industrias Peñoles, S.A. de C.V. dominated the production of nonfuel minerals (table 2). Smaller companies, such as Minas Luismín, S.A. de C.V. (a subsidiary of GoldCorp Inc.), were significant or emerging producers of precious metals. A large portion of the production of industrial minerals was in the hands of the medium-scale and small-scale mining companies. A large number of foreign companies were active in exploration in Mexico, a few of which were in production or development stages. A significant portion of the exploration effort was for gold and silver.

During the year, investment in the mining sector totaled $911.8 million. Of this amount, $349.2 million was for new projects, $235.5 was for new equipment, $167.8 was for expansion of existing projects, and $120.3 million was for exploration (Cámara Minera de México, S.A. de C.V., 2006b§).

Mexico's cement industry was dominated by Cementos Mexicanos, S.A. B de C.V. (CEMEX) (and its operating company CEMEX México). CEMEX was the world's third ranked producer after the LaFarge Group of France and Holcim Ltd. of Switzerland. Cementos Apascos, S.A. de C.V. and Cooperativa La Cruz Azul, S.C.L. were other important producers of cement in Mexico.

The production of crude petroleum, natural gas, and basic petrochemicals, which were reserved for the Government under Article 27 of the Constitution, was entrusted to PEMEX. It operated through several subsidiaries—PEMEX Exploración y Producción, PEMEX Gas y Petroquímica Básica, PEMEX Petroquímica, and PEMEX Refinación.

In 2005, employment in the minerals sector was 264,448; this was a 2.8% increase compared with that of 2004 and a 6.6% increase compared with that of 2003. Of the total workforce, 132,293 were employed in the manufacturing of nonmetallic mineral products; 68,620, in base-metal industries; 36,516, in the production of coal, graphite, and nonmetals; and 25,206 in the extraction and beneficiation of metals (Secretaría de Economía, 2006§). Nearly all miners were represented by the Sindicato Nacional de Trabajadores Mineros, Metalúrgicos y Similares de la República Mexicana. The Confederación de Trabajadores de México, the largest Mexican union, represented the cement employees.

At yearend 2005, PEMEX employed 145,427 employees, of which 126,618 were permanent and 18,809 were temporary. The largest sectors of employment in the company were PEMEX Refinación, with 49,494 employees, and PEMEX Exploración y Producción, with 49,427 (Petróleos Mexicanos, S.A. de C.V., 2006b, p. 20).

Commodity Review

Metals

Copper.—In 2005, mine production of copper increased to 429,042 metric tons (t), or by almost 6% compared with that of 2004. Most producing States increased their production levels. The State of Sonora produced 86% of Mexico's total copper production. Three other States—Zacatecas (21,700 t), San Luis Potosi (19,600 t), and Chihuahua (11,400 t)—produced 12% of the total (Servicio Geológico Mexicano, 2006, p. 191). Two large mines in the State of Sonora produced the bulk of copper output in that State (89%) and an equally impressive portion of the national output (77%). These two open pit mines, Cananea and La Caridad, were owned by Grupo México and were operated by Mexicana de Cananea, S.A. de C.V. and Mexicana de Cobre, S.A. de C.V., respectively. Both mines produced copper from concentrates and from solvent extraction-electrowinning (SX-EW). Grupo México also produced copper from three of its underground mines (Charcas in San Luis Potosi, San Martín in Zacatecas, and Santa Bárbara in Chihuahua) under its subsidiary Industrial Minera Mexicana, S.A. de C.V. (Grupo México, S.A. de C.V., 2006, p. 13, 31). Since 2003, Minera Mina María, S.A. de C.V., which was located in the Cananea mining district in the State of Sonora, produced copper by open pit methods. In 2005, production from the María mine exceeded 14,000 t. The mine had previously produced by underground methods but had been inactive since 1999 (Mining and Construction, 2006§).

Peñoles produced less than 3% of the copper mined in Mexico in 2005. However, the company's construction work on its Milpillas Mine in Sonora was almost complete with production scheduled to begin by mid-2006. The $217.8 million mine had a design capacity of 55,000 t of copper cathode produced by SX-EW. Peñoles continued its exploration effort on the Precobre project with Chile's Corporatión Nacional del Cobre de Chile (Codelco) in the State of Sonora's copper belt. Diamond drilling in the project inferred 1 billion metric tons of ore at a grade of 0.3% copper and 400 Mt at a grade of 0.4% zinc. Peñoles planned to continue exploring the area in 2006 (Industrias Peñoles, S.A. de C.V., 2006, p. 5, 15).

Another copper project, Piedras Verdes, which was located in the State of Sonora, was near completion at yearend 2005. The project—an open pit, heap leach, and SX-EW operation that was scheduled to begin production in mid-2006—was owned by Frontera Copper Corporation of Canada. Frontera Copper planned to produce an average of about 31,800 t (reported as 70 million pounds) of copper per year for 12 years; production would decrease thereafter. Piedras Verdes, which had an expected mine life of 18 years, had proven and probable reserves of 191 Mt of ore at a grade of 0.36% copper (Frontera Copper Corporation, 2006§). When operating at full capacity, these two projects would represent an increase of about 20% of Mexico's copper mine and refining levels produced in 2005.

Mexico's production of primary refined copper increased by 11.4% compared with that of 2004. Most of the production was from Mexicana de Cobre's metallurgical complex in the State of Sonora where the company had the largest electrolytic copper

refinery in Mexico. Another producer was Cobre de México, S.A. de C.V. Primary refined copper was also produced at the Cananea, La Caridad, and the María SX-EW plants. A small amount of secondary refined copper was estimated to have been produced in Mexico in 2005 (table 1).

