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EGYPT OIL&GAS NEWSPAPER

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An Overview of the Workshop

An insider's thoughts on

Apache's

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Editor's **Note**

In this month's issue we strove as usual to bring our readers the latest news, facts, and analysis of Egypt's petroleum industry. As Egypt has become a net importer of fuel, and oil and gas production declines, political and economic pressures amount for the Egyptian population. As a result, a need for brownfield development is becoming increasingly urgent. The need to develop existing fields has become a necessity, recognizing that political turmoil can be mitigated in the near future if technical and investment measures take place.

I would like to thank everyone that was interviewed for this issue – CEO of Italian Edison International Mr. Bruno Lescoeur, Chairman of Tanmia Petroleum Company Eng. Tarek Al Baraktawy, and Apache's General Manager in Egypt Mr. Thomas M. Maher – for giving us an opportunity to get insights on the Egyptian petroleum industry and the investment plans and policies of these companies in Egypt.

Egypt is approaching the hot summer months and already the temperature is above 30 degrees Celsius daily. A hike in electricity and natural gas consumption is expected due to the use of millions of air conditioners. In preparation for the upcoming hot summer, Tom Rollins writes about power shortages, their origins, and associated circumstances.

In addition, this issue of Egypt Oil & Gas Newspaper brings our readers the latest Egyptian news on drilling, overall petroleum news, and insights into oil and gas projects.

I would like to thank everyone who contributed in this month's issue, and I would like to personally thank my editorial team for bringing this issue to light.

Editor in Chief **Sherif Elhelwa**

Prices

Bullion Market		Oil Prices	
GOLD	SILVER	BRENT	NYMEX Crude
1330.03 USD/BBL	20.69 USD/BBL	107.62 USD/BBL	100.51 USD/BBL
2.23%	-0.73%	-1.01%	-0.17%

EGYPT OIL&GAS NEWSPAPER

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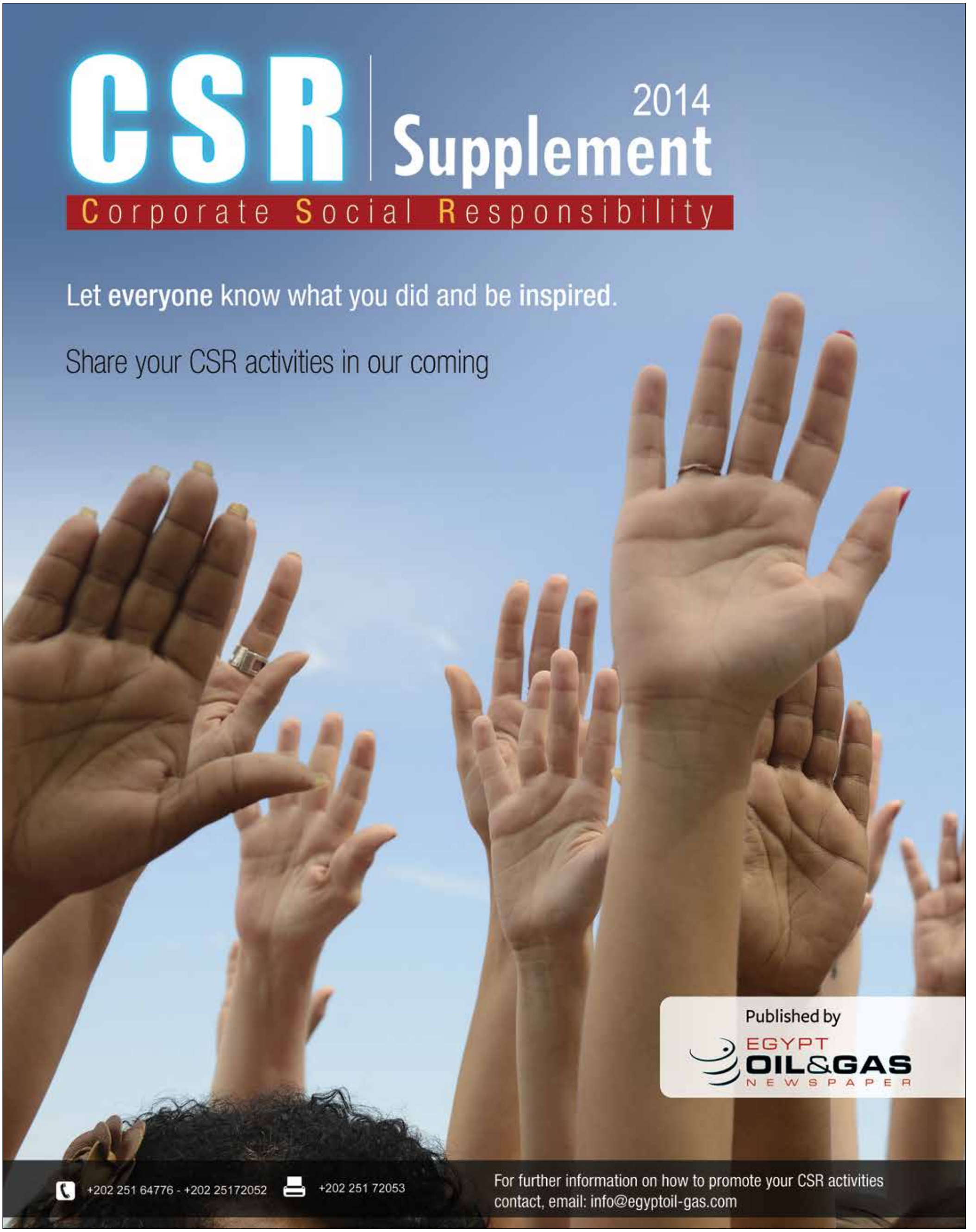
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Petroleum Sector Addresses Energy Crisis

