



2006 Minerals Yearbook

FRANCE

THE MINERAL INDUSTRY OF FRANCE

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France was a major European and world economy; its gross domestic product (GDP) in 2006 was valued at more than \$1.9 trillion (based on purchasing power parity), and its GDP was the third largest in the European Union (EU) after Germany and the United Kingdom. The output value of France's industry accounted for about 20% of the GDP. The country was a major processor of mineral raw materials and a manufacturer of producer and consumer durable goods. France's heavy industries, which, among other product categories, produced machine tools, chemicals, and automotive and aviation products for domestic consumption and export, relied mainly on imported metal ores and concentrates, and on imported industrial minerals and mineral fuels (U.S. Central Intelligence Agency, 2007, p. 205).

Minerals in the National Economy

Owing to the size of France's economy, the upstream input of minerals was key to continued maintenance and growth of the country's heavy industries. In 2006, the value of crude material imports alone, which included ores and concentrates of metals and industrial minerals, base metals, and mineral fuels, amounted to almost 3% of the GDP (Eurostat, 2007, p. 1, 5).

Government Policies and Programs

The diminution of the role of the Government of France in the country's economy continued in 2006. Although the Government maintained total ownership of the postal, the transportation, and the tobacco growing and distribution sectors of the economy, the Government's total ownership of the country's natural gas and electricity production and distribution facilities ended with stock sales in 2005 and 2006. Earlier denationalization programs included the partial privatization of the country's automobile manufacturers and highway (toll-road) companies. The reduction of the Government's role in the economy was aimed at raising the competitiveness of and investment in France's economy; this policy was stimulated, in part, by the adoption of the euro (€), which increased competitive pressure on French companies (U.S. Department of Commerce, 2007a, b).

The Ministry of Ecology and Sustainable Development was responsible for overseeing and regulating such environmental issues as agricultural runoff; air pollution from industrial and vehicle emissions; forest damage from acidic rain; and the potential for water pollution from mining, mineral processing, and urban waste. To promote the innovation and assimilation of new technologies for sustainable commercial growth and development through public funding, the Government created the National Agency for Industrial Innovation (NAII) in June 2005. In 2006, the NAII allocated about €337 million (\$445 million)¹ for research on technologies aimed at increasing energy efficiency, reducing CO₂ emissions, and raising the

output of renewable raw materials. Research on sustainable mining and quarrying practices to assist municipalities in securing biodiversity, land, and water resources would be undertaken in France's Mediterranean region, at Crau/Camargue in the Rhone Delta, and in the vicinity of Marseille (Bio Intelligence Service SAS, 2006; Euro-Roc, 2007).

Production

In 2006, France's reported nickel output increased by about 9.3%, and that of hot-rolled steel, by 5.3%, compared with respective production levels in 2005. The production of zinc declined by an estimated 40%, and that of secondary lead declined by about 5% (table 1).

Major changes in the industrial mineral sector included sharp drops in the output of barite and fluorspar owing to mine closures. Also noted was a 49% decline in ammonia (nitrogen) production, and significant declines in chalk and pumice output. The production of salt increased by 39% compared with that of 2005 (table 1).

Mineral Trade

Most of France's needs for nonfuel and fuel mineral raw materials were met by imports. In 2006, France's imports of nonfuel crude materials, which included ores and concentrates of metals and industrial minerals, accounted for about 2% of total imports (\$547 billion). Imports in this category from outside the EU were about 19% greater in value than those from EU-member countries. The major components of France's mineral trade in 2006 were net imports of mineral fuels, which constituted about 10.3% of the value of total imports. France's imports from the Commonwealth of Independent States (CIS), which included a major natural gas and petroleum component, amounted to more than \$17 billion. France had a negative trade balance with the CIS that amounted to about \$8.5 billion. France's imports from Russia alone amounted to more than \$12.4 billion. France's negative trade balance with Russia amounted to more than \$6.2 billion. In terms of volume, Russia accounted for about 13% of total French imports of petroleum; the CIS as a whole accounted for about 28%. Petroleum imports from within the EU were centered mainly in Norway and the United Kingdom, which together accounted for about 27% of France's crude petroleum imports in 2006. The Netherlands and Norway together accounted for about 45% of France's natural gas imports. Outside the EU, Russia accounted for more than 20% of France's imports of natural gas (Euro-Roc, 2007; Gambini, 2007; U.S. Energy Information Administration, 2007).