Gold and Silver.—In 2005, Mexico's mine production of gold increased by 39% to 30,536 kilograms (kg). Three States (Chihuahua, Durango, and Sonora) produced 76% of the mined gold. Almost 32% of the production was from the State of Durango. Almost all production from Durango came from the San Dimas and the Santiago Papasquiaro mining districts. La Herradura Mine in the State of Sonora was Mexico's leading producing mine. La Herradura was a joint venture between Peñoles and Newmont Mining Corporation. During the year, La Herradura produced about 5,700 kg of gold, which was a more than 16% increase compared with that of 2004. The second largest production in the Santiago Papasquiaro district was from La Ciénega Mine (owned by Peñoles), which produced more than 4,500 kg. Expansion of La Ciénega's milling capacity to 700,000 t/yr was completed in 2005; this expansion increased the gold production capacity to about 5,100 kilograms per year (kg/yr) (reported as 165,000 troy ounces per year) (Industrias Peñoles, S.A. de C.V., undated§).

In terms of output, Peñoles was the largest gold company in Mexico. In 2005, it produced almost 40% of the country's total. Luismin continued to be an important producer of precious metals in Mexico. The company produced about 4,500 kg of gold from its mines in the States of Durango, Guerrero, and Queretato.

El Sauzal mine, which is located in the State of Chihuahua, began production in 2004 and was the newest gold mine in Mexico. The mine, which was owned by Glamis Gold Ltd. in 2005, exceeded production levels planned for the year and became Mexico's leading producing mine with an output of about 6,000 kg/yr (reported as 191,586 troy ounces per year). Original plans called for an average production of about 5,300 kg/yr (reported as 170,000 troy ounces per year) of gold for a period of 10 years. The company owned seven exploration concessions surrounding El Sauzal and was planning to explore the area to increase the 52,900 kg (reported as 1.7 million troy ounces) of gold reserves (Glamis Gold Ltd., 2006a§, b§).

During the year, another new open pit gold and silver mine was being constructed in the State of Sonora. The Mulatos Mine, which was owned by Alamos Gold Inc. and had a small production of doré in 2005, was nearing commercial production by yearend when mine and plant facilities were completed. Production plans called for an output of almost 4,700 kg/yr (reported as 150,000 troy ounces per year) for a period of 10 years. Mulatos's reserves were estimated to be 36.39 Mt at a grade of 1.637 grams per metric ton (g/t) gold from the Estrella Pit. The company was conducting additional advanced exploration in other areas of the project (Alamos Gold Inc., 2005a, b).

Another advanced gold (gold and silver) project in Mexico was Los Filos, which was owned by GoldCorp. During 2005, the feasibility study for Los Filos was completed. The study was later extended to include the Bermejal deposit, which was acquired by the company in March. The project (including Bermejal) had proven and probable reserves that totaled 202.65 Mt of ore at a grade of 0.69 g/t gold. GoldCorp planned to complete construction of the open pit in 2006 and to begin commercial production in 2007. The ore will be heap leached to produce doré bars onsite (GoldCorp Inc., 2006a§).

In 2005, Mexico maintained its position as the second ranked silver producer (after Peru), although China continued to increase its production. Mexico's mine production of silver increased to 2,894 t, or by almost 13% compared with that of 2004. Six States produced 91% of Mexico's mined silver. The State of Zacatecas, where the Proaño (Fresnillo) Mine (Mexico's richest silver mine) is located, was the leading producing State with 1,529 t. Other States that produced significant amounts of silver were Durango (437 t), Chihuahua (326 t), Mexico (139 t), Sonora (121 t), and San Luis Potosi (107 t). The leading producing company was Peñoles, which produced 50% of the silver mined in Mexico during the year; this was a slightly lower share than in 2004 when Peñoles produced 54% of the mined silver in Mexico, but an almost 7% increase in terms of the company's output. In addition to Proaño, which produced about 72% of Peñoles silver mine output (1,054 t), the company produced silver from Bismark, Francisco I. Madero, La Ciénega, Naica, Sabinas, and Tizapa (Industrias Peñoles, S.A. de C.V., 2006, p. 19-22, 44). Other important silver mine producers were Grupo México, which produced about 435 t (reported as 14 million troy ounces) of silver, most of it from its underground properties, and Minas Luismín, with about 211 t (Grupo México, S.A. de C.V., 2006, p. 21; GoldCorp Inc. 2006b§).

In 2005, Pan American Silver Corp. announced that it would bring its Alamo Dorado silver-gold project in the State of Sonora into production. During the year, the company began construction of the primary crusher, the mill, the cyanide leach recovery system, and the tailing system. Plans called for the $76 million project to begin production in 2007 with an output of 155 t/yr (reported as about 5 million troy ounces per year) of silver and about 62 kg/yr (reported as 2,000 troy ounces per year) of gold and a mine life of 8 years. Alamo Dorado's proven and probable reserves totaled 11.6 Mt of ore at a grade of 118 g/t silver and 0.33 g/t gold (Pan American Silver Corp., 2006a§). Pan American Silver also produced silver in Mexico from its La Colorada Mine in Central Mexico. Production from La Colorada in 2005 was about 96 t (reported as 3.1 million troy ounces) (Pan American Silver Corp., 2006b§).

Peñoles owned the world's largest silver refinery in Torreon, Coahuila, with a capacity to produce almost 3 Mt/yr. Grupo Mexico also owned a silver refinery through Mexicana de Cobre in the State of Sonora. Grupo Mexico's refined silver capacity was more than 465 t/yr.

Iron and Steel.—Mexico was the second ranked producer of steel in Latin America and the Caribbean (after Brazil). Production of steel decreased slightly in 2005 to 16.2 Mt. Mexico's three leading producers were Mittal Steel, with 3.67 Mt; Altos Hornos de México, S.A. de C.V. (Hylsa), with 3.24 Mt; and SICARTSA, with 1.26 Mt. Despite the decrease, which was attributed in part to the high cost of natural gas and refinery products, and a labor dispute in one of the country's leading steel producers, the year was a financially sound one for the industry (Cámara Minera de México, S.A. de C.V., 2006a§).

During the year, consumption of steel products continued to increase and reached 14.6 Mt. Of the total, 80% was supplied by

domestic producers. From 2000 to 2005, consumption of steel products increased by almost 33% (Altos Hornos de México, S.A. de C.V., 2006, p. 27).

