

THE MINERAL INDUSTRY OF

FRANCE

By Harold R. Newman

France was a major European mineral producer despite traditional mineral industries being in a state of transition during the past few years. The transition was from an economy that featured extensive Government ownership and intervention to one that relies more on market mechanisms. International pressures of globalization and more direct pressure from the European Union (EU) were behind the trend away from Governmental involvement in industry. In accordance with EU requirements, the reduction of Government subsidies to support uneconomic mineral operations continued in 2001. Changing economic conditions, such as rising energy costs, increased imports of raw materials from other countries, lower prices owing to increased competition, and depletion of mineral reserves, have necessitated the closing or reduced output of such traditionally strong mineral extractive operations as bauxite, coal, and iron ore.

Government Policies and Programs

Efforts were continuing to promote the private sector and to reduce the dependence of state-owned companies on subsidies. The Government was proceeding with its program of privatization that required large state-controlled companies to reduce the direct role of the Government in their operations. Efforts included fiscal reform, privatization, and implementation of EU liberalization and deregulation directives. Nevertheless, the Government remained involved in the functioning of the economy through national and local budgets, remaining state holdings of major corporations, and extensive regulation of labor, goods, and services markets. The Government has done little to cut generous unemployment and retirement benefits, which impose a heavy tax burden. Also, the reduction of the workweek to 35 hours has drawn criticism for lowering the competitiveness of French companies (U.S. Embassy, Paris, France, 2001).

The European Commission (EC) told the Government that it should amend its Mining Code or face possible legal action at the European Court of Justice because it does not allow companies from other EU member states to secure French coal mining licences (Mining Magazine, 2001).

Environmental Issues

The Ministry of the Environment is the agency responsible for monitoring the quality of the environment; protecting nature; preventing, reducing, or totally eliminating pollution and other nuisances; and enhancing the quality of life. With this in mind, it conducts two different types of actions. The first are aimed at preserving and protecting spaces and species; this includes prevention of pollution and major risks, nature conservation, protection of landscapes and sites, and management of water

resources. The second are aimed at developing research, improving knowledge of the state of the environment, and taking account of concerns at European and international levels (Ministère de L'Écologie et du Développement Durable, 2001¹).

France is making progress in solving its most serious ecological problems. The annual review of environmental quality in France set up by the French Environmental Institute (IFEN) highlights a range of issues where improvements are needed, such as air quality in many country towns or the disposal of household wastes. The IFEN identified water pollution by nitrates as the most significant problem in France because of intensive animal farming, especially in the northern part. France was warned by the EC to improve its record on nitrate pollution or face possible legal action at the European Court of Justice (Keil, 2002§).

Production

Mineral and metal industries generally maintained production and other activities at about the same or slightly decreased rates as those of 2000. Several industries, such as bauxite, coal, iron ore, and uranium, have steadily undergone changes during the past few years, especially iron ore, which was no longer mined. Some bauxite waste dumps in the Languedoc region were reprocessed; the resulting product was used by cement companies to correct the alumina and iron content of cement.

The coal industry and other mineral producers were affected by cheaper foreign sources, high operating costs, and the depletion of domestic resources. Coal mining was directed by the state-owned company Charbonnages de France (CdF).

The uranium industry reduced its operations by closing a number of mines and processing plants because of low market prices and depletion of certain deposits. Some factors in the drop of uranium demand were the increased accessibility of petroleum and natural gas from the North Sea and the former Soviet Union (table 1).

Trade

In general, EU agreements and practices determine France's trade policies. France has a tradition of highly centralized administrative oversight of its essentially market-based economy. Strong commercial relations continued between France and the United States, and Germany remained France's largest export destination.

In 2001, France was the ninth largest trading partner of the United States worldwide and the third largest trading partner in

¹References that include a section twist (§) are found in the Internet References Cited section.

Europe after the United Kingdom and Germany and had the world's fifth largest industrial market (table 2). France continued with economic expansion although growth has slowed in concert with other EU countries. France accounted for more than 5% of the world gross domestic product (GDP), which made it the country with the fourth largest GDP after the United States, Japan, and Germany. The GDP was expected to grow by 2.3% in 2001. France adopted the euro as of January 1, 1999. Responsibility for the exchange rate was shared between the national finance ministry and the European Central Bank (U.S. Commercial Service, 2001§).