Structure of the Mineral Industry

Although France has maintained state monopolies in a number of sectors of the economy, state ownership of the mineral

¹Deceased.

²Where necessary, values have been converted from EU euros (€) to U.S. dollars (\$) at the rate of €1.00=\$1.32.

sector had substantially diminished by 2006. As noted earlier, the Government maintained partial ownership of the country's electricity generating and natural gas production and distribution capacities. Table 2 provides data on major French enterprises that produced metals, industrial minerals, and mineral fuels in 2006.

Commodity Review

Metals

Aluminum.—In 2006, France's total output of aluminum of was the same as that in 2005; net imports of aluminum metals and articles thereof amounted to more than \$1.3 billion (table 1). France's Aluminium Pechiney, which was owned 100% by Alcan Inc. (Alcan), was the country's sole producer of primary aluminum. Alcan also operated facilities for the production of alumina and aluminum semimanufactures. Implementation of Alcan's decision in 2005 to close its smelter at Lannemezan was begun in mid-2006. The planned closure of the Lannemezan smelter, which was scheduled for completion by 2008, was based mainly on the expiration of long-term energy contracts and increasing energy costs (Alcan Inc., 2005, 2006b).

In 2006, Alcan's investment in France's aluminum sector included the acquisition of the remaining stock (70%) in cathode maker Carbone Savoie. The transaction, which was valued at \$135 million, paralleled Alcan's planned investment of \$70 million in 2007 for research and development (R&D) on smelter technology at the company's R&D facilities at Rhone-Alpes. Additional investment by Alcan included a planned outlay of about \$9.5 million for the modernization of the continuous annealing and quenching line for automotive sheet and \$15 million for new aluminum can splitting and trimming facilities at Neuf Brisach (Alcan Inc., 2006a, c, d).

Ferroalloys.—In 2006, major issues in France's ferroalloy sector concerned mainly the temporary closure of FerroPem's (part of FerroAtlántica Group, formerly Pechiney Électrométallurgie) silicon furnaces until March owing to high energy prices in the first months of the year (American Metal Market, 2006).

Iron and Steel.—France's output of pig iron and crude steel increased by 2.4% and 1.9%, respectively, compared with that of 2005 (table 1). Crude steel consumption during the 2001 to 2005 period (the latest years for which data were available) averaged slightly more than 18 million metric tons per year (Mt/yr); the consumption of finished steel averaged about 16.7 Mt/yr. The major event in the steel industry was the agreement reached in midyear to merge Acelor S.A. and Mittal Steel Company N.V. to form the world's leading steel producer. The initial value of Mittal's acquisition of Arcelor was set at \$33.1 billion. Arcelor was created in 2002 through a merger of steel companies in France (Usinor Group), Luxembourg (Arbed S.A.), and Spain (Aceralia Corporacion Siderurgica S.A.). Virtually all of France's steel sector was encompassed by the merger (Kanter and others, 2006).

Lead and Zinc.—In 2006, France's production of secondary lead declined by about 4.5% compared with that of 2005, but owing to the reportedly small amount of primary metal output, overall lead production fell by only about 1%. France's consumption of refined lead amounted to 207,025 metric

tons (t), which was about 1.5% less than in 2005. Total slab zinc production in 2006 amounted to 120,000 t, which was a substantial decline of about 43% compared with that of 2005. France's zinc consumption in 2006 amounted to 249,244 t, which was a decline of about 8% compared with that of 2005. The decline in lead and zinc consumption was attributable, in part, to price increases of about 30% and 33% for lead and zinc, respectively, compared with 2005 prices; these price increases stemmed largely from continued growth of China's metals consumption and insufficient mine production capacity (table 1; Metaleurop, 2007; World Bureau of Metal Statistics, 2007, p. 90, 137).