In August, the Techint Group acquired Hylsamex, S.A. de C.V. from Grupo Alfa. Hylsamex was the holding company of the integrated steel producer Hylsa. Ternium S.A., a company that was registered in Luxembourg and in which Techint had a 59% equity share, had an 86.68% equity share in Hylsamex (also known as Ternium Hylsa) at yearend (Ternium S.A., 2006, p. 26; 2005§). Hylsa also owned the iron ore mine and pellet plant producer Las Encinas, S.A. de C.V., which produced iron ore from the Cerro Náhualt and Aquila Mines in the States of Colima and Michoacan, respectively. The company shared ownership of the Consorcio Benito Juárez-Peña Colorada, S.A. de C.V. iron ore and pellet producer with Mittal Steel (table 2).

Lead and Zinc.—Mexico was the world's fifth ranked producer of mined lead. Production in 2005 increased by 13% to about 134,400 t. Of the total, 39% was from the State of Chihuahua where the Naica Mine (Mexico's richest lead mine) is located. During the year, the State of Zacatecas produced almost as much mined lead as did Chihuahua.

Peñoles continued to dominate the production of mined lead with 46% of the national output. Grupo México produced 19,200 t from its underground mines (Grupo México, S.A. de C.V., 2006, p. 22; Industrias Peñoles, S.A. de C.V., 2006, p. 21, 44; Servicio Geológico Mexicano, 2006, p. 276-277).

Zinc mine production in Mexico increased by 11.7% to about 476,300 t (table 1). The country was an important producer of mined zinc, ranking sixth in the world. The leading producing State was Zacatecas, with almost 42% of the total. Chihuahua produced about 27% of the total. The leading producing company was Peñoles, which produced 44% of the national total. Its Francisco I. Madero Mine in Zacatecas produced about 65,400 t, and its Bismark Mine produced about 45,100 t. The Charcas Mine, which was owned by Grupo México, produced 70,500 t in the State of San Luis Potosi. Grupo Mexico produced 30% of Mexico's mined zinc in 2005.

Industrial Minerals

Cement.—Mexico produced 37.5 Mt of cement in 2005. The leading producer of cement in Mexico was CEMEX México, with 15 plants. In addition to CEMEX México, two of the other world leaders in cement production, the Holcim and Lafarge Groups, had plants in Mexico. Corporación Moctezuma, S.A. (a joint venture between Cementos Molins, S.A. of Spain and Buzzi Unicem SpA of Italy) owned two cement plants in Mexico. The company's newest plant, which was constructed in 2004, was in Cerritos, State of San Luis Potosi. Cementos Molins announced in 2005 that it would invest $100 million to expand the production capacity at Cerritos, which was producing at full capacity during the year. With the expansion, the plant would reach a capacity of 2.4 Mt/yr by 2005, which would be equal to the capacity of Moctezuma's plant in the State of Morelos (Corporación Moctezuma, S.A., 2006§).

Fluorspar.—Mexico, which was the world's second ranked producer of fluorspar after China, produced slightly less than 17% of the world total. Fluorspar production increased by almost 4% compared with that of 2004 after an increase of 12% in the previous year. The State of San Luis Potosi was the leading producer with 82% of the country's production. The States of Coahuila (16%) and Durango (2%) produced the remainder. The leading producing company of fluorspar in Mexico, which produced its entire output in the State of San Luis Potosi, was Cía. Minera Las Cuevas, which was a subsidiary of Mexichem, S.A. de C.V. (formerly Grupo Industrial Camesa, S.A. de C.V.). The company's mine had proven reserves of 30 Mt to 40 Mt. The mine's content of fluorspar calcium fluoride exceeded 84% (Grupo Industrial Camesa, S.A. de C.V., 2005, p. 6, 24-25). Mexichem also owned Química Fluor, S.A. de C.V., which was Mexico's leading producer of hydrofluoric acid and the leading consumer of fluorspar. Química Fluor had a plant in the State of Tamaulipas with a capacity of 90,000 t/yr of hydrofluoric acid. Mexichem planned to invest $12 million during 2005 to reduce the impurity of the fluorspar from Las Cuevas and to improve the processing between Las Cuevas and Química Fluor. Mexichem exported about 75% of its production; 40% of exports went to the world steel market (Grupo Industrial Camesa, S.A. de C.V., 2005, p. 25).

Sulfur.—In Mexico, sulfur was produced as a byproduct of petroleum refining and in the form of sulfuric acid in metallurgical facilities. In 2005, production of sulfur as a byproduct of the petroleum industry decreased slightly to about 1 Mt. The State with the largest share of petroleum byproduct sulfur production was Tabasco, with 40%. The States of Chiapas and Guanajuato were also important producers of petroleum byproduct sulfur. In 2004, PEMEX began construction of a sulfur plant in La Cangrejera complex in the State of Veracruz. The plant was to produce 10 metric tons per day of sulfur and would have an efficiency of 96%. This would be PEMEX Gas' 12th sulfur recovery plant in its complexes. With the construction of the recovery plant, the sulfur dioxide emissions would be significantly reduced and the facilities would be in compliance with Mexican environmental laws. The plant, which had an estimated cost of $8.8 million and was originally scheduled to begin production in May 2005, was completed in August (Petróleos Mexicanos, S.A. de C.V., 2006b, p. 53; PEMEX Gas y Petroquímica Básica, 2004§).

Mineral Fuels

The Government of Mexico's strategy, through its producing company PEMEX, focused on increasing its hydrocarbon reserves by increasing the production of light crude and nonassociated natural gas. PEMEX reported that, in 2005, the company had 74 new exploration wells, of which 39 were successful producers (13 for crude petroleum and 26 for natural gas) (Petróleos Mexicanos, S.A. de C.V., 2006a, p. 14).