Structure of the Mineral Industry

Government and private companies produced minerals and mineral products, conducted research, and explored for new domestic and international mineral resources. Adjustment to the single European market resulted in mergers, closures of operations, and cooperative ventures as companies sought ways to obtain competitive advantages (table 3).

Commodity Review

Metals

Aluminum.—Pechiney was to increase capacity for superground alumina by constructing a new facility at its Gardanne facility, which was the only production site for alumina in France. The new capacity, which will be 1 million metric tons per year (Mt/yr), would be used for production of alumina for the refractories and ceramic industries. Superground reactive aluminas are suitable for ceramic and refractory applications. Their fine and ultrafine grain-size distribution is particularly important for refractories, and their high sintering capacity is valuable in the production of ceramics (Industrial Minerals, 2001b).

After a brief lull in 2001, the aluminum industry was expected to resume the process of consolidation. Norsk Hydro A/S was proceeding with the acquisition of VAW Aluminium A.G. If this happens, then Norsk Hydro would eclipse Pechiney as Europe's biggest aluminum company. Pechiney stated that it would be interested in acquiring the flexible packaging businesses of VAW after Norsk announced that it was selling it (Metal Bulletin, 2002).

Gold.—Gold mining in France was mostly concentrated in Société des Mines du Bourneix's open pit and underground operations south of Limoges in the Saint Yrieix la Perche district and Mines d'Or de Salsigne's underground Salsigne Mine near Carcassonne. The Salsigne Mine was in receivership and was operating under the protection of the French courts.

Lead and Zinc.—Mining of lead and zinc has completely ceased in France. In 2001, two companies operated lead and zinc plants using imported ores and concentrates. Métaleurop S.A. operated a 125,000-metric-ton-per-year (t/yr) primary lead smelter and a 40,000-t/yr secondary lead smelter (Société de l'Industrie Minérale, 2001a). Union Minière S.A. operated a zinc refinery with a capacity of 220,000 t/yr of zinc, and Métaleurop S.A. operated a 110,000-t/yr zinc refinery (Société de l'Industrie Minérale, 2001c).

Métaleurop announced that it would spend about \$22 million to revamp its Noyelles Godault lead-zinc plant. The money would be spent on reengineering to increase the operating ratio of the plant and better utilize its capacity. Métaleurop would not specify how much the increase in production would be but said that the improvements would significantly reduce downtime at the plant (Metal Bulletin, 2001b).

Magnesium.—The permanent closure of the EU's only magnesium producer Pechiney Electrometallurgie's Marignac plant left the European magnesium market in limbo. The plant's magnesium production had fallen victim to increased competition from cheaper Chinese imports and the overall drop in magnesium prices. The EU had imposed antidumping duties against imports of magnesium from China. With no European business to protect, the market was left to speculate as to if, or when, those duties will be removed (Metal Bulletin, 2001a).

Steel.—Aceralia S.A. of Spain, Acieries Reunies de Burbach-Eich-Dudelang (ARBED) of Luxembourg, and Usinor Group of France have agreed to merge their businesses and specialities. When the new company is created, the partners will make up the world's largest steel group. It will have the capacity to produce 46 Mt/yr of liquid steel at a sales volume of about \$30 billion. Aceralia, ARBED, and Usinor would form the multispeciality group Arcelor S.A., and the merger would furnish the companies the means to be stronger in Europe and to develop more rapidly outside of Europe. The new group that will emerge from the integration will focus its activities on flat carbon steel products, long carbon steel products, stainless steel products, and distribution, processing, and trading. The EC gave permission for the integration in November 2001 (Arcelor S.A., 2001§).

