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Between a Rock and a Hard Place: Egypt's New Natural Gas Supply Policy

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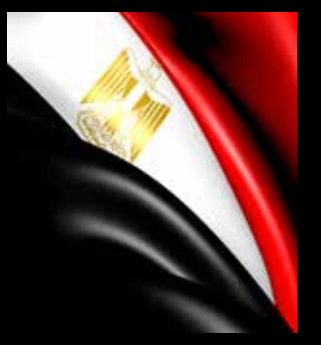

EGYPT OIL&GAS NEWSPAPER

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Egypt's Natural Gas Dilemma: Prices, Investment, Liberalization, and Geopolitics

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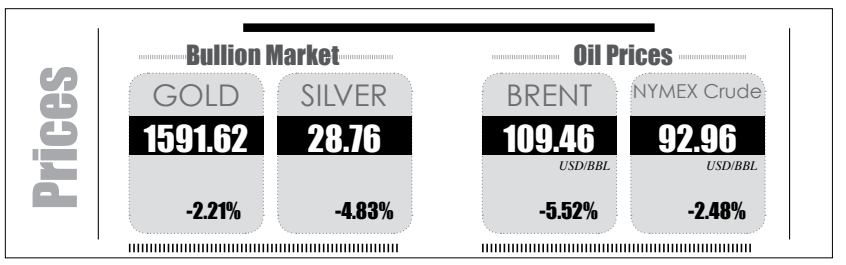
The Absence of Strategy

Amid widespread economic turmoil and ongoing political uncertainty, the Egyptian government has become increasingly direct in its calls for international assistance. Earlier this year, Qatar pledged three billion dollars in deposits to Egypt in an effort to stave off an economic disaster characterized by rising prices, fuel and power shortages, and dangerously low levels of foreign currency reserves. Earlier this month, Qatar and Libya pledged an additional five billion in deposits and simultaneously agreed to cover Egypt's natural gas export obligations for the coming summer months. This week, Egypt sought Russian assistance requesting a reported two billion dollar loan in addition to vital supplies of grain. Egyptian officials also asked for government assistance in coordinating a gas swap with Russian corporations including Gazprom, Gazprom Neft, Lukoil and Novatek. The proposed swap would allow Egypt to keep much needed natural gas for the domestic market. Russian officials were noncommittal on all fronts.

Egypt's calls for help clearly demonstrate an absence of a clearly defined and strategic objective. It seems that Egyptian officials are merely reacting to one crisis after the other in an effort to keep the country away from the edge of short run disaster. The absence of a clear strategy and existing in perpetual crisis management mode do little to support the feasibility of IMF imposed austerity measures...whether the loan is received or not. Absent fundamental change in the way business is done, we are quite likely to find ourselves in an identical difficult circumstance one or two years in the future.

Julie Herrick Editor in Chief



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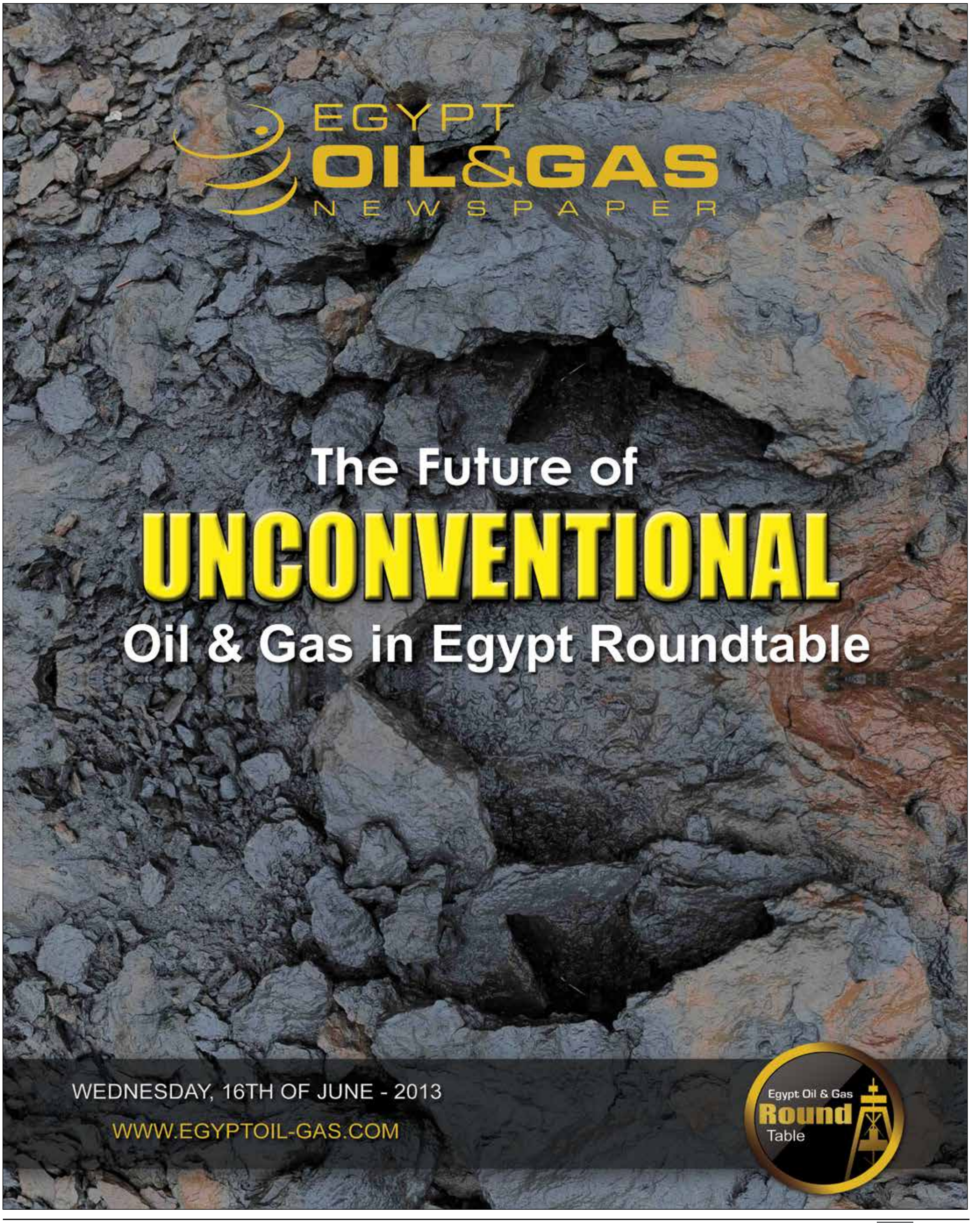
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Round
Table

Khalda Drills KARANIS SW-1 ST-4 Well

Khalda Company recently concluded the drilling of a new exploratory well. Khalda is a joint venture between EGPC and Apache American Corporation. The drilling operations occurred in the company's concession area in the Western Desert.

The KARANIS SW-1 ST-4 oil producing exploratory well was drilled to a depth of 16,500 feet utilizing the EDC-54 rig. Investments on the drilling process are estimated at 2.133 million USD. Khalda production rates of crude oil and condensates reached 4,224,378 barrels, while natural gas production reached 4,861,786 barrels equivalent at the end of March 2013.

Khalda Drills SHROUK NE-3 and W.KAL.C6 ST-1 Wells

Khalda Company recently drilled two new developmental wells. The drilling operations occurred in the company's concession area in the Western Desert. Khalda is a joint venture between the EGPC and Apache American Corporation.

The SHROUK NE-3 oil-producing developmental well was drilled to a depth of 6,400 ft utilizing the EDC-66 rig. Investments on the drilling process are estimated at 806,000 USD.

The W.KAL.C6 ST-1 oil-producing developmental well was drilled to a depth of 15,290 ft utilizing the EDC-48 rig. Investments on the drilling process are estimated at 6,689,000 USD.

Khalda production rates of crude oil and condensates reached 4,224,378 barrels while natural gas production reached 4,861,786 barrels equivalent at the end of March 2013.

Khalda Drills SWAG-4 and AMOUN NE-1X Wells

Khalda Company has recently drilled two new wells, one developmental and one exploratory. The drilling operations occurred in the company's concession area in the Western Desert. Khalda is a joint venture between EGPC and Apache American Corporation.

The SWAG-4 oil-producing developmental well was drilled to a depth of 11,000 ft utilizing the ST-6 rig. Investments on the drilling process are estimated at 1.9 million USD.

The AMOUN NE-1X oil-producing exploratory well was drilled to a depth of 14,000 ft utilizing the EDC-8 rig. Investments on the drilling process are estimated at 3.6 million USD.

Khalda Drills KHEPRI-45 and FAGHOUR S-3 Wells

Khalda Company recently drilled two new developmental wells. The drilling operations occurred in the company's concession area in the Western Desert. Khalda is a joint venture between the EGPC and Apache American Corporation.

The KHEPRI-45 oil-producing developmental well was drilled to a depth of 7,450 ft utilizing the EDC-19 rig. Investments on the drilling process are estimated at 1 million USD.

The FAGHOUR S-3 oil-producing developmental well was drilled to a depth of 16,400 ft utilizing the EDC-16 rig. Investments on the drilling process are estimated at 2,164,000 USD.

Petrobel Completes Drilling of BLS-11 and 113-189 ST-1 Wells

Petrobel recently completed drilling two developmental wells in its Sinai concession area. Petrobel is a joint venture between the EGPC and ENI.

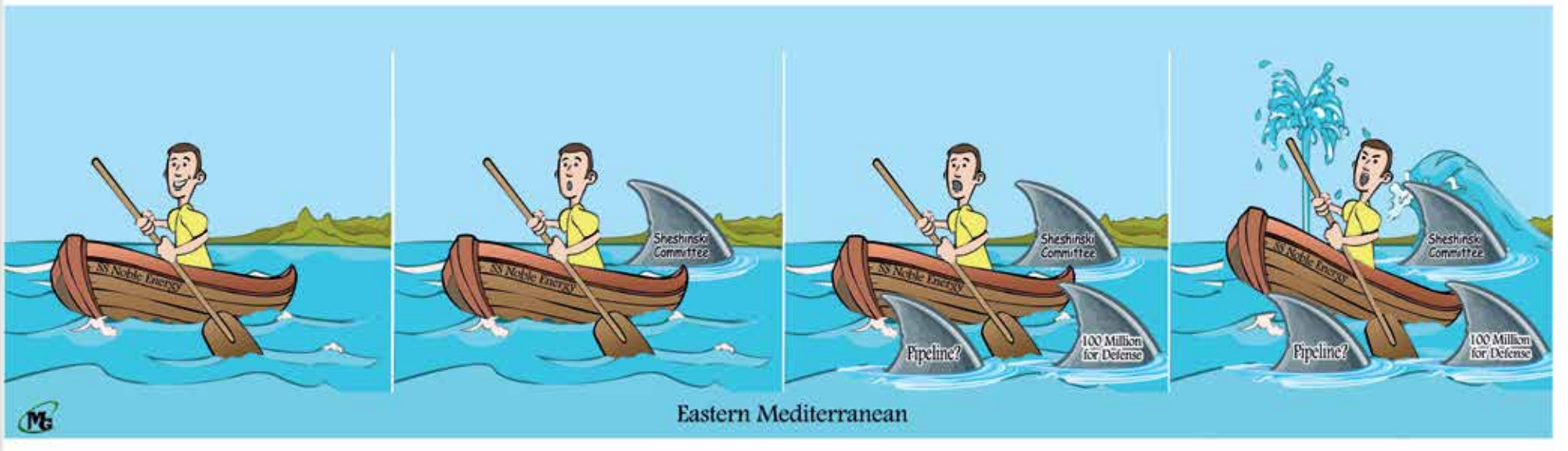
The oil producing well-labeled BLS-11 was drilled to a total depth of 11,129 ft using ST-12 rig. Operational investments surrounding the project are estimated at 4.693 million USD.

The 113-189 ST-1 oil-producing developmental well was drilled to a depth of 10,031 ft via the ST-1 rig. Total investments associated with the project are estimated at 3.93 million USD. Petrobel production rates of crude oil and condensates reached 3,746,637 barrels while natural gas production reached 8,007,677 barrels equivalent at the end of March 2013.

Petrobel Completes Drilling of BALTIM E-10 ST-7 Well

Petrobel has recently completed the drilling of a new developmental well in its Mediterranean concession area. Petrobel is a joint venture between EGPC and ENI. The oil producing developmental well-labeled BALTIM E-10 ST-7 was drilled to a depth of 16,200 ft using ALQAHER-2 rig. Operational investments surrounding the project are estimated at 35.800 million USD.

Story Board



Qarun Completes HAMRA NE-26, FARASHA-3, HAMRA-12

Qarun Petroleum Company recently completed the drilling of three new developmental wells. The drilling operations occurred in the company concession's area in the Western Desert. Qarun is a joint venture between EGPC and Apache.

The HAMRA NE-26 oil-producing developmental well was drilled to a depth of 6,130 ft utilizing the PD-1 rig. Investments surrounding the drilling process are estimated at 698,000 USD.

The FARASHA-3 oil-producing developmental well was drilled to a depth of 7,825 ft utilizing the EDC-47 rig. Investments on the drilling process are estimated at 1.258 million USD.

The HAMRA-12 oil-producing developmental well was drilled to a depth of 5,900 ft utilizing the PD-1 rig. Investments surrounding the drilling process are estimated at 777,500 USD. Qarun production rates of crude oil reached 1,530,775 barrels at the end of March 2013.

Qarun Completes KNE-5 ST-1 and HEBA-310

Qarun Petroleum Company completed drilling two new developmental wells. The drilling operations occurred in the company concession's area in the Western Desert. Qarun is a joint venture between EGPC and Apache.

The KNE-5 ST-1 oil-producing developmental well was drilled to a depth of 8,400 ft utilizing the PD-1 rig. Investments surrounding the drilling process are estimated at 1.2 million USD

The HEBA-310 oil-producing developmental well was drilled to a depth of 6,900 ft utilizing the EDC-63 rig. Investments surrounding the drilling process are estimated at 958,000 USD.

Apache Concludes Drilling of SALLUM E-1X Well

Apache recently drilled an exploratory well in their concession area in the Western Desert. Total investments associated with the project are estimated at 5.217 million USD. The SALLUM E-1X ST-1 oil-producing exploratory well was drilled to a depth of 16,514 ft via the EDC-59 rig.

Apache Concludes Drilling of W.KAN-N-1X Well

Apache recently drilled an exploratory well in their concession area in the Western Desert. Total investments associated with the project are estimated at four million USD. The W.KAN-N-1X oil-producing exploratory well was drilled to a depth of 15,200 ft via the EDC-57 rig.

Bapetco Drills New Exploratory Well

Bapetco Petroleum Company has recently concluded drilling a new developmental well. The drilling operation occurred in the company's concession area in the Western Desert. Bapetco is a joint venture between EGPC and Shell Corporation.

The AL FADL-28 oil-producing developmental well was drilled to a total depth of 4,776 ft utilizing the EDC-72 rig.

The drilling expenditures reached approximately 866,110 USD. Bapetco production rates of crude oil and condensates reached 1,047,692 barrels while natural gas production reached 1,990,179 barrels equivalent at the end of March 2013.

Bapetco Drills New Developmental Well

Bapetco Petroleum Company has recently concluded the drilling process of a new developmental well. The drilling operation occurred in the company's concession area in the Western Desert. Bapetco is a joint venture between the EGPC and Shell Corporation.

The AL FADL-29 oil producing developmental well was drilled to a total depth of 4,700 ft utilizing the EDC-72 rig. Drilling expenditures are estimated at 1.3 million USD.

Qarun Drills KNE-6 Well

Qarun Petroleum Company recently completed the drilling of a new developmental well. The drilling operations occurred in the company's concession area in the Western Desert. Qarun is a joint venture between EGPC and Apache.

The KNE-6 oil-producing developmental well was drilled to a depth of 8,345 ft utilizing the EDC-47 rig. Investments surrounding the drilling process are estimated at 1,268,000 USD.