Industrial Minerals

France produced a broad variety of industrial minerals, such as those listed in tables 1 and 2. In 2006, Imerys, which was a major French producer of industrial minerals, mined and processed ball clays, carbonates, feldspar, and red clays not only domestically but from deposits in such countries as China, Germany, Spain, the United States, and Vietnam for domestic use and export (Imerys, 2007, p. 8, 121).

Cement.—France's principal cement manufacturers were Lafarge S.A. and Société des Ciments Français (Ciments Français); apart from cement-producing facilities in France, both companies had major capital assets abroad. Ciments Français was a subsidiary of Italcementi S.p.A of Italy. The other important producers of cement in France were the Vicat Group, which had five plants with a total cement production capacity of 6 Mt/yr, and Ciments d'Origny, which had six plants and a total cement production capacity of 4.2 Mt/yr. In 2006, work continued on Lafarge's 300,000-metric-ton-per-year (t/yr)-capacity slag crushing plant at Bassens. Completion of the \$26 million facility was scheduled for early 2007; it would deliver crushed slag by land and sea to cement plants at Deux-Severes and Haute Garonne (PR Newswire Europe Ltd., 2006; International Cement Review, 2003, p. 147).

Fluorspar.—The pending closure of the fluorspar mines in the Tarn region that was reported in 2005 was confirmed in 2006 with the announcement of a plan to auction off the Tarn region mines' equipment in midyear. The mines were owned and operated by Société Générale de Recherches et d'Exploitations Minières, which was a subsidiary of Alcan Inc. The closure of the mines was attributed to the depletion of reserves (Industrial Minerals, 2006).

Mineral Fuels and Other Sources of Energy

Of the total amount of primary energy consumed by France in 2006, 42.7% was electricity generated by hydraulic, nuclear, photovoltaic, and wind power facilities. Nuclear energy accounted for 42.7% of total energy consumption; petroleum, 33.4%; natural gas, 14.7%; coal, 4.5%; and other, 4.6%. Total primary energy consumption reached 275.3 million metric tons (Mt) of petroleum equivalent, which was a slight decrease (0.3%) compared with that of 2005. The production of electricity amounted to 574.5 terawatt-hours (Twh). Nuclear electric power stations contributed 450.2 Twh, thermal-electric power generated 60.5 Twh, and hydroelectric, wind, and photovoltaic power

installations accounted for 63.8 Twh (Direction Générale de l'Énergie et des Matières Premières, 2007, p. 1, 9).

Coal.—Domestic coal production ceased in 2005; this loss was compensated for mainly by imports of solid mineral fuels. In 2006, coal constituted 93% of solid mineral fuel imports, which was an increase of 2.2% compared with that of 2005. Australia, Colombia, the EU, South Africa, and the United States were the leading suppliers of coal to France. Owing to rising energy prices, state-owned coal producer Charbonnage de France was considering reopening coal mines (provided that strict clean coal technologies are utilized). Some discussion centered on the construction of a coal mine–thermal electric power-generating complex at Lucenay-les-Aix in central Burgundy. Reportedly, the proposed complex would rely on 70 Mt of coal reserves and supply feedstock to a 1,000-megawatt electric power station (Carlisle, 2006; Direction Générale de l'Énergie et des Matières Premières, 2007, p. 7).

Natural Gas and Petroleum.—In 2006, France's domestic production of natural gas and petroleum showed mixed results compared with the output of these commodities in 2005. Natural gas output increased by about 9%, which followed a substantial production decline in 2005 that stemmed from facility downtime for scheduled 5-year maintenance at the Lacq gasfield and processing facility. Domestic petroleum production declined by about 2% compared with that of 2005. In 2006, rising oil prices prompted a 27% outlay increase for exploration; drilling increased by 59% to about 4,600 meters (Carlisle, 2006).

