MUSLIMS AND THE OIL INDUSTRIES

Seventh to Nineteenth Century

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The famous tenth-century Muslim historian al-Mas'udi wrote about the oil fields in Muslim lands. He used the word *atam* to describe a burning well. Al-Mas'udi observed oil wells in Sicily, Oman, the Hadramawt in today's Yemen, Iraq, Persia, Turkmenistan, Tashkent, India and on the island of Sumatra. Astonished by the amount of oil produced, Al-Mas'udi called the Baku region bilad al-naffata, "the land of the naphtha fountain."

The Muslim oil age began with a tale of treason. To break the Arab seige of Constantinople in 680 CE, the **Emperor Constantine IV** ordered his high command to work with the defector from Damascus in strictest secrecy. In the end, Constantine succeeded in breaking the seven-year seige by using the Umayyad oil-weapon technology against them.

In many areas of the Muslim world especially the lands that now comprise Kuwait, Iraq, Iran and the newly independent republic of Azerbaijan, Turkmenistan and Uzbekistan, oil upwellings and gas vents had been known since the beginning of time. The Mesopotamian peoples who built some of the first civilizations were also the first to describe crude oil oozing from natural wells. Akkadian clay tablets from about 2200 BC referred to crude oil as *naptu* - from which derives the root of the Arabic *naft*. The first productive oil well in Iraq was sunk in 1927 at **Baba Gurgur**, about 140 miles north of Baghdad, almost within view of a natural oil spring called "Eternal Fires" that had been burning continuously since at least 600 BC.

When the Muslim armies first arrived in Iraq and Persia around 640, they found hundreds of open oil pits. Arab records from the 10th century show that the province of Faris, in Persia, paid an annual tribute of 90 metric tons of oil to light the palace of the caliph. And an early Muslim historian, **Ibn Adam**, wrote that the Arab governors of northern Iraq refrained from taxing the oil - and mercury - producing industries in their districts as an incentive to boost production. Clearly the demand for oil was high.

Several large oil pits were operating in Iraq and nearby areas in the eighth century. So vast and strategically important was the pit at Dir al-Qayyara (near Mosul) that at one time it had to be guarded day and night. It provided not only crude oil but most of the bitumen used by the state to **pave roads**. In the early 13th century, the **geographer Yaqut** described in detail how **"asphalt"** was made in those days from the pit and used to build roads. In Europe, roads paved with anything but flagstones or cobbles were unknown until 1838, when asphalt was first laid on a street in Paris.

Azerbaijan was conquered in 643 and it remained under loose Arab rule until the end of the ninth century, with allegiance first to the central government of the Umayyad Dynasty in Damascus and then to the Abbasids in Baghdad. **Caliph al-Mansur** (754-775 CE) imposed a special **"naphtha tax"** on Baku in the middle of the eighth century and it marked the first appearance of a state tax on petroleum - a levy with which we are all still familiar today.

By the early ninth century, the Abbasid caliph in Baghdad had appointed an **"oil czar" (wali**

al-naft) in every major producing district. The famous physician **Muhammad al-Razi (Rhazes, 864-930)** has mentioned in **Kitab al- Asrar** (Book of secrets) that kerosene lamps were in common use for heating and lighting. He gives **two methods** for making kerosene, one using clay as an absorbent and another using sal ammoniac (ammonium chloride). The distillation is to be repeated until the distillate is perfectly clear and "safe to light," meaning that the volatile hydrocarbon fractions had been substantially removed. **The kerosene lamps were in use in the Muslim world more than a thousand years before they became known in the West.**

By 850, the distillation process used for producing the refined lamp oil or kerosene was perfected. This was what the Muslims called white naphtha, or ***naft abyad***. It was made then much as it is today, except that instead of high-volume, continuous-process distillation towers, the Arabs used an apparatus called **al-inbiq**, batch-process still whose name we have taken into English as alembic. Essentially, the alembic consisted of three parts: a gourd-shaped lower flask called the cucurbit in which the crude oil was heated; a cooled, spouted condenser that sat atop the cucurbit and received the vapors that rose from the oil; and a receiver at the end of the condenser's spout in which the clear distillate was collected.

In Abbasid times, every school of chemists had its own variation of the alembic. Some were made of blown glass like today's labware, others were made of ceramic, copper or brass. Some were built for laboratory use, while others were much larger and might properly be called industrial stills. The Syrian naturalist **al-Dimashqi** wrote that in the early 13th century there was a quarter of Damascus known as ***Suq al-Qattarine***, the distillers market.

Tashkent became the largest and most important city on Islam's eastern flank in 751, a distinction that it retains even today as the capital of the Uzbek Republic. In the eastern mountains of **Tajikistan**, the Muslims found the source of an extraordinary soft rock that could be torn apart into fibers, much like certain kinds of cheese. It was put to a great military use in the days of **Caliph Harun al-Rashid** (786-809 CE), at the height of Abbasid power. **They fashioned this material (asbestos) into fireproof uniforms and padding for the naphtha troops and their horses.** In addition, they called the substance *hajar al-fatila* or "wick-stone" because, as one writer from Damascus put it, "it is made into indestructible wicks for lanterns, for although the oil burns off the wicks themselves remain intact."