Coal.—Production of coal increased by about 2% to about 11.8 Mt, of which 4.7 Mt was metallurgical. All the coal produced in Mexico was from the State of Coahuila. The principal producer was Minera Carbonífera Río Escondido, S.A. (MICARE), which was a subsidiary of Altos Hornos de México, S.A. de C.V. (AHMSA). The company produced thermal coal for electricity production from an open pit and an underground mine, which supplied Mexico's electricity company Comisión

Federal de Electricidad. The company was developing another underground mine. Another AHMSA subsidiary, Minera Monclova, S.A. de C.V., produced metallurgical coal from four underground mines and an open pit. These mines produced most of AHMSA's metallurgical coal requirements (Altos Hornos de México, S.A. de C.V., 2006, p. 52-55).

Mexico's coal reserves totaled 972.3 Mt. Of these, AHMSA had more than 54% of the total (Cámara Minera de México, S.A. de C.V., 2006a§).

Natural Gas.—Despite having less than 1% of the world reserves, Mexico was the world's 12th ranked producer of natural gas. In the Americas, only the United States, Canada, and Argentina, in that order, produced more natural gas than Mexico (BP p.l.c., 2006, p. 22-23; Petróleos Mexicanos, S.A. de C.V., 2006b). Nonetheless, Mexico was a net importer of dry (marketable) natural gas. Production of gross natural gas increased by about 5% compared with that of 2004 and production of dry natural gas remained basically unchanged. About 25% of the country's total production was from the Burgos Basin, which is located in the Region Norte. The leading producing field was Cantarell in the Region Marina Noreste, with almost 15% of the total (Petróleos Mexicanos, S.A. de C.V., 2006a, p. 5, 19-20).

Petroleum.—Mexico was the world's fifth ranked producer of crude oil. In the Americas, only the United States produced more crude petroleum than Mexico (Petróleos Mexicanos, S.A. de C.V., 2006a, p. 57). Production of crude petroleum and condensate in 2005 decreased by about 1% after a small increase in 2004 compared with that of 2003. Mexico had 357 fields, 5,682 wells, and 193 marine platforms in production. Offshore wells produced most of Mexico's crude petroleum (83%). The Cantarell oilfield was Mexico's largest field and produced 61% of Mexico's total production, a slightly smaller portion than in 2004 when it produced 63% of the total. Heavy crude accounted for 72% of the production. Light and super-light crude accounted for about 24% and 4% of the total, respectively. Of the total crude distributed, 55% was sent to export terminals and 38% went to domestic refineries; the petrochemical plants received 4%, and the maquiladora industry received 3% (Petróleos Mexicanos, S.A. de C.V., 2006a, p. 6, 16-17, 21).

Refinery Products.—In 2005, PEMEX had six refineries in operation. Refinery production decreased by about 2% compared with that of 2004. Despite efforts to increase the production capacity of refinery products by upgrading its refinery system, Mexico was a net importer of refinery products. Exports of refinery products increased significantly in terms of volume (39%), but they were outpaced by the increase of their imports (82%). The country has been upgrading its refinery system to improve the quality of gasoline and to expand the system's production capacity. Additional capacity was due to become available in 2008. PEMEX would need to invest $19 billion to reduce its import requirement, which was the result of low production levels (U.S. Energy Information Administration, 2007§).

Outlook

Investment in the mining sector is expected to increase in 2006 by more than 25% to $1.15 billion, which is a level almost as high as that achieved in 1997. Equipment acquisition is expected to absorb the largest portion of the investment with more than $410 million; this would be a more than 75% increase from the level recorded in 2005. Investment in new projects, expansion of projects, and exploration are expected to total $331 million, $219 million, and $140 million, respectively (Cámara Minera de México, S.A. de C.V., 2006b§).

A number of mining projects were near completion in 2005. Such projects as Alamo Dorado (silver), Cerro San Pedro (gold and silver), Los Filos (gold), Milpillas (copper), Mulatos (gold), Ocampo (gold and silver), Piedras Verdes (copper), which were scheduled to begin production in 2006 and 2007, are expected to have a positive impact on the production levels of copper, gold, and silver.

The production of cement in Mexico is expected to increase as two of the producers increase their production capacity. Lafarge México was doubling its production capacity with the construction of its new plant in Tula, which was expected to begin production in 2006. CEMEX México planned to increase its production capacity in its Yaqui plant in the State of Sonora. The plant's production capacity would increase to 1.8 Mt from 1.35 Mt. CEMEX also planned to expand the production capacity of its Tepeaca plant in the State of Puebla to 4.4 Mt by 2009 from 3.2 Mt. Strong demand for cement in Mexico, which has been generated by the strength of the housing construction sector, was behind the decisions for the capacity expansions (CEMEX, S.A. B de C.V., 2006a§; b§).

According to PEMEX, Mexico's proven reserves have decreased significantly in recent years and, based on the production levels, would be depleted in 10 years. Although the majority of PEMEX's investment is dedicated to exploration and production (96% in 2005) and PEMEX expects to increase production from other producing fields, many analysts think that, under present circumstances, PEMEX will be unable to allocate enough funds to reverse this trend. Because of this, and the declining output from the Cantarell field, Mexico's production of crude petroleum is expected to decline (U.S. Energy Information Administration, 2007§).

