Oil and gas have played a role in the history of Egypt for thousands of years. Ancient tombs and funeral rites have given way to a modern, dynamic industry that is pushing back the frontiers of exploration and production technology.

Egypt has played a key, pioneering role in the development of Middle East gas resources. In addition to its gas expertise and its role as an oil exporter, Egypt has strategic importance because of its operation of the Suez Canal and Sumed (Suez–Mediterranean) Pipeline, two routes for distribution of Gulf oil.
Until 1863, the dawn of industry, the Egyptians almost certainly used bitumen to caulk large seaweed ships, sealing the spaces between the planks with bitumen and parpaps. This technique was being used almost 3000 years ago. The first mention of bitumen in the Zett, (Arabic for mountain) were known and exploited by the Romans, who named the ancient deposit ‘Antimony’. The sticky pools of bitumen were used for domestic lighting and heating, and in quarrying and digging for gold. New technology began to be exploited in oil seeps from the ground until the mining of sulfur began in the late nineteenth century. The discovery of oil by those sulfur miners launched an industry, and a new age.

The dawn of an industry

While mining for sulfur under the Gemsa hills during the 1860s, the French company Société Sucrière des Mines de jéman et de Ranga sunk a 60 ft. hole in the sandstone at about 2300 ft. The shaft, being below sea level, filled with sea water and a layer of oil. A second gallery filled with the same mixture.

The company approached the Egyptian Government for permission to explore for oil. No doubt appreciating the potential of this find, the Government refused on the grounds that this was the last concession, and only in 1863, was concerned only with sulfur mining. The Société took the argument to court in 1869. It took the Government 14 years to win the lawsuit. In 1883, a Belgian diplomat, M. de Bay was engaged by the Egyptian Government to explore for oil at Ras Gemsa. Operations began in November 1885, the team drilling with a steam-driven rig. His moderate success with de Bay Well Number One – which yielded gas and oil at a rate of 1.3 tons per day – was not repeated with wells two and three. In the year of completion, 1886, de Bay’s contract was not renewed. To replace de Bay, the Egyptian Government looked further west and appointed an American, H. Tweddle, and a team of drillers to continue the search. All five of Tweddle’s Gemsa wells were considerably deeper than those of his predecessor, and all struck or showed oil. Also in 1886, American geologist and engineer L. H. Mitchell was appointed to carry out a survey of the area. Mitchell’s report and recommendations to drill deeper for oil-bearing sediments are now considered to be prophetic, considering that the science of petroleum geochemistry was in its infancy. He also downgraded Giftun, Shadwan, Juba and other islands, as being ‘at too great a depth’ to contain oil.

Mitchell recommended that drilling should continue at Gemsa, and also at Ras Dhibi to the north and also at Abu Durma on the eastern side of the Gulf. However, after an expenditure of £100,000, the government withdrew support and drilling stopped in July 1888.

Gemsa oil at last

The dawn of the twentieth century saw little or no prospecting in Egypt. In June 1907, the Egyptian Oil Trust Ltd was registered by Messrs Light and Fulton, in London. Its objectives were to acquire oil concessions, explore, develop, drill, refine, store, supply, distribute and deal in petroleum and petroleum products. It had a capital of £150,000, in £1 shares, its concessions for the embraced 100 square miles of territory, immediately west of the Red Sea, and included waters of the Suez Canal, including Gemsa.

The Trust’s workers began drilling on January 1, 1908, and a well was completed in March 1909 at a depth of 1200 ft. The Petroleum Review reported on April 24, 1909: “A most important oil strike has recently been made by the Egyptian Oil Trust Ltd, in one of its wells upon the coast of the Red Sea” (Figure 3.3). Other wells were also to prove fruitful. Later that year, the second ordinary meeting of the Egyptian Oil Trust Ltd in London, was to hear de Bay Well Number One had struck large quantities of oil at a depth of 1287 ft, in porous dolomitic limestone. The well was a gusher, producing two barrels per minute. In the spring of 1912, the first tank steamer left for the F.E. Suez with 3000 tons of Gemsa oil on board. In all, 23 wells were drilled at Gemsa, and for a number of years it was the only source of Egyptian oil production. But its output gradually declined, until 1917, it became inoperable.

Hopeful at Hurghada

The Hurghada field lies about 100 miles south of where the Gulf of Suez meets the Red Sea. In 1911, Max K. Bauermann, a geologist who had worked for Shell in Romania since 1909, was sent to Egypt on a short exploratory assignment. He discovered the West Hurghada structure, and struck oil in basal Miocene limestone at Ras Gharib, a barren stretch of desert about halfway between Hurghada and Suez. The well was spudded on December 1, 1937, and was completed in April of the following year at a depth of 2560 ft. It produced 150 tons of oil per day (Figure 3.2). Tanks and loading facilities were quickly built, and the first shipment of Ras Gharib crude was made on August 18, 1938. A spectacular rise in production was reported in 1939, with a total output of 1,100,000 bbl exceeding the previous year’s yield by 20%.

