

New Discovery in Offshore Nile Delta

The announcement by BP of a significant gas discovery in January in the offshore Nile Delta confirms the area as one of the most promising gas provinces being explored at present.

The BP discovery, known as *Satis*, is located in 90m of water about 50 km north of the port of Damietta, which is located at the intersection between the Mediterranean Sea and the Nile in the north-eastern part of the delta. The well was drilled to a Nile Delta record depth of more than 6,500 meters and is the first significant high-pressure, high-temperature offshore discovery in the region.

In terms of hydrocarbon geology, the Nile Delta is dominated by the relatively young deposits of the proto-Nile and Nile Deltas. After the opening of the Mediterranean in the Jurassic, Cretaceous sediments formed a steep fault-bounded slope break. In the Late Eocene, northern Egypt was tilted towards the Mediterranean during regional uplift, resulting in the deposition of deltaic and channel sediments over this break. Debris flows, slumps, and slides were followed by the deposition of stacked channels, a pattern which was repeated over several regressions, including the lowstand associated with the Messinian salinity crisis, when thick layers of evaporites were deposited (see page 34-38 for a geological cross section through the Nile Delta).

Proven reservoirs vary in age from Oligocene to Pleistocene, while source rocks include Cretaceous and Eocene shales and Pliocene mudstones, the probable source of the biogenic gas found in younger reservoirs. The onset of hydrocarbon genera-

tion and expulsion is governed by deposition of the thick Miocene to Pleistocene overburden and is still an ongoing process, so the source rocks appear to have entered the mature stage only very recently, probably in Pleistocene to Recent times.

Predicting sand distribution and reservoir presence is one of the main exploration risks in the Nile Delta, coupled with issues associated with visualising pre-Pliocene sediments under the Messinian. Recent innovations in seismic visualisation techniques, as well as advancements in drilling economic high temperature – high pressure wells, will be very important for the future development of the area.

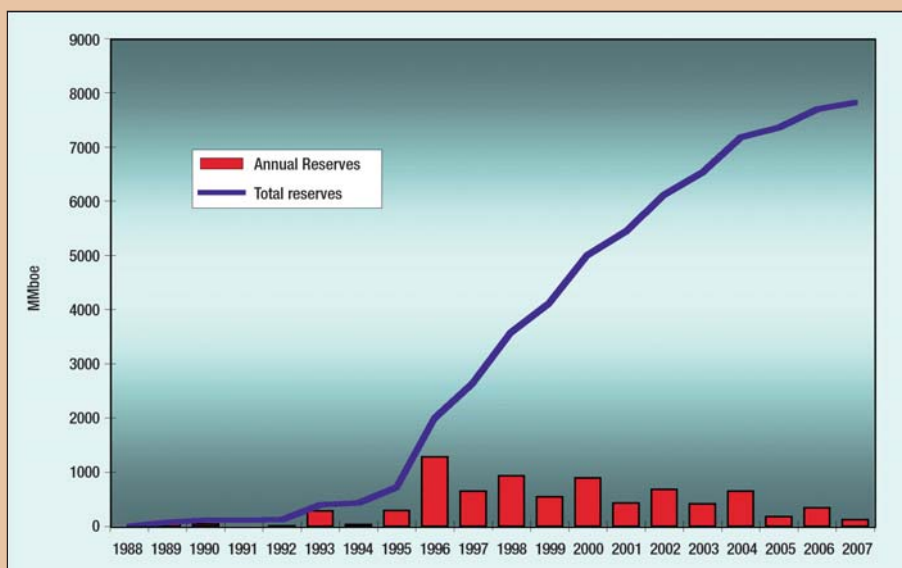
Although hydrocarbon exploration started in Egypt in the early part of the 20th century, investigation of the Nile Delta did not commence until the 1960's. As a result, while other areas of Egypt have reached a mature stage, there is still good potential for growth in the Nile Delta, which covers nearly 60,000 km² (equivalent to ten

North Sea quadrants), the majority offshore. In July 2007, Egyptian Petroleum Minister Fahmi said Egypt's recoverable gas reserves had reached 72.3 Tcf (2,024 Bm³, or 13.0 Bboe), with the possibility of another 70 Tcf (1,982 Bm³) of probable gas reserves being added to the proven category in the coming years.

Gas exports by pipeline from the Mediterranean fields began in July 2003, and two further LNG plants came on stream in 2005. Egypt is now Africa's second-largest gas producer behind Algeria.

With the discovery of further gas resources close to emerging and established markets in the Mediterranean, and the establishment of a number of gas processing plants on the coast, the Nile Delta is emerging as one of the most promising areas in northern Africa for future petroleum exploration and supply.

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Egyptian hydrocarbon reserves in the Nile Delta Basin have risen dramatically over the last ten years. The majority of these finds have been gas, and the average discovery size is large, about 450 Bcfg (12.6 Bm³, or 81 MMboe).