The fifteenth century encyclopedia entitled ***Al-Qamus al-Muhit***, or *The All-Encompassing Dictionary* is known as the best references ever written on the Arabic language and Arab culture. It contains a remarkable section on the oil industry. In it, the author Abu Tahir states: **"The best grade of naphtha is the water-white.** It is a good solvent, a diluent and an expectorant....The word naffatah has three meanings - a naphtha well or fountain, a naphtha lamp used for lighting, or the brass instrument used to throw naphtha..." The modern usage for the word naphtha is petroleum. His use of the phrase 'best grade' indicates that the Muslims of that era practiced some form of crude-oil refining, and there must have been refiners and other associated technicians in this line of work.

The descriptions of Al-Razi, Al-Mas'udi and Abu Tahir provide all the elements of a thriving oil industry, in the modern sense of the term, if on a medieval scale and powered by fire and by human and animal muscle rather than machines. Laborers evidently worked the oil wells, or *naffatah* to obtain the oil; cameleers and merchants transported and sold it in the cities as lighting fuel; craftsmen built lamps to burn the oil; weapons of brass or bronze used to throw "naphtha pots" in war; and pharmacists made an assortment of remedies from it.

By the middle of ninth century, the city of **Tiflis** - now Tblisi, the capital of **Georgia** in the Caucasus - was a center of trade between the Muslim state and northern Europe. Gold and silver coins have been found in the city that date to the ninth century and were minted in Baghdad, Muhammadiyyah (in Armenia), Kufa, Basra, Aran and Balkh, as well as in Africa and India.

In 843, the Arab amir of Georgia, Ishaq ibn Isma'il, withheld his annual payment of tribute to Baghdad, and declared his independence from the caliph. To quell the rebellion, Caliph al-Mutawakkil dispatched a punitive expedition led by a Turk named Bugha al-Sharabi. When the rebels refused to surrender, Bugha ordered his ***naffatun***, or naphtha troops, to burn the city of Tiflis. So complete was the resulting destruction that it had political effects, ending the city's chances of becoming the capital of an Islamic state in the Caucasus.

Muslim geographer, **Yaqut al-Hamdawi** (completed his last book Mu'jam al-Buldan in 1228) noted that **Baku** had two great oil fields; one produced oil "the color of mercury" and the other a darker grade. He recorded the value of the output from the two fields as 2000 silver dirhams a day - equivalent to roughly 800 grams (28 ounces) of gold, or four million dollars a year at today's prices. Such an enormous sum was enough to qualify Baku as one of the wealthiest cities in the Muslim realm.

The large scale use of **"naphtha pots"** as military arsenal was recorded in connection with the attack of the crusader king of Jerusalem, **Amalric I**, on Fustat in 1167 CE. He had taken **Bilbeis** and slaughtered nearly all its inhabitants; he then sent a message to Caliph that he would do the same to Cairo. In order to prevent Amalric from taking Cairo, Caliph Athid's vizier Shawar used **20,000** naphtha pots in Fustat. **In the 1940's**, French scientist, **Maurice Mercier** concluded that these naphtha pots had the strongest walls and the most aerodynamic designs. It indicated that the technicians manufacturing them had sophisticated knowledge not only of explosives and incendiaries, but also of soil sciences, ceramics, mechanics and at least the rudiments of aerodynamics.

The Book of Horsemanship and the Art of War, written in 1285 by Najm al-Din Ahdab, a Syrian officer, details information on how to distill oil to make kerosene; how to prepare explosives from gunpowder; how to fit the multiple fuses into the various kinds of "naphtha pots"; and even how to build "flying fire"- rockets! The author includes sketches of the weapons he mentions, and one is indeed a crude missile armed with a "naphtha pot."

T**he influence of Russia** began to grow in the region after the Mongol devastations (1258 CE), and it took a couple of centuries before their interference was seriously felt in the Muslim Central Asia and the Caucasus region. Among the European monarchs, it was **Peter the Great** who took interest in oil and foresaw the enormous economic potential of petroleum. **In 1723**, he gave orders to Matushkin, one of his generals, to take Baku. Peter wrote, "Of white naphtha send one thousand poods (16,000 kilos or 36,000 pounds), or as much as possible, and bring from there a refining master."

Persia consented to the **Gulistan Treaty** (1828) under which the Baku Khanate (and the Muslim state of Daghestan) were officially ceded back to the czar, and only Russia was permitted a navy on the Caspian (in the early 19th century). **The first oil well in North America was drilled in 1858, and it became clear to the Czar that Baku was Russia's best hope for countering a potential North American monopoly on oil.** By 1884 all of Tajikistan was taken and that completed Russia's conquest of the Muslim Central Asia, and the vast region became a part of what was to become the Soviet Union, serving the oil needs until the present decade.

Before pipelines were developed in this century, oil reached the cities of the Levant, Iran and Central Asia from the western shore of the Caspian Sea by camel caravan, horse-drawn *arba* and ship. **By 1903, the Baku region supplied half the world's oil**, and it was here that the **Nobel Brothers Petroleum company** modernized refining principles that had been developed earlier in the Arab world. In the early 1920's, the newly formed USSR chose the famous gushers of Baku for its first stamp on a petroleum theme, which featured both Cyrillic and Arabic script.

The overwhelming documentary evidence confirms that the most important period in the history of oil prior to our own age, the age of the internal-combustion engine, unfolded during the flowering of the Muslim civilizations that some have called "Islam's Renaissance."

This article was developed from two articles on Ancient Oil Industries by Dr. Bilkadi, Aramco World, 1995.

The Land of the Naphtha Fountain
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