



2013 Minerals Yearbook

ALGERIA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF ALGERIA

By Mowafa Taib

Algeria was an important supplier of crude oil, helium, and natural gas to the world in 2013. The country was the world's third-ranked producer of helium after the United States and Canada and the fourth-ranked exporter of natural gas in terms of volume (Hamak, 2014; Organization of the Petroleum Exporting Countries, 2014, p. 28, 30). In 2013, Algeria was the leading natural gas producer and exporter in Africa and the world's seventh-ranked exporter of liquefied natural gas (LNG), accounting for about 5% of the world's total LNG exports. The country was Africa's third-ranked crude oil producer after Angola and Nigeria. Algeria accounted for 2.7% and 2.3% of the world's crude oil and natural gas output, respectively. The country held 4.5 trillion cubic meters of proven natural gas reserves, which was 2.4% of the world's total proven reserves, and 12.2 billion barrels (Gbbl) of proven crude oil reserves, which was 0.7% of the world's total reserves. The volume of Algeria's proven reserves of natural gas was ranked second in Africa after Nigeria, and its crude oil proven reserves were ranked fourth in Africa after Angola, Libya, and Nigeria. Additionally, Algeria held the world's third largest amount of shale gas (estimated by U.S. Energy Information Administration to be 20 trillion cubic meters), and 5.7 Gbbl of shale oil (BP p.l.c., 2014, p. 6, 8, 20, 22; U.S. Energy Information Administration, 2014). Algeria is a member of the Organization of the Petroleum Exporting Countries and the Gas Exporting Countries Forum (Gas Exporting Countries Forum, 2014; Organization of the Petroleum Exporting Countries, 2014, p. 8).

Output of nonfuel minerals included iron and steel, small quantities of gold and silver, and a wide variety of industrial minerals that included barite, bentonite and other clays, cement, crushed stone, diatomite, dolomite, feldspar, gypsum, lime, limestone, marble, nitrogen, phosphate rock, pozzolan, quartzite, salt, sand and gravel, and sulfur. The country was responsible for 2% of world's pumice (pozzolan) output and 1% of the world's gypsum output. Algeria held other minable mineral resources that were not being produced in 2013, including diamond and other gemstones, fluorite, niobium, perlite, rubidium, shale gas, tantalum, tin, and uranium (table 1; Crangle, 2014a, b; Ministère de l'Énergie et des Mines, 2014).

In January 2013, a militant group operating in North Africa and the Sahel stormed the In Aminas natural gas treatment facility, which is located in eastern Algeria near the border with Libya, causing several casualties and halting production in the facility. The In Aminas facility produced about 10% of the country's natural gas output and 16% of its gas exports. The facility was operated by a joint venture of BP p.l.c. of the United Kingdom, Sonatrach S.p.A. of Algeria, and Statoil A.S.A. of Norway. In the aftermath of the attack, BP and Statoil pulled out their employees from the In Aminas facility as well as the In Salah natural gas treatment plant, which is located in central Algeria. The Government and international oil companies began to review their security arrangements for crude oil and natural

gas facilities in the country and enhanced the safety measures in place for hydrocarbon activity throughout Algeria (U.S. Energy Information Administration, 2014).

Minerals in the National Economy

Algeria's gross domestic product (GDP) increased in real terms by 2.7% in 2013 compared with an increase of 3.3% in 2012. The value of the hydrocarbon sector activity, which accounted for 32.4% of the GDP in 2013 compared with 36.8% in 2012, decreased by 0.6% compared with that of 2012. The decrease in value was the result of decreased volumes of crude oil, condensate, and natural gas exports and a slightly lower crude oil price, which, for Algeria, was \$109.38 per barrel in 2013 compared with \$111.49 per barrel in 2012 (International Monetary Fund, 2014b, p. 13; Organization of the Petroleum Exporting Countries, 2014, p. 82).

Government Policies and Programs

The Government continued its golden share policy, which was initiated in 2010, concerning foreign investment in the country. The policy gives the Government majority ownership (that is, at least a 51% share) in the local operations of new companies operating in Algeria as well as a seat on the company's board of directors but not voting rights. Consequently, the maximum foreign ownership share of any new company operating in Algeria in any sector of the economy, including in the mineral industry, is 49%.

To increase hydrocarbon production, which had been declining in recent years, the Government attempted to attract participation of international oil companies by introducing amendments to the hydrocarbon law. Under the revised law, taxes are assessed on profits rather than on revenue; this change is intended to make exploration of smaller fields more viable. The Government had been promoting economic diversity by planning major mineral industry projects, such as aluminum and steel mills and ammonia and other fertilizer plants. An important challenge for the Government was to be able to produce sufficient quantities of natural gas for such projects while maintaining current levels of natural gas exports and meeting the increased domestic demand for natural gas for electric power generation and other types of consumption (Niell, 2010, 2013).

The hydrocarbon sector is regulated by ordinance No. 06–10 of July 29, 2006, which is a supplement to law No. 05–07 of April 28, 2005. The ordinance grants Sonatrach 51% ownership of all hydrocarbon projects in the country. Environmental laws applicable to the mineral industry include law No. 03–10 of July 19, 2003, and associated decrees and law No. 05–12 of September 4, 2005.

The Government amendments to the hydrocarbon law are also intended to give international oil companies the incentive to

develop the country's vast nonconventional gas resources, such as shale gas reserves, which were estimated by the Government to be 27 trillion cubic meters, which is six times greater than the country's conventional gas reserves of 4.5 trillion cubic meters (Baxter, 2014). The Government was expected to initiate a new oil and gas licensing round in 2014. Government-owned Sonatrach planned to begin initial shale gas production in 2022 and had set a production target of 28.3 million cubic meters per day by 2025 based on favorable market conditions and the acquisition of production technology (Baxter, 2014).

Ordinance No. 07–02 of March 1, 2007, amends and supplements the mining law. The Mining Law guarantees parity for all investors, allows separate surface and underground mine tenure; ensures that disputes can be appealed to international arbitrators, gives incentives for importing equipment for mining operations, and provides custom-tariff exemptions and rebates on mineral extraction royalties. In 2013, the Government was working on an amendment to the mining law to attract international companies to invest in the country's unexploited and underexploited mineral resources.