Norpetco Completes Drilling of a Developmental Well

Norpetco recently completed drilling a developmental well in its Western Desert concession area. Norpetco is a joint venture between EGPC and Sahari Oil Company. The oil-producing developmental well-labeled ABRAR-9 was drilled to a depth of 6,760 ft using ECDC-2 rig. Operational investments surrounding the project are estimated at two million USD. Norpetco production rates of crude oil reached 579,140 barrels at the end of March 2013.

Agiba Drills New Developmental Well

Agiba Company recently began drilling a new developmental well. Agiba is a joint venture between EGPC, Mitsui (10%) and IEOC (40%). The drilling operation occurred in the company's concession area in the Western Desert.

The EMRY DEEP-6 ST-2 oil-producing developmental well was drilled to a depth of 18,006 ft utilizing the PDI-92 rig. Investments surrounding the drilling process reached approximately 5.772 million USD. Agiba production rates of crude oil and condensates reached 1,682,416 barrels while natural gas production reached 59,684 barrels equivalent at the end of March 2013.

Dana Gas Drills New Exploratory well-Wells

Dana Gas recently completed drilling an exploratory well in its Delta concession area. The gas producing well-labeled BEGONIA-1 was drilled to a total depth of 9,468 ft using AMAK-1rig. Operational investments surrounding the project are estimated at 3.03 million USD.

West Bakr Drills Developmental Well

West Bakr Company recently started drilling a new developmental well. The drilling operation occurred in the company's concession area in the Eastern Desert. West Bakr is a joint venture between EGPC and TransGlobe Energy Corporation.

The K-27A ST-1 oil-producing developmental well was drilled to a depth of 7,390 ft utilizing the EDC-62 rig. Investments surrounding the drilling process reached approximately 1.682 USD.

Sipetrol New Production Record Achievement

Mr. Miguel Angel Vargas, the General Manager of the Chilean state-owned Sipetrol International S.A., Egypt Branch, announced a new achievement in East Ras Qattara Concession in the Western Desert, with a new production record exceeding 17,000 BOPD from the last drilled Development Well Shahd-3 with an added production rate of 4,300 BOPD during April 2013. He added that that the daily production rates are expected to hit new a record by the end of Q2-2013, thus exceeding 20,000 BOPD, as a result of the successful implementation of the current drilling plan.

Eng. Sayed Rezk, Sipetrol Operations Manager and the Managing Director of the JV Petroshahd, added that this increase is attributed to the implementation of the intensive development plans in the company's wells, in addition to the continuous efforts to improve the wells production performance and enhance reserves. Mr. Rezk added that these successes are the result of fruitful cooperation between Sipetrol and its partners Kuwuait Energy Egypt and EGPC through its joint operating company Petroshahd.

Choice Words

"The delays in payments to the operators end up hurting Egypt itself as a potential decline in investment and production may lead to lower government revenues and a supply gap, in a potential vicious circle.

Maji Jafar, Managing Director of the board of Dana Gas

"This [the Sheshinski Committee] is a situation where taxes were raised after we had made investments, and that is very unusual in the industry, because if a government makes a practice of retroactively raising taxes after investments are made, that scares off investors. "If [the Sheshinski Committee recommendations] would be reopened I think we would have to reconsider everything we're doing.

Charles D. Davidson, Chairman & Chief Executive Officer of Noble Energy

"The private sector will deal with the purchase and the sale of gas amongst themselves. The government will just act as a regulator to prevent monopoly of prices.

Sherif Soussa, Chairman EGAS

"The gas, which they were supposed to ship (abroad) under a contract, may be left for domestic consumption, while we could fulfil the contract via a swap supply by Gazprom.

Alexander Novak Russian Minister of Energy,

TransGlobe Drills New Exploratory Well

TransGlobe concluded the drilling process for a new exploratory well. The drilling operation occurred in the company's concession area in the Western Desert.

The AL AZAYEM-1X ST-1 oil producing exploratory well was drilled to a total depth of 16,400 ft utilizing the PDI-94 rig. The drilling expenditures reached approximately 9.4 million USD. The well was abandoned and considered dry.

GUPCO Drills New Exploratory Well

GUPCO recently concluded drilling a new exploratory well. The drilling operations occurred in the company's concession area in Sinai. GUPCO is a joint venture between EGPC and BP Corporation.

The NS 385-1 ST-2 oil-producing exploratory well was drilled to a depth of 23,735 ft utilizing the EMSCO-605 rig. The drilling process lasted for 146 days. Investments surrounding the drilling process are estimated at 14.7 million USD. GUPCO production rates of crude oil and condensates reached 2,123,344 barrels while natural gas production reached 211,748 barrels equivalent as the end of March 2013

Egypt Awards New Oil and Gas Contracts

Egypt recently awarded eight oil and gas exploration contracts for prospecting projects off the North Coast of the Mediterranean Sea. Companies including BP, Petroceltic International, Sea Dragon, Pura Vida Energy and Dana Gas are paying a total of $73.2 million to secure the license deals, which require a minimum investment of $1.2 billion.

According to Reuters, The Ministry of Petroleum declared that it received 13 offers from domestic and international companies. Reuters reported that a total of 15 blocks were offered in the bid round announced last June supervised by the Egyptian Natural Gas Holding Company (EGAS). Of the 15 total blocks, 6 blocks are located near the maritime borders with Israel and Cyprus near the Levant basin.

The original deadline for offers was postponed by EGAS from November 13 last year to February 13 due to initial weak bidding interest. Chairman of EGAS Sherif Soussa told Bloomberg Business News that according to new conditions of the tender, foreign partners will have the option of selling their share of the produced gas to third parties. Previous regulations dictated that companies were required to sell their whole share to Egypt.

The Minister of Petroleum Osama Kamal said that issuing international tenders is part of the ministry's strategy to intensify the search for oil and gas, to secure new sources of energy supply and to encourage international companies to invest more in research and exploration activities.

EGAS Chairman Sherif Soussa stated the results of the tender included the acceptance of the offer from Petroceltic International / Edison for block (1) S. Idku onshore. The offer from Sea Dragon for the block (2) S. Disouq onshore as also accepted, as well as the offer from Dana gas for block (6) N. El Arish offshore. The offer from Addison / Petroceltic International for block (7) N. Thekah offshore was also approved. Offers from BP for blocks (10) N. Tennin offshore and (13) N. El Max offshore were also accepted. Pura Vida Energy, operating in Egypt for the first time, received acceptance for the block (15) North Burg El Arab offshore.

Petco Concludes Drilling Well in Eastern Desert

Petco Petroleum Company recently concluded the drilling process of a new exploratory well. The drilling operation occurred in the company's concession area in the Eastern Desert. Petco is a joint venture between the Egyptian General Petroleum Corporation (EGPC) and Sahara Corporation.

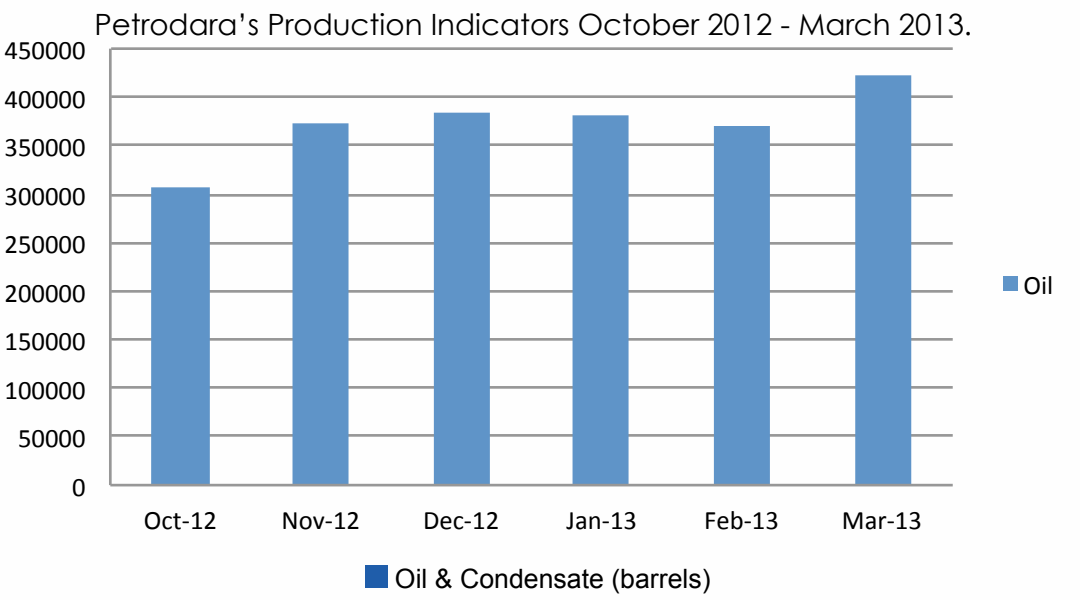
The FH 85-9 ST-4 oil-producing exploratory well was drilled to a total depth of 27,466 ft utilizing the EMSCO-602 rig. The drilling expenditures reached approximately 25.187 million USD.

Petrosilah Concludes Drilling Well in Western Desert

Petrosilah Petroleum Company recently concluded the drilling process of a new developmental well. The drilling operation occurred in the company's concession area in the Western Desert. Petrosilah is a joint venture between the Egyptian General Petroleum Corporation (EGPC) and Merlon International Corporation.

The S.SILAH-2-1 oil-producing developmental well was drilled to a total depth of 7,537 ft utilizing the EDC-49 rig. The drilling expenditures reached approximately 1,908,000 USD. Petrosilah production rates of crude oil reached 139,662 barrels at the end of March 2013.

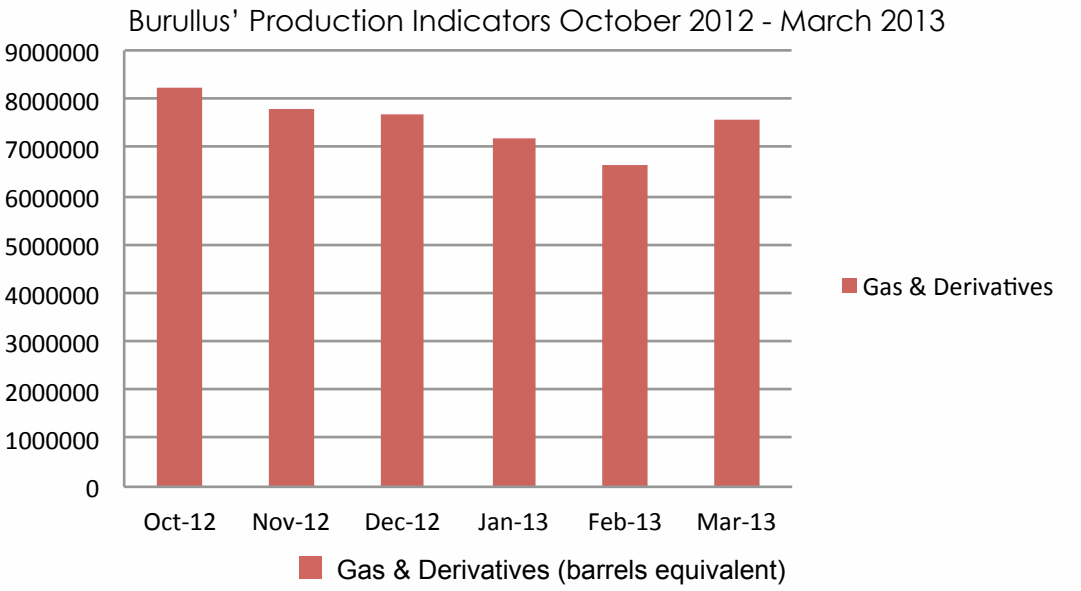
Petrodara Shows Steady Increase



Petrodara's Production Indicators October 2012 - March 2013. Petrodara Petroleum Company showed a general increase in production over the last six months. Production of oil in October 2012 began at 306,092 barrels and ended at 422,789 barrels in March 2013. Rates of oil production stayed relatively constant from December 2012 to January 2013 starting at 383,665 barrels and ending at 380,703 barrels.

Production dipped in February at 370,807 barrels, then rose in March 2013 at 422,789 barrels.

Burullus Exhibits Inconsistent Production



Burullus' production demonstrated an inconsistent decrease over the last six months. Production of gas and derivatives in October 2012 began at 8,215,357 barrels and ended at 7,546,429 barrels in March 2013. Production for the month of January stood at 7,185,357 the decreased in February at 6,650,714

The production was inconsistent with a slight decrease from November 2012 to January 2013.

Israel's Tamar Field Is Flowing

The first gas from the Israel's massive Tamar field in the Mediterranean began flowing to shore on March 30, starting a process that will not only make Israel largely energy independent, but can also turn it into a key supplier for European markets.

The Tamar platform can process up to 1.2 bcf of gas per day. Plans are underway for a second Tamar phase that could include a 3.4 MMtpa-capacity floating LNG system for gas export, international media reports.

The Tamar field, discovered in 2009 and developed at the cost of $3bn, is said to hold 250 billion cubic meters of gas. This is enough to generate electricity for Israel for 20 years. In addition to Tamar the country has another offshore field that is even bigger – Leviathan has an estimated 425 billion cubic meters of gas- but it has yet to be developed.

The Tamar gas alone is expected to boost Israel's GDP by 1% annually and to reduce the price of electricity. However, there are many controversies surrounding the Israeli gas industry.

One of them concerns gas exports which should begin in 2-3 years via a planned undersea Mediterranean pipeline to Turkey, but this requires the rapprochement of the two countries. It is speculated that energy considerations were behind Israel's recent apology to Turkey over the 2010 killing of nine Turks on board a Gaza-bound aid ship.

Entrepreneurs have asked for the government's approval to export gas from the Tamar field saying that otherwise they would not be able to gather funding for developing the Leviathan field. The government set up a committee to study the issue, but nothing has been done with its findings released in August 2012.

If Israel does start exporting gas to Europe, it might undermine the position of Russia as the main European gas supplier. To avoid this, Russia's Gazprom has jumped in on Tamar itself, obtaining exclusive rights from Israel to develop the field's LNG. Russia hopes to divert Israeli gas exports to Europe by banking on these resources being turned into LNG for Russian export to Asian markets instead.

Israel's recently discovered offshore gas resource offers its enemies an obvious target and requires a lot of effort from the country's navy to avoid sabotage and attacks. Israel's gas reserves lie in an area larger than the country itself. According to the navy, a suitable defense system will cost $700m to build and $100m annually to maintain.

Since all the Israeli gas is supplied via one pipeline, a mishap or sabotage could disrupt gas supply for weeks. The government's attempts to decide on erecting an additional intake terminal for the offshore gas have stumbled. Many locales for the terminal have been disqualified due to the opposition from local residents or from defense authorities as well as for other reasons.

Cyprus To Build Gas Plant With Or Without Israel

Cyprus is going to build a gas processing plant to export excess supply, no matter if Israel decides to be a partner in the project or not, the Greek Cypriot Foreign Minister Ioannis Kasoulides said.

According to him, the offshore natural gas deposits of Cyprus are enough to warrant the construction of the plant, international media reports.

Cypriot government is continuing talks with Israel, on the ways the countries can cooperate on exploiting their mineral resources. Israel has also recently discovered its own offshore gas deposits in the Tamar and Leviathan fields.

One option is to pipe the gas to Greek Cyprus where it could be processed for export. The pipelines and processing facility, which would liquefy the gas for easier transport, are expected to be in place by 2019-20 and cost 10 billion Euros (13.33 billion USD).

Another unpredictable factor is Turkey, whom recently cautioned that it would react strongly to further gas exploration by Greek Cyprus due to the marginalization of Turkish Cypriots. Kasoulides responded, saying that the potential gas revenue belongs to all Cypriot citizens, but will be shared with the north after a reunification agreement is reached.

Turkish Energy Minister Taner Yildiz also warned in April that the gas resources of Cyprus and Israel would not be logically feasible unless an export route was established through Turkey. "A subsea pipeline [to Turkey] is a lot cheaper than an L.N.G. terminal, but a no-go politically," noted Laura El-Katiri, a research fellow at the Oxford Institute for Energy Studies.

The Cypriot government estimates the country's gas reserves amount to 1.7 trillion cm, but according to experts, the production could start no earlier than 2018.