The privatization of Gaz de France and its merger with the Belgian-French Suez Group was among the main developments in the energy sector in 2006. The privatization and merger received the approval of the EU and the Government. The agreement called for the reduction of the Government's stake in Gaz de France to 34% from about 80% and the divestiture of several gas and electricity distribution subsidiaries by each of the merging parties. To diversify sources of natural gas, Gaz de France announced plans in early 2006 to invest about \$1.8 billion in two natural gas pipelines; one would connect Europe with Algeria by 2007; the other would connect Europe with Iran by 2015 (Alexander's Gas & Oil Connections, 2006; European Commission, 2006).

In midyear, a natural gas pipeline that connected the Basque regions of France with Spain was put into operation. The 28-kilometer Euskadour pipeline was designed with a gas-carrying capacity of about 500 million cubic meters per year (Petroleum Economist, 2006).

Nuclear Energy.—In 2006, nuclear energy accounted for 78.4% (450.2 Twh) of total electric power, which was a slight decline (-0.3%) compared with that of 2005. At yearend 2006, the EU and a consortium of countries that included China, India, Russia, and the United States reached an agreement to build an experimental \$5.77 billion fusion reactor at Cadarache in France (Platts, 2006; Direction Générale de l'Énergie et des Matières Premières, 2007, p. 9).

Outlook

France is expected to continue to rely on imported mineral raw materials, including mineral fuels, to produce consumer and

producer durables and such intermediate products as ferrous and nonferrous metals and semimanufactures, construction materials, and chemicals.

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TABLE 1
FRANCE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2002	2003	2004 ^c	2005 ^c	2006 ^c
METALS					
Aluminum:					
Bauxite, gross weight ³ thousand metric tons	170	168	160 ⁴	168	168 ⁴
Alumina, metallurgical, gross weight ³ do.	400 ^c	300 ^c	300	200	200
Metal:					
Primary do.	463	445	451 ⁴	442 ⁴	442 ⁴
Secondary do.	262	240	236 ⁴	222 ⁴	222 ⁴
Antimony, metal, including regulus ^c	500	500	500	500	500
Cadmium metal	63	120 ^r	100 ^r	100 ^r	100
Cobalt, metal:					
Powder ^c	500	500	500	500	500
Chloride	175	181	191 ⁴	191 ⁴	190 ⁴
Copper, metal, secondary, refined ^c	500	--	--	--	--
Gold, mine output, Au content kilograms	1,724	1,470	1,312 ⁴	1,500 ^r	1,500 ⁴
Iron and steel:					
Metal:					
Pig iron thousand metric tons	13,217	12,756	13,198 ^r	12,705 ^r	13,013 ⁴
Ferrous alloys, electric furnace:^c					
Ferromanganese do.	130	120	106	105 ^r	105
Ferrosilicon do.	100	100	87	100	100
Silicomanganese do.	50	107	64	65	60
Silicon metal do.	75	75	75	75	85
Other do.	65	65	65	65	60
Total do.	420	467	397	415	410
Steel:					
Crude do.	20,524	19,803	20,770 ^{r,4}	19,481 ^{r,4}	19,857 ⁴
Hot-rolled do.	18,561	18,400	17,376 ^{r,4}	16,566 ^{r,4}	17,437 ⁴
Lead:					
Smelter, secondary	105,000	-- ^c	-- ⁴	-- ⁴	-- ⁴
Refined:					
Primary	83,575	1,535	--	--	4,039
Secondary	111,643	96,155	105,600 ⁴	104,979 ^{r,4}	100,195 ⁴
Total	195,218	97,690	105,600	104,979 ^{r,4}	104,234 ⁴
Nickel, refinery products, Ni content ⁵	11,440	11,138	12,103 ^r	12,536 ^{r,4}	13,700 ⁴
Silver:^c					
Mine output, Ag content kilograms	709 ^r	495 ^r	682 ^r	700 ^r	700
Metal, Ag content of final smelter products do.	400	400	400	400	400
Tin, secondary	1,600	1,500	1,500	1,500	1,500
Zinc metal, including slab and secondary	338,924	268,408	267,528 ⁴	210,000	120,000 ⁴
INDUSTRIAL MINERALS					
Abrasives, undifferentiated ^c	300	300	300	300	272
Barite, BaSO ₃ equivalent ^c	80,000	81,000	75,000 ^r	75,000 ^r	30,000
Cement, hydraulic thousand metric tons	19,450	19,660	20,960 ⁴	21,277 ^r	21,000
Clays:					
Kaolin and kaolinitic clay (marketable) do.	339	323	316 ⁴	293 ^r	300
Refractory clay, unspecified ^c do.	15	15	15	15	15
Diamond, synthetic, industrial ^c thousand carats	3,600	3,600	3,600	3,600	3,600
Diatomite ^c thousand metric tons	80	80	75	75	75
Feldspar, crude do.	659	671	628 ⁴	651 ^{r,4}	650
Fluorspar, marketable do.	105	89	90	53 ^r	40
Gypsum and anhydrite, crude ^c do.	4,500	3,500	3,500	3,500	3,500
Kyanite, andalusite, related materials ^c do.	65	65	65	65	65
Lime, quick and hydrated, dead-burned dolomite ^c do.	3,500 ^r	3,500 ^r	3,600 ^r	3,400 ^r	3,500
Mica ^c	17,000 ^r	18,000 ^r	19,000 ^r	20,000 ^r	20,000