Production

Notable increases in mineral commodity production in 2013 compared with that of 2012 included those of feldspar (by 59%), marble blocks (20%), pozzolan (19%), common clay (16%), calcite and helium (15% each), limestone (10%), and refinery products (5%). Notable decreases in mineral commodity production in 2013 compared with that of 2012 included those of dolomite (by 92%), kaolin (58%), gold (47%), iron ore (40%), silver (36%), methanol (30%), ammonia (29%), lime (27%), crude steel (21%), crushed marble (17%), barite (16%), phosphate rock (8%), and dry natural gas (4%) (table 1).

Structure of the Mineral Industry

The Ministère de l'Énergie et des Mines [Ministry of Energy and Mining] (MEM) is responsible for regulating the activities of the mineral industry through its numerous agencies. The Agence Nationale du Patrimoine Minier [Algerian Mining Authority] (ANPM) and the Agence National de la Géologie et du Contrôle Minier [National Agency of Geology and Mining Control] (ANGCM) were created by mining law No. 01–10 of July 3, 2001. ANPM is responsible for awarding mining licenses (Agence Nationale du Patrimoine Minier, 2013; Ministère de l'Énergie et des Mines, 2013, p. 44–45).

The Office National de la Recherche Géologique et Minière [National Office of Geologic and Mining Research] (ORGM), which was created by Decree No. 92–31 of January 20, 1992, has been a partner with almost all the mining companies involved in exploration, exploitation, and prospecting activities in the country. ORGM employed 2,200 people and provided geochemical, geologic, and geophysical surveys as well as chemical assays and drilling services. In 2012 (the latest year for which data were available), employment in the state-owned mining companies increased by 2% to 29,409 people from 28,953 people in 2011. The number of employees in private mining companies increased slightly to 20,427 from 20,406

in 2011 (Ministère de l'Énergie et des Mines, 2013, p. 45, 54; World Investment News, 2013).

The Algerian hydrocarbon sector operations were conducted by Sonatrach and several international oil companies working in Algeria under production-sharing agreements. In 2013, Sonatrach was responsible for 53% and 84% of crude oil and natural gas production, respectively, and the remainder was produced by international oil companies, including Anadarko Petroleum Corp. of the United States; BP Algeria, which was a subsidiary of BP; Compañía Española de Petróleos, S.A.U. (Cepsa) of Spain; Eni Algeria Production BV of Italy; Repsol YPF S.A. of Spain; Statoil; and Total Algeria S.p.A. of France (Sonatrach S.p.A., 2014, p. 16–17; U.S. Energy Information Administration, 2014).

Sonatrach was the leading oil company in Africa and the 12th-ranked oil company in the world in terms of the amount of its hydrocarbon production. The state-owned company, which employed 50,608 people in 2013, carried out diverse operations in mining and the extraction of crude oil and natural gas; it was responsible for the exploration, production, pipeline transportation, and marketing of hydrocarbons and their byproducts. Sonatrach had 155 affiliates and subsidiaries, 105 of which were located in Algeria and 50 of which were located in such countries as Argentina, Libya, Mauritania, Mali, Peru, Spain, and Tunisia (table 2; Sonatrach S.p.A., 2014, p. 72).

The Government-owned Enterprise Nationale de Fer et du Phosphate (Ferphos Group S.p.A.) managed Algeria's production of iron ore, phosphate rock, pozzolan, and other building materials. Its subsidiaries included Société des Mines de Phosphates S.p.A. (SOMIPHOS), which was the state's phosphate rock mining company; Société des Mines de Fer d'Algérie S.p.A. (SOMIFER), which was the iron ore mining company; and Société des Pouzzolanes et des Matériaux de Construction S.p.A. (SPMC), which produced pozzolan and other building materials (Agence Nationale du Patrimoine Minier, 2013).

The state-owned industrial group Manal S.p.A. [also known as Société de Manadjem El Djazair (Algerian Mines Co.)] was created by Presidential Decree No. 11–85 of February 16, 2011. Manal replaced Société de Gestion des Participations de Mines de l'Etat (SOMINES), which had been in charge of the assets of five state-owned mining companies, including Enterprise Nationale d'Exploitation des Carrières de Sels Industriels et Domestiques et Commercialisation des Sels S.p.A. (ENASEL), Enterprise Nationale du Marbre S.p.A., Enterprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF), and Ferphos. Manal assumed responsibility for the development, exploration, exploitation, distribution, and marketing of the country's nonfuel mineral resources. Manal also oversaw financial, industrial, and partnership aspects of mining operations in Algeria (African Manager, 2014).

Mineral Trade

Algeria's exports decreased in value by 11% in 2013 to \$65.6 billion from \$71.9 billion in 2012. The value of hydrocarbon exports included \$30.4 billion for crude oil, \$25.7 billion for natural gas [including liquefied natural gas (LNG)], and \$8.8 billion

for refinery products. Other nonfuel mineral exports included ammonia (valued at \$304 million), phosphate rock (\$97 million), helium and hydrogen (\$39 million each), and zinc (\$15 million). Natural gas exports, which accounted for 41% of Algeria's primary energy exports, decreased in volume by 14% to 32.7 billion cubic meters in 2013 from 37.3 million cubic meters in 2012; crude oil exports, which accounted for 42.2% of the primary energy exports, decreased by 11% to 222.2 million barrels (Mbbbl) from 250.4 Mbbbl in 2012. Exports of petroleum products, however, increased by 29% to 165.4 Mbbbl in 2013 from 128 Mbbbl in 2012. Other hydrocarbon exports included 48.4 Mbbbl of condensate, 58.1 Mbbbl of liquefied petroleum gas (LPG), and 24.4 million cubic meters of LNG (Banque d'Algérie, 2014, p. 27; Organization of the Petroleum Exporting Countries, 2014, p. 49, 54, 56; Sonatrach S.p.A., 2014, p. 9).