Noble Energy Evaluates Cyprus

U.S based Noble Energy will start evaluating drilling potential in Cyprus to validate preliminary findings of offshore gas. Noble stated that in late 2011 it has discovered natural gas in Block 12 located in Cyprus' Exclusive Economic zone. Natural gas reserves contained in Cyprus' 1-A well are estimated at 5-8 trillion cubic feet, an amount that would meet Cyprus' domestic energy needs for nearly 100 years. CEO and President of Nobel, Charles Davidson, stated that they preferred a liquefied natural gas (LNG) terminal to process and export the gas in Cyprus. Noble is currently in talks with Israel's Delek Group to collaborate on the construction of a pipeline from Block 12 to the southern end of Cyprus. Such a pipeline would cost an estimated one billion USD but could potentially supply the Cypriot domestic market. The pipeline in conjunction with a planned LNG facility (that would cost an estimated 10 billion USD), have been proposed as a joint project between Delek and Noble. The proposed LNG facility would have a capacity of 15 million tons of natural gas per year. The proposed projects would be the biggest in Cyprus' history.

Malta Gives a Boost to Oil Exploration

The government of Malta plans to open all seven areas on the island's continental shelf for exploration licensing.

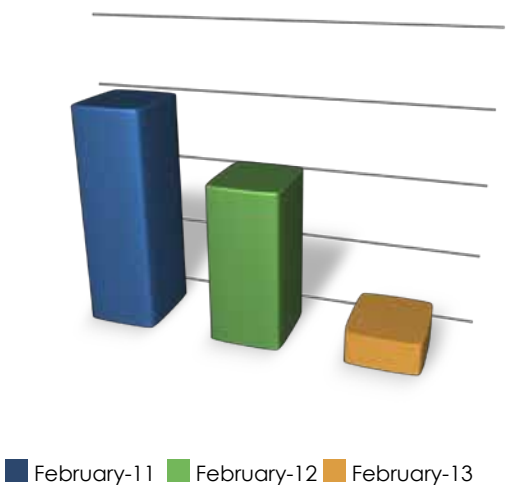
The Minister of Transport Joe Mizzi, who is also responsible for oil and gas exploration has already held meetings with corporations interested in drilling two exploratory oil wells, The Malta Independent reports.

Malta embarked on a drive to market its offshore oil resources to companies more than 50 years ago. However, all exploration attempts since 1953 have failed, some with dry wells and a few others with limited oil and gas prospects. Since 2005, Malta has not drilled any oil wells.

Nevertheless, some signs indicate the revival of the industry.

At the beginning of the year, the government awarded three offshore blocks totaling 6,400 km2 to the oil company Capricorn Malta Limited to assess exploration potential.

Mediterranean Oil & Gas assured it is continuing preparations for the Hagar Qim 1 well offshore Malta. "We are continuing to prepare for the drilling of Hagar Qim 1 in late 2013," the company's chief executive Bill Higgs said. Mediterranean Oil & Gas holds an exploration license for the Area 4, located to the south Malta. According to the company, the area can contain as much as 1.5 billion barrels of oil.



Equivalent Gas			Oil		
February-11	February-12	February-13	February-11	February-12	February-13
24277857	23616071	22322857			

Liquefied Gas			Condensate		
February-11	February-12	February-13	February-11	February-12	February-13
474514	459950	397401	1541094	1290083	1184860

Mediterranean Rig Count 2013	Total	Percentage of Total Rigs
	9	7 %

Gulf News

Iran to Reduce Dependence on Crude Exports

Iran plans to increase natural gas exports in order to reduce its dependence on crude sales, said the managing director of the National Iranian Gas Company Javad Owji.

Iran's oil exports are limited by international sanctions, imposed due to the country's nuclear program, but its gas industry is not subject to the same restrictions, Bloomberg reports.

"By signing new deals with Turkey and Iraq, Iran will increase natural gas exports to about 100 million cubic meters by next year from a current 35 million," Owji noted. According to him, Iran's current gas exports total 10 billion cm per year.

Iran has also pushed ahead with the plans to export gas to Pakistan. In March, the two countries started work on the cross-border leg of a $1.3bn gas pipeline that will deliver 21.5 million cubic meters of gas to Pakistan per day.

Iran currently exports gas to Turkey, Iraq and Armenia while swapping gas with Azerbaijan. It has the world's second largest natural gas reserves after Russia, amounting to 29.61 trillion cm. The country's oil reserves are 137.6 bn

A Boost to Iran's Gas Production

Three phases of Iran's South Pars field will come on stream in the next few months, boosting the country's gas production capacity by 150 m cm/d.

According to the National Iranian Oil Company managing director Ahmad Qalehbani, this will happen in the current Iranian calendar year, which started on March 21, the Iranian media reports.

Iran is currently producing 300 m cm/d of gas from the South Pars.

"Over the fifth five-year development plan to 2015, 12 new phases of the South Pars gas field will be coming online, of which four phases have been allocated to LNG," the managing director of the National Iranian Gas Company Javad Owji noted. He went on to say that Iran's gas production capacity will reach 1.2 bn cm/d in 2016, of which 180 m cm will be exported.

High Energy Prices Boost Qatar's Reserves

Qatar's international reserves reached $36bn in February thanks to favorable energy prices, relatively higher production, and prudent fiscal management.

The reserves have increased by $3bn since the end of 2012, Gulf Times reports.

Qatar's crude oil price was averaging $112.80/pb in February. In 2012, the price average was $111.20 and in 2011 it was $108.40.

The country's average crude production, on the other hand, has fallen since 2009. Then it amounted to 781,000 b/d, but in 2012 was only 733,700 b/d. However, according to a report by Qatar National Bank, the country's crude production increased in February by 1.4% month-on-month, to an average of 738,000 b/d.

According to the same report, Qatar's real GDP grew 6.2% in 2012. The main driver of growth was the non-oil and gas sector, whose share in the economy increased to 42.2%.

Growth in the oil and gas sector was 1.7%, as an increase in gas production to supply the new Pearl Gas-to-Liquids (GTL) facility more than offset declining crude production.

Qatar's exports grew 16% in 2012. Export earnings from LNG increased significantly thanks to higher prices, but the exports of crude fell slightly due to a drop in production.

International News

An Energy Boom Underway in Mozambique

If the recent discoveries of natural gas are confirmed, Mozambique will rank fourth in the world for natural-gas reserves behind Russia, Iran, and Qatar. In addition to natural gas there is also hope for new oil discoveries. Malaysia's Petronas, US's Anadarko Petroleum and Italy's Eni are currently exploring in the country. Norway's Statoil will join them this year, Ventures Africa reports. Mozambicans hope that the oil and gas industry will stimulate the economy and generation much needed jobs.

Petronet LNG to Raise $110 Million for Terminal Expansion

India's biggest liquefied natural gas importer Petronet LNG Ltd plans to raise 6bn Rs ($110m) in debt to fund expansion of its Dahej LNG terminal.

Petronet LNG intends to raise the capacity of the import terminal to 15m tons by the next year, The Economic Times reports. "We will raise Rs 600... to fund the construction of a second jetty and additional storage and re-gasification facilities at the Dahej terminal," stated Finance Director Shri R.K. Garg said. Petronet LNG has leased out most of the new capacity being built to state-owned GAIL India Ltd and Gujarat State Petroleum Corp (GSPC) on a use-or-pay basis. "We have entered into long-term tolling arrangements for 2.5 million tons of capacity with GAIL and 2.25 million tons with GSPC," Garg noted.

TMK Acquiring ITS Tubular Services:

OFS International, service company for manufacturer TMK, has acquired a 100% interest in the pipe services and manufacturing assets from ITS Tubular Services. Energy Business Review reported that ITS has the ability to produce more than 700 thousand joints of threaded pipe in addition to 250 thousand connectors. Alexander Shryeav, TMK's CEO stated, "The acquisition is another step in expanding TMK in the US plus strengthening the focus on service development and production of high value added tools for the oil and gas industry." Konstantin Semerikov, OFS International President said, "Theses new assets allow them to integrate their operations as well as meeting their customers requirements in the pipe services."

GDI Delivering Al Jassra Rig

Gulf Drilling International (GDI) recently completed the 'BMC 375 Pacific Class' Al Jassra Rig. The rig is a 75-foot cantilever outreach was built over a period of 15 months and will depart from Singapore's PPL shipyard in early May for Qatar. It will provide the capacity and ability to drill the extended reach wells that are needed to access the long thin basins of the Al Shaheen field, Qatar's largest offshore oil field. Al Jassra is the first of three new offshore rigs from GDI. GDI intend to increase its market share by adding seven new rigs (three offshore, two onshore, and another two accommodation barges). In 2012 GDI revenue boasted a growth rate of 30% and an overall increase in net profit by 66 %.

New Industrial Park in East Java

AKR director announced early April, that AKR Corporindo and state port operator Pelindo III are seeking to fund an integrated port and industrial park in Gresik East Java with up to Rp 5.6 trillion ($576 million) in external financing. AKR is the largest private distributor of fuel and basic chemicals.

Both fuel distributors are establishing two joint ventures to develop the Java Integrated Industrial Port and Estate. The port will consist of a deepwater port and an industrial complex that will be supported by electricity as well as transportation infrastructure, such as a railway network and toll road. According to Suresh Vembu, a director at AKR stated in Jakarta that, "The projects total investment is probably around Rp 7 trillion to Rp 8 trillion. The financing source forms 30 percent from equity and 70 percent from external funds."

BPH Migas, the downstream oil and gas regulator has awarded AKR the right to distribute subsidized petroleum, with an initial 2013 allocation of 267,892 kiloliters. This step was a result AKR's decision to raise subsidized fuel by 160 percent from 2012. AKR believes that Indonesia's strong economic growth and rising demand for consumer goods will enhance the demand for fuel and raw materials used in consumer goods production, construction materials and chemicals. As a result, it's essential to improve the logistical infrastructure.

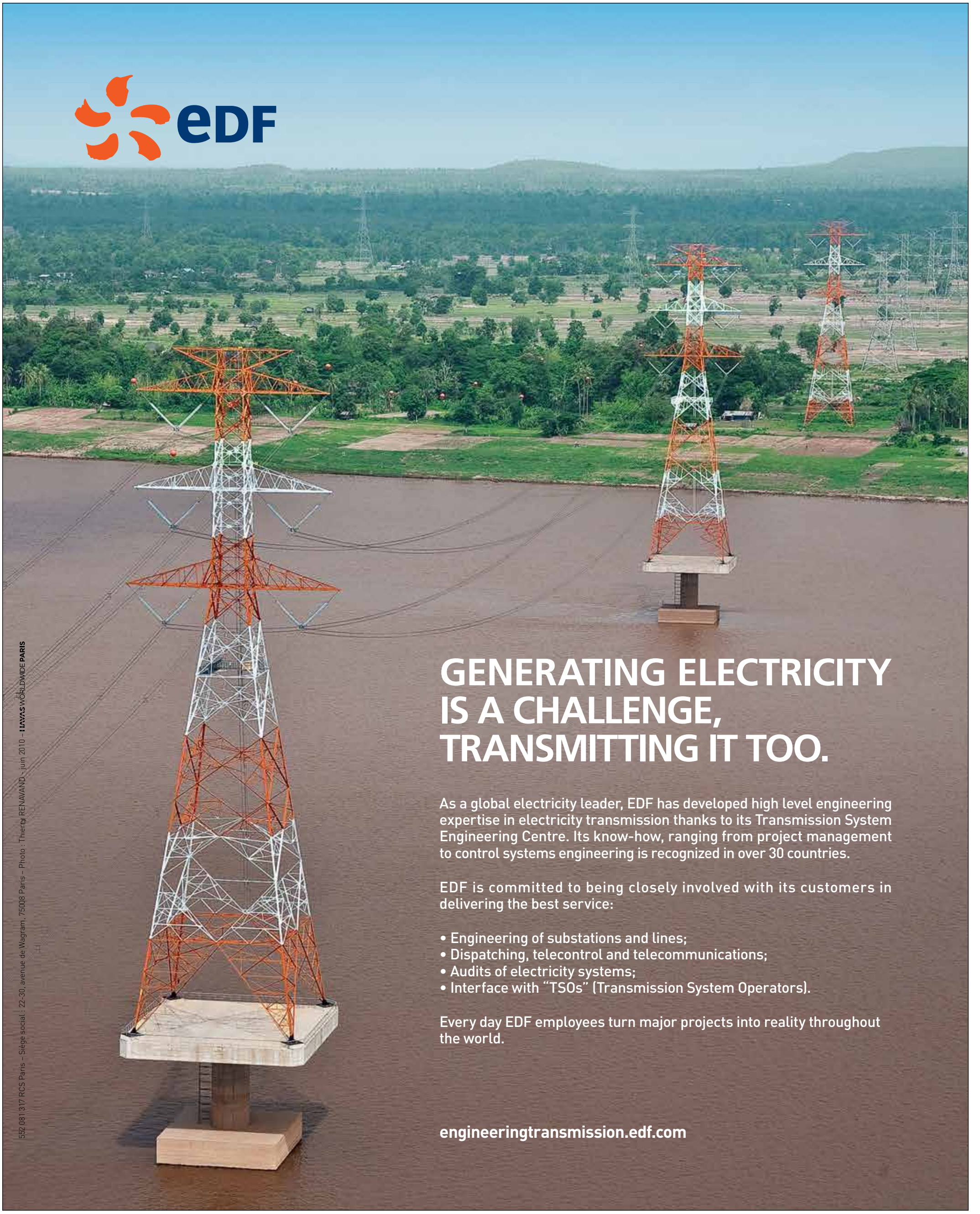
Genel Discovers More Oil in Kurdistan

Tony Hayward, the current CEO of the British oil exploration company Genel Energy, announced that Genel has made a major oil discovery in Kurdistan. Genel is currently the largest producer in Kurdistan holding 60 percent of the license area located in the south of the Kurdish region. According to Genel, their first well at Chia Surkh is currently producing 12,000 barrels of oil and 15 million cubic feet or 435,000 cubic meters of natural gas per day.

Despite the recent finds, disagreements between Kurdistan and Baghdad have made it hard for Genel to export its oil supplies. Most disagreements concern control over licensing agreements and production. Last year the company's production averaged 45,000 barrels a day, but could be much higher if export pipelines were available. Genel currently exports around 25,000 barrels of oil per day from its Taq Taq field via truck to Turkey, a route, which Hayward says, could carry up to 50,000 barrels of oil per day in the future. Hayward expects that by the middle of this year a pipeline between Iraqi Kurdistan and the Turkish border will be completed. This will allow Kurdish oil exports to bypass the central government in Baghdad and send them directly to Turkey.

Petronet LNG Partnership

One of the biggest liquefied natural gas importers in India called Petronet LNG LTD will take a stake of 26% in a shipping venture planned to pull gas to its new terminal. Petronet is building a 5 million tone per annum capacity LNG import facility at Kochi, and they want a 216,000 cubic meters capacity ship to pull liquid gas (LNG) from Gorgon, Australia. A shipping consortium will own and operate the vessel, in which Petronet will pick up the 26 % stake. Petronet's Director R K Garg, told PTI that "they have decided to take a stake of 26% in the LNG tanker and time charter for 20 years." Petronet currently has a stake of 3% in one of the three consortia formed to ferry 7.5 million tone per annum of LNG from Qatar to its Dahej terminal in Gujarat.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Foster Wheeler Awarded EPC Contract With Apache Khalda

Apache Khalda Corporation LDC has awarded contracts to Foster Wheeler AG for technical consultancy services. According to a press release the subsidiaries of Foster Wheeler's Global Engineering and Construction Group, will manage and assist in the administration of the engineering, procurement and construction (EPC) phase of the Qasr Compression Project. The Qasr Compression Project will update the existing compression facilities at the Qasr gas condensate field in the Western Desert.

This is not the first time that Foster Wheeler has provided consultancy services to Apache Khalda. They also helped in the engineering design phase. The total contract value is still unknown, but will be disclosed in the first quarter of 2013.

Another Hit to Australia's Downstream Business

Shell announced on April 4 that it would put its Geelong refinery up for sale.

Last year, Shell closed Clyde refinery and next year Caltex will close its Kurnell refinery. Australia is already a net importer of refined fuels, The Daily Reckoning reports.