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TABLE 1
MEXICO: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2001	2002	2003	2004	2005
METALS						
Aluminum, metal:						
Primary		51,500	39,000	--	--	--
Secondary		216,400 r	253,500 r	495,900 r	519,500 r	574,100
Total		267,900 r	292,500 r	495,900 r	519,500 r	574,100
Antimony[3]		81	155	434	503	564
Arsenic[4]		2,381	1,946	1,729	1,829	1,664
Bismuth:						
Mine output, Bi content[5]		1,390	1,126	1,064	1,014	970
Metal, refined		1,390	1,126	1,064	1,014	970
Cadmium:						
Mine output, Cd content		1,245	1,609	1,616	1,662	1,627
Metal, refined		1,421	1,382	1,590	1,594	1,627
Copper:						
Mine output, Cu content:						
By concentration or cementation		306,779	260,574	279,254 r	327,432 r	336,367
Leaching, electrowon		60,500	69,300	76,399 r	78,108 r	92,675
Total		367,279	329,874	355,653	405,540	429,042
Metal:						
Anode and blister, primary		344,500 r	260,700 r	220,100 r	271,000 r	301,200
Refined:						
Primary		440,100 r	349,200 r	314,399 r	368,308 r	410,375
Secondary[e]		6,000 r	6,000 r	6,000 r	6,000 r	6,000
Total		446,100 r	355,200 r	320,399 r	374,308 r	416,375
Gold:						
Mine output, Au content	kilograms	23,543	21,324	20,406	21,824	30,356
Metal, refined	do.	25,749	23,594	22,177	24,496	28,782
Iron and steel:						
Iron ore, mine output:[6]						
Gross weight	thousand metric tons	8,783	9,941	11,265	11,483	11,687
Fe content	do.	5,270	5,965	6,759	6,890	7,012
Metal:						
Pig iron	do.	4,363	3,996	4,183	4,278	4,047
Direct-reduced iron	do.	3,672	4,740	5,473	6,345	5,973
Total	do.	8,035	8,736	9,656	10,623	10,020
Ferroalloys, electric arc furnace:[7]						
Ferromanganese	do.	60	39	56	72	90
Silicomanganese	do.	74	73	81	103	105
Total	do.	134	112	137	175	195
Crude steel	do.	13,292	14,010	15,159	16,730	16,195
Rolled products[8]	do.	11,185	11,639	12,214	13,126 r	13,727
Lead:						
Mine output, Pb content		136,413	138,707	139,348	118,484	134,388
Metal:						
Smelter:						
Primary[9]		143,523	128,241	137,483	107,414 r	116,539
Secondary[e]		110,000	110,000	110,000	110,000	110,000
Total[e]		254,000	238,000	247,000	217,000 r	227,000
Refined:						
Primary[10]		143,345	128,201	137,483	107,414 r	103,691
Secondary[e]		110,000	110,000	110,000	110,000	110,000
Total[e]		253,000	238,000	247,000	217,000 r	214,000

See footnotes at end of table.

TABLE 1--Continued
MEXICO: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2001	2002	2003	2004	2005
METALS--Continued						
Manganese ore:[11]						
Gross weight[e]		277,000	245,000	320,000	377,000	369,000
Mn content		99,751	88,358	114,550	135,893	132,872
Mercury, mine output, Hg content[e]		15	15	15	15	15
Molybdenum, mine output, Mo content		5,518	3,428	3,524	3,731	4,245
Silver:						
Mine output, Ag content	kilograms	2,759,985	2,746,989	2,568,877	2,569,478	2,894,161
Metallurgical products, Ag content:						
In copper bars	do.	283,539	208,360	236,468	235,970 r	251,838
Mixed gold and silver bars	do.	195,086	183,383	193,453	189,128 r	83,076
Metal, refined, primary	do.	2,330,811	2,500,652	2,310,283	1,860,996 r	2,014,304
Tin:						
Mine output, Sn content		8	1	2	NA r	NA
Metal, smelter, primary		1,789 r	1,756	1,790 r	25 r	17
Zinc:						
Mine output, Zn content		428,828	446,104	413,991	426,360	476,307
Metal, refined, primary		303,810	302,122	320,364	316,834 r	327,205
INDUSTRIAL MINERALS						
Abrasives, natural[12]		NA r	NA r	NA r	NA r	NA
Barite		142,017	163,620	287,451	306,668	268,657
Cement, hydraulic[13]	thousand metric tons	32,134 r	33,372	33,593	34,992	37,452
Clays:						
Bentonite		415,133	488,215	464,056	564,017	425,629
Common		13,257,459	13,258,195	13,242,893	15,127,163	41,190,217
Fuller's earth		148,194	147,064	152,917	129,502	107,265
Kaolin		681,709	745,498	798,407	654,711 r	877,147
Diatomite		69,474	62,322	53,395	59,818	62,132
Feldspar		329,591	332,101	346,315	364,166	373,411
Fluorspar:						
Acid-grade	thousand metric tons	343	343	409	402	325
Metallurgical-grade	do.	276	279	347	441	551
Total	do.	619	622	756	843	876
Graphite, natural, amorphous		21,442	14,065	8,730	14,769	12,357
Gypsum and anhydrite, crude (yeso)		6,237,056	6,739,834	6,986,491	9,221,458 r	6,251,969
Lime, hydrated and quicklime[e]	thousand metric tons	6,500	6,500	6,500	6,500	6,500
Magnesium compounds:						
Magnesite		250	--	--	--	--
Magnesia[14]		37,565	40,194	53,900	73,313	85,800
Mica, all grades		648	456	506	424	120
Nitrogen, N content of ammonia		581,154	558,960	438,948	559,782	422,450
Perlite		80,297	85,703	194,463	188,027	91,724
Phosphate rock[15]		787,283	4,764	5,500	350	350
Salt, all types	thousand metric tons	8,501	7,802	7,547	8,566	9,508
Sodium compounds:[e]						
Carbonate, soda ash, synthetic		290,000	290,000	290,000	290,000	290,000
Sulfate, natural, bloedite[16]		547,000	591,500	626,100	648,000	647,000
Stone, sand and gravel:						
Calcite, common		2,711,889	2,935,127	3,425,623	18,545,973	3,712,097
Dolomite		670,797	457,665	565,896	1,158,929	1,308,977
Limestone	thousand metric tons	63,346	59,421	56,253	72,763	57,568
Marble		4,155,745	3,615,728	3,529,274	2,824,181	3,595,970
Quartz, quartzite, glass sand (silica)		1,720,211	1,778,715	1,689,042	2,055,940	2,120,878
Sand	thousand metric tons	67,712	63,576	62,060	63,059	62,199
Gravel	do.	57,157	68,239	76,332	74,224 r	65,927
Strontium minerals, celestite		145,789	94,015	130,329	87,610	110,833

See footnotes at end of table.