Algeria's crude oil exports went to Europe (72%), the Americas (18%), and the Asia and the Pacific region (10%). Natural gas exports were received mainly by Spain (34%), Italy (27%), France (12%), and Turkey (9%). Exports of petroleum products were transported to the United States (43%), European countries (21%), Brazil (14%), China (7%), Japan (6%), and other countries (9%) (U.S. Energy Information Administration, 2014).

U.S. exports to Algeria increased in value by about 36% to about \$1.85 billion in 2013 from about \$1.36 billion in 2012. The value of U.S. imports from Algeria has been decreasing since 2008 when they had peaked at about \$19.4 billion. In 2013, the value of U.S. imports from Algeria decreased by about 52% to \$4.8 billion from about \$10.0 billion in 2012. The value of U.S. crude oil imports from Algeria decreased to \$1.2 billion in 2013 from \$4.7 billion in 2012 and a peak of \$11.5 billion in 2007; fuel oil imports decreased to \$3.3 billion from \$4.0 billion in 2012; and imports of LPG decreased to \$160 million from \$1.2 billion in 2012, and a peak of \$4.7 billion in 2008. The decrease in U.S. hydrocarbon imports from Algeria followed the general trend of decreased global petroleum exports to the United States as a result of an increase in U.S. domestic production (United Nations Statistics Division, 2014; U.S. Census Bureau, 2014).

Algeria's total imports increased in value to \$54.9 billion in 2013 from \$50.4 billion in 2012. The top import categories were motor vehicles and refined petroleum products, which were valued at about \$3.8 billion each. Imports of semifinished and finished steel products decreased in value to about \$1.9 billion from \$2.1 billion in 2012 but increased in volume to 5.1 million metric tons (Mt) in 2013 from 5.0 Mt in 2012 and about 4 Mt in 2011. In 2013, Algeria was the world's seventh-ranked net importer of steel products. The country's cement imports were estimated to be 5 Mt (Banque d'Algérie, 2014, p. 172; United Nations Statistics Division, 2014; World Cement, 2014; World Steel Association, 2014, p. 25).

Commodity Review

Metals

Gold.—Entreprise d'Exploitation des Mines d'Or S.p.A. (ENOR) was the sole gold producer in the country, producing from the Amesmessa Mine in southern Algeria. Gold production

from the mine decreased to 140 kilograms (kg) in 2013 from 264 kg in 2012 and the peak production of about 1,000 kg in 2009. The decrease was attributed to the lower grade of gold being extracted from the Amesmessa-Tirek Mine in recent years (table 1; Entreprise d'Exploitation des Mines d'Or S.p.A., 2014).

Cancor Mines Inc. of Canada, which had four exploration permits in Algeria for copper, gold, and silver located 2,000 kilometers (km) south of Algiers in the Hoggar region, did not report any new activity in 2013. Exploration activities were suspended in the region because of recent political and military activity in neighboring Mali. Cancor permits in Algeria included two gold-silver permits for the Ouzzul North and the Tirek North properties and two copper-gold permits for the Tan Chaffao East and the Tan Chaffao West properties. In early 2014, Cancor was expected to sign a binding merger agreement with Yorbeau Resources Inc. of Canada and become a wholly owned subsidiary of Yorbeau (Cancor Mines Inc., 2014).

Iron Ore and Iron and Steel.—Algeria's iron ore production decreased by 40% to about 1.1 Mt in 2013 after an increase of 38% to 1.78 Mt in 2012. Crude steel production decreased by 21% to 440,000 metric tons (t) from 557,000 t in 2012. The fluctuations in iron ore and crude steel production were attributed to disputes between the operating company, the Government, and workers unions. Algeria, which was the seventh-ranked net importer of steel in the world in 2013, imported 5.1 Mt of steel products, including 4.0 Mt of long products, 700,000 t of flat products, and about 300,000 t of tubular products to meet the demand for steel products in the domestic market. The country's apparent consumption of crude steel equivalent increased by about 48% to 5.9 Mt in 2012 from about 4.0 Mt in 2011 (table 1; World Steel Association, 2013, p. 78; 2014, p. 25).

ArcelorMittal Tebessa S.p.A., which was a joint venture of ArcelorMittal of Luxembourg (70% interest) and Ferphos (30% interest), operated the Boukhadra and the Ouenza iron ore mines in Tebessa Province. ArcelorMittal Annaba S.p.A., which was a joint venture of ArcelorMittal (73% interest) and state-owned Enterprise Nationale de Sidérurgie (Group Sider) (30% interest), operated the El Hadjar steel plant in Annaba. In September, ArcelorMittal signed an agreement with Group Sider to invest \$763 million for the development of the steel complex in Annaba and the iron mines in Boukhadra and Ouenza. Under the agreement, ArcelorMittal reduced its stake in both ArcelorMittal Annaba and ArcelorMittal Tebessa to 49% from 70%, and Ferphos and Sider purchased ArcelorMittal's share (21%) in their ventures, thus becoming majority owners and ArcelorMittal the minority owner in both ventures (table 2; ArcelorMittal, 2013).

In March, Qatar International Co., which was a joint venture of Qatar Mining Co. and Qatar Steel Co., signed an agreement with the Government to build a 4-million-metric-ton-per-year (Mt/yr) steel mill in the Bellara Industrial Zone, which is located in Jijel Province about 360 km east of Algiers. The mill would be built in two stages, and a 2-Mt/yr-capacity direct-reduced-iron-based steel works would be added at each stage. Ownership in the new project would follow Algeria's new partnership rules, which gives the Government a 51% share and Qatar International a 49% share. The Government's share would be

divided equally between Group Sider and Fonds National de l'Investissement (Qatar Steel Co. Q.S.C., 2013).

In June, Tosityali Industrie du Fer et de l'acier Algérie, which was owned by Tosityali Holding of Turkey, commenced production at its new iron and steel plant in Oran. The \$750 million plant had been built in 19 months and had the capacity to produce 1.25 Mt/yr of liquid steel; the plant employed more than 1,000 people in 2013 and was expected to employ 1,400 workers by yearend 2014 (Tosityali Holding, 2013).