From an economic point of view, if Australia can buy refined fuels from Asia more cheaply than it can produce them itself. However, a further increase in the imports of refined fuels is a serious challenge to the country's energy security.

Museveni Blasts Oil Companies Over Refinery

Ugandan President Yoweri Museveni expressed stern criticism for international oil companies opposing Uganda's plans to build an oil refinery in the country. Despite discoveries in 2006 Uganda has not been able to start the extraction process due to an inability to come to agreement over terms. Museveni stated that if the parties failed to come to an agreement over terms then the country will be forced to continue importing refined oil. The conflict over the refinery terms concerns rates. IOC's claim the Ugandan market is too small for the governments desired rate of 180,000 barrels per day.

However, if the factory is built it will become Africa's fourth largest oil refinery. Each year about 2 trillion Ugandan Shilling (25 million USD) are spent by Uganda on the importation of petroleum products, which is a quarter of the country's entire budget. Data from the Energy Ministry indicates that 70 wells have been drilled by IOCs in Uganda, 90% of which have viable oil and gas reserves. In addition to an extremely high success rate, only 40% of the area with oil and gas potential has been explored.

2013 Total SATORP Project: Apache Khalda

Total's CEO Christophe de Margerie recently told international news outlets including the Wall Street Journal that the joint oil refinery will be operating at full capacity by the end of 2013. Satorp is building a 400,000-barrel-a-day export refinery in Jubail located in the eastern region of Saudi Arabia. The refinery complex will cost $14 billion and is integral to the Saudi's recent efforts to boost its oil refining and petrochemicals industry.

Sinopec Shanghai Petrochemical in China Warning that Cheap US Natural Gas Threatens Local Industry

Chinese refiner Sinopec stated that its mainland crude oil refiners are threatened by increased rates of natural gas production in the United States and coal from the mainland. According to the South China Post Sinopec Shanghai vice-chairman Wang Zhiqing, stated that the "oil refinery will have to cut costs and boost the uniqueness of its products." Zhiqing further stated "US spot-market gas prices have been pushed down by rising supplies from 13.60 dollars per million British thermal units in mid-2008 to below 2 dollars a year ago and currently is around 4 dollars."

Italian Police Seize Mafia-Owned Renewable Energy Assets

The Italian police have appropriated properties and bank accounts worth 1.3 billion euros (1.7 billion USD), connected to renewable energy farms. This is the largest ever seizure of mafia-linked assets in the country, The Verge reports.

According to the AP, the police seized 43 wind and solar energy companies and 66 bank accounts belonging to Vito Nicastri, known as "Lord of the Wind" for his energy businesses. He is now under probation while the authorities continue their investigation.

Nacastri is linked with Matteo Messina Denaro who is considered the godfather of the Sicilian mafia. The Italian police froze Nicastri's assets in 2010 following investigations into whether the mafia was using renewable energy installations to launder money.

In recent years, the focus of the Italian mafia has turned from traditional industries to the renewable energy sector that receives generous government subsidies, but poorly regulated.

BP to Sell Wind Power Assets

BP will sell its wind power assets in the US estimated to be worth 3.9 to 5.2bn USD and will focus on its main oil and gas business.

The company is going to sell its interests in 16 operating wind farms with a total capacity of 2,600 MW in addition to projects currently under development, Electric Light & Power reports.

The sale is another step in BP's attempt to recover from the 2010 Deepwater Horizon oil spill in the Gulf of Mexico that cost the company upwards of $42bn. BP has already withdrawn from its assets in solar power as well as sold $38bn in oil fields, pipelines and refineries.

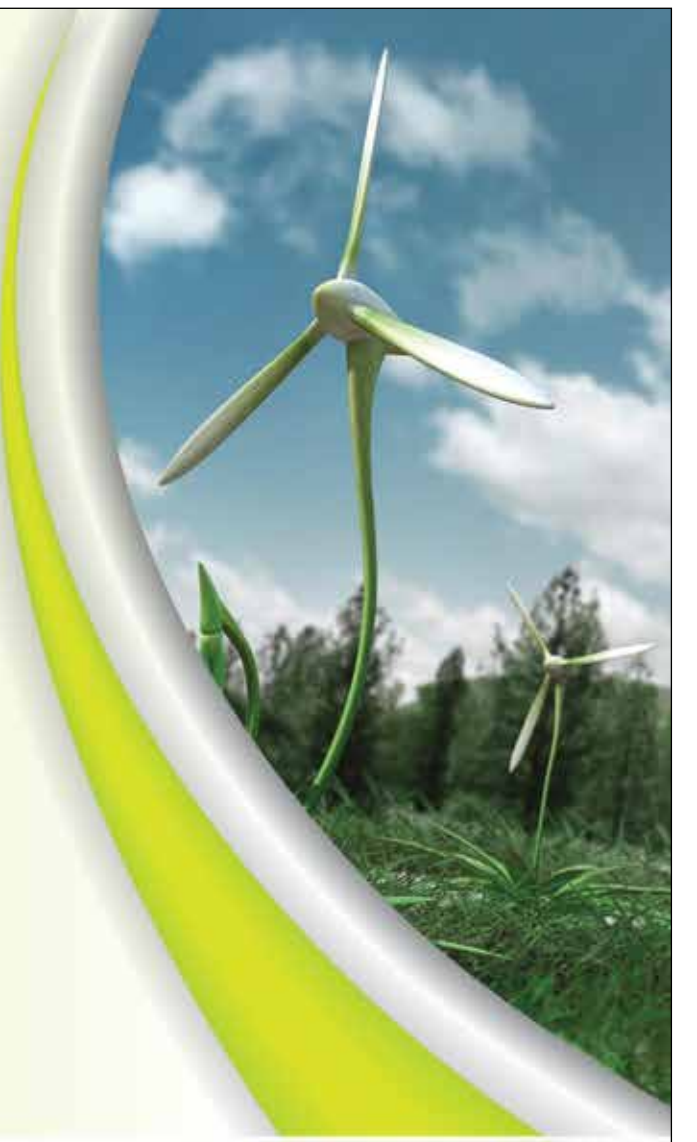
Green Energy Could Power New York by 2030

According to a recently published study, New York could get all the power it needs from wind, water and sunlight by 2030.

However, it would require massive investments, said the researches of Stanford and Cornell universities in the study, the AP reported.

New York has been committed to significantly increasing renewable energy production since 2004. Currently, the state has a goal to support the production of about 10 million mWh of energy from hydro, wind, solar, biomass and landfill gas annually by 2015. However, the state was just 46 percent of the way to the goal at the end of 2012.

In 2011, about 20% of the energy generated in New York came from hydro, just 2% from wind and 2% from other renewable sources. Nevertheless, the study says that by 2030, half of the state's renewable power could come from wind.



Renewable Energy

By EOG

WHEN VERSATILITY COUNTS...

MV FUGRO NAVIGATOR

The Fugro Navigator is the only specialist geoscience survey vessel dedicated to the Egyptian market. The Navigator's multi-role capability allows her to undertake a wide range of survey activities, such as geophysical and geotechnical surveys for drill sites and pipelines, ROV surveys and inspections, and high resolution seismic surveys and environmental surveys.

As a specialist survey vessel, the Navigator offers significant advantages over vessels of opportunity by offering:

- Greater versatility
- Improved safety performance
- Reduced weather standby costs
- The ability to respond quicker to requests for projects
- Hull-mounted sensors produce that higher quality data
- Reduced turnaround time for reporting

The Navigator is permanently equipped with a wide range of geophysical equipment for deep and shallow-water operations while ROV systems and geotechnical and environmental equipment are mobilized to the vessel on a project-by-project basis. She has carried out an average of 15 survey projects each year since her introduction in early 2008, in water depths from as shallow as 10m to over 1300m.

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Between a Rock and a Hard Place:
Egypt's New Natural Gas Supply Policy

By Ali Aissaoui

The decision by the Egyptian government to commit to the long-term domestic supply of natural gas while allowing immediate imports of LNG and the rapid adjustment of domestic prices to reflect the cost of supply to the industry, signals a potentially significant shift in Egypt's energy policy. The move has been decried by some as a sign of panic on the part of a government beset by economic and political pressures from many sides. Others have hailed it as the most effective way to address the incontrovertible fact that not only does natural gas production no longer meet domestic demand and export commitments, but the high cost of subsidizing energy products has also impacted the state budget to an extent that is no longer bearable.

Notwithstanding the success story of Egypt's natural gas industry, it has been clear for some time that its production potential was unlikely to keep up with rapidly growing demand fed by massive subsidies.[I] But Egypt is not an isolated case within MENA, and we have already pointed to countries that have developed a similar syndrome. Despite being well-endowed with natural gas, these countries have been struggling to supply their domestic markets, in some cases moving back to oil products to generate power (as in Saudi Arabia) or filling the gap with pipeline gas and/or LNG imports (as in the UAE, Oman and Kuwait). However, unlike these countries, Egypt cannot afford the associated economic and opportunity costs.

This commentary examines in four parts the key aspects of Egypt's new natural gas supply policy. Part one describes the policy and what makes it new. Part two highlights the novel upstream features designed to secure long-term domestic supply. Part three considers the LNG import scheme and its progress so far. Part four explains the move to adjust domestic prices. We conclude by providing a preliminary assessment of the policy. Since its implementation is still unfolding, the commentary should be read as research in progress.

The genesis of a new policy

Stagnant production and the unrelenting rise in domestic consumption have put tremendous pressure on Egypt's natural gas supply system. In order to bridge the growing supply gap the government has decided to adjust its energy policy mix to support LNG imports. However, since importing natural gas while still exporting it does not square with common economic sense (MEES, 15 February), the government has decided to end the controversial pipeline gas exports to Israel, set higher prices for pipeline gas deliveries to Jordan and curtail the quantities allocated for LNG export plants. As a result one of Egypt's two LNG export terminals, that at Damietta which, unlike the Idku plant, has no dedicated gas supplies but relies on supply from the grid, is virtually sitting idle. The government has also begun to adjust heavily subsidized domestic prices in a move to contain an ever-widening fiscal deficit.

Cairo seems to have prioritized the import of LNG after realizing that the opportunity cost of such an option must be lower than that of substituting oil products for natural gas or dealing with power shortages which result in the economy running below capacity and frustrate legitimate social needs.

Furthermore, LNG imports are seen by the government as a short-to-medium term stop-gap measure until eventually more domestic natural gas supply is made available once resources far offshore are developed. Import volumes, which will depend on the needs of industry, are expected to be in the order of 5 to 7.5 bcm per year. However, soundings of well-informed professionals indicate that because of latent demand in the system, the supply gap could be double these amounts and might last much longer. In fact, the exact size of the shortage is difficult to forecast given the uncertainty about future demand growth, the inherently unpredictable rate of depletion of existing reserves and the wide range of estimates of yet-to-be discovered reserves (see Box 1).[II]

Box 1: Natural Gas Reserves and Resources in Egypt

B11. According to the BP Statistical Review of World Energy, which is mainly based on official data sources, Egypt's proved reserves of natural gas amount to 2.2 tcm as of 1st January 2012. The ratio of reserves to production (R/P) is 36 years. This is a static indicator of how long the above reserves will last at current annual production rates of 61 bcm.

B12. However, according to our calculations, the past 5-year average natural gas reserve replacement ratio (RRR) for Egypt has been less than 0.5. This means that the country is no longer able to replace produced reserves. In the extreme case of no addition to reserves and production continuing to grow at the same rate as in the last decade an average of 9.2% per year - future volumes from proven reserves would last only 16 years.

B13. Depletion of reserves has reached a point that warrants drastic action both to curb demand and boost supply. The opportunities for the latter will be driven by the potential for reserve expansion. This potential is supported by the 2012 assessment conducted by the US Geological Survey (USGS), according to which technically recoverable undiscovered conventional gas resources in the Nile Delta Basin (apparently extending beyond Egypt's maritime borders) are estimated at 6.3 tcm (mean), with a range of 2.6 to 11.7 tcm.

Securing long term domestic supply

While moving with urgency to address current supply issues, Egypt's policy makers have taken the long term view that only audacious upstream investment could secure long-term supply. To further exploration and development (E&D) of conventional gas, the Egyptian Gas Holding Company (EGAS) – the institutional instrument for the implementation of natural gas policies since 2001 – has offered higher-risk acreage in its latest licensing round, either deep water/deep targets or unexplored areas along the eastern maritime border (MEES, 4 June 2012). This move has been accompanied by "bold modifications" to the model production-sharing agreement supporting the bidding round. This was most likely in response to the concerns and expectations raised by the international oil companies (IOCs) during an informal roundtable discussion on "The Future of Oil & Gas Agreements in Egypt" held prior to launching the licensing round in June 2012.

Among the changes to the model production-sharing agreement, two key features are most relevant to the new natural gas supply policy. The first is the priority given to the domestic market. This has in effect made irrelevant both the 2008 moratorium on further natural gas exports and the principle of equal allocation of proven natural gas reserves between the domestic market, the export market and future generations. The second is the explicit criteria for determining the price of natural gas taken from foreign contractors' share to meet the priority requirements of the domestic market.

Until recently, this price was indexed to Dated Brent and bound by a floor and a ceiling with the latter reaching $4.70/MBtu in some of the most demanding agreements.[III] Henceforth such a price will be determined by the expected risk-adjusted internal rate of return of upstream projects. The higher-risk and higher-cost capital expenditures required to drill the reserves currently targeted will most likely overshoot the price EGAS will have to pay. Failure to pass-through any such a price to end users would mean that EGAS will be short on its dues to contractors, causing delays to upstream projects, as is evidently the case today.

Immediate imports of LNG

The LNG import scheme is one key priority of the new policy. EGAS will not get involved directly in importing and marketing natural gas. Instead, it will allow domestic industrial users to engage directly with private importers/sellers. Accordingly, the government will only act as a

facilitator, providing access to transport infrastructure within a regulated framework. Setting up an independent gas regulator is already being considered.

As far as the scheme proper is concerned, EGAS announced in November 2012 its intention to issue approvals to qualified companies to import natural gas in the form of LNG, build a floating storage and regasification unit (FSRU), connect the facility to the national grid and market and sell the imported gas to local consumers. In addition EGAS signaled the urgent need to proceed with the scheme by announcing that approvals will be given to the earliest "first delivery date" starting from May 2013.

Feedback on how best to structure the venture must have helped EGAS, which was mandated in mid-December 2012 to proceed with implementation, expedite the necessary tender documents and issue an invitation to bid by mid-January 2013. It is believed, at the time of writing, that five investors have submitted bids. Citadel Capital, which was the first to confidently announce it would be involved, has indicated that it has partnered with Qatar's QInvest to head a group of Qatari investors in a joint-venture to build and own the planned FSRU and deliver the imported gas to end-users.

The scheme cannot be fast tracked without timely LNG procurement. In this regard, negotiating volumes and prices with potential LNG suppliers is likely to be the critical element in success. Our soundings indicate that well before tendering for the LNG terminal, the Egyptian authorities approached Algeria and Qatar in a price discovery exercise to learn that under current energy market conditions (Dated Brent at about $110/B) they should not expect any LNG supply to be priced below $9/MBtu FOB, whether on

a spot or on a long-term, take-or-pay basis.

Hiking domestic prices

Adjusting domestic prices to reflect the cost of supplying natural gas to industry is the other key priority element of the new policy. First in line are the energy-intensive and feedstock-conversion industries. The evolution of natural gas prices in recent years up to current adjustments is summarized in Box 2. The latest and expected natural gas prices are tentatively given in table 1. Following discussions EGAS has recently had with key stakeholders, the pricing environment is rapidly changing. According to Egypt's State Information Service, which has referred to an as yet unpublished decree dated 21 February 2013, cement factories should expect the price they pay for natural gas to increase to $6/MBtu. This price, and the recently revised $6.50/MBtu for natural gas shipped via pipeline to the port of Aqaba in Jordan give some idea of the cost incurred by EGAS. As such it may be an indication of what other energy-intensive and feedstock conversion industries can expect.

