Discovery Shows Onshore Potential

A recent onshore oil discovery proves that the potential of the Nile Delta is not confined to the deep offshore.

Jane Whaley, Associate Editor

"RWE has been in Egypt for more than 30 years and is one of the longest standing operators in the country," says Erik Karlstrøm, Exploration Manager and Deputy General Manager of RWE Dea, Egypt. "We have acreage in the Gulf of Suez, the Western Delta and the offshore Nile Delta, including a share in the recently discovered sub-salt Raven Field. However, our most exciting new discovery has been on our onshore Nile Delta acreage."

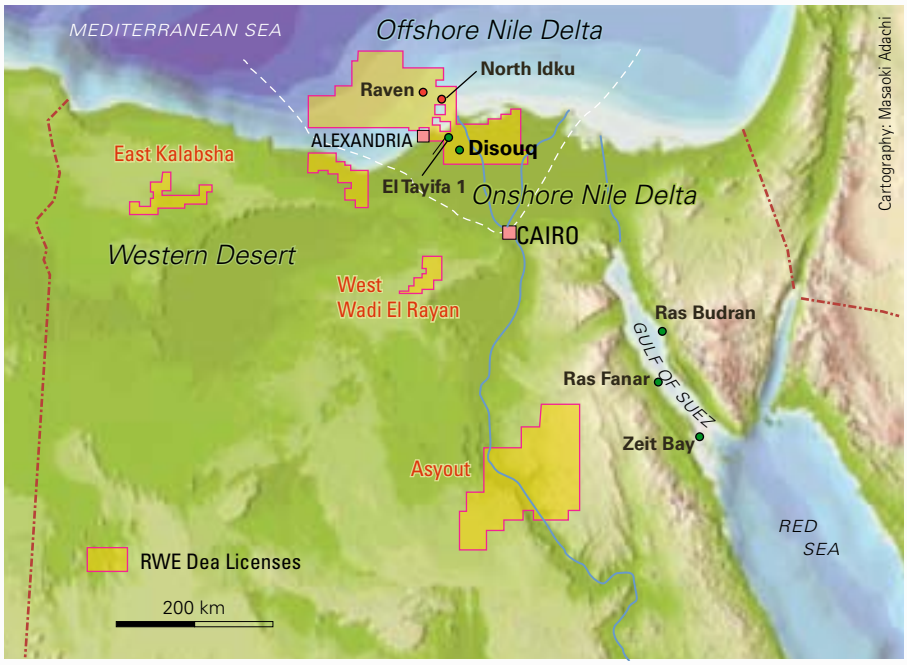
Focusing on the Nile Delta

While there has been a lot of interest in the offshore Nile Delta, RWE Dea has decided to focus its main operating efforts in the less obvious part of the Nile Delta, on the shore, east of Alexandra.

"We are very enthusiastic about the onshore area, where we have just made an oil discovery in what is considered to be a gas basin," says Erik. "The deep water Nile Delta discoveries were made on new 3D seismic data, but the onshore was only covered by 2D data, so we had neither penetration to deeper reservoirs nor good areal resolution to see if the deep potential continued onshore. Both onshore and offshore, the shallower reservoirs of Pliocene age had proved disappointing, as the section is too sandy, with no proper seal, and production drops off rapidly. However, as we found in the Raven Field last year, the deeper targets of Early Miocene age and older could seal off much higher columns of gas and condensate."

"We decided to take this experience and extend it onshore. Late last year we drilled El Tayifah 1-X on our Disouq licence, 120 km north of Cairo, choosing a shallow location over a deep-seated structure of similar age to the Raven reservoir. When we deepened the well early this year, we found 48° API oil – almost good enough to put straight into your tank!"

"The high pressure in the well told us of a good sealing capacity, but did not allow proper testing," Erik adds. "Having proved the existence of hydrocarbons, though not



In addition to the on- and offshore Nile Delta, RWE have acreage in the Gulf of Suez, where 3 fields (Ras Budran, Ras Fanar and Zeit Bay) have been producing since the early 1980's. It is a non-operating partner in the Western Desert, an area of conventional onshore oil exploration, with small fields and quick returns, where a mere 5 weeks production sometimes covers the cost of a well.