Lead and Zinc.—Western Mediterranean Zinc S.p.A. (WMZ) was a joint venture of Terramin Australia Ltd. (65% interest), state-owned ENOF (32.5% interest), and ORGM (2.5% interest). The joint venture was formed to develop the Tala Hamza lead and zinc project on the 125-square-kilometer Oued Amizour exploration permit, which is located 15 km southwest of the Port of Bejaia in northeastern Algeria. In 2013, Terramin entered into a technical cooperation agreement with China NonFerrous Metals Industry's (NCF) Foreign Engineering and Construction Co. Ltd. NFC undertook a technical and financial assessment of mining methods for Tala Hamza and presented its findings to ENOF and the ORGM. The report led to Terramin and its partners agreeing to a revised definitive feasibility study to determine a preferred mining method that would be economically and technically viable, based on preliminary modeling (Terramin Australia Ltd., 2014).

As of yearend 2013, the total resource (measured, indicated, and inferred) at the Tala Hamza deposit was 68.6 Mt grading 1.2% lead and 4.6% zinc at a 2.5%-zinc cutoff grade (Terramin Australia Ltd., 2014). The results of an earlier definitive feasibility study completed by Terramin in 2010 indicated that a project could be developed on the Tala Hamza deposit using block cave and conventional processing. The proposed project would have production capacity of 2 Mt/yr of ore, which would be processed to produce 100,000 metric tons per year (t/yr) of zinc in concentrate and 25,000 t/yr of lead in concentrate in the first phase. In the second phase, production would increase to 4 Mt/yr of ore to produce 200,000 t/yr of zinc in concentrate grading 53% zinc at a 90% recovery rate and 40,000 t/yr of lead in concentrate grading 60% lead at a 72% recovery rate (Terramin Australia Ltd., 2010, 2014).

Industrial Minerals

Barite, Bentonite, and Kaolin.—ENOF operated 18 mines and quarries and produced nonferrous metal mineral commodities through six subsidiaries. These subsidiaries were La Société des Feldspaths d'Algérie (SOFELD), Société Algérienne des Granulats S.p.A. (ALGRAN), Société des Bentonites d'Algérie S.p.A. (BENTAL), Société des Diatomites d'Algérie (DIATAL), Société des Kaolins d'Algérie S.p.A. (SOALKA), and Société des Mines de Baryte d'Algérie S.p.A. (SOMIBAR) (table 2).

SOMIBAR produced barite from the Amin Mimoun Mine in Khenchela Province, the Boucaid Mine in Tissemsilt Province, and the Mellal Mine in Tlemcen Province. BENTAL produced bentonite from the Maghnia Mine in Tlemcen Province and the M'Zila deposit in Mostagnem Province (Entreprise d'Exploitation des Mines d'Or S.p.A., 2014).

SOALKA was a joint venture of Federal White Cement Ltd. of Canada (63% interest) and ENOF (37% interest). SOALKA explored for and produced kaolin for the ceramic industry (Société des Kaolins d'Algérie S.p.A., 2014).

Algeria produced 37,000 t/yr of barite on average during the period between 2009 and 2013, which was not sufficient to meet the demand of Sonatrach's operations in and outside Algeria. In December, a new joint venture of Sonatrach (60% interest) and Manal (40% interest) was created to develop the Draissa barite deposit, which is located in Bechar Wilaya in western Algeria. Sonatrach's stake in the company was divided equally among three of its subsidiaries—L'Entreprise Nationale de Forage (Algerian National Drilling Co.), Entreprise Nationale des Travaux aux Puits (National Well Engineering Co.), and Entreprise des Services aux Puits (National Company of Well Services), whereas Manal's stake was assumed by ENOF, which was one of Manal's subsidiaries. The new company, National Company for Barium (Barytal) was expected to have the capacity to produce 100,000 t/yr of barite by 2017 (Bariyo and O'Driscoll, 2013).

Cement.—Cement production in Algeria amounted to 18 Mt in 2013 compared with 19 Mt in 2012. Cement consumption, on the other hand, amounted to 23 Mt in 2013 compared with 21 Mt in 2012. Thus, the Government imported about 5 Mt of cement to meet the national demand. Demand for cement in Algeria had been on the rise in recent years because of increased construction activities in general and in the housing sector in particular. The Government planned to expand its residential-building capacity to 120,000 units per year from 80,000 units per year. New investments in the cement sector and expansion plans for existing plants were expected to increase cement output in Algeria to 29 Mt/yr by 2018 (World Cement, 2014).

Lafarge Group of France was a significant cement producer in Algeria. The company owned and operated two cement plants at M'Sila and Oggaz and two industrial aggregates facilities. The two plants had a combined production capacity of 9.4 Mt/yr of cement, which was the second largest capacity for the company in Africa and the Middle East after the company's operations in Egypt. The company claimed a 36% share of the Algerian cement market in 2013. Lafarge's output of cement increased by 9% in 2013 compared with that of 2012 (Lafarge S.A., 2014, p. 34, F71).

Zahana Cement Co. produced 785,000 t of cement in 2013 compared with 809,000 t in 2012 at its plant in Zahana, which was located 40 km south of Oran in western Algeria. The plant was owned by the Government (65% interest) and managed by ASEC Cement of Egypt (35% interest). ASEC Cement also had a 49% stake and management rights in ASEC Algeria Cement Co. S.p.A. (AACC), which was building a 3.4-Mt/yr-capacity greenfield cement plant at Djefla, which is located about 300 km south of Algiers. The project included two production lines; the first line would have the capacity to produce 1.5 Mt/yr of cement and would cost \$300 million to build. The second line would increase the capacity to 3.4 Mt/yr and would cost \$250 million to build. The limestone for the cement plant would come from the Djellal El Gharbi deposit, which is located about 1 km from the plant and had resources sufficient to supply the plant for 80 years at projected production levels. Construction

of the plant, which began in 2009, had been on hold for the past 4 years because of lack of funding and extensive governmental procedures. Following the decision of the public sector holding company to withdraw from funding the project in January, AACCC began negotiations with Banque Extérieure d'Algérie to secure funding for the project (ASEC Cement, 2014, p. 3, 28).