Table 1: Latest and Expected Natural Gas Prices

(Data in the first column of the table are those appearing in a live ticker on the website of Egypt's ministry of petroleum's, as of mid-March 2013)

	Recent price	Likely objective	Comment
Feedstock conversion	Final-product-price indexation formulae (undisclosed)		
Energy-intensive industries	$3.00/MBtu	Gradual but rapid increase to $6.00/MBtu	Price to the cement ind. already at $6/MBtu
Rest of industries	$1.25/MBtu	Gradual but rapid increase to $3.00/MBtu	Specific case power generation
Households	Pt20/cum (*)	Likely increase in the high-end domestic market	

(*) The Egyptian Pound (EGP) is divided into 100 piastre (Pt), or qirsh. At the time of writing Pt20/cum was about $0.80/MBtu.

The electricity sector, by far the largest user of natural gas and the most politically sensitive, has been somewhat insulated. Certainly, electricity tariffs have been allowed to rise for industry, commerce and high-end domestic consumers. However, the price increase of natural gas supplied to power generators – currently less than $1.25/MBtu – has been muted, perhaps until a comprehensive reform of the country's energy subsidy system is articulated. Indeed as natural gas prices feed into generation costs and electricity tariffs, any adjustment should be seen in the context of this reform, which needs to be coordinated with the not yet finalized, but seemingly imminent, IMF-backed government macro-economic program.

The case of the cement factories signals how fast and how far the government might proceed. At the same time the government must be wary of the socio-economic consequences of sudden price increases. Whatever the ultimate pace, passing on the average cash cost of supply of apparently $6/MBtu to the industry should be relatively easy. It will be far more difficult to justify a price adjustment to a higher level to reflect the economic cost of supply, which should be made up of the long-run marginal cost (LRMC) plus a depletion premium. As proven reserves become a constraint, the depletion premium will grow larger, bringing the price of natural close to that of alternative fuels, either imported oil products or imported LNG.[IV]

Box 2: Recent Evolution of Natural Gas Prices in Egypt

B21. Decree no. 470 dated 2004 set natural gas prices at $0.75/MBtu uniformly for all industrial activities and the power generation sector, with a $0.10/MBtu discount to compensate new projects incurring the cost of connecting to the natural gas grid.
B22. Decree no. 1914 dated 2 September 2007 provided for a gradual increase in the price of natural gas supplied to industry (except the textile industry) from $1.25/MBtu to $2.65/MBtu within three years, ie by mid-2010.
B23. Less than a year later, in the context of soaring international oil prices (up to July 2008), Decree no. 1795 dated 30 July 2008 restructured the price increases decreed above along the following lines:
- *An immediate increase in gas prices from $1.25/MBtu to $3.00/MBtu for energy use in energy-intensive industries, defined as including steel, aluminum, copper, cement, glass, ceramics, chemicals and fertilizers;*
- *Maintaining the prevailing progression schedule from $1.25/MBtu to 2.65/MBtu for the energy use of the rest of industry;*
- *Separate pricing for natural gas used as feedstock in the export-oriented petrochemical and fertilizer industries, along with undisclosed formulas which set natural gas price as the sum of a base price plus an element indexed to the prices of the main final products, without a price cap.*

B24. By the end of 2008, the global financial crisis served as a pretext to freeze the above decree and reverse some of the increases already applied. It is not clear how prices have since evolved to the levels shown in the first column of Table 1.

Preliminary assessment of the new policy

On the long-term supply side, the minimal interest shown by IOCs in the 2012 bidding round has compelled EGAS to extend it by three months until mid-February 2013 (MEES, 9 November 2012). Judging from the deliberations of the second edition of the informal roundtable discussion on "The Future of Oil & Gas Agreements in Egypt" held just one month before the extended closing date of the bidding round, the "bold modifications" of the associated model production sharing agreement have fallen short of expectations. IOCs also seized on the opportunity to add to the usual litany of complaints the new impediments resulting from the polarization of decision making, now involving both ministerial technocrats and politically empowered presidential advisors. This notwithstanding, IOCs did acknowledge the potential of Egypt's natural gas resources and reiterated their commitment to long-term development and relationships.

As far as LNG imports are concerned, EGAS has so far managed to expedite the steps needed to initiate the plan. However, further progress may prove more difficult to achieve, given the current business and political environment in Egypt, which does not lend itself to a swift process. As a result, completing the LNG import terminal to free domestic gas for power generation during the summer peak of 2013 looks extremely challenging. Normally, developing an FSRU project from concept to commercial operation needs some 18 months. Securing medium to long term base-load LNG contracts at competitive prices to feed it could require an even longer lead time, unless the successful bidders are already involved in the business of producing and selling LNG.

Furthermore, there is little guarantee that industrial users will accept the government's proposals and commit to a take-or-pay obligation at market prices of over $10/MBtu (when including freight, regasification costs and marketing margins). In the context of Egypt's current natural gas market, shifting the supply problem to industrial users by requesting them to take charge of their own procurement could be seen as a flight from responsibility. The government should get involved further and more proactively in seeking affordable supply solutions such as using a price pooling mechanism to offset the inevitable high cost of imported LNG.

As far as domestic pricing is concerned, government policy appears, in the absence of transparency and informed public debate, piecemeal and inconsistent, particularly when taking into account the fact that pricing issues are not limited to natural gas. LPG, petroleum products and electricity, which are also in critical shortage, suffer similar price distortions. In this regard, gas-to-power pricing stands largely unaddressed. Without major increases in electricity tariffs, demand for power generation will not be significantly reduced and concurrently gas consumption will continue to rise unabated.

The government must have been - and if not, it should be - provided with a broader framework to reconcile the many objectives it seeks to achieve, including providing the upstream sector with adequate incentives for further exploration and development, supporting industry and power generation with affordable fuel options and alleviating the fiscal burden of subsidies, not to mention saving energy, preserving the environment and relieving poverty by redistributing national income. But pursuing all such objectives with pricing as the primary (and apparently only) tool would violate the rule that each policy objective needs at least one specific policy instrument. Otherwise policy makers should be realistic about their preferences and be ready to make compromises.

Herein lies the crux of the matter. In its attempt to correct energy market structure and distortions, the Egyptian government is caught between a rock and a hard place. On the one hand, it has come under increasing pressure to balance the need for energy prices to reflect the costs of supply against the social and economic impacts of price increases. On the other, multilateral lending agencies, prominent among them the IMF, have been pressing it for a genuine commitment to, and implementation of, reforms to reduce the country's ever-increasing cost of subsidies. Steering the broader economic and energy policy agenda between these conflicting expectations is never going to be easy or fast.

This commentary has been prepared by Ali Aissaoui, Senior Consultant at APICORP to present preliminary findings from research-in-progress. The views expressed are those of the author only. Comments and feedback may be sent to: aaissaoui@apicorp-arabia.com. The commentary was originally published as APICORP's Economic Commentary Volume 8 No 3 for March 2013

[I] Hakim Darbouche and Robert Mabro, "Egypt's Natural Gas Market: So far So Good, But where To Next?" in Bassam Fattouh and Jonathan Stern (Ed.) Natural Gas Markets in the Middle East and North Africa, Oxford Institute for Energy Studies, 2011.

[II] USGS, "Assessment of Undiscovered Conventional Oil and Gas Resources of North Africa, 2012", Fact Sheet 2012–3147, February 2013.

[III] Darbouche and Mabro, ibid.

[IV] Hossein Razavi, "Natural Gas Pricing in Countries of Middle East and North Africa, The Energy Journal, Vol. 30, No. 3, 2009.

Egypt's Natural Gas Dilemma: Prices, Investment, Liberalization, and Geopolitics

By Reem Morsi and John Pastrikos

Historical Overview and Governmental Rationality

Ranking an impressive twelfth among global exporters in 2009, Egypt initiated natural gas production in the 1980s with a mere 30 billion cubic feet of gas to accommodate domestic consumption. These figures increased steadily over the coming years to reach 518 billion cubic feet in 1999 and 867 billion cubic feet in 2001. Egypt was clearly becoming an energy powerhouse and the surplus was valuable on international markets at the time. Over the next decade, production continued growing through the one trillion cubic feet mark accompanied by a parallel growth in domestic demand. Production growth eventually allowed for a surplus of roughly 536 billion cubic feet in 2010 as global prices were simultaneously falling. Even so, in 2011/12, this surplus generated $1.96 billion in revenue according to the Egyptian Central Bank. For better or worse, those days are behind us.

The realities described above force even casual observers to wonder what forces have pushed Egypt to import natural gas rather than continue to export a surplus. Is domestic consumption actually increasing at a rate that much faster than theoretical production capabilities? Frankly, this is highly unlikely and, to the degree that it might be true, the reality is not entirely a function of domestic issues. More likely, perceived complications within the natural gas sector are resulting from a peculiar coincidence of domestic economic and political factors in combination with the externally imposed disincentives to update and expand productive capabilities. Most obvious among these is the reality that the post-financial crisis era has caused a bear market in natural gas thereby persistently suppressing international prices to levels not seen since the 1990s.

According to major natural gas producers operating in Egypt, domestic demand did rise steadily during the last five years with 55% of this demand originating from the electricity sector. This, coupled by a stagnation of production, created the need to import in order to fill an extant domestic deficit. The slowing of production was of course, to a substantial degree, brought about by political unrest and resulting decreased output by BG, Dana Gas, and Apache. Simultaneously however, this decrease in production and waning desire to export is also a rational result of international price changes. Fundamental laws of economics note that when the price of a good falls, one should quite rationally produce less of it. Further, one should certainly not export that which is produced at historically low international prices. These facts become doubly true when faced with rising domestic consumption needs that would necessitate the import of more expensive alternative energy sources. In this way, Egyptian governmental action in the sphere of natural gas is quite rational. However, this rationality should not be seen as ubiquitous or ongoing.

Proven Reserves, Irrationality, and The Egyptian Economy

As of 2011 Egypt has proven reserves of 77 trillion cubic ft of natural gas, which amounts to nearly 30 years of consumption not accounting for growth in production, changes in demand, pressure depletion, and other factors such as exploration outcomes. In spite of this, Egypt is clearly not acting to exploit these reserves. To some degree, as noted above, this makes rational sense. However, the historically low price of natural gas resulting from a global economic slowdown is simultaneously correlated with a low international price for capital. As Warren Buffet is fond of saying, it is the wise investor who is"greedy when others are fearful, and fearful when others are greedy." Given this maxim, a collapsing international natural gas price, while it may rightly encourage domestic consumption, should also encourage investment in the development of a resource that will inevitably experience a price rebound. The question should then become focused upon how Egypt might finance rational investment during a time of relatively low capital costs.

The answers to this specific question can, of course, only be understood within the construct of large-scale investment viability, which relies prominently upon future exploration. This, according to industry experts, is becoming increasingly expensive due to the depletion of shallow reserves and the necessary switching to deeper, higher temperature, and more costly methods to extract natural gas. Indeed, according to Marwan El Sayed, former Financial Manager at Shell International, "The issue is not that there are not sufficient reserves, the issue is the lack of developed reserves". El Sayed further notes that, "Such required facilities to provide processed and developed reserves are very costly at billions of dollars." Of course, it is very important to note that these costs, while high, are quite likely substantially lower now than they will be as the global economy recovers over the next decade.

Further, this short run financial barrier to reserve development will result in Egypt importing one billion cubic feet of natural gas every day over the last half of 2013. This will be done at an annualized cost of $3.65 billion and represents the most obvious present period loss associated with Egypt's uncertain investment climate. Perhaps even more unfortunate is that Egypt's bold plan to start importing natural

gas does not come without the need for further foreign investment as Egypt must construct a LNG (liquefied natural gas) import or receiving terminal to follow its chosen path. This project alone will cost roughly $3.7 billion dollars. Of course, as discussed elsewhere in recent issues of Egypt Oil and Gas, the country's ability to attract this investment has been impeded by its growing reputation for not paying its due to foreign energy sector partners.

Of course, this unfortunate budgetary constraint is partially a result of the expensive but necessary subsidization of various consumer good and imported petroleum products. The outcome of this continued policy has also been a delayed IMF loan and readily observable currency depreciation in formal and black markets. Ironically, in a rather circular manner, this has only continued to worsen the initial payment difficulties.

When examining one side of this budgetary challenge, Egypt's natural gas subsidies totaled LE 10 billion during the fiscal year 2009/2010 and were embodied in the fields of power generation, industrial production, and residential consumption. This means that subsidy reduction or elimination may conceivably lead to the closure of factories that can no longer cope with their rising expenses. This might in turn deter foreign investors, which will result in more complications to the present currency situation. Similarly, lifting the subsidization of natural gas will also impact households in two different ways. First, this impact will be rather direct as many households in Egypt use natural gas rather than butane bottles for cooking. An indirect impact will also exist as natural gas is the main fuel used to generate Egyptian electricity. According to CEDIGAZ's, the electrical sector consumes 54 percent of Egypt's natural gas which means that subsidy elimination will feature prominently in higher household electricity bills. Similarly, the industrial sector consumed 29 percent of Egypt's natural gas production in 2009 which means that subsidy elimination will also impact the price of consumer goods directly. What's more, all cars running on natural

gas will feel this subsidy elimination crunch as will the increased number of new taxis and buses servicing major Egyptian cities. This reality will impact the economy of intercity transport and the price of all goods transported by natural gas powered vehicles.

The paradox is clearly that subsidy elimination may yield enough social unrest to cause a decline in Egypt's foreign investment…but only subsidy elimination will allow repayment of Egypt's financial obligations towards foreign gas companies and the reassurance offoreign investors. This circularity is undoubtedly what recently prompted IMF official Carlo Cotterelli to note that, "You need to compensate

the poor for the loss of subsidies, but at the same time, you also save money because you are not subsidizing the rich." This statement very obviously represents an important softening of IMF rhetoric surrounding theliberalization necessary to go forward with Egypt's 4.8 billion dollar loan deal.

The "Switch" and Geopolitical Outcomes

Interestingly, the Egyptian switch from net exporter to a net importer of natural gas will not only impact the domestic economy but also the economies of countries that were formerly consumers of Egyptian output. In fact, in at least one case, it seems quite clear that this was a secondary political objective behind the rationally driven domestic policy change.

Egypt started exporting natural gas in 2003 with the volume increasing rapidly after the completion of the Arab Gas Pipeline (AGP) in 2004 and the construction of other export facilities such as the Damietta LNG trains in 2005. Egypt historically exported natural gas throughthe controversial AGP pipeline providing gas to Israel, Jordan, Syria, and Lebanon, with recent additions extending the pipeline to Turkey and even European markets. Perhaps not surprisingly, the pipeline has been attacked at least 12 times since the 25th of January Revolution.

Prior to the attacks, roughly 40 percent of Israel's gas consumption and 80 percent of Jordan's power generation derived from Egypt's gas supply. Further, Egypt also exported natural gas in the form of Liquefied Natural Gas (LNG) through Damietta and Edko. Egypt's exports of LNG go primarily to Europe followed by the USA, Korea, and Japan. While it is highly doubtful that Egypt's declining natural gas exports will have a substantial impact upon European countries with substantial natural gas imports, the regional impact of domestic Egyptian consumption could be substantial, not just from economic perspective, but also geopolitically.