See footnotes at end of table.

TABLE 1—Continued
FRANCE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2002	2003	2004 ^e	2005 ^c	2006 ^e	
INDUSTRIAL MINERALS—Continued						
Nitrogen, N content of ammonia	thousand metric tons	1,172	1,153	1,120 ⁴	1,206 ^r	616
Phosphates, Thomas slag ^c	do.	50	50	50	50	50
Pigments, mineral, natural, iron oxide ^c		1,000	1,000	1,000	1,000	1,000
Potash, K ₂ O equivalent (marketable)	thousand metric tons	139	-- ^e	--	--	--
Pumice and other natural abrasives	do.	400	400	400	400	272 ⁴
Salt, all sources	do.	6,807	6,673	6,910	6,730	9,371 ⁴
Sodium compounds: ^c						
Soda ash	do.	1,000	1,000	1,000	1,000	1,000
Sodium sulfate	do.	120	120	120	120	120
Stone, sand and gravel: ^c						
Chalk	do.	700	700	700	673 ⁴	554 ⁴
Dolomite, crude	do.	1,000	1,000	1,000	974 ⁴	991 ⁴
Granite, crude	do.	300	300	300	255 ⁴	245 ⁴
Limestone, agricultural and industrial	do.	12,000	12,000	12,000	11,590 ^{r,4}	11,018 ⁴
Marble and travertine, crude	do.	200	200	200	121 ⁴	130 ⁴
Sandstone	do.	35	35	35	33 ⁴	32 ⁴
Slate, crude		5,000	5,000	5,000	5,390	5,703
Sand and gravel:						
Industrial sands		5,179	5,089	5,242 ⁴	5,200	5,200
Other sand, gravel, and aggregates		166,788	160,884	163,404 ⁴	165,000	165,000
Sulfur, all sources		1,016	1,012	965	616 ^r	650
Talc, crude	thousand metric tons	359 ^r	394 ^r	402 ^r	416 ^r	420
MINERAL FUELS AND RELATED MATERIALS						
Asphaltic material ^c		20,000	20,000	20,000	20,000	20,000
Carbon black ^c		200,000	200,000	200,000	200,000	200,000
Coal, including briquets:						
Anthracite and bituminous	thousand metric tons	1,483	1,730	160 ⁴	--	--
Lignite	do.	148	9	--	--	--
Total	do.	1,631	1,739	160 ⁴	--	--
Briquets ^c	do.	175	175	100	100	100
Coke, metallurgical	do.	4,552	4,601	4,616 ⁴	4,500	4,500
Gas, natural, marketed	million cubic meters	1,750	1,520	1,330 ⁴	1,100 ^r	1,200
Petroleum:						
Crude	thousand 42-gallon barrels	9,825	9,150	8,550 ⁴	7,775 ⁴	7,604 ⁴
Refinery products:						
Liquefied petroleum gas	do.	26,901	33,617	32,000 ⁴	32,000	30,000
Gasoline, all kinds	do.	128,115	143,263	140,000 ⁴	140,000	140,000
Kerosene and jet fuel	do.	41,428	41,356	42,000 ⁴	42,000	45,000
Distillate fuel oil	do.	245,645	261,340	250,000 ⁴	250,000	250,000
Residual fuel oil	do.	66,357	70,847	72,594 ⁴	72,600	70,000
Other products ^c	do.	118,698	127,166	129,000 ⁴	129,000	130,000
Refinery fuel	do.	34,128	34,419	35,000 ⁴	35,000	35,000
Total	do.	661,272	712,008	700,594 ⁴	701,000	700,000
Uranium, chemical concentrate, U ₃ O ₈ equivalent		12	--	--	--	--