Usinor and Nippon Steel Corp. of Japan (NSC) have signed a cooperation agreement that could lead to the establishment of joint-venture steel production plants. Initially, the focus for collaboration would be sheet steel for the automotive industry, but NSC and Usinor said that it also could extend to tinplate and stainless steel. Both companies stressed that the agreement did not cover their sales activities and that they would remain competitors at the commercial level and did not expect to exchange shareholdings or directors (Metal Bulletin, 2001c).

Uranium.—Compagnie Générale des Matières Nucléaires (COGEMA), which was the state-owned uranium mining company, was the major producer of uranium. France was the world's largest per capita nuclear power generator and ranked second in total installed nuclear capacity after the United States. About 75% of electricity generated in France came from 57 nuclear plants. This has changed dramatically since 1973 when fossil fuels accounted for more than 80% of power generation. France faces choices of replacing obsolete nuclear plants with more modern plants or beginning to phase out nuclear power generation (U.S. Energy Information Administration, 2002§).

The U.S. International Trade Commission (ITC) gave final approval to import duties that total more than 32% on shipments of more than \$200 million worth of nuclear powerplant fuel. France is one of the biggest suppliers of enriched uranium to the U.S. market. At the World Trade Organization, the EU was expected to challenge the decision on any antidumping and countervailing duties imposed (Yahoo Inc., 2002§).

Industrial Minerals

Cement.—Lafarge SA and Société des Ciments Français were the two largest producers of cement in France. Each company had control of approximately one-third of the domestic market. Lafarge was the world's largest producer of cement with 113 cement plants and 30 grinding plants in 46 countries (Lafarge SA, 2001b§).

Lafarge announced that the acquisition of Blue Circle Industries (BCI) of the United Kingdom had been finalized. The process of integration was expected to be completed by yearend 2001 (Lafarge SA, 2001a§).

Gypsum.—France was one of Europe's largest producers of gypsum. Two-thirds of the production was from the Paris Basin. Four companies produced about 95% of the output. S.A. de Materiel de Construction was the largest company.

Potash.—Mines de Potasse d'Alsace S.A. (MDPA) was the principal producer of potash with two underground mines, Marie Louise and Amélie, which are located near Mulhouse, Alsace. MDPA announced that production would be stopped at the Amélie Mine in 2003. This was earlier than the planned closing in 2004. The Berrwiller Mine, which is near the Amélie Mine, closed in June 2001. Berrwiller was the remaining part of the Marie Louise Mine that MDPA began to close in 1999 when its ore became depleted (Industrial Minerals, 2001a).

Stone, Crushed.—Minerals Technologies Inc. of the United States announced that Speciality Minerals France (its wholly owned subsidiary) would construct and operate a satellite precipitated calcium carbonate (PCC) plant at Alizay, France. The plant will have a capacity of about 100,000 t/yr of PCC, which is used as a substitute for wood fiber and other more expensive pigments. The paper industry will be able to produce higher quality paper at a lower cost. Minerals Technologies originated the satellite concept for making and delivering PCC on site at paper mills. This concept has been a major factor in changing papermaking from an acid-based to an alkaline-based technology (Mineral Technologies Inc., 2001§).

Talc.—Talc de Luzenac S.A. was significant not only to the domestic market, but also to the European market. Borax Français S.A. (a subsidiary of Rio Tinto Corp.) purchased 92% of Talc de Luzenac. As a result of mergers and acquisitions during the past 6 years, Talc de Luzenac was formed as a subsidiary of Rio Tinto. Talc de Luzenac operated 16 deposits and 20 processing plants in Europe and North America and was the leading talc producer in the world (Société de l'Industrie Minérale, 2001b).

Mineral Fuels

France has few indigenous energy sources, only small amounts of coal, natural gas, and petroleum. The exploitation of these resources has steadily decreased during the past two decades, and nuclear power has dominated the energy supply sector.

Coal.—CdF was proceeding with further rationalizations that would result in reduced production. All but mines in the

Lorraine area were closed by yearend 2000. The two deep mines still active in Lorraine, La Houve and Merlebach, were expected to close by 2005. Four open pit mines and one underground mine in the Centre-Midi Basin were still being worked mostly for lignite. CdF envisioned the final stoppage of all coal mining in France in accordance with the National Coal Pact signed in 1995. Although the Government recognized the total lack of any prospect of the French coal industry becoming competitive in the medium or long term, the seriousness of the social and regional problems has prevented the Government from keeping the 2002 deadline for a reduction of activity and programmed closures (Commission of the European Communities, 2001§).