Nitrogen.—Fertial S.p.A, which was a joint venture of Grupo Villar Mir of Spain (66% interest) and Asmidal Group (34% interest), was the sole producer of ammonia in Algeria for most of 2013. The company, which had the capacity to produce 1 Mt/yr of ammonia, 330,000 t/yr of compound fertilizers, and 580,000 t/yr of nitrogen fertilizers, exported about 75% of its output mainly to France, Morocco, Portugal, and Spain (Fertial, S.p.A., 2014).

Two major ammonia and urea production projects—Algeria Oman Fertilizer Co. and Sofert Algeria Spa—were at the final stage of construction by yearend 2013. Algeria Oman Fertilizer Co. (Sharika El Djazairia El Omania lil Asmida S.p.A.), which was a joint venture of Suhail Bahwan Group (Holding) L.L.C. of Oman (51% interest) and Sonatrach (49% interest), was expected to complete the construction of a nitrogen fertilizer plant in the Arzew Industrial Zone near Oran in northwestern Algeria. The commissioning of the project, which would have the capacity to produce 2.6 Mt/yr of urea and would cost \$2.4 billion to build, was delayed until the second quarter of 2014 following the amendment of the agreement between Sonatrach and Suhail Bahwan Group on natural gas allocations (Suhail Bahwan Group LLC, 2014).

In May, Orascom Construction Industries S.A.E. (OCI) of Egypt and Sonatrach reached an agreement on the commercial and economic terms that govern operations at their Sofert Algeria joint-venture facility. The agreement enabled commencement of production at Sofert Algeria's fertilizer plant in Arzew later in the year. Sofert Algeria, which was a joint venture of OCI (51% interest) and Sonatrach (49% interest), built a fertilizer complex at the Arzew Industrial Zone that included two plants—an 800,000-t/yr-capacity anhydrous ammonia plant and a 1.2-Mt/yr-capacity granulated urea plant. Sofert was expected to supply 1.1 Mt/yr of urea to the domestic market and 700,000 t/yr of ammonia for export (Orascom Construction Industries S.A.E., 2014).

Mineral Fuels

Helium.—The output of helium was estimated to have increased by 15% in 2013 compared with that of 2012 because of the resumption of helium production at Helison plant at Skikda in northern Algeria in late 2013. Two new LNG trains were commissioned by Sonatrach in 2013; they were the GLIK at Skikda, which had the capacity to produce 163 million cubic meters per year of enriched helium gas, and the GL3Z at Arzew, which had the capacity to produce 350,000 cubic meters per year of enriched helium gas (Sonatrach S.p.A., 2013).

Natural Gas and Petroleum.—Algeria's production of crude oil and condensate increased by 2.5% in 2013 compared with a decrease of 6.4% in 2012. Gross natural gas output amounted to 179 billion cubic meters of natural gas, which included 81.5 billion cubic meters of dry (marketed) gas. In 2013,

Sonatrach commissioned a 4.5-Mt/yr LNG megatrain at Skikda. The project replaced the original plant, which had been severely damaged in 2004 as a result of an industrial accident. KBR Inc. of the United States conducted the front-end engineering and design as well as the engineering and procurement contract for the \$3.5 billion project (KBR Inc., 2014).

Algeria's installed refining capacity of crude oil and condensate increased to 652,500 barrels per day (bbl/d) from 592,000 bbl/d in 2012. The increase in capacity was the result of expansions at the existing five refineries. The Government was building four new 100,000-bbl/d-capacity refineries at Biskra, Ghardaia, Hassi Messaoud, and Tairt. Construction of the new refineries and expansion projects at the existing refineries were expected to be completed by 2018 (U.S. Energy Information Administration, 2014).

In 2013, Algeria had 2,061 producing wells, which included 191 wells that were completed during the year. The number of hydrocarbon discoveries in Algeria totaled 31 in 2013 compared with 20 discoveries in 2012. One crude oil discovery in the southern region of Hassi Messaoud and one natural gas discovery under the Hassi R'Mel field were reported in Algeria in 2013 compared with 3 oil discoveries and 23 natural gas discoveries in 2012 (Noueihed, 2013; Organization of the Petroleum Exporting Countries, 2014, p. 25–27).

Forty percent of Algeria's crude oil and condensate output, which averaged 1.58 million barrels per day (Mbbbl/d) in 2013, came from the Hassi Messaoud field, which was operated by Sonatrach. First oil was produced at the El Merk field in March. The field was located in the Sahara desert, south of the Hassi Messaoud field. The El Merk field produced 160,000 bbl/d and was managed by Sonatrach and Anadarko. The El Merk central processing facility commenced production in October and was expected to produce 6.2 billion cubic meters per year of natural gas. The field was developed by ConocoPhillips Co. of the United States, Eni S.p.A. of Italy, Maersk Oil A.S. of Norway, Petrofac Ltd. of the United Kingdom, and Talisman Energy Inc. of Canada (Sonatrach S.p.A., 2014, p. 17).

Sonatrach planned to invest \$102 billion during the next 5 years in crude oil and natural gas projects to reverse the decline in production. The investment would be directed toward increasing offshore oil and gas reserves by raising exploration concessions to 79 by 2014 from 57 in 2012 and increasing the country's oil-refining capacity by installing five new oil refineries, as well as the development of nonconventional natural gas resources (Oil & Gas 360, 2014).

Outlook

In their consultation with the Government in 2014, International Monetary Fund experts emphasized the need for reform in Algeria “to improve the business climate, remove constraints to foreign investment, promote international trade integration, and reduce labor market rigidities” (International Monetary Fund, 2014a). The Algerian economy is heavily dependent on its hydrocarbon sector, and the Government economic diversification plans had not succeeded so far, as hydrocarbon exports continued to account for 98% of the country's total exports. The Government is seeking international

investment and technological knowledge to develop the country's vast nonfuel mineral resources, including by encouraging joint ventures with international mining companies to explore and exploit the country's mineral resources of metals, such as gold, iron ore, and zinc. Such investment, however, had been moving slowly, in part because of the golden share policy, which gives the Government a majority stake in all new projects (International Monetary Fund, 2014a).