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. -- Zero.

¹Table includes data available through September 2007.

²In addition to the commodities listed, France produces germanium from domestic ores, but actual output is not regularly reported.

³Reprocessed bauxite not for metallurgical use.

⁴Reported figure.

⁵Excludes secondary production from nickel/cadmium batteries.

TABLE 2
FRANCE: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina, metallurgical		Aluminium Pechiney (Alcan Inc., 97.95%)	Plant at Gardanne	200
Aluminum		do.	Aluminum smelters at:	
Do.		do.	Saint-Jean-de-Maurienne, Savoie Province	120
Do.		do.	Nogueres, Pyrenees, Atlantiques Province	115
Do.		do.	Lannemezan, Hautes-Pyrenees Province	63
Do.		do.	Auzat, Ariegee Province (closed)	50
Do.		Aluminium Dunkerque (Alcan Inc., 97.95%)	Dunkerque, Calais du Nord	250
Andalusite		Denain-Anzin Minéraux Réfractaire Céramique	Glomel Mine, Brittany	75
Antimony, metal		Produits Chimiques de Lucette	Plant at Le Genest, Mayeene Province	15
Barite		Barytine de Chaillac	Mine and plant at Chaillac, Indre Province	150
Do.		Société Industrielle du Centre	Mine at Rossigno, Indre Province	100
Cadmium	metric tons	Compagnie Royale Asturienne des Mines	Plant at D'Auby-les-Douai, Nord Province	200
Cement		Four companies, the largest of which are:	80 plants, including:	26,700
Do.		LaFarge S.A.	13 plants; largest at St. Pierre-la-Cour (1,160)	9,500
Do.		Société des Ciment Français	13 plants; largest at Gargenville (1,100)	7,000
Clay, kaolin		La Source Compagnie Minière	Kaolin d'Arvor Mine, Quessoy	300
Coal		Charbonnages de France (CdF), including:		
Do.		Centre-Midi Bassin	Open pit mines (closed)	1,000
Do.		Lorraine Bassin	Underground mines (closed)	2,500
Cobalt, metal	metric tons	Société Métallurgique le Nickel (SLN)	Plant at Sandouville, near Le Havre	600
Copper, metal		Compagnie Générale d'Électrolyse du Palais	Electrolytic plant at Palais-sur-Vienne	45
Do.		Société Française d'Affinage du Cuivre	Smelter at Poissy, Yvelines	11
Diatomite		Ceca S.A.	Mines and plants at Riom-les-Montagne and St. Bauzille	100
Feldspar		Denain-Anzin Minéraux S.A. (Imerys Group)	Mine and plant at St. Chely d'Apcher	55
Ferroalloys		Comilog International	Plant at Boulogne-sur-Mer	500
Do.		Société du Ferromanganese de Paris, Outreau	do.	420
Do.		FerroPem (Ferroatlantica)	Plants at Bellegarde, Laudun, and Marignac	400