Natural Gas and Petroleum.—In 2001, onshore petroleum production was mainly from the Aquitaine and Paris Basins. Because production had started to decline in these areas, the Government initiated a program to encourage exploration for new deposits in other areas thought to have potential; the Jura Basin was one area under consideration.

Companies that operated refineries in France included BP Amoco plc, ExxonMobil Corp., Royal Dutch Shell Group, and TotalFinaElf S.A., as well as other smaller companies. The structure of the industry was geared to gasoline production. France's crude oil refining capacity was 1.9 million barrels per day (bbl/d). The country's largest refining complex was TotalFinaElf's with a capacity of 446,000 bbl/d. Increasingly strict EU environmental regulations for refineries resulted in recent upgrades in the French refining sector. The regulations will become considerably more strict in 2005, and substantial investment in the refining sector will be necessary to meet these new mandatory targets. France was a net importer of petroleum products (U.S. Energy Information Administration, 2002§).

Nuclear Energy.—The Government had planned to have nuclear power reach 100% of electricity generation; environmental objections, however, have increased, and public opinion polls showed that a growing percentage of the public favors an end to nuclear power.

France was one of the few countries in the world with a nuclear reprocessing plant. COGEMA's La Hague facility received authorization from Direction de la Sûreté des Installations Nucléaires (Nuclear Installation Safety Directorate) to start operation of two new facilities for hull and end-pieces compacting and plutonium purification (U.S. Energy Information Administration, 2002§).

Outlook

Having one of the world's most developed economies, France was an advocate for the EU and the European single-market concept. The country has had to make considerable changes in the structure of its industries, particularly those mineral industries controlled by the State. Several state-owned companies have taken the initiative to become leaders in their respective industries. Others have been forced to make additional adjustments under rationalization schemes proposed by the EU or the French Government. The depletion of mineral resources and/or the cessation of subsidies for uneconomic operations have had impacts on local communities and their

economies. France will have the advantage of plentiful electrical power to attract industrial facilities that required skilled workforces and good access to markets in Europe. If nuclear power is phased out, then imports of oil and gas would be required.

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Major Sources of Information