TABLE 1--Continued
MEXICO: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2001	2002	2003	2004	2005
INDUSTRIAL MINERALS--Continued						
Sulfur, elemental, byproduct:						
Of metallurgy[e]	thousand metric tons	572	575	575	575	575
Of petroleum and natural gas	do.	878	887	1,052	1,122	1,016
Total[e]	do.	1,450	1,460	1,630	1,700	1,590
Talc		77,650	111,621	114,870	101,896	64,827
Vermiculite		--	300	312	218	140,276
Wollastonite		39,830	42,756	31,234	28,224	27,132
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Run of mine:						
Metallurgical	thousand metric tons	5,242	5,097	6,648	5,786	4,653
Steam	do.	6,935	6,308	6,530	5,687	7,097
Total	do.	12,177	11,405	13,178	11,473	11,750
Washed metallurgical coal[e]	do.	2,000	2,000	2,000	2,000	2,000
Coke:[17]						
Metallurgical	do.	2,025	1,412	1,414	1,401	1,492
Breeze	do.	40	39	49	44	45
Total	do.	2,065	1,451	1,463	1,445	1,537
Gas, natural:						
Gross	million cubic meters	46,624	45,716	46,509	47,269	49,818
Marketable (dry)	do.	28,998 [r]	30,147 [r]	31,323 [r]	32,510 [r]	32,539
Petroleum:						
Crude	thousand 42-gallon barrels	1,141,355	1,159,642	1,230,415	1,234,795	1,216,654
Condensate, natural gas liquids	do.	158,045	148,920	152,570	161,330	158,978
Total	do.	1,299,400	1,308,562	1,382,985	1,396,125	1,375,632
Refinery products:						
Liquefied petroleum gas	do.	10,147	11,425	12,410	10,220	11,169
Motor gasoline	do.	142,423	145,343	162,425	170,346	166,112
Jet fuel	do.	20,696	20,696	21,900	22,667	23,105
Kerosene	do.	110	--	--	--	--
Distillate fuel oil, diesel	do.	102,784	97,419	112,420	118,516	116,143
Lubricants	do.	1,898	1,789	1,825	1,971	1,898
Residual fuel oil	do.	159,104	164,104	144,905	134,320	128,042
Asphalt	do.	10,476	10,512	9,490	9,928	10,695
Other, refinery fuel and losses	do.	14,854	14,416	5,840	28,870	31,316
Total	do.	462,492	465,704	471,215	496,838	488,480

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. -- Zero. NA Not available.

[1]Table includes data available through September 30, 2006.

[2]In addition to the commodities listed, additional types of crude construction materials are produced, but output is not reported; available information is inadequate to make estimates of output.

[3]Sb content of antimonial lead.

[4]Arsenic content of white arsenic.

[5]Refined metal plus bismuth content of impure smelter products.

[6]Iron ore pellets.

[7]Reported by Cámara Nacional del Hierro y del Acero.

[8]Includes flat, nonflat, and seamless pipe steel products.

[9]Lead content of impure bar, antimonial lead, and refined metal.

[10]Includes lead content of antimonial lead.

[11]Mostly oxide nodules; includes smaller quantities of direct-shipping carbonates and oxide ores for metallurgical and battery applications.

[12]The previous series, which was based on exports comprising mostly pumice stone and emery (a granular, impure variety of corundum), is believed to be incomplete. Available information is inadequate to make estimates of output.

[13]Includes grey and white portland and masonary cement.

[14]Reported by Industrias Peñoles, S.A. de C.V. as the only major producer. Includes caustic, electromelt, hydroxide, and refractory.

[15]Includes only output used to manufacture fertilizers.

[16]Series reflects output reported by Industrias Peñoles, S.A. de C.V. plus an additional 40,000 metric tons of estimated output by other producers.

[17]Includes coke made from imported metallurgical coal.

TABLE 2
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1]	Annual capacity
Aluminum, primary	Aluminio y Derivados de Veracruz, S.A. de C.V. (private Mexican, 100%)	Smelter in Veracruz, Ver.	65.
Antimony	Cía. Minera y Refinadora Mexicana, S.A. (private Mexican, 51%, and Cookson Ltd., 49%)	San Jose Mine, Catorce, S.L.P.	365.
Barite	Barita de Sonora, S.A. [Grupo Acerero del Norte, S.A. de C.V. (GAN), 100%]	Mazatan, Son.	219.
Do.	Minerales y Arcillas, S.A. de C.V. (private Mexican, 100%)	San Francisco del Huerto Mine in San Pedro, Coah., La Escondida and Angelita Mines and plant in Galeana	55.
Do.	Barita de Santa Rosa, S.A. de C.V. (private Mexican, 100%)	Muzquiz, Coah.	256.
Bismuth	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Torreon, Coah.	1.2.
Cement	CEMEX México (CEMEX, S.A. B de C.V., 100%)	Ensenada, B.C.N.; Torreon, Coah.; Barrientos, D.F.; Arotonilco and Huichapan, Hgo.; Guadalajara and Zapotilic, Jal.; Hidalgo and Monterrey, N.L.; Tepeaca, Pue.; Tamuin and Valles, S.L.P; Hermosillo and Yaqui, Son.; and Merida,Yuc.	26,650.
Do.	Cementos Apasco, S.A. de C.V. (Holcim Group, 49%, and other, 51%)	Apasco, Mex.; Ramos Arizpe, Coah.; Macuspana, Tab.; Tecoman, Col.; Orizaba, Ver.; and Acapulco, Gro.	8,900.
Do.	Cooperativa La Cruz Azul, S.C.L. (private Mexican, 100%)	Cruz Azul, Hgo., Lagunas, Oax.	5,000.
Do.	Cementos de Chihuahua, S.A. de C.V. (CEMEX México, 36%, and private Mexican, 64%)	Chihuahua, Cuidad Juarez, and Samalayuca, Chih.	2,000.
Do.	Lafarge México (Lafarge Group, 100%)	Vito, Hgo.	600.
Do.	Corporación Moctezuma, S.A. (Cementos Molins, S.A., 50%, and Buzzi Unicem SpA, 50%)	Tepetzingo, Mor.	2,400.
Do.	Corporación Moctezuma, S.A. (Cementos Molins, S.A., 50%, and Buzzi Unicem SpA, 50%)	Cerritos, S.L.P.	2,400.
Coal	Minera Monclova, S.A. [Altos Hornos de México, S.A. de C.V. (AHMSA), 100%]	Mimosa and Palau Mines and Muzquiz washing plant at Palau, Coah., and coking plant at Monclova, Coah.	3,000.
Do.	Carbonífera de San Patricio, S.A. de C.V. (private Mexican, 100%)	Progreso, Coah.	1,314.
Do.	Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A. de C.V., 90%)	Nueva Rosita, Coah.	1,500.
Do.	Minera Carbonífera Río Escondido, S.A. [Grupo Acerero del Norte, S.A. de C.V. [Altos Hornos de México (AHMSA), 100%]	Mina I, Mina II, and Tajo I at Nava and Piedras Negras, Coah.	6,500.
Copper	Mexicana de Cobre, S.A. de C.V. (Grupo México, S.A. de C.V., 90%)	La Caridad Mine, smelter, refinery, SX-EW[2] plant, and rod plant at Nacozari de Garcia, Son.	350 smelter, 50 SX-EW,[2] 300 refinery, 150 rod plant.
Do.	Mexicana de Cananea, S.A. de C.V. (Grupo México, S.A. de C.V., 90%)	Mine and SX-EW[2] plant at Cananea, Son.	29,200 mill, 33 SX-EW.[2]
Do.	Minera María S.A. de C.V. (Grupo Frisco, 100%)	Mine and SX-EW[2] plant at Cananea, Son.	20 SX-EW.[2]
Do.	Cobre de México, S.A. de C.V. (Grupo Condumex)	Primary refinery in Mexico City and secondary refinery in Villagran, Gto.	150.
Ferroalloys	Cía. Minera Autlán, S.A. de C.V. (Grupo Ferrominero, S.A. de C.V., 54%; Minas de Basis, S.A. de C.V., 32%; BHP Ltd., 14%)	Plant in Tamos, Ver.	140.
Do.	do.	Plant in Teziutlan, Pue.	38.
Do.	do.	Plant in Gomez Palacio, Dgo.	35.