In 2014, the Government created a national company for iron and steel to explore for and develop iron ore deposits at Gara Djebilet and Mecheri Abdelaziz, which are located in southwestern Algeria near the border with Mauritania and hold an estimated 2.2 billion metric tons (Gt) of iron ore. The iron ore deposits at Gara Djebilet are located in the Reguibat Shield, which extends to Mauritania, and host an estimated 1.5 Gt of iron ore grading 56% iron. The Mecheri Abdelaziz deposit is located east of Gara Djebilet and holds an estimated 700 Mt of iron ore grading 52% iron. The new national company is owned by Sonatrach (55% interest), Manal (25% interest), and Sider (20%).

In 2014, the Government signed an energy and investment contract with Fertiberia S.A., which was owned by Grupo Villar Mir of Spain, to reactivate the construction of the El Bahia fertilizer plant at Arzew that had been proposed in 2007. The \$1.5 billion plant was expected to produce 1.1 Mt/yr of ammonia for export and would require 3 to 4 years to complete (ICIS News, 2014).

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TABLE 1
ALGERIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2009	2010	2011	2012	2013	
METALS						
Gold, mine output, Au content	kilograms	999	723	449	264 ^r	140
Iron and steel:						
Iron ore:						
Gross weight		1,307	1,469	1,320	1,784 ^r	1,067
Fe content		700	771	693	946 ^r	565
Metal:						
Pig iron		680	696	360	350	350
Steel:						
Crude		597	662 ^r	551	557	440
Continuous cast		560	657	545	550	550
Silver, mine output, Ag content	kilograms	200	147	91	42 ^r	27
Zinc:						
Metal, smelter output	metric tons	24,115	21,127	15,611	15,000 ^e	15,000 ^e
Alloys	do.	612	390	686	700 ^e	700 ^e
INDUSTRIAL MINERALS						
Barite, crude	metric tons	37,981	42,254 ^r	40,000	36,211 ^r	30,245
Cement, hydraulic		18,732	19,100	19,000	19,000	18,000
Calcite		221	339	339	232 ^r	267
Clays:						
Bentonite	metric tons	31,612	34,126	29,000	26,278 ^r	27,668
Common		10,973	10,973	11,000	10,167 ^r	11,829
Kaolin	metric tons	87,766	71,065	71,065	100,970 ^r	42,504
Diatomite	do.	1,896 ^r	2,104 ^r	2,132	2,398 ^r	2,224
Dolomite (industrial) ^e	do.	2,260	2,260	2,260	743 ^r	60 ³
Feldspar		131	164	148	163 ^r	259
Gypsum		1,757	1,610	1,610	1,958 ^r	2,078
Lime, hydraulic		65	63	63	66 ^r	48
Nitrogen, N content of ammonia ^e		500	600	593	713	509
Phosphate rock:						
Gross weight		1,017	1,525	1,287	1,250 ^r	1,151
P ₂ O ₅ content ^e		305	458	386	375 ^r	345
Pozzolan		328	237	141	325 ^r	388
Salt, brine and sea salt		109	107	238	178 ^r	173
Sand and gravel:						
Construction sand	thousand cubic meters	3,372	3,164	4,100	2,898 ^r	2,635
Granulates:						
Aggregates, crushed stone, and gravel	do.	13,685	13,095	41,000	56,040 ^r	54,898
Crushed sand	do.	13,360	12,286	12,000	12,000 ^e	12,000 ^e
Silica sand		134	95	95	95	100
Stone:						
Aragonite		254	254	260	260	260
Marble:						
Blocks	thousand cubic meters	11 ^r	9	9	15 ^r	18
Crushed		266	114	119	287 ^r	239
Limestone ^e		10,000	10,000	10,400	20,000 ^{r,3}	22,000 ³
Slabs	thousand square meters	53 ^r	53 ^e	55 ^e	-- ^r	--
Quartzite ^e		136	136	140	140	140
Tuff ^e	thousand cubic meters	7,525 ³	1,819 ³	1,700	1,700	1,700
Sulfur, S content of sulfuric acid ^e		18	16	14	110	110
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	196,900	192,209	190,127	182,599	179,489
Dry	do.	82,600 ^r	83,370	82,060	85,195 ^r	81,543
Helium, liquid	do.	20	20	55 ^r	61 ^r	70
Methanol		101	93	118	112	78
Natural gas plant liquids	thousand 42-gallon barrels	139,135 ^r	114,805 ^r	107,351 ^r	95,325 ^r	97,577

See footnotes at end of table.

TABLE 1
ALGERIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2009	2010	2011	2012	2013	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	647,875 ^r	616,485 ^r	599,330 ^r	561,005 ^r	574,875
Refinery products:						
Liquefied petroleum gas	do.	6,388	6,862	6,059	6,601 ^r	6,612
Gasoline, normal	do.	8,465	9,128	10,710	10,000	9,600
Gasoline, super	do.	8,537	8,308	9,131	8,944	8,618
Naphtha	do.	37,908	60,988	57,017	52,101	53,755
Kerosene and jet fuel	do.	7,348	11,050	8,893	9,600	13,584
Distillate fuel oil	do.	51,175	55,618	55,654	51,474 ^r	52,533
Lubricants	do.	953	1,058	821	2,100 ^r	2,100
Residual fuel oil	do.	47,155	48,884	49,778	31,646 ^r	35,684
Bitumen	do.	1,880	1,279	1,058	1,060	1,000
Total	do.	169,809	203,175	199,121	174,000 ^r	183,000

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto.

¹Table includes data available through October 15, 2014.

²In addition to the commodities listed, secondary aluminum, secondary copper, and secondary lead may be produced in small quantities, and crude construction materials (for local consumption), caustic soda, fertilizer, fuller's earth perlite, rhyolite, and urea are produced, but available information is inadequate to make reliable estimates of output.

³Reported figure.