The Minister of Petroleum Eng. Sherif Ismail confirmed that the statements attributed to him that were published in several newspapers and claimed that there will be no electricity shortage in Egypt this summer were false, reported official sources. Ismail admitted that the Egyptian petroleum sector is facing challenges in meeting the fuel needs of power plants. These challenges are currently being addressed on five levels, which include increasing natural gas production, using alternative fuels such as diesel, using other sources of fuel in a number of industries as a substitute for natural gas, as well as importing LNG. This will be in addition to encouraging Egyptian citizens to reduce their consumption and formulating a national energy plan. Ismail stressed that the petroleum sector is working very hard to resolve the fuel shortage during the summer season and to minimize its effect on power production.

EPRI's Workshop Addressed Sector's Problems

The Egyptian Petroleum Research Institute (EPRI) organized a workshop on cleaning petroleum reservoirs and retrieving the sediment accumulated in crude oil tanks in cooperation with EGPC. Over 50 engineers and chemists from more than 15 oil and gas companies attended the workshop at the institute's headquarters, reports the MENA New Agency. The Director of the institute Dr. Ahmed el-Sabbagh said that the workshop was held upon the request of the Minister of Petroleum Eng. Sherif Ismail and the General Manager of EGPC Eng. Tarek el-Molla to discuss the services provided by the institute.

Petroleum Minister: Egypt Produces 2,300 Tons of Asphalt Daily

Egypt's asphalt production from the Alexandra, Ameria and Suez refineries has reached 2,300 tons per day, stated the Minister of Petroleum Eng. Sherif Ismail according to the MENA News Agency. The Alexandria refinery produces 1,000 tons daily, whereas the Ameria and Suez refineries produce 300 tons and 1,000 tons respectively. Ismail also said that to address the needs of Egypt's urban expansion, an additional 5,300 tons of asphalt has to be imported every week.

Egypt's Oil and Petroleum Product Exports Increase 28%

The balance of payments accounts for the first half of the current fiscal year revealed that exports of oil and petroleum products amounted to $6 billion, which represents a 28% increase compared to the same period of the last year, said official sources. This raises questions regarding the previous government's policies for addressing the energy crisis in Egypt. The accounts also showed that there was an overall surplus of $2.5 billion during the first half of the current fiscal year, whereas the same period a year ago saw a deficit of $551.5 million. The surplus is mainly thanks to Arab Gulf countries increasing aid to Egypt after its army deposed the Muslim Brotherhood regime in July 2013. The aid from these countries reached $12 billion in grants and loans. Foreign direct investments totaled $2.8 billion, of which $1.7 billion was invested in the petroleum sector. In the first half of the previous fiscal year, foreign direct investments totaled $2.5 billion and $1.5 billion of this amount was invested in the oil and gas sector.

Minister of Petroleum: Agricultural Sector's Fuel Needs a Priority

The Minister of Petroleum Eng. Sherif Ismail said that Egypt's government was keen on meeting the needs of consumers for petroleum products and that he would give a priority to the agricultural sector, particularly during the harvest season, by providing the sector with all its diesel fuel needs. According to Ismail, diesel production will be increased to 40,000 tons per day, which will cover the needs of the agricultural sector, and the implementation of the smart cards system will not affect the sector in any way. The minister also said that the smart cards are starting to bear fruit as a tool for following the movement of goods, reducing smuggling and providing information about consumption rates. He asserted that the smart cards do not aim to curtail the normal consumption of consumers. Consumers are currently registering for the smart cards, with 2.1 million registrations by now out of 4.5 million vehicles in total. According to Ismail, the smart cards system will not be implemented until all car owners have registered.