See footnotes at end of table.

TABLE 2--Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities[1]	Annual capacity
Fluorspar		Cía. Minera Las Cuevas, S.A. de C.V. (Mexichem, S.A. de C.V.)	Salitera (Zaragoza), S.L.P.	520.
Do.		Fluorita de México, S.A. de C.V. (Corp. Alfil, 51%, and Applied Industrial Minerals Corp., 49%)	Mines at La Encantada district and plant at Muzquiz, Coah.	150.
Gold, mine	kilograms	Minera Fresnillo, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Proaño (Fresnillo) Mine, Zac.	1,200.
Do.	do.	Peñoles, S.A. de C.V., 56%, and Newmont Mining Corporation, 44%)	La Herradura Mine, Son.	6,900.
Do.	do.	Minera Mexicana La Ciénega, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	La Ciénega Mine, Dgo.	4,500.
Do.	do.	Minas Luismín, S.A. de C.V. (GoldCorp Inc., 100%)	San Dimas Gold, Dgo. (two mines)	2,700.
Do.	do.	Cía. Minera de Santa Gertrudis (Grupo Ariztegui, 51%, and Phelps Dodge Corp., 49%)	Santa Gertrudis Mine, Son.	1,600.
Do.	do.	Exploraciones El Dorado, S.A. de C.V., 70%, and Minerales Sotula, 30%	La Colorada Mine, Son.	800.
Do.	do.	Cía. Minera El Cubo, S.A. de C.V. (Mexgold Resources Inc., 100%)	El Cubo Mine, Gto.	128.
Do.	do.	Minas de las Altas Pimerias, S.A. de C.V. (Glamis Gold Ltd., 100%)	El Sauzal Mine, Chih.	5,900.
Do.	do.	Alamos Gold Inc.	Mulatos Mine, Son.	4,700.
Do.	do.	Sociedad Cooperativa Minero Metalúrgica Santa Fe de Guanajuato (private Mexican, 100%)	Guanajuato, Gto.	438.
Gold, refined	do.	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Torreon, Coah.	22,700.
Graphite		Grafitos Mexicanos, S.A. (Cummings Moore Graphite Co. of the United States, 25%, and private Mexican, 75%)	Lourdes and San Francisco Mines, Son.	60.
Do.		Grafito Superior, S.A. de C.V. (Superior Graphite Co., 100%)	Covalmar, Santa Clara, and Rio Mayo Mines, and plant in Son.	25.
Gypsum		Cía. Occidental Mexicana, S.A. (private Mexican, 51%, and Domtar, Ltd. of Canada, 49%)	Santa Rosalia on San Marcos Island, B.C.S.	2,500.
Iron ore		Consorcio Minero Benito Juárez Peña Colorada, S.A. de C.V. (Hylsamex, S.A. de C.V., 51%, and Mittal Steel, 49%)	Peña Colorada mine and pellet plant near Manzanillo, Col.	3,500.
Do.		Altos Hornos de Mexico, S.A. de C.V. (AHMSA) [Grupo Acerero del Norte, S.A. de C.V. (GAN), 78.9%]	La Perla Mine, Chih.; Hercules Mine, Coah.; and Cerro de Mercado Mine, Dgo.	5,000.
Do.		Siderúrgica Lázaro Cárdenas-Las Truchas, S.A. de C.V. (SICARTSA) (Grupo Villacero, 100%)	Ferrotepec, Volcan, and Mango deposits in Las Truchas project area and pellet plant, Mich.	2,350.
Do.		Hylsamex, S.A. de C.V. (Ternium S.A, 86.68%)	Cerro Nahualt, Col. and Aquila Mine, Mich.	1,500.
Lead and zinc		Industrial Minera México, S.A. de C.V. [(IMMSA) (Grupo México, S.A. de C.V., 90%)	Charcas, S.L.P.; San Martin, Zac.; Santa Eulalia, Chih.; Taxco, Gro.; Rosario, Sin.; Santa Barbara, Chih.; Velardena, Dgo; lead refinery at Monterrey, N.L.; and zinc refinery at S.L.P.	70 lead, mine; 110 refined zinc.
Do.		Industrias Peñoles, S.A. de C.V. (private Mexican, 97%, and private United States, 3%)	Mines at La Encantada, Coah.; Fresnillo, Zac.; Naica, Chih.; Bismark, Son; Rey de Plata, Gro. (Peñoles, 51%; Dowa Mining Co., 39%); metallurgical complex at Torreon, Coah., with silver, lead, and zinc smelter and refineries operated by Met-Mex Peñoles (Peñoles, 100%)	180 refined lead, 240 refined zinc.
Do.		do.	Francisco I. Madero Mine, Zac.	100,000 zinc.
Do.		Minera San Francisco del Oro, S.A. de C.V. (Empresas Frisco, S.A. de C.V., 100%)	San Francisco del Oro, near Hidalgo del Parral, Chih.	15 lead, 21 zinc.