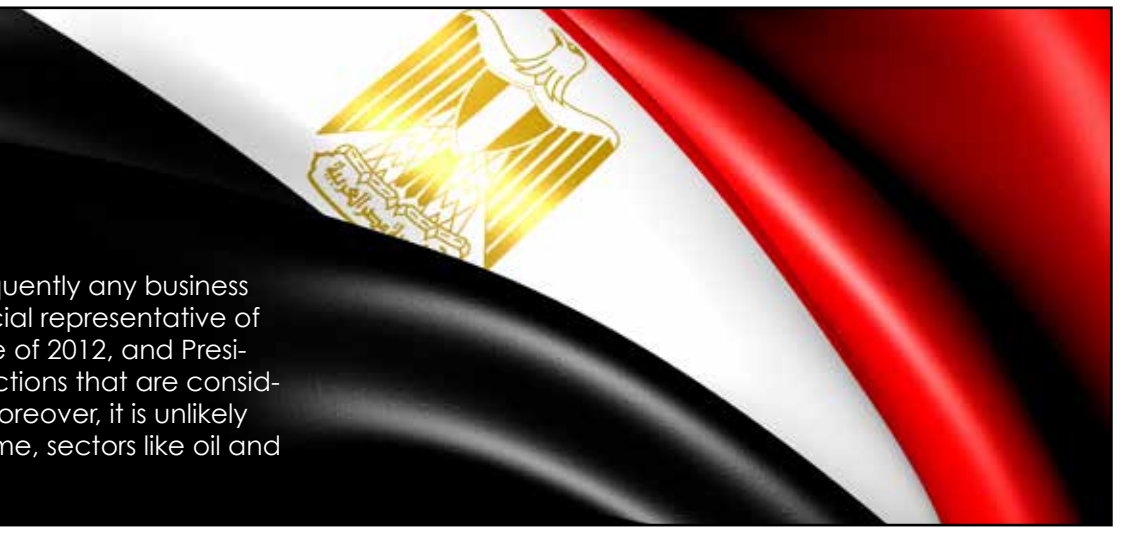
Egyptian importation of natural gas and the continued refusal to regionally export has forced Israel in particular to seek alternative energy sources. The result has been a rather intense desire to develop the Leviathan, Tamar, and newly discovered Tanin gas fields. These rational objectives, given Egypt's actions, have substantially modified economic and political relationships between Israel and Korea, Turkey, and Cyprus. Far from the intended consequence of Egyptian governmental action, the inability of Israel to import inexpensive Egyptian natural gas may actually result in a more globally integrated Israel. Simultaneously, Egypt is missing a global opportunity to invest in its natural gas infrastructure, is forced to choose between domestic liberalization and currency devaluation, is losing credibility with foreign investors, and is becoming politically marginalized due to self-imposed economic isolation.

Conclusion

Given the very obvious and immediate political cost of its actions, it is beyond imperative that Egypt at least benefits economically in the longer term. Therefore, the proper policy action today is to first resolve the budget crisis. This means they the government must at least increase the efficiency with which subsidies target ONLY the poor. These savings can then be used to pay creditors and secure the forthcoming IMF loan. This will be used (along with recent regional assistance) to enhance capital investment while international prices are relatively low. Incentives must then be put into place to transition domestic industry to natural gas so that

they might capitalize upon presently low commodity prices and increasing domestic production. Finally, the resulting small surpluses must be exported if only to maintain Egypt as a player in the regional political sphere. As the global economy recovers, Egypt will then have "been greedy when others are fearful", invested in a commodity that it can utilize over the long term, built credible relations with foreign investors, and avoided alienating itself from regional and global consumers. This sort of action and foresight can only be described in one way…..revolutionary in spirit.

Egypt's Might-Have-Been Parliament



Oil and gas are sovereign resources owned by the Egyptian people. Consequently any business agreements in this sector must be ratified by a parliament serving as the official representative of the Egyptian people. Unfortunately, Egypt's parliament was dissolved in June of 2012, and President Morsi's administration has thus far been unsuccessful in conducting elections that are considered legitimate by Egypt's courts, the opposition, and the broader public. Moreover, it is unlikely that the parliamentary crisis will be resolved in the near future. In the meantime, sectors like oil and gas will remain in a precarious state of suspension.

By Robert Mogielnicki

History Tends to Repeat Itself

The Egyptian parliamentary election crisis highlights the paradox of post-revolutionary Egypt: everything has changed and nothing has changed. The January 25th Revolution ousted Hosni Mubarak and appeared to pave the way for sweeping democratic reforms. Egyptians elected a new parliament; however, the representative body was short-lived as the Supreme Constitutional Court (SCC) dissolved the parliament in June of 2012. Meanwhile Mohamed Morsi defeated Ahmed Shafik in a close presidential race after Egypt's liberal opposition failed to function as the cohesive political entity that many Egyptians and international observers had hoped for. Several months later, President Morsi attempted to rectify the parliamentary crisis by issuing a presidential decree to hold new parliamentary elections in April. In return, the National Salvation Front (NSF), the leading opposition coalition in Egypt, responded by boycotting the elections citing an unsuitable political climate. Eager to enter the fray, Egypt's judiciary branch suspended Morsi's presidential decree thus delaying the parliamentary elections indefinitely into Cairo's hazy future.

A brief look back at the 2010 parliamentary elections sheds light on the paradoxical nature of post-revolutionary Egyptian politics and subsequent parliamentary crisis. More specifically, the 2010 elections suggest a continuity, rather than a transformation, of the electoral mechanisms that existed in pre-revolutionary Egypt. The 2010 parliamentary elections pitted the ruling National Democratic Party (NDP) against the Muslim Brotherhood (MB), the largest opposition group in pre-revolutionary Egypt. After a poor performance in the first round of elections, the MB decided to withdraw from the elections citing widespread fraud and election irregularities. "The violations, terror and hooliganism we were subjected to at the hands of security forces and NDP thugs before and during elections...made us reconsider taking part in the runoff," were the words used by the Brotherhood's Supreme Guide Mohamed Badee as reported by Amro Hassan of the Los Angeles Times.

Two and a half years later, Egyptians are hearing the same accusations of fraud, irregularity, and intimidation. Only this time, the accusations are coming from liberals like Muhammad ElBaradei and directed at none other than the MB. How did the MB transition from the accusers to the accused? For starters, the MB assumed the majority role formerly held by the NDP, and consequently it is in their interest to hold elections as soon as possible in order to secure a parliamentary majority. On the other hand, the liberal opposition has been relegated to the role formerly played by the MB during the 2010 elections, and it is in the opposition's interest to delay elections. Following in the footsteps of the MB, the NSF officially announced that they would boycott the 2013 elections. Perhaps they learned a lesson from the MB's playbook.

The progression of political events from the 2010 parliamentary elections until present suggests that a fundamental transformation of the political structure has not occurred in Egypt. Rather, the MB simply filled the political vacuum left by the NDP, and the liberal opposition was forced to assume the much smaller and limited role formerly played by the MB. The repositioning of the MB in Egyptian political society from the leading opposition group to the ruling party can serve as a useful framework through which to view the current parliamentary impasse.

A Three-Way Battle

The latest political drama in Cairo concerns a three-way battle between the Muslim Brotherhood, the judiciary branch, and the opposition over who will determine the upcoming elections. The MB are hoping to conduct elections while they still have a good chance of securing a majority of seats in the upcoming parliament. Yet a dismal economic forecast and constant political turmoil threaten to upset the MB's plans for majority rule. The judiciary recently expanded its role in parliamentary proceedings by suspending Morsi's decision to hold elections. The opposition, best represented by the NSF, boycotted the election in the hopes that the boycott would be associated with increasing public dissatisfaction over the Morsi administration. In order to shed light on the current parliamentary election crisis, it is necessary to examine each of these three power players in more detail.

The crisis began when President Morsi, the figurehead of the MB, issued Decision No. 134 of 2013 which paved the way for parliamentary elections to begin on April 22. The reasons behind T presidential decree were twofold. First, the MB are worried that any delay in the elections will cost them seats in the upcoming parliament. Eamonn Gearon, North Africa expert and professor at John Hopkin's SAIS, describes the MB's concern: "Nothing is guaranteed in Egyptian politics, least of all a Muslim Brotherhood majority in a to be determined parliament." Second, securing a much-needed loan from the IMF depends partly on Morsi's ability to convey a semblance of democratic progress and stability. Electing a parliament is an important condition in this respect. There was only one problem with the MB's plan, they underestimated the power of the judiciary branch.

On March 6, the Administrative Court officially entered the parliamentary ring by issuing a decision to suspend Presidential Decision 134 and send Law 2 of 2013 back to the Supreme Constitutional Court (SCC) for review. Law 2 of 2013 is the draft election law that provided the legal framework for Morsi's presidential decree. The Shura Council amended and passed Law 2 on February 21 without final approval from the SCC. Since the Shura Council made changes to the law, the council was supposed to refer the law back to the SCC for final approval. When President Morsi issued his presidential decree, he either sought to circumvent judicial authority or believed that the Shura Council's changes would not be challenged. In either case, the Administrative Court did challenge the draft election law as well as the presidential decree that followed.

The Administrative Court's suspension of the draft law passed the political buck back to the Morsi administration and the Shura Council. As of April 11, the Shura Council responded by passing a new election bill in addition to a political participation bill. The two bills have been referred to the SCC before they can be signed into law. The constitutional court has 45 days since the date of referral to rule on the new election draft law. This means that President Morsi may be in a position to announce new election dates at some point in May.

The Administrative Court's decision to suspend the upcoming elections also forced Egypt's leading opposition coalition, the NSF, to rethink its strategy. The NSF had decided to boycott the elections before the court's decision because many believed that any elections conducted by the Muslim Brotherhood controlled government would be fraudulent. NSF member Sameh Ashour explained to Egypt Independent's Omar Halawa that his coalition would refrain from participating in elections until there was "a law that ensures the integrity of the electoral process, a Cabinet that applies the law and gets the trust of people, a true independent judiciary, lifting the blockade on the canal cities, and realizing the hopes of the nation and social justice." Some observers questioned whether the NSF boycotted the elections because its demands were not met or because they feared confronting the MB in a general election.

Whatever the case may be, the battle between the MB and the courts has nevertheless granted the NSF additional time to rethink their electoral strategy and the effectiveness of a boycott. The court's decision to delay the elections could not have come at a better time for the NSF, which is suffering from internal strife. Many of the coalition's senior leadership did not agree that the boycott was an effective political strategy. Moreover, a prominent opposition leader, Hossam Eissa, resigned from his position in the Dostour Party on March 21 over corruption in the party. The Dostour Party is headed by Mohamed ElBaradei and serves as a founding party of the NSF. Eissa's resignation is just one example of the growing discontentment and discord within the diverse umbrella coalition of opposition parties. The NSF will likely use this window of opportunity provided by the courts to organize their rank and file and reevaluate the effectiveness of their proposed boycott.

The NSF and other opposition groups criticized the new election draft law passed by the Shura Council in April, citing exclusion from the drafting process. The opposition also expressed concern over the council's decision to allow religious slogans during election campaigns. Moreover, the NSF released a new set of demands meant to ensure a free and fair election process. These demands represent more of the same political rhetoric from the opposition, but they serve to leave the door open for another boycott. In other words, demanding much needed, but perhaps unrealistic, political conditions provides Egypt's opposition with a legitimate excuse to boycott the upcoming elections.

The Future of the Parliament

What does the future have in store for the elections? The elections will eventually occur; however, it remains unclear whether the Muslim Brotherhood or the judiciary branch will determine the time frame for the elections. The MB will do everything in its power to push the judicial process along, or work around it if possible, in order to hold elections sooner rather than later. The deteriorating political and economic situation in Egypt means that delayed elections will likely equate to less Muslim Brotherhood controlled seats in the parliament. Egypt's judiciary, on the other hand, is not motivated by any particular time constraints. It will seek to establish itself as an independent branch capable of serving as a bulwark against power hungry presidents. For this reason, the courts will follow every technical procedure necessary to set the precedence that the judiciary is an important oversight body in the Egyptian system of checks and balances. In either case, the court must rule on the constitutionality of the new draft law by the end of May.

While the NSF may not be able to determine election dates, the opposition coalition has the luxury of time on their side. In other words, they are free to decide when and if they want to participate in the upcoming elections without suffering major political repercussions. When the legal technicalities are inevitably resolved and the elections dates are once again set, the NSF will have another chance to reconsider their decision to boycott. If the election crisis is resolved in the near future (let's say before Ramadan), then it is unlikely that the NSF will reverse its decision to boycott. Yet the longer the crisis goes unresolved, the more likely it is that the NSF will reverse its former decision. "In light of the growing dissatisfaction with the Muslim Brotherhood on the Egyptian streets, the NSF may soon decide that participation in, rather than withdrawal from, future elections will be advantageous for Egypt's opposition," explains Gearon.

As the dissolved parliament approaches its one year anniversary, there seems to be a greater and greater disconnect between the Egyptian government and its citizens. This disconnect does not bode well for the oil and gas sector. In Business Today Egypt, Hani El Sharkawi, an independent oil and gas consultant, says that a consistent dialogue between the government and the general public is essential for the wellbeing of the oil and gas sector. The government has not managed to determine a date for the elections, and the window for dialogue is closing quickly. Unfortunately for sectors like oil and gas, it appears that the battle over the next parliament is just warming up.

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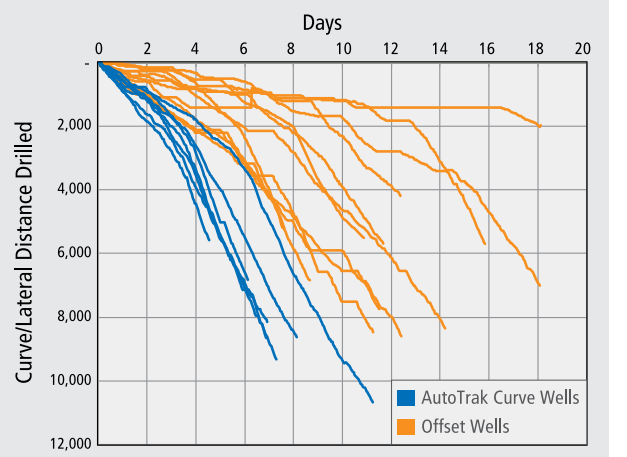

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Methods of Natural Gas Transport

In recent years we have seen extraordinary technological developments in the production of natural gas, which has lead to a significant increase in supply and a sharp drop in prices. As natural gas prices have decreased by more than half in the past five years, production has moved in the opposite direction. In 2011 it totaled 3,276 billion cm, which is about a third more compared to ten years ago. [1]

By Laura Raus

According to many forecasts, the price of natural gas will stay low, as supplies will surge higher. The International Energy Agency stated in 2011 that the world is entering a "golden age of natural gas." According to WTRG Economics as of last month, the price of natural gas stood at about 4 $/MMBtu, whereas the price of crude oil was around 99 $/bbl, which translates to 15 $/MMBtu.

A boom in the production of natural gas inevitably means a rise in its transport as well. However, increasing transport capabilities can be complicated as new pipelines and LNG facilities require huge investments. Not to mention that the construction of new pipelines can become complicated, politically, if pipelines cross international borders. This raises a need to explore alternative ways to export natural gas energy.

Pipeline

The fire that results from lightening striking natural gas bewildered ancient civilizations. In 500 B.C the Chinese discovered how to benefit from these fires. They built pipelines out of bamboo shoots to transport gas from its ground sources to waterways in order to separate salt and water, essentially a primitive form of desalination. [2] As such pipelines are the oldest method of transporting natural gas. Pipeline transport is still the most common method of transporting natural gas. Although the construction of pipeline is complicated and expensive, once in place, they are an easy and cheap way to transport large volumes of gas. Additionally, pipeline transport is relatively safe and reliable.

Pipeline transport does have distinct disadvantages primarily related to reserves and production output. Infrastructural investment in pipeline transport only makes economic sense when transporting vast and relatively stable amounts of gas to a given destination and market over a long period of time. The cost of building and maintaining a pipeline is directly related to its length. Therefore, it is expensive to transport gas over long distances via pipelines, especially if they have to run below the seabed. Pipelines are also very vulnerable to sabotage, a significant factor when navigating the implicit geopolitics of a pipeline that runs thousands of miles through several countries. An attack on a pipeline can stop the transport of huge amounts of gas for a long period of time significantly impacting a country of regions energy supply. Recent shortages in Jordan resulting from attacks on the Arab Gas Pipeline serve as evidence of this point.

Liquefied natural gas (LNG)

Currently the most common method of transporting natural gas is via its liquid form. In order to liquefy natural gas, it has to be cooled to around -162C. LNG, which has a volume 1,600 times less than gas at room temperature, is transported by specially designed cryogenic sea vessels or road tankers and then re-gasified. Re-gasification terminals, where LNG is allowed to expand and then reconverted into gas, are connected to a storage and pipeline distribution network.

LNG and re-gasification processes are complex and expensive. Natural gas liquefaction technology was developed in the 19th century and in 1964 the first significant commercial transport of LNG occurred. LNG infrastructure developed slowly and has currently attained a high level of sophistication as LNG shipments are growing fast. [3] In 2011, global LNG shipments grew by 10.3%, whereas pipeline shipments increased by just 1.3%.