Seeking solutions in Sinai

Egyptian oil output almost doubled during World War II. Oil prices during the 1940s and early 1950s were characterized by instability and logistical problems (Figure 3.3). The first post-war exploration success came in 1946 when new fields were discovered in the Sinai Peninsula. Production from Suez (around 3.5 million barrels), raised total output for Egypt in 1948 to over 1.3 million barrels.

Exploration efforts in the Sinai Peninsula (Figures 3.4 and 3.5) intensified after the discovery of the new field at Belayim, in partnership with Socony-Vacuum Oil Co., struck oil in a wild well at Sudr, on the east coast of the Sinai Peninsula. Production from Sudr (around 3.5 million barrels), raised total output for Egypt in 1948 to over 1.3 million barrels.

A second rush for black gold

Early in 1937, the Egyptian Government responded to growing pressure to find new sources of oil, with a massive redefinition of mining regulations. Under the new rules, provision was made for the granting of prospecting licenses over an area of not less than four square kilometers, for one year, subject to renewal. The same was to be repeated where the new license holder was to explore on the license area, and any agreement to assign the license was to be made public. Exploration licenses were awarded to companies, effectively curbed exploration until 1953, when a new, more liberal oil law was enacted. In the wake of increasing exploration activity, a new field was discovered at Belal, about eight miles south of Feiran, by the Southern California Petroleum Corporation, on behalf of the Egyptian Government’s International Egytian Oil Company. Standard Oil of Egypt had carried out reflection seismic surveys during the late 1940s, but the Oligarch Orientale des Pétroles d’Egypte (COPE) followed up with detailed land and marine reflection seismic work at Belal. The discovery well yielded 1150 B/D. Development of the Belal field progressed under the new government’s International Egyptian Oil Company (American) in 1956. The General Petroleum Authority (GPA) was created by the Egyptian Government in 1956. GPA founded the General Petroleum Company (GPC) in 1956 and awarded it 33 prospecting licenses in the Suez Gulf area and the Eastern Desert. Oil wells yielded new

Figure 2.3: The World Petroleum report of the Ras Gharib oil field, 1939

Figure 3.1: Two barrels of oil per minute. In 1909 the Egyptian Oil Trust Ltd discovered a Gemsa gusher on the Red Sea coast
Egypt’s share of world oil production has also been stable in recent years. However, despite a long and extensive exploration history, there remains considerable scope for new discoveries. Future exploration, in regions such as the Western Desert and North Sinai, will almost certainly identify major new oil and gas reserves and may lead to a significant rise in oil output.

**Present and future**

Today, Egypt is a significant oil producer and a rapidly growing gas producer. The Suez Canal and Sumed Pipeline are strategic routes for Gulf oil shipments, making Egypt a focal point in world energy markets. The Egyptian economy made remarkable progress in the 1990s. Oil exports accounted for about 40% of the country’s total export revenues. The government was successful in curbing domestic demand for petroleum products by reducing subsidies and encouraging consumption of natural gas. New natural gas fields, especially in the Nile Delta region, will soon give Egypt enough production capacity to become a significant gas exporter.

Egyptian oil production comes from four main areas: the Gulf of Suez (over 70%), the Western Desert (about 16%), the Eastern Desert, and the Sinai Peninsula. Egypt’s proven crude oil reserves are estimated at 5 billion barrels.

Oil from the Gulf of Suez basin is produced mainly by GUPCO, a joint venture between BP and EGPC. Production in the GUPCO fields, with most wells in operation since the 1960s and 1970s, is falling rapidly, although it remains substantial at around 360,000 B/D. GUPCO is attempting to slow the natural decline in its fields through significant investments in enhanced oil production as well as increased exploration. It has announced that it intends to invest $450 million in technology over the next six years to prolong the life of the Gulf of Suez fields.

Besides GUPCO, other major companies in the Egyptian oil industry include Badr el Din Petroleum Company (EGPC and Shell); Suez Oil Company (EGPC and Dinnex); and EL Zafarana Oil Company (EGPC and BG).

Egypt’s total oil production has declined more slowly than GUPCO’s due to new output from independent producers like Apache and Seagull Energy at smaller fields, especially in the Western Desert. Production in the Qurun block passed 40,000 B/D in mid-1997, up from 5,000 B/D in late 1995. In October 1997, Apache and Seagull announced an oil discovery in the East Beni Suef concession (which they share 50/50), also located in the Western Desert. The field is said to contain around 100 million barrels of crude oil.

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The industry has come a long way since the momentous discovery at Goma (Figure 3.7). Egypt produced an average of 866,000 B/D of crude oil during 1998 (Figure 3.8), a slight decline from a high point of 920,000 B/D in 1996. With domestic oil demand increasing due to economic growth, there are fears that the country could become a net oil importer by 2020-2015. Egypt is hoping that exploration activity, particularly in new areas, will discover sufficient oil in coming years to maintain crude oil production comfortably above the 800,000 B/D level.

Overall, Egypt now gets about 16% of its oil and 30% of its natural gas from the Western Desert. Oil Minister Handy el-Banby said in October 1998, that “Egypt’s oil production capacity will increase by 40,000 B/D when new fields in the Qattara depression and the North Coast’s El Alamein come online in the next few years.” Three recent discoveries in the Western Desert include one find south of Daba (93-miles southwest of Alexandria), another at the Qaroun concession (43-miles southwest of Cairo); and a third at the Melia concession area (50-miles southeast of Marsa Matrouh City).