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TABLE 1
FRANCE: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/ METALS	1997	1998	1999 e/	2000 e/	2001 e/
Aluminum:					
Bauxite, gross weight 3/ thousand tons	164	165 e/	160	185 r/	153 4/
Alumina:					
Crude do.	570	570 e/	550	500	600
Calcined do.	450	450 e/	450	462	480
Metal:					
Primary do.	399	424	455 4/	441 4/	462 4/
Secondary do.	242	240 e/	239 4/	260 r/ 4/	253 4/
Antimony metal, including regulus	650	600 e/	500	500	500
Cadmium metal	309	223 r/	195 4/	160 4/	176 4/
Cobalt metal:					
Powder	670	600 e/	600	600	600
Chloride	159	172 e/	180 r/ 4/	204 4/	199 4/
Copper:					
Mine output, Cu content	196	180 e/	100	100	--
Metal:					
Blister, secondary e/	1,490	1,079	1,000	1,000	1,000
Refined:					
Primary	5,800 e/	--	--	--	--
Secondary e/	29,800	22,400	1,800	1,500	1,500
Total	35,600	22,400 e/	1,800	1,500	1,500
Gold, mine output, Au content kilograms	4,953	3,793	3,570	2,632 4/	2,510 4/
Iron and steel:					
Iron ore and concentrates:					
Gross weight thousand tons	523	100	--	--	--
Fe content do.	145 e/	28	--	--	--
Metal:					
Pig iron do.	13,424	13,603	13,854 4/	13,661 4/	12,004 4/
Ferroalloys:					
Blast furnace, spiegeleisen, and ferromanganese	326	321 e/	302 4/	300	300
Electric furnace:					
Ferromanganese e/ thousand tons	100	100	138 r/ 4/	140	130
Ferrosilicon do.	109	110 e/	100	110	100
Silicon metal do.	66	65 e/	65	60	65
Other (Si, Ca, Mg) do.	94	95 e/	100	100	100
Total	695	691 e/	705 r/	710	695
Steel, crude do.	19,773	20,241	20,211 4/	21,002 4/	19,431 4/
Steel, hot rolled do.	17,975	16,822	17,294 4/	17,722 4/	18,744 4/
Lead:					
Smelter, secondary e/	218,500	208,000	205,000 4/	209,000 4/	132,000
Refined:					
Primary	137,500	146,000 e/	124,000	109,868 4/	98,257 4/
Secondary	164,800	172,000	155,000	158,226 4/	143,338 4/
Total	302,300	318,000	279,000	268,094 4/	241,595 4/
Magnesium metal, including secondary	13,740	14,700	16,200	16,500	4,000 5/
Nickel metal 6/	8,750	9,778	9,458 r/ 4/	10,100 4/	11,033 4/
Silver: e/					
Mine output, Ag content kilograms	1,770	1,027	1,140	720 4/	800
Metal, Ag content of final smelter products do.	535	550	500	500	450
Tin, secondary	3,810	2,926	1,506 4/	1,257 4/	1,644 4/
Tungsten, powder	680	600 e/	500	500	500
Uranium:					
Mine output, U content	579	468	625	318 4/	182 4/
Chemical concentrate, U ₃ O ₈ equivalent	487	453	424	302 4/	156 4/
Zinc metal, including slab and secondary	317,151	329,019	331,103 4/	347,705 4/	343,805 4/
INDUSTRIAL MINERALS					
Barite, BaSO ₃ equivalent	77,000	75,000 e/	76,000	91,000	81,000 4/
Bromine, elemental e/	1,980	2,000	8,000	7,900 4/	7,800
Cement, hydraulic thousand tons	19,780 e/	19,737 r/	19,527 4/	20,191 r/ 4/	19,839 4/
Clays:					
Kaolin and kaolinitic clay (marketable) do.	332	333 e/	330	380 4/	375
Refractory clay, unspecified do.	13	14 e/	14	12	14

See footnotes at end of table.