Transport via LNG has a distinct cost advantage when gas needs to be transported over long distances. LNG transport may be better than pipelines for distances over 2000 miles, according to Richard Dawe, Professor Emeritus in Petroleum Studies at the University of West Indies. LNG requires huge initial investments for necessary infrastructure. In addition to this, maintenance of conventional LNG facilities is rather expensive; as such LNG projects require established and expansive reserves, long-term commitment chains and substantial markets to guarantee profitability. [4]

Cheaper technologies for producing and transporting smaller amounts of LNG have been developed in recent years enabling the development of small remote gas fields and the importation of gas to smaller markets outside pipeline networks. The popularity and viability of small-scale LNG is reflected by the recent agreement of Volvo Trucks, Mack Trucks and Shell Oil Company to collaborate supporting the wider use of LNG as a fuel for heavy-duty trucks. [5]

According to BP's World Energy Report global LNG shipments totaled 331 bn cm while pipeline shipments were at 695 bn cm in 2011. Despite the popularity of pipeline and LNG transport there are alternative methods to transport natural gas. In many cases, gas is not even transported as gas, but is transformed into other substances or is converted to energy and transported in the form of other products.

Compressed natural gas (CNG)

CNG can be used as an alternative transport fuel. CNG has less energy than traditional gasoline, which is a distinct disadvantage, as vehicles powered by CNG require frequent refueling. Not to mention the pressurized fuel tanks used in vehicles that run on CNG also constitute a safety concern. However, CNG does have positive applications, the combustion of CNG produces much less greenhouse gas emissions compared to gasoline. [6] According to Dawe producing and transporting CNG is simpler and cheaper than LNG as it does not require extreme temperatures.

CNG has been used as a transport fuel for decades, but its popularity is hindered by the lack of cars designed for CNG and the dearth of CNG dispensing stations. However, due to the imposition of restrictions on greenhouse gas emissions and increases in gasoline prices, the popularity of CNG vehicles has increased significantly in recent years. The Volkswagen Group has recently revealed plans to invest heavily in the development of CNG technologies. [7]

Gas to liquid fuels

Natural gas can also be converted into other liquids such as methanol, syncrude and ammonia. Due to its toxicity and low energy content methanol is not used as a transport fuel. Methanol is primarily used for fuel for internal combustion engines and as a basic chemical feedstock for the manufacturing of plastics.

Other gas-to-liquids (GTL) processes are being developed to produce more environmentally friendly fuels such as syncrude and diesel. Using current technologies such processes are usually complex and expensive; today very few GTL plants operate commercially. However, potential for development exists. Shell, for example, has been operating a GTL plant in Malaysia since 1993 and is currently building the world's largest GTL plant in Qatar. [8]

Gas to wire

Another alternative to transport gas energy is to use it in the production of electricity that can be transmitted via cables. However this method is less popular due to high cost.

In the mid-90s the use of natural gas for electricity generation became quite popular. In many plants, the hot exhaust from gas turbines is passed through a heat recovery steam generator and the steam produced is then used to drive a conventional steam turbine. [9] Both gas and steam turbines are then used to drive electricity generators. The efficiency achieved with this technology is 55-60%. Cogeneration technology, which is being used more and more in places where there is a need for heat combined with electricity, can even reach efficiency of 80%. Additionally, producing electricity from gas is more environmentally friendly than conventional power generation.

However, transporting gas energy as electricity also has a number of disadvantages. Installing high-power lines is expensive, not to mention the significant energy loss when converting it to low voltages for consumers over cable lines. In the case of associated gas, there is a risk that if a generator error or shutdown occurs, then the whole oil production facility might also have to be shut down, unless there exists another gas outlet. [9]

For these reasons, the use of gas for power generation has not proved very popular. Nonetheless, it still exists to some extent. For example, in 2012, Iran started the implementation of its first gas-to-wire project, hoping to export the electricity generated to other Persian Gulf countries. [10]

Gas to hydrate

Another alternative for gas transport that is still in the experimentation phase is gas hydrate. Natural gas hydrate is an ice-like substance that is formed by mixing natural gas with liquid water and cooling it. Dawe explains that compared to alternative technologies such as LNG, conversion to hydrate is relatively simple, as it does not require extreme temperatures or pressure, potentially making it relatively cheap. Therefore, transportation as hydrate could be especially suitable for small reservoirs, associated gas, stranded gas and other unconventional gas.

Unfortunately, pilot projects have demonstrated that hydrate production is not as simple as it seems. The behavior of hydrates is still not completely understood, making it too dangerous to make on large scale.

The future

Each method of transporting gas energy has specific advantages and disadvantages. Therefore, the future popularity of each method depends on where gas will be transported and from where it's coming. One factor that could have a huge impact on natural gas is the development of shale gas. If the US manages to make extensive use of its shale gas reserves, then the need for imported LNG will be drastically reduced in the US. Conversely, Japan, another major natural gas importer, is likely to stay a major importer as it relies heavily on Qatar and its LNG technology. The world's largest gas producer Russia, will probably continue to rely on pipelines in the near future as it would be uneconomical to opt for other methods as pipelines are already in place. The same goes for LNG facilities. Since pipelines and LNG facilities already exist, it will be difficult for other methods to come on the market. Even if their running costs are lower, they don't have a chance, as their establishment requires large investments that have already been made in LNG.

However, Dawe argues that for green site developments and smaller niche markets - such as remote reservoirs on islands, small reservoirs, associated and stranded gas and gas production with highly variable volumes – other methods, especially CNG, can be strong options. Small volumes of intermittent gas at which CNG could have a competitive advantage are not economically attractive to major gas transporters and sellers, but could appeal to smaller companies, especially since CNG facilities require relatively small initial investments.

In conclusion, LNG and pipelines are not likely to face strong competition from other modes of gas energy transport on a large scale in the near future. However, small-scale gas transport may play a much greater role thanks to the development of CNG. Only time will tell if other technologies such as hydrates and GTL will revolutionize the transport of natural gas energy.

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Case History

Kymera Hybrid Bit Reduced Rig Time by 13 Days in Abrasive Egyptian Sandstone Formatic

Baker Hughes saved USD 150,000 through increased drilling ef

Benefits

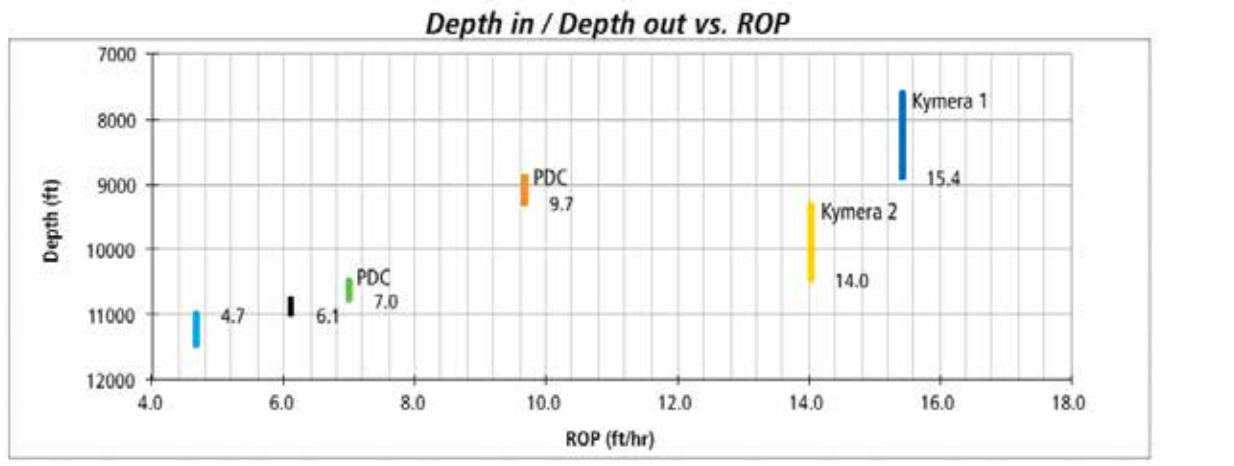
- Reduced rig time by 13 days over comparable offset runs
- Saved operator USD 150,000

Background and challenges

- Onshore drilling operation, Western Desert, Egypt
- Hard, abrasive Kaolinitic sandstone formation
- Kick-off from vertical and drill a challenging 12 ¼-in. directional section
- Eliminate potentially harmful vibrati difficulties that had previously hampered directional drilling activitie

Baker Hughes solution and results

- 12 ¼-in. Kymera hybrid drill bit with PDM motor
- In two runs, drilled significantly greater distances with higher ROP than comparable offset runs
- Eliminated transitional zone



A Middle Eastern operator working in Egypt's Western Desert wanted to kick off from vertical and drill a challenging 4/12-in. high-torque directional well section through a hard, abrasive Kaolinitic sandstone formation.

From previous experience in the area, the operator knew PDC bits could provide high rates of penetration (ROP) but were likely to experience significant damage from potentially excessive levels of vibration. Roller cone bits would require less torque and be easier to steer but with significantly reduced ROP. They would also be likely to require more trips due to bearing failure.

To drill the formation, Baker Hughes recommended the Hughes Christensen Kymera™ hybrid drill bit with a positive displacement mud (PDM) motor. The Kymera bit, which incorporates PDC technology and tungsten carbide inserts with elastomer seal bearing technology, offers the higher ROP associated with PDC bits while delivering the improved steering customarily delivered by roller cone bits.

On its first run, the Kymera bit kicked off from vertical and drilled %230 farther than comparable offset runs with a %58 higher ROP and a %48 lower cost per foot (CPF). On its second run, the Kymera bit drilled %193 farther than comparable offset runs while recording a %44 higher ROP and %43 lower CPF.

Overall, that equates to a total savings of 13 rig days with a corresponding reduction in costs of USD 150,000.

www.bakerhughes.com

KPC 24” Abu Gharadig-Dahshour Pipeline Repair Project:

By: Tatianna Duran

Summary:

The Khalda Petroleum Company is undertaking the 24" AG/ DAH Pipeline Repair Project. The project is under the supervision of the Project Managers Neil Clark and Engineer Mohamed Ismail, and was contracted by PETROJET.

The project started on September 29th 2012, and will be completed by end of October 2013 (mechanical completion). The budget stated for this project $27.50mm.

The Pipeline Details:

The pipeline was originally constructed and designed in 1974. The pipeline from the Abu Gharadig Plant to the Dahshour Plant is 262.5 kilometers long and is a

24-diameter pipe with a wall thickness of 7.1mm (0.28) and a MAOP (Maximum Available Operating pressure) of 795 psig. Additionally, the pipeline has line-break valves installed along the length of the pipeline. The route of the pipeline runs through mainly uninhabited desert.

As a result of the identification of corrosion by the previous operator (GUPCO) a number of repairs were carried out, however further inspection recommended that the MAOP be reduced and a MAOP of 690 psig implemented.

The Dahshour Gas Plant must receive gas at a minimum pressure of 550 psig to enable extraction LPG from the “rich” gas and deliver “sales” gas to GASCO.

Khalda became the operator of the pipeline and associated assets in February 2011. At this time the pipeline was inspected using an intelligent pig with the objective to detect internal and external corrosion, buckles, dents, coating dis-bonding, etc. This testing was done to ensure that the line could continue to operate at the required MAOP of 795psig and as based on the original Location Class of the pipeline.

The inspection was completed and the final report, published in August 2011, identified that an immediate repair was required for wall thickness reduction exceeding 80% of the original w.t. (wall thickness). However, the report also identified w.t. reductions of over 50% of the original w.t. at other locations. Due to the severity of the identified external corrosion the pipeline was de-rated and limited to a maximum 400 psig operating pressure.

In the period between January and March 2012 a second pipeline inspection was carried out for identification metal loss, extended geometry and high resolution-mapping. This inspection provided more precise and accurate coordinates in order to ensure correct identification and location of line sections to be repaired and replaced.

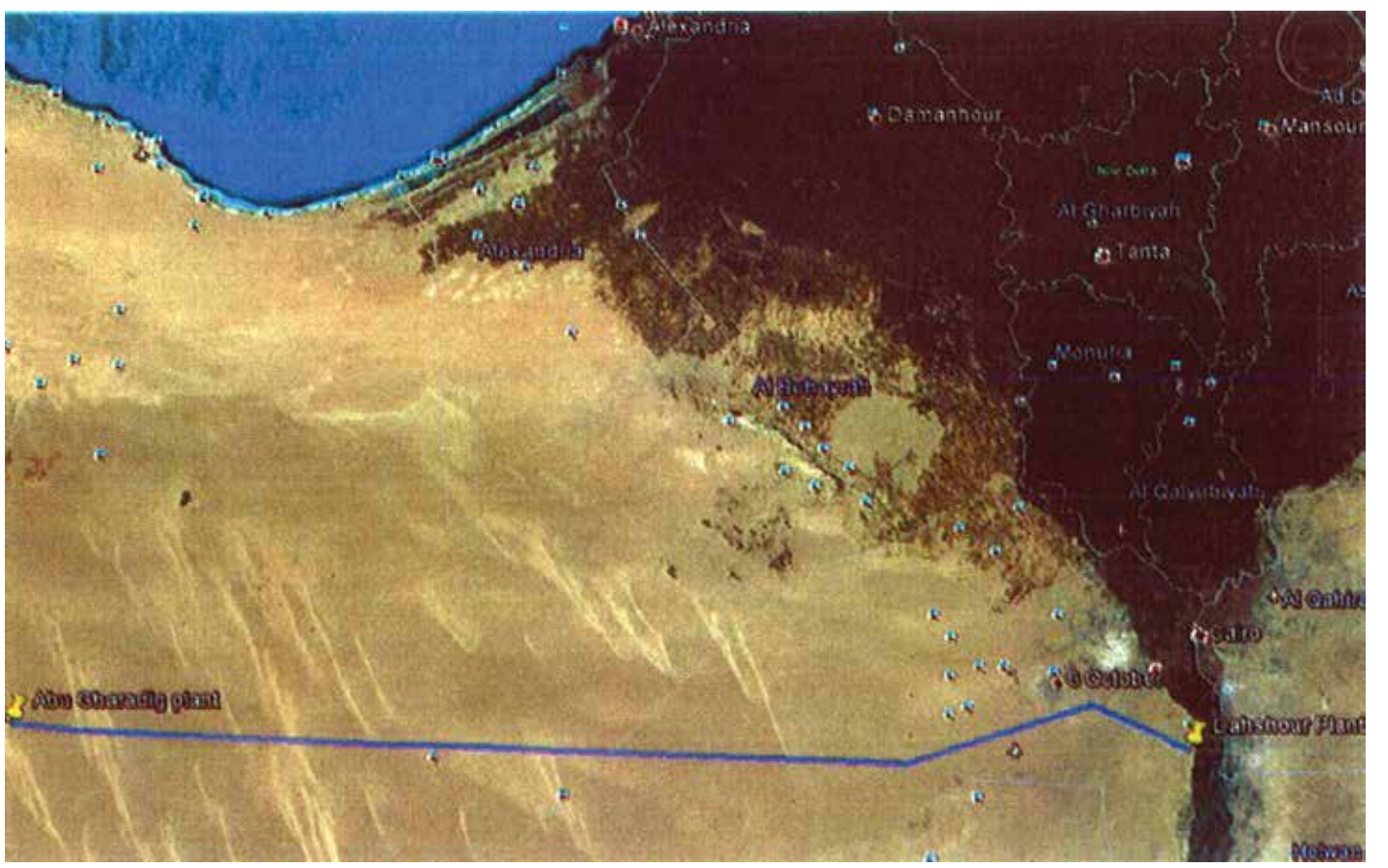
In April 2012, it was identified to Operations that two sections of the pipeline have dwellings/ buildings located close to the pipeline route (6th October City & Dahshour Military Camp). The proximity of the buildings together with the Operations Departments instruction to restore the pipeline to its original MAOP (Maximum Allowable Operating Pressure) of 795 psig resulted in a “Location Class“ change, as defined by ANSI 331.8, to Location Class 4.