Erik Karlstrøm (left), Exploration Manager and Deputy General Manager of RWE Dea Egypt, on site at the onshore Nile Delta El Tayifa well.

their volume, we are now undertaking 3D seismic surveys in the area."

Tremendous potential

In Erik's opinion the onshore and shallow water Nile Delta is still an immature province with tremendous potential. "In many ways, we know less about the Nile Delta now than we knew about the Mississippi Delta in the mid eighties. We thought of that as a mature delta with declining production. Some companies left, but others stayed and drilled deeper, and found a new, prolific play."

"Only about 185 wells have been drilled in the whole Nile Delta, less than half of them offshore. Most of the potential is in gas - in fact, we hope to start gas production from our onshore licences in 2008 - but there is also oil. Hopefully, shallow gas production will pay for the high risk wells targeting the new deep potential, but there is substantial financial risk involved in acquiring 3D seismic data over large, densely populated areas, and in drilling down to the deeper accumulations which may possibly make a substantial return in the future. You need a supportive management team which understands risk, reward and the time it takes."

Efficient, with local flavour

Coming from Norway, Erik finds drilling in the Nile Delta a fascinating contrast to the North Sea. "Everything is so immediate here," he says. "I'm not used to being so close to operations. In Norway there are always people from different companies participating in discussions about a well hundreds of miles away in the North Sea. Here, I can leave the office, and in a couple of hours I am at the well site, which is surrounded by farmland. In fact, 20 million people live within the 6,000 km2 of our Disouq licence, the size of a North Sea quadrant. We are 100% operators, which gives us great freedom – no partners to worry about!"

"We will spud the El Tayifah appraisal well in October this year and are actively looking for new licences. A large investment has been made in seismic data and well commitments, although no commercial discovery has been proven, so we haven't opened the champagne yet! All the exploration to date has been aimed at Tertiary prospects, but Cretaceous targets are deeper possibilities in the Nile Delta," explains Erik.

He thinks that RWE in Egypt is a very satisfying and enjoyable environment to work

RWE's Disouq licence area covers 6,000 km^2 of agricultural land and is home to 20 million people. It is very intensively farmed and beans, maize, cotton, millet, rice, and wheat are all grown, but traditional methods of irrigating the land with donkey-driven wells are still in use.

in. "Everything runs remarkable smoothly, quickly and efficiently with its strong Egyptian flavour," Erik comments. "People seem surprised when I say that about Egypt, but it is because we have been here a long time and everyone knows our name. It is also vital to respect the fact that the people we deal with here are proud of their working ways. We have a good staff that understands what they are doing and how to handle the authorities."

Eating salt fish

"In Egypt, you have to spend a lot of time sitting down with people, talking and building relationships." Erik explains this further. "A typical example was when we wanted to acquire 3D data onshore in the Disouq acreage, among all those farmers.

The first thing to do is to visit the top military man in the area. He wants to know what you are doing, how you are going to bring prosperity to the area, and how many people you are going to employ, but he is also interested in you as a person. A good relationship is based on personal experience and judgement. You drink tea, and then after a while he invites you to eat salt fish with him – a speciality of the area, apparently - and you talk a little bit about football. Then, just as you are leaving, he says fine, go ahead, and the paths are smoothed. It's an interesting, but very enjoyable way of doing business!"

Photo: RWE Dea

Erik Karlstrøm and Aly Gadallah in the RWE Dea office in Cairo, where 25 geologists and geophysicists are employed, more than half of whom are Egyptians.