TABLE 1--Continued
FRANCE: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 3/	1997	1998	1999 e/	2000 e/	2001 e/
INDUSTRIAL MINERALS--Continued					
Diamonds, synthetic, industrial e/ thousand carats	3,600	3,600	3,600	3,600	3,600
Diatomite e/ thousand tons	80	80	75	75	85
Feldspar, crude e/ do.	621	706	638	642 4/	650
Fluorspar:					
Crude do.	236	250 e/	250	250	250
Marketable:					
Acid- and ceramic-grade do.	84	85 e/	86	85	95
Metalurgical-grade do.	22	20 e/	20	20	20
Total do.	106	105	106 4/	105 4/	115 4/
Gypsum and anhydrite, crude do.	4,500	4,500 e/	4,500	4,500	4,500
Kyanite, andalusite, related materials e/ do.	67	70	70	65	65
Lime, quick and hydrated, dead-burned dolomite e/ do.	2,360	3,106	3,094 4/	3,000	3,000
Mica e/	8,000	10,000	10,000	10,000	10,000
Nitrogen, N content of ammonia thousand tons	1,757	1,570 e/	1,580	1,620 r/	1,580
Pigments, mineral, natural, iron oxide e/	2,200	2,000	1,500	1,500	1,000
Phosphates, Thomas slag thousand tons	44	50 e/	50	50	50
Potash, K ₂ O equivalent (marketable) do.	725	453	345	321 r/ 4/	257 4/
Pozzolan and lapilli e/ do.	477	460	450	450	400
Salt:					
Rock salt e/ do.	371	300	100	386 r/ 4/	596 4/
Brine salt, refined do.	1,475	1,500 e/	1,730	1,774 4/	1,727 4/
Marine salt e/ do.	1,188 4/	1,200	900	1,000	1,000
Salt in solution do.	4,051	4,000 e/	4,050	3,956 4/	3,774 4/
Total do.	7,085	7,000 e/	6,787 4/	7,120 r/	7,100
Sodium compounds: e/					
Soda ash do.	1,053	1,000	1,000	1,000	1,000
Sodium sulfate do.	120	120	120	120	120
Stone, sand and gravel: e/					
Limestone, agricultural and industrial do.	11,433 4/	11,000	11,000	12,000	12,000
Slate, roof do.	31	30	30	30	30
Sand and gravel:					
Industrial sands do.	6,560 4/	6,500	6,500	5,359 r/ 4/	5,062 4/
Other sand, gravel, and aggregates do.	164,000	165,000	165,000	181,020 r/ 4/	172,764 4/
Sulfur, byproduct:					
Of natural gas do.	697	600	600	500	550
Of petroleum do.	263	245	250	150	150
Of unspecified sources do.	236	261	250	150	150
Total e/ do.	1,200	1,100	1,100	800	850
Talc:					
Crude	362,000	391,000	405,300 4/	376,000 r/ 4/	367,000 4/
Powder e/	300,000	300,000	300,000	300,000	300,000
MINERAL FUELS AND RELATED MATERIALS					
Asphaltic material e/	23,000	24,000	24,000	24,000	25,000
Carbon black e/	253,000	250,000	250,000	250,000	250,000
Coal, including briquets:					
Anthracite and bituminous thousand tons	5,779	5,300	4,033 4/	3,805 4/	2,364 4/
Lignite do.	690	800	894 4/	297 4/	324 4/
Total do.	6,469	6,100	4,927 4/	4,102 4/	2,688 4/
Briquets e/ do.	250	250	163 4/	200	200
Coke, metallurgical e/ do.	3,900	4,000	5,312 4/	5,327 4/	5,091 4/
Gas, natural, marketed e/ million cubic meters	2,800	2,600	2,500	1,873 r/ 4/	1,810 4/
Petroleum:					
Crude thousand 42-gallon barrels	13,104	13,000 e/	13,380 4/	11,591 r/ 4/	10,082 4/
Refinery products: e/					
Liquefied petroleum gas do.	34,324 4/	34,000	29,012 4/	30,937 4/	29,000
Gasoline, all kinds do.	145,954 4/	145,000	146,855 4/	132,107 4/	140,000
Kerosenes and jet fuel do.	53,656 4/	54,000	52,948 4/	48,872 4/	48,800
Distillate fuel oil do.	260,000	260,000	238,451 4/	250,417 4/	250,000
Residual fuel oil do.	70,000	76,000	59,121 4/	57,776 4/	69,000
Other products do.	125,000	100,000	46,872 4/	46,179 4/	45,000
Refinery fuel do.	1,000	1,000	868 4/	1,148 4/	1,200
Total do.	690,000	670,000	574,127 4/	567,436 4/	583,000

See footnotes at end of table.

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

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

1/ Table includes data available through August 2002.

2/ In addition to the commodities listed, France also produces germanium from domestic ores. Unfortunately, actual output is not regularly reported. France also produces large amounts of stone, but statistics on output are not available.

3/ Reprocessed bauxite not for metallurgical use.

4/ Reported figure.

5/ Plant closed in June 2001.

6/ Excludes secondary production from nickel/cadmium batteries.

TABLE 2
FRANCE: EXPORT AND IMPORT TRADE WITH THE UNITED STATES

(Million dollars)

Month	Exports	Imports
January	1,642	2,525
February	1,972	2,344
March	2,042	3,309
April	1,610	2,734
May	1,687	2,612
June	1,749	2,303
July	1,233	2,629
August	1,404	2,364
September	1,613	1,873
October	1,700	2,714
November	1,644	2,469
December	1,570	2,533
Total 1/	19,865	30,408

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

Source: U.S. Census Bureau, Foreign Trade Division, July 2001.