Based on the above information the full mechanical scope of work to be performed by Petrojet on the pipeline to return the pipeline to its original MAOP and meet the location class changed comprises the following:

1. Replacement of pipe at 53 digs out locations subsequent to combining a number of dig outs and associated reinstatement.
2. Installation of 5 Km of pipe in a new trench and tied in to the existing pipeline.
3. Isolation and sealing ends of 5km of redundant pipeline in place, replaced by new line.
4. Installation of isolation joints and associated civil works.
5. Installation of 7 new rail and road crossing, tie-in to exiting pipeline nd associated reinstatement. Two crossings combined and formed by HDD technique.
6. Installation of 1 automatic line break valve and associated civil works (final scope dependent on valve delivery) and reinstatement.
7. Installation of 6 manual (hand operated) 24" valves (Qarun) and associated civil work (final scope dependent on valve delivery) and reinstatement (subject to valve delivery).
8. Installation of 1 off-take (8') for East Baharia Power Station (Qarun) and associated civil work and reinstatement.

The Project Total Costs:

1. The total project budget: $27.5mm
2. PETROJET construction contract awarded at: $17.78mm
3. KPC allocated cost for engineering, materials, studies, procurement, and contingency was: $9.72mm.
4. Down payment to PETROJET against construction contract was: $3.5mm.



Enap Sipetrol Sponsors Orphans Day at Awlady Orphanage

By: Tatianna Duran

Enap Sipetrol Egypt held their first ever Orphans Day at the Awlady (My Children) Orphanage in Degla, Maadi on April 9th.

The Awlady Orphanage, founded in 1953, provides a home for over 300 girls and boys (newborn-adult) in a family atmosphere that allows for their physical, mental and emotional growth and development. The orphanage relies on donations and public contributions to provide the orphans with an education and vocational training.

The day was full of fun, joy and excitement for the children of the orphanage. Sipetrol provided face painting, a popcorn and cotton candy stand, three jumping houses, and a musical dancing and singing show for the kids. In the afternoon there was a catered lunch and a speech by Miguel Vargas, GM of Sipetrol. After the speech Mr. Vargas spent time passing out new shoes to the children. Sipetrol also provided bags full of treats and fun little toys to each child.

Mr. Vargas remarked at the event that "I am impressed of all what you have managed to achieve here in this organization. I find it very important that we as Sipetrol and Sipetrol family should unite as one with you and the community to take these great offspring to safety, help them find a safe shelter, food, medical care, love and to complete their education and lead them to safety to become useful members of the community who will help build this country and take to the next level."

While this is the first Orphans Day Sipetrol has sponsored, they have been working with the Awlady Orhanage for over a year. Some of the other ways they help is donating towards fertilizer to help the Orphanage cultivate fresh food on their land.

Sipetrol will continue to donate to the orphanage and hopes to make Orphans Day an annual reoccurrence.

If you would like to donate to Awlady Orphanage please contact them at

awladyorphanage@gmail.com or call 25212659 or 25212700.

Dow Chemical Works to Enhance STEM Education In Egypt

By Effat Mostafa

In order to foster a better understanding of worldwide industries and broaden the horizons of students in matters that relate to their fields of interest and studies, Dow Chemical arranged a visit for the Maadi STEM School for Girls on April 3rd. Dow is working to build an innovative and competitive workforce, and create a knowledgeable society that values science and technology through its support for STEM education and careers. As an attempt in innovation, Dow is supporting the Education Consortium for the Advancement of Stem in Egypt (ECASE) project with STEM schools to make a difference for students, educators and academic institutions.

The ECASE project is working with a four-year plan funded by USAID for 25 million USD in partnership with World Learning, the Franklin Institute (TFI), and 21st Century Partnership for STEM Education (21PSTEM). The ECASE project collaborates with government entities and engineering schools that engage children in real-world problem solving through project-based learning (PBL) steeped in the disciplines of science, technology, engineering and math.

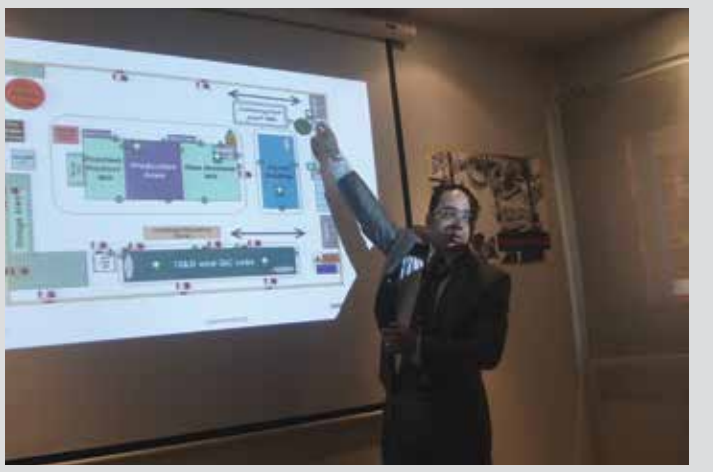
In two years ECASE has succeeded in establishing two STEM schools in Egypt. The Maadi STEM School for Girls has 120 students in 10th and 11th grade. The October STEM School for Boys has 140 students in 10th and 11th grade each. Starting a new school is not an easy task and entails creating academic curriculum, forming school cultures, writing policies and procedures, teaching professional development, offering teacher and administrator training, and recruiting faculty and students. Over the four-year contract, ECASE has plans for the completion of up to 5 STEM schools in key regions throughout the country, while at the same time increasing the capacity of the Ministry of Education to scale up the model in the future.

Dow chemical is one of the main supporters of the ECASE project in Egypt. Dow started work with the STEM schools over a year ago. They provided several opportunities for students to enhance their understanding of technology and innovation. During the student's third visit to the DOW chemical factory in 10th of Ramadan City, STEM 10th and 11th grade girls were informed about DOW's latest inventions, the products most recognized by DOW worldwide and the manufacturing process that goes into producing such products. Students expressed their interests in Dow's ability to combine the power of science and technological applications to enhance innovation. Beginning with a presentation, employees from Dow Chemical informed students about "Thermoset", one of their chemical applications in the industry. Afterwards, the presenter encouraged the students to develop their computer skills to be able to deal with the recent updates in technology. "Today's presentation was very informative for me and I really want to work hard in my school now in order to be able to work for such a big and great factory like Dow," said one of students after the presentation.

Dow is embracing all opportunities to utilize their role in industry to develop STEM education, and they directly tied STEM educational initiatives to an industry growth strategy. "We recognize that advances in innovation and technology investments are needed to drive the economic growth. These advancements are critical to our nation's prosperity and security in the global marketplace." said company's presenter.

Through the Dow Chemical Company Foundation, they have made significant funding and support commitments across the spectrum of continuous learning. They are also supporting these efforts by generating interest in STEM education among students, providing development opportunities to science teachers, and preparing candidates for advanced manufacturing jobs.

USAID-Egypt and ECASE see STEM education as a foundational tool for global economic development and increased collaboration and cooperation among and between all nations. USAID Egypt published that the burgeoning global STEM education community is already working in informal global networks and the ECASE initiative will ensure that the children of Egypt are an integral part of the worldwide STEM movement.



SPE Hosts North Africa Technical Conference and Exhibition

The North Africa Technical Conference and Exhibition (NATC) took place on April 15th-19th in Cairo. The Society of Petroleum Engineers (SPE) hosted the event with the help of sponsors such as Baker Hughes, Total, Schlumberger and Shell.

By: Tatianna Duran

SPE is the largest individual-member organization, serving professionals worldwide in the upstream segment of the oil and gas industry. The non-for profit association serves more than 104,000 members in 123 countries worldwide. Their mission is to "collect, disseminate, and exchange technical knowledge concerning the exploration, development and production of oil and gas resources, and related technologies of the public benefit; and to provide opportunities for professions to enhance their technical and professional competence".

The conference had 340 delegates and 850 total attendees, from 150 companies and 28 countries. The NATC conference was held under the patronage of the Ministry of Petroleum and Mineral Resources, Egypt. The Minister of Petroleum and Mineral Resources, Eng. Osama Kamal, presided over the Opening Ceremony and officially opened the conference and exhibition.

The Opening Ceremony included keynote speeches from Sherif Hadara, CEO of EGPC and Conference Chairman and Waleed Refaay, Managing Director of SPE Middle East, North Africa, and India, and Minister Osama Kamal. Hadara said "We will no doubt need to use events like this to exchange information and to make sure we use the latest technology to extract the oil and gas from our current assets, improve our processes in finding more and optimizing the use of our refining, manufacturing capabilities and distribution information systems. Egypt has a growing market for energy, and has the right expertise that can, with our efforts to improve production, increase reserves."

Refaay added, "SPE has continued to fulfill its mission of disseminating technical knowledge and has supported Egypt and the North African region throughout the years. There is much appeal in an event that focuses on current technological challenges in this important part of the world; an event that provides innovative solutions to overcome industry challenges. Today, I am glad to see NATC is one of the most highly regarded technical conferences in the region."

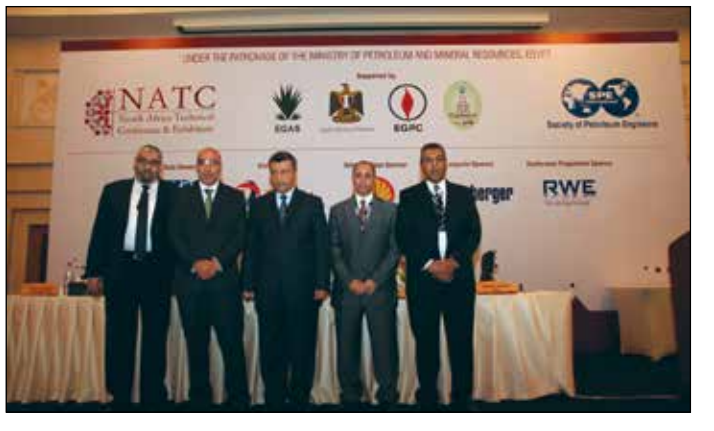
The first day of the conference featured an executive plenary session with prominent speakers such as Antony Beck, Middle East and Africa General Manager, Lufkin; Jean-Daniel Blasco, Vice President North Africa, TOTAL, Sherif Hadara, and Sudhir Vasudeva, Chairman and Managing Director, ONGC, India. The following two days were filled with four panel sessions, numerous technical sessions, poster presentations, and an exhibition, all addressing a wide range of issues of interest to the North African oil and gas industry.

The conference included four major panel sessions. One of the most anticipated panel sessions was "Business Outlook- Eastern Mediterranean" chaired by Samir Abdelmoaty of BP Egypt and Nick Beeson of Baker Hughes. This session was not only an opportunity to share knowledge and challenges about working in the region, but was also an opportunity to find potential customers, partners and service providers.

The conference also contained a Technical Program that had 23 technical sessions on everything from "Well Integrity" chaired by Gamal Gouda of ENI and Joachim Oppelt of Baker Hughes, to "Reservoir Management" chaired by Abdallah Bekhiet Badr of Agiba Petroleum Company and Salah Kamal of Scimitar, to "Human Resources and Economics" chaired by Heba Megahed of Shell and Luca Bertoldi of Dana Gas. Each of these 23 sessions were further broken down into time blocks that contained over 70 different discussion topics.

The event also included student activities involving career development presentations, discussions on "tough topics"and industry-relevant presentations. In addition to professional development and industry information, SPE also dedicates more than one million dollars to support education. They provide scholarships and fellowships to both undergraduate and graduate students pursing degrees in degrees related to the oil and gas industry.

With over 30 exhibitors and 850 attendees the conference was a place to share knowledge and to network. Some of the biggest exhibitors included Weatherford, Schlumberger, Enppi, Total, Gasco, and Petrojet.



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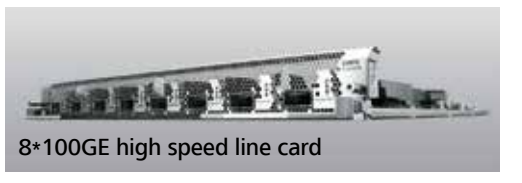

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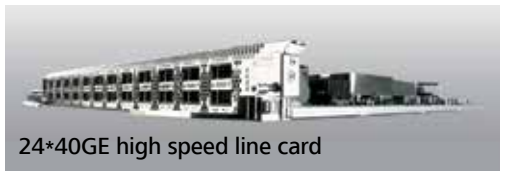

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Egypt Statistics

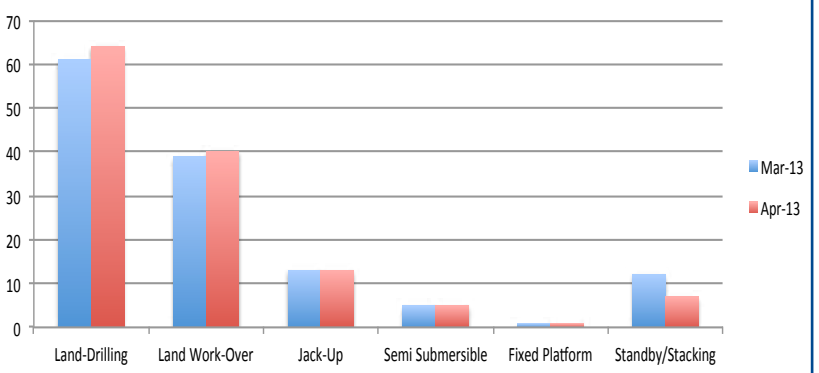
EGYPT OIL&GAS RESEARCH & ANALYSIS

Table 1 Egypt Rig Count per Area February 2013

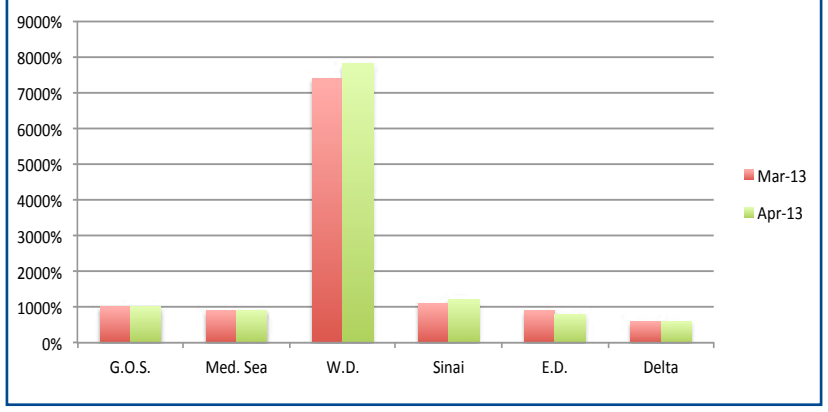
RIG COUNT

Area		Total	Percentage of Total Rigs
Gulf of Suez		10	8 %
Offshore	10		
Land			
Mediterranean Sea		9	7 %
Offshore	9		
Land			
Western Desert		78	63 %
Offshore			
Land	78		
Sinai		12	10 %
Offshore			
Land	12		
Eastern Desert		8	7 %
Offshore			
Land	8		
Delta		6	5 %
Offshore			
Land	6		
Total		123	100%

Rigs per Specification March - April 2013



Rigs per Area March - April 2013



	Oil			Equivalent Gas			Condensate			Liquefied Gas		
	Barrel			Barrel			Barrel			Barrel		
	February-11	February-12	February-13	Febru-ary-11	Febru-ary-12	February-13	Febru-ary-11	Febru-ary-12	Febru-ary-13	February-11	Febru-ary-12	Febru-ary-13
Med. Sea				24277857	23616071	22322857	1541094	1290083	1184860	474514	459950	397401
E.D.	2224083	2326843	2443578			31607			2687			7731
W.D.	7818048	8175842	8568041	6875179	7158214	7057321	1741378	1741365	1439860	585852	714955	694987
GOS	5028677	4925021	4358255	265179	224643	273214	71031	63287	63396	192229	191251	208939
Delta	99959	102683	20699	2452679	1789286	1556071	201262	163667	263575	105590	106558	83135
Sinai	2082130	2162497	2163757	22321	1250	3393	37337	35641	34218	81363	86493	85660
Upper Egypt	25190	15290	13681									
Total	17278087	17708176	17568011	33893215	32789464	31244463	3592102	3294043	2988596	1439548	1559207	1477853