Spain’s Repsol has expanded its oil output in Egypt’s Western Desert to 60,000 B/D (from 32,000 B/D in early 1997). A joint venture of Repsol (50%), with Apache (40%) and Australia’s N rejoice (10%) operates the Khaldia concession, currently producing 33,000 B/D of oil. In September 1998, the partners announced that they would double their investment to $110 million at Khaldia over the next two years in order to increase oil production to 40,000 B/D by the end of 2000.

Offshore production possibilities in the Mediterranean are beginning to be explored. The largest concession awarded from the bidding round in February 1999 went to Shell, for a large, deepwater area off Egypt’s Mediterranean coast. BP and Elf Aquitaine were also awarded a large, offshore block. A smaller, offshore concession was awarded to Italy’s Eni-Agip.

The 1999 bidding round offered 15 concessions, with only one round scheduled for the year. Among the areas offered were the Mesaha trough in Upper Egypt, which is considered geologically similar to areas in northern Sudan where oil discoveries have been made. Blocks near the Khargee basin and offshore from Marsa Matruh were also on offer.

**A role in distribution**

In addition to its role as an oil exporter, Egypt has strategic importance because of its operation of the Suez Canal and Sued Pipeline, two routes for export of Gulf oil. Tanker traffic and revenues have declined in recent years as a result of competition from oil pipelines and the alternate route around the Cape of Good Hope in South Africa.

The Sued Pipeline is an alternative to the Suez Canal for transporting oil from the Gulf region to the Mediterranean. The 200-mile pipeline runs from Ain Sukhna on the Gulf of Suez to Sidi Kerir on the Mediterranean. The Sued’s original capacity was 1.6 million B/D, but with completion of the Dashour pumping station located to the south of Cairo, capacity has increased to 3.5 million B/D. The pipeline is owned by the Arab Petroleum Pipeline Company (APP); a joint venture between Egypt (50%), Saudi Arabia (15%), Kuwait (15%), the UAE (15%), and Qatar (5%). APP also has been increasing storage capacity at the Ain Sukhna and Sidi Kerir terminals. An extension of the pipeline is being studied. This extension would traverse the Red Sea from Suez to the closest point on the Saudi coast near Sharm al Sheikh, and then continue to link up with the terminal of Saudi Arabia’s main east-west pipeline in Yanbu.
Oil companies only began active exploration for natural gas in Egypt in the early 1990s, but they rapidly found a series of significant gas accumulations in the Nile Delta and the Western Desert. Today, Egypt’s natural gas sector is expanding rapidly, with production expected to have doubled by 2001. In recent years, proven natural gas reserves have increased sharply, with a string of major discoveries along the Mediterranean coast/Nile Delta region and in the Western Desert. This trend is likely to continue. In October 1998, for instance, a large, high-quality gas deposit was discovered in BG’s West Delta deep marine concession. One of the three wells discovered (Saffron-I) tested at a rate of 90 MMcf/D, which BG says is the highest gas flow rate ever recorded in Egypt. Two other wells (Scarab-I and Scarab-II) tested at 30 MMcf/D each.

Besides BG, other major foreign companies involved in gas exploration and production in Egypt include BP, ENI-Argo, and Shell. Shell has plans to spend around $1.6 billion in Egypt, mainly on gas exploration and development, over the next five years. BP planned to spend $450 million by 2000, while ENI-Argo and BG also plan significant expenditures in this area.

As of early 1999, Egypt’s total proven gas reserves were estimated at 31.5 Tcf, up 54% from 20.4 Tcf in 1997, and more than double the 15 Tcf of proven reserves in 1993. Reserves are expected to increase even more over the next few years. Most of this increase has come about as a result of new gas discoveries in the Mediterranean offshore/Nile Delta region, and increasingly in the Western Desert.

In the Nile Delta, which has emerged as a world-class gas basin, recent offshore field developments include Port Fouad, South Temsah, and Wakah. In the Western Desert, the Obeiyed field is an offshore field development. The rapid increase in Egypt’s natural gas reserves and production in recent years has encouraged ambitious plans for gas exports (either by pipeline or liquefied natural gas tanker) to such countries as Turkey, Israel, Jordan, Libya, and the Palestinian territories. Currently, Egypt consumes all the gas it produces. Plans for exporting Egyptian gas have been complicated by pricing issues - Egypt has insisted that it sells gas at fuel-oil parity. Potential customers such as Israel have considered that too high, as prices would need to be low enough to offset the investment required for the necessary infrastructure.

Gas International made a large find, testing at 45 MMcf/D, in the West Delta deep marine concession. Geologists believe the same type of formations that have been found to hold gas in the Nile Delta also extend out into the Mediterranean.

The rising trend in Egypt’s oil production stabilized in the mid-1980s and stood at 866,000 B/D in 1998. However, despite the decline in oil production, Egypt’s natural gas sector is expanding rapidly, with production expected to have doubled by 2001.