TABLE 2
ALGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Barite	Société des Mines de Baryte d'Algérie S.p.A. (SOMIBAR) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A. (ENOF)]	Amin Mimoun Mine, Khenchela Province	35,000
Do.	do.	Boucaid Mine, Tissemsilt Province	20,000
Do.	do.	Mellal Mine, Tlemcen Province	NA
Do.	Société des Baryte SARL (SOBAR)	Chaabet Abou Fares, Tipaza Province	7,000
Bentonite	Société des Bentonites d'Algérie S.p.A. (BENTAL) [a subsidiary of Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A. (ENOF)]	Hammam Boughrara, Tlemcen Province	18,000
Do.	do.	M'Sila Province	17,000
Do.	do.	Maghnia Mine, Tlemcen Province	16,000
Cement:			
Portland	Lafarge Ciment de M'Sila (Lafarge S.A., 99.99%)	M'Sila Province	5,000,000
Do.	Lafarge Ciment d'Oggaz (Lafarge S.A., 99.99%)	Oggaz, Mascara Province	4,400,000
Do.	Entreprise des Ciments et Dérivés d'Ech—Cheliff	Chlef	2,000,000
Do.	Société des Ciments de la Mitidja (Entreprise des Ciments et Dérivés du Centre, 65%, and Lafarge S.A., 35%)	Meftah	800,000
Do.	Société des Ciments de Sour El Ghozlane (Entreprise des Ciments et Dérivés du Centre, 65%, and Buzzi Unicem S.p.A., 35%)	Sour El Ghozlane	1,000,000
Do.	Société des Ciments Zahana (Entreprise des Ciments et Dérivés de l'Ouest, 65%, and ASEC Cement., 35%)	Zahana, Djefla Province	1,200,000
Do.	Société des Ciments Beni Saf (Entreprise des Ciments et Dérivés de l'Ouest, 90%, and Pharoan Group, 10%)	Beni Saf	1,000,000
Do.	Société des Ciments Saïda (Entreprise des Ciments et Dérivés de l'Ouest)	Hassasna	500,000
Do.	Société des Ciments d'Aïn-Touta (Entreprise des Ciments et Dérivés de l'Est)	Ain Touta	1,000,000
Do.	Société des Ciments d'Aïn-Kébira (Entreprise des Ciments et Dérivés de l'Est)	Ain-Kebira	1,000,000
Do.	Société des Ciments de Hamma-Bouziane (Entreprise des Ciments et Dérivés de l'Est)	Hamma-Bouziane	1,000,000
Do.	Société des Ciments de Hadjar Soud (Entreprise des Ciments et Dérivés de l'Est)	Bekkouche	900,000
Do.	Tabessa Cement Company S.p.A.	Tebessa	525,000
Do.	Société des Ciments de l'Algérois (Entreprise des Ciments et Dérivés du Centre)	Rais-Hamidou	368,000
White cement	Ciment Blanc d'Algérie S.p.A. (Lafarge S.A., 100%)	Oggaz, Mascara Province	550,000
Coke	ArcelorMittal Annaba S.p.A. (ArcelorMittal, 70%, and Groupe Industriel Sider, 30%)	El Hadjar, Annaba Province	1,200,000
Copper, cathode	Société Algérienne du Zinc S.p.A. (Entreprise Nationale de Métallurgie de Transformation des Métaux Non Ferreux, S.p.A., 100%)	Ghazaouet	30,000
Diatomite	Société des Diatomites d'Algérie (DIATAL) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A. (ENOF)]	Tahalait quarry, Sig	2,000
Dolomite	Société Algérienne des Granulats S.p.A. (ALGRAN)	Djebel Taioualet	8,000
Feldspar	Tuféal SARL	Bouaita	83,000
Do.	La Société des Feldspaths d'Algérie (SOFELD) [Entreprise des Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A. (ENOF), 57%, and Entreprise de la Céramique Ouest, 43%]	Ain Barbar	200,000
Nitrogen, fertilizer:			
Ammonia	Fertial S.p.A. (Grupo Villar Mir, 66%, and Asmidal Group, 34%)	Arzew	500,000
Do.	do.	Annaba	500,000
Do.	Sofert Algérie S.p.A. [Orascom Construction Industries S.A.E. (OCI), 100%]	Arzew	800,000
Do.	Sharika El Djazairia El Omania lil Asmida S.p.A. (Suhail Bahwan Group (Holding) L.L.C., 51%, and Sonatrach S.p.A., 49%)	do.	1,460,000
Ammonium nitrate	Fertial S.p.A. (Grupo Villar Mir, 66%, and Asmidal Group, 34%)	do.	580,000

See footnotes at end of table.