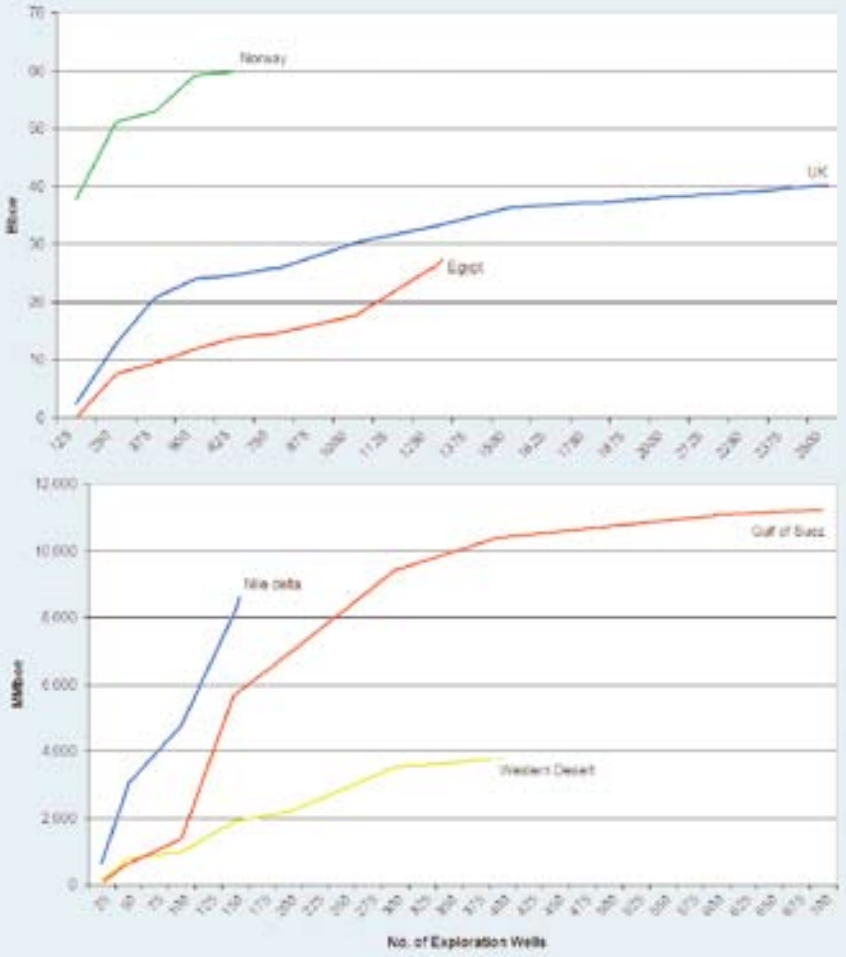
Egypt's Reserves may pass UK total

Exploration in Egypt started in the Gulf of Suez in 1906, although the Western Desert and the Nile Delta areas were not investigated until the 1960's. However, as the creaming curve shows, the Gulf of Suez and Western Desert areas are already reaching a mature stage. By contrast, there has been an explosion of interest in the Nile Delta in the last 3 or 4 years, fuelled by the discovery of the Raven Field, among others.

"The real potential in Egypt lies in the Nile Delta," confirms Erik Karlstrøm. "Since we began drilling here, the creaming curve for total Egyptian reserves, which had begun to flatten off, started to rise again, and we may see total production pass that of the UK. The USGS yet-to-find estimate for the whole Nile Delta is between 9.4 and 15 billion barrels (1.5 – 2.4 billion m3) of oil equivalent. The average discovery size in the delta is much larger than in the Western Desert, with a typical prospect being 400 – 500 billion cubic feet (Bcf) of gas. In addition, the success rate is excellent – we have drilled 18 wells in the offshore Nile Delta with our partners, and 17 have been discoveries!"

"Roughly speaking," adds Erik, "about 68 trillion cubic feet (Tcf) of gas have been discovered since 1990. The reserves figure grew rapidly after the 1999 discovery of North Idku and is rising even more steeply since the Raven discovery. This has induced many companies to return to Egypt, while others, like Statoil, have come to the country for the first time."

Hany Soliman, Undersecretary for Gas Affairs at Egypt's Ministry of Petroleum and Mineral Resources, recently announced that they expect Egypt's natural gas reserves to reach 100 Tcf by 2011, up 47% from the current level. To cater for this increase, a third Egyptian LNG train is about to be approved, and others will follow.



Creaming curves for the main exploration areas in Egypt clearly show that, while the Gulf of Suez has reached a mature stage, there is good potential for growth in the Nile Delta. The line depicting total Egyptian reserves has started to rise again and it is interesting to compare it against those for Norway and the UK.