TABLE 3
FRANCE: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of facilities	Annual capacity
Alumina	Aluminium Pechiney	Plant at Gardanne	700
Aluminum	do.	Aluminum smelters at:	
Do.	do.	Saint-Jean-de-Maurienne, Savoie Province	120
Do.	do.	Noguères, Pyrénées, Atlantiques Province	115
Do.	do.	Lannemezan, Hautes-Pyrénées Province	63
Do.	do.	Auzat, Ariège Province	44
Andalusite	Denain-Anzin Minéraux Refractaire Ceramique	Glomel Mine, Brittany	75
Antimony, metal	Société Nouvelle des Mines de la Lucette	Plant at Le Genest, Mayeene Province	10
Barite	Barytine de Chaillac	Mine and plant at Chaillac, Indre Province	150
Do.	Société Industrielle du Centre	Mine at Rossigno, Indre Province	100
Bauxite	Aluminium Pechiney	Mines in Var Province (closed)	900
Cadmium	tons Compagnie Royal Asturienne des Mines	Plant at D'Auby-les-Douai, Nord Province	200
Cement	Eight companies, of which the largest are:	80 plants, including:	23,233
Do.	Lafarge SA	15 plants,	7,815
Do.	do.	Largest at St. Pierre-la-Cour	(1,160)
Do.	Société des Ciments Français	13 plants,	6,190
Do.	do.	Largest at Gargenville	(1,100)

TABLE 3--Continued
FRANCE: STRUCTURE OF THE MINERAL INDUSTRY FOR 2001

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of facilities	Annual capacity
Coal		Charbonnages de France (CdF) including:	Mines and washeries in:	12,000
Do.		Bassin de Centre-Midi	Middle France	(2,500)
Do.		Bassin de Lorraine	Eastern France	(9,500)
Cobalt, metal	tons	Société Métallurgique Le Nickel (SLN)	Plant at Sandouville, near Le Havre	600
Copper, metal		Compagnie General d'Electrolyse 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.	Mine and plant at St. Chély d'Apcher	55
Ferroalloys		Société du Ferromanganese de Paris, Outreau	Plant at Boulogne-sur-Mer	420
Do.		Pechiney Electrometallurgie	Plants at Bellegarde	387
Do.		Chromeupe S.A.	Plant at Dunkerque	25
Fluorspar		Société Générale de Recherches et d'Exploitation Minière (SOGEREM)	Mines in southern France	150
Gold	kilograms	Société des Mines du Bourneix (Government)	Mines in the Saint Yrieix la Perche District	4,000
Do.	do.	Mines d'Or de Salsigne (Eltin Co., 51%, Ranger Co., 18%, Peter Hambro Plc., 10%)	Mine near Carcassonne	3,000
Gypsum		S.A. de Materiel de Construction	Mine at Taverny	1,500
Iron and steel:				
Steel		Usinor Group	Dunkerque	7,500
Do.		do.	Fos-sur-Mer	4,200
Do.		do.	Seramange	3,000
Do.		Sollac, Unimetal (Usinor Group, 100%)	Gadrange, Neuves Maisons, and Thonville	8,400
Kaolin		La Source Compagnie Minière	Kaolin d'Arvor Mine, Quessoy	300
Lead, metal		Métaleurop S.A.	Plant at Noyelles Godault	165
Magnesium, metal		Pechiney Electrometallurgie	Plant at Marignac (closed in 2001)	14
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	barrels per day	Société National Elf Aquitaine (SNEA)	Paris Basin oilfields	1,000
Refined	do.	TotalFinaElf 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.		Elf Aquitaine-France	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
Potash, K ₂ O		Mines de Potasse d' Alsace S.A. (MDPA)	Mines at Amélie and Marie-Louise (closed), Alsace	5,000
Salt, rock		Compagnie des Salins du Midi et des Salines de l'Est	Varangeville Mine at Saint-Nicolas-de-Port	9,000
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 Ariège, Pyrenees	350
Uranium, U ₃ O ₈	tons	Compagnie Général des Matières Nucléaires (COGEMA) (Government)	Mines at Limousin, Vendee, and Hérault	1,800
Zinc, metal		Umicore Group	Plant at Auby-les-Douai	220
Do.		Métaleurop S.A.	Plant at Noyelles Godault	110