Fluorspar		Société Générale de Recherches et d'Exploitation Minières (Alcan Inc.)	Mines in southern France	150
Gold	kilograms	Mines d'Or de Salsigne (Eltin Co., 51%; Ranger Co., 18%; Peter Hambro Plc., 10%)	Salsigne Mine near Carcassonne (closed)	3,000
Gypsum		S.A. de Matériel de Construction	Mine at Taverny	1,500
Iron and steel, steel		Sollac Atlantique S.A. (Acelor Group)	Dunkerque	6,700
Do.		do.	Fos-sur-Mer	4,200
Do.		do.	Florange	3,200
Do.		Sollac Unimetal (Usinor Group, 100%)	Gadrange, Neuves Maisons, and Thonville	8,400
Lead, metal		Metaleurop Nord (Metaleurop S.A.)	Plant at Noyelles Godault (closed)	165
Magnesium, metal		FerroPem	Plant at Marignac (closed)	15
Mica		Denain-Anzin Minéraux S.A. (Imerys Group)	Mine at Ploemeur, Brittany	160
Natural gas	million cubic meters	Société Nationale Elf Aquitaine (SNEA)	Gasfield and plant at Lacq	20,000
Nickel, metal		Société Métallurgie le Nickel (SLN)	Plant at Sandouville	16
Nitrogen, N content of ammonia		Grande Paroisse S.A.	Plant at Grandpuits	390
Petroleum:				
Crude	42-gallon barrels per day	Société National Elf Aquitaine (SNEA)	Paris Basin oilfields	1,000
Refined	do.	Total S.A.	Refineries at Gonfreville and La Mede	446,000
Do.		Shell-Française	Refinery at Petite Couron	285,000
Do.		do.	Refinery at Berre	270,000
Do.		Société Nationale Elf Aquitaine (SNEA)	Refinery at Feyzin	120,000
Do.		do.	Refinery at Donges	200,000
Do.		do.	Refinery at Grandpuits	96,000
Do.		Société Française British Petroleum (S.F.B.P.)	Refineries at Lavera	175,000
Do.		Esso S.A.	Refineries at Fos-sur-Mer	237,000
Do.		Mobil Oil Française	Refineries at Gravenchon	62,000
Do.		Cie. Rhenane de Raffinage (CRR)	Refinery at Reichstett	80,000

TABLE 2—Continued
FRANCE: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Potash, K ₂ O		Mines de Potasse d'Alsace S.A. (MDPA)	Amelie and Marie-Louise mines in Alsace (closed)	2,500
Salt		Compagnie des Salins du Midi et des Salines de l'Est (Salins Group)	Mines and plants at Algues Mortes, Dax, Salin de Girad, and Varangeville	2,500
Sulfur		Société Nationale Elf Aquitaine (SNEA)	Byproduct from natural gas, Lacq plant	3,000
Talc		Talc de Luzenac S.A. (Rio Tinto Corp., 100%)	Trimouns Mine near Ariege, Pyrenees	350
Uranium, U ₃ O ₈	metric tons	Compagnie Général des Matières Nucléaires (Areva S.A.)	Mines at Limousin, Vendee, and Herault (closed)	1,800
Zinc, metal		Umicore Group	Plants at Auby-les-Douai and Calais	220
Do.		Metaleurop Nord (Metaleurop S.A.)	Plant at Noyelles Godault (closed)	110