TABLE 2—Continued
ALGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Nitrogen, fertilizer—Continued:				
Urea		Sofert Algerie S.p.A. [Orascom Construction Industries, S.A.E. (OCI), 100%]	Arzew	1,200,000
Do.		Fertial S.p.A. (Grupo Villar Mir, 66% and Asmidal Group, 34%)	do.	400,000
Do.		Sharika El Djazairia El Omania lil Asmida S.p.A. [(Suhail Bahwan Group (Holding) L.L.C., 51%, and Sonatrach S.p.A., 49%)]	do.	2,555,000
Phosphatic		do.	do.	280,000
Do.		do.	Annaba	300,000
Gold	kilograms	Entreprise d'Exploitation des Mines d'Or S.p.A. (ENOR) (Sonatrach S.p.A., 100%)	Amesmessia-Terik gold mine	500
Gypsum		32 private sector units and 13 public sector units	Batn, Bejaia, Biskra, Bouira, Chlef, Ghardaia, Mascara, Milla, M'Sila, Medbea, O.El Bouaghi, Oran, Setif, Tiara	2,000,000
Helium	million cubic meters	Helios S.p.A. (Sonatrach Valorisation Hydrocarbonés, 51%, and Helaps S.A., 49%)	GL1Z and GL3Z complexes, Arzew	17
Do.	do.	Helison Production S.p.A. (Linde AG, 50%, and Sonatrach S.p.A., 50%)	GL1K and GNL2K complexes, Skikda	163
Iron and steel:				
Crude steel		ArcelorMittal Annaba S.p.A. (Groupe Industriel Sider, 51%, and ArcelorMittal, 49%)	Electric arc furnace at El Hadjar, Annaba	400,000
Do.		do.	Hot-strip mill at El Hadjar, Annaba Province	1,800,000
Do.		Tosyali Industrie du Fer et de l'acier Algerie (Tosyali Holding)	Steel mill at Oran	1,250,000
Processed		do.	Cold-rolling mill at El Hadjar, Annaba Province	1,050,000
Do.		do.	Bar and wire rod mills at El Hadjar, Annaba Province	850,000
Do.		do.	Seamless tube mill at El Hadjar, Annaba Province	700,000
Do.		Entreprise Nationale de Tubes et de Transformation de Produits Plats (Groupe Industriel Sider, 100%)	Welded tube plant at Ghardaia	128,000
Do.		Société Algérienne de Fabrication Tubes en Spirale (Groupe Industriel Sider, 100%)	Welded tube plant at El Hadjar, Annaba Province	70,000
Iron ore		ArcelorMittal Tebessa S.p.A. (Ferphos S.p.A., 51%, and ArcelorMittal, 49%)	Ouenza Mine, Tebessa Province	1,200,000
Do.		do.	Boukhadra Mine, Tebessa Province	525,000
Do.		Société des Mines de Fer d'Algérie S.p.A. (SOMIFER)	Khanguet Mine, Tebessa Province	50,000
Do.		do.	Anini Mine, Setif Province	170,000
Do.		do.	Rouina Mine, Ain Defla Province	140,000
Kaolin		Société des Kaolins d'Algérie S.p.A. (SOALKA) [Federal White Cement Ltd., 63%, and Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF), 37%]	El Milia Mine, Jijel Province	50,000
Do.		do.	Jebel Debbagh Mine, Guelma Province	15,000
Do.		SARL Faïenceries Algériennes	Adjarda, Chekfa	95,000
Lime		SODEPAC (ERCO Group)	Hassasna	93,000
Do.		Société de Chaux de l'Ouest	Oran	65,000
Do.		Unité Chaux de Chettaba (Société des Produits Dérivés de l'Est, 100%)	Chettaba	11,000
Limestone		Mittal Steel Annaba SPA	Oued N'hal	250,000
Marble:				
Blocks	cubic meters	Entreprise Nationale du Marbre S.p.A.	Oran and Skikda Province	10,460
Do.	do.	SMS Bouhouita SARL	Skikda Province	160
Crushed		Commercialisation du Marbre et de Dérivés de Marbre S.p.A. and Entreprise Nationale du Marbre S.p.A.	Chlef, Oran, Skikda, Tizi Ouzou, and Tlemcen Provinces	17,000
Methanol		Société Nationale de Pétrochimie S.p.A. (Sonatrach S.p.A., 100%)	Methanol plant, Arzew	113,000

See footnotes at end of table.

TABLE 2—Continued
ALGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners		Location of main facilities	Annual capacity
Natural gas:					
Crude	million cubic meters	Sonatrach S.p.A.		Numerous gasfields, including Adrar, Hamra, Hassi R'Mel, and Sbaa	45,000
Liquefied	do.	do.		GL2Z complex, Azrew	11,152
Do.	do.	do.		GL1Z complex, Azrew	8,976
Do.	do.	do.		GL3Z complex, Azrew	5,576
Do.	do.	do.		GL1K complex, Skikda	6,000
Do.	do.	do.		GL2K complex, Arzew	2,992
Petroleum:					
Crude	42-gallon barrels per day	do.		About 50 oilfields, including Acheb West, Amassak/Tin-Yaguene, Draa Tamra, Edjeleh, El Borma, El Gassi, El Merk, Gassi-Touil East, Guellala, Hassi Messaoud North and South, Ohanet North, Rhourde El Baguel, Tin-Fouye, and Zarzaitine	1,700,000
Refined	do.	Société Nationale de Raffinage de Pétrole S.p.A. (NAFTEC)		RA1K refinery, Skikda	352,700
Do.	do.	do.		RHM refinery, Hassi Messaoud	163,500
Do.	do.	do.		RA1G refinery, El Harrach	63,400
Do.	do.	do.		RA1Z refinery, Arzew	58,500
Do.	do.	Société Nationale de Raffinage de Pétrole S.p.A. (NAFTEC), 70%, and China National Petroleum Corp. (CNPC), 30%		Adrar	14,400
Phosphate:					
Phosphate rock		Société des Mines de Phosphates S.p.A. (SOMIPHOS) (a subsidiary of Ferphos Group S.p.A)		Djebel Onk (Djemidjema and Kef Essenoun), Tebessa Province	1,600,000
Pozzolan		Société des Pouzzolanes et des Matériaux de Construction S.p.A.		Rockbet El Hassi	452,000
Do.		(SPMC) Société des Ciments Béni Saf (ERCO Group)		Beni Saf	11,000
Do.		Entreprise Nationale de Fer et de Phosphate		do.	600,000
Salt, crude:					
Rock		Entreprise Nationale d'Exploitation des Carrières de Sels Industriels et Domestiques et Commercialisation des Sels (ENASEL) S.p.A.		El Outaya, Biskra Province	100,000
Solar		Several private companies		Bethioua, Oran; El Meghaier, El Oued, Guergour Lamri, Setif Ouled Zouai, Oum el Bouaghi, and Sidi Bouziane, Relizane	100,000
Stone		Société Algérienne des Granulats S.p.A. (ALGRAN) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF)]		Aggregate quarries at Adrad, Oufarnou, Arzew, Ghedir, Gustar, Keddara, Oued Fodda, Teioueit, and Timezrit	3,000,000
Do.		Société des Diatomites d'Algérie S.p.A. (DIATAL) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF)]		Oggaz limestone quarry, near Sig	12,500
Do.		Société des Bentonites d'Algérie S.p.A. (BENTAL) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF)]		Limestone quarries near Beni Saf and M'Said	12,000
Sulfuric acid		Société Algérienne du Zinc (Entreprise Nationale de Métallurgie et de Transformation des Métaux Non Ferreux, 100%)		Ghazaouet	70,000
Tuff	cubic meters	CTIC-CRCC Group (China)		Annaba, Boumerdes, Sidi Bel Abbes Mustganem, Mascara, Oran, Relizane	10,300,000
Do.	do.	Six public sector units and 59 private units		Ain Temouhent, Tipaza, Tiaret	2,000,000

Do., do. Ditto. NA Not available.