See footnotes at end of table.

TABLE 2--Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1]	Annual capacity
Manganese	Cía. Minera Autlán, S.A. de C.V. (Grupo Ferrominero, S.A. de C.V., 81.75%, and private Mexican, 18.25%)	Molango, Naopa, and Nonoalco Mines, Hgo.	600 ore and concentrate.
Molybdenum	Mexicana de Cobre, S.A. (Grupo México, S.A. de C.V., more than 90%)	La Caridad Mine and molybdenum plant, Son.	6.
Petroleum thousand barrels per day	Petróleos Mexicanos, S.A. de C.V. (PEMEX) (Government, 100%)	Comalcalco, Poza Rica, Ver., and Gulf of Campeche, Cam., Districts	3,500.
Salt	Exportadora de Sal, S.A. (Fideicomiso de Fomento 51%, and Mitsubishi Corp., 49%)	Solar salt complex at Guerrero Negro, B.C.S.	6,000.
Silver kilograms	Minera Fresnillo, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Proaño (Fresnillo) Mine, Zac.	1,100,000.
Do. do.	Minera Mexicana La Ciénega, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	La Ciénega Mine, Dgo.	65,800.
Do. do.	Minera Bismark, S.A.de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Bismark Mine, Chih.	7,000.
Do. do.	Co. Minera Sabinas, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Sabinas Mine, Zac.	157,000.
Do. do.	Minera Tizapa, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 50%)	Tizapa Mine, Mex.	140,000.
Do. do.	Minas Peñoles S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 50%)	Francisco I. Madero Mine, Zac.	63,000.
Do. do.	Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A. de C.V., 90%)	San Martin Mine, Sombrerete, Zac.; Taxco, Gro.; Charcas, S.L.P.; Santa Eulalia, Chih.; and refinery at Monterrey, N.L.	335,000.
Do. do.	Pan American Silver Corp.	La Colorada Mine, Zac.	100,000.
Do. do.	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Torreon, Coah.	2,900,000 refinery.
Do. do.	Mexicana de Cobre, S.A. de C.V. (Grupo México, S.A. de C.V., 100%)	La Caridad metallurgical complex, Son.	466,500.
Sodium sulfate	Química del Rey, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Plant at Laguna del Rey, Coah.	620.
Steel	Altos Hornos de Mexico, S.A. de C.V. (AHMSA) [Grupo Acerero del Norte, S.A. de C.V. (GAN), 78.9%]	Steelworks at Monclova, Coah.	3,316 steel, 3,800 pellet.
Do.	Hylsamex, S.A. de C.V. (Ternium S.A., 86.68%)	Steel works and direct-reduction units at Monterrey, N.L., and Puebla, Pue.; pelletizing plant in Col.	3,100 steel, 1,500 pellet.
Do.	DEACERO, S.A. de C.V. (private Mexican, 100%)	Steelworks at Saltillo, Coah., and Celaya, Gto.	1,450.
Do.	Mittal Steel Lazaro Cardenas (Mittal Steel, 100%)	Facilities at Lazaro Cardenas, Mich.	5,300 steel, 4,000 pellet.
Do.	Siderúrgica Lázaro Cárdenas-Las Truchas, S.A. de C.V. (SICARTSA) (Grupo Villacero, 100%)	Port Lazaro Cardenas, Mich.	2,350 steel, 1,850 pellet.
Do.	Tubos de Acero de México, S.A. (private Mexican, 100%)	Veracruz, Ver.	1,000.
Strontium (celestite)	Cía. Minera La Valenciana (private Mexican, 100%)	San Agustin Mine, Torreon, Coah.	50.
Sulfur	Petróleos Mexicanos, S.A. de C.V. (PEMEX)	Nationwide petroleum operations	890.
Tin[4]	Fundidora Marni, S.A.	San Luis Potosi, S.L.P.	NA.
Do.	PIZUTO, S.A.	do.	NA.

NA Not available.

[1]State abbreviations: Baja California Norte (B.C.N.), Baja California Sur (B.C.S.), Campeche (Cam.), Chihuahua (Chih.), Coahuila (Coah.), Colima (Col.), Distrito Federal (D.F.), Durango (Dgo.), Guanajuato (Gto.), Guerrero (Gro.), Hidalgo (Hgo.), Jalisco (Jal.), Mexico (Mex.), Michoacan (Mich.), Nuevo Leon (N.L.) Oaxaca (Oax.), Puebla (Pue.), Queretaro (Qro.), San Luis Potosi (S.L.P.), Sinaloa (Sin.), Sonora (Son.), Tabasco (Tab.), Veracruz (Ver.), Yucatan (Yuc.), and Zacatecas (Zac.).

[2]Solvent extraction-electrowinning.

[3]Petróleos Mexicanos, S.A. de C.V. operated six refineries with an installed capacity of 1.68 million barrels per day.

[4]Smelter output from mostly imported concentrates.