EGAS Cuts Gas Supplies to Cement and Fertilizer Factories

EGAS recently reduced its natural gas flows to cement and fertilizer factories in Egypt. The company had given a notice to the cement companies that it planned to reduce the natural gas supply by 50% starting from April 2014, reports al-Borsa News. At the same time, Egypt has been suffering from a worsening energy crisis and frequent power cuts.

Cement factories, which normally operate several furnaces, are now operating only one furnace for 20 days per month at 25% of its capacity, said an official at one cement company. Due to reduced fuel supply, the production at Egypt's cement factories is forecasted to decrease by 50%, which is expected to cause a sharp increase in cement prices. Normally, the average daily gas consumption of cement factories reaches 35 million cubic meters, but since the supply reduction this has been cut down to 17 million cubic meters.

According to a source at AlexFert, one of Egypt's fertilizer producers, EGAS informed the company just one day ahead of a sudden 100% cut in its gas supply, due to which the company ceased all production and export activities. The source also said that the company's normal production reaches 55,000 tons of urea fertilizer per month, of which 17,000 tons are sold in the local market.

It is worth noting that the growing season for corn, rice and cotton has already started. Eng. Mohamed el-Refaai, General Manager of Helwan Fertilizers Company, said that the factory has halted production completely due to the 100% cut in natural gas flows. He also mentioned that the factory normally produces 1,600 tons of urea fertilizer daily.

Misr Fertilizers Production Company (MOPCO) is not suffering from a fuel shortage and is expected to continue its normal production, said Ashraf el-Semman, Manager of the Follow-up Sector at MOPCO. However, MOPCO cannot compensate for reduced fertilizer supplies in the market caused by the production cuts in other companies.

A source at EGAS revealed that there is a reduction of 230 million cubic feet daily from the total requirements of cement and fertilizer factories – which are 920 million cubic feet daily – due to the increased consumption of natural gas by power plants resulting from the rise in temperatures. He said that natural gas supplies to cement factories have been reduced by 160 million cubic feet daily out of the total requirements of 410 million cubic feet. He added that natural gas supplies to fertilizer factories have been reduced by 70 million cubic feet daily, whereas their total requirements are 510 million cubic feet.

The Ministry of Petroleum issued a statement in which it said that it was providing power plants with the maximum amount of natural gas and that power plants use fuel oil to meet the rest of their requirements. According to the ministry, there are currently sufficient fuel oil reserves at the power plants amounting to 110,000 tons, in addition to a constant supply of fuel oil amounting to about 20,000-22,000 tons per day.

StoryBoard

New Solar Units in Wadi el-Rayan

As part of a framework for cooperation in environmental and development issues, the Italian government provided Egypt with an EGP 3.5 million grant for solar energy production in Wadi el-Rayan, Fayoum. The new solar units produce 43 KW of electricity per hour, said the Manager of the Commodity Aid Program at the Italian Foreign Ministry's Italian Cooperation, Igor Marcialis. At present, 19 buildings in the vicinity are getting their electricity from the new solar units, said a source at the Ministry of Environment. He added that Italy will also provide regular maintenance for the solar units for two years, reports the Daily News Egypt. Egypt's government has stated that it intends to increase the country's solar power production. The government plans to produce 20% of Egypt's energy from renewable and new energy sources by 2020.

Egyptian Government Approves Use of Coal for Energy

The Egyptian government approved the use of coal for power generation after a debate within the cabinet over whether the highly pollutant fuel should be allowed to use by the cement industry. The government recently cut natural gas supplies to factories in an attempt to reduce the frequent power cuts Egypt has been suffering from recently. Government spokesman Hani Salah said that it would not take very long before companies could start using coal since "most environmental studies" had already been conducted. Suez Cement CEO Bruno Carre told Reuters that one of the company's four plants could be ready to run on coal by September. Environmentalists say that the use of coal as an energy source would be catastrophic for Egypt, which already has one of the worst pollution levels in the world.

Petroleum Ministry Official in Talks with BG

President of EGAS Eng. Khaled Abdel Badee traveled to the UK for talks with BG regarding the completion of the West Delta Deep Marine project's phase 9A, which is expected to be in production by the summer of 2014 and will produce approximately 450 million cubic feet of natural gas. The Petroleum Minister Eng. Sherif Ismail denied any delay on the part of BG in completing its projects in Egypt and that the delay is due to it developing several fields. BG's profit in Egypt fell by 4% during the third quarter of the previous year due to reduced gas shipments from the country and a decline of the company's production by 10%, or 53.8 million boe, in that time period. According to al-Youm al-Sabi, the decrease of production from BG's fields has quickened and the daily production of gas has fallen from 1.9 billion cubic feet to 1.2 billion cubic feet.

Kuwait's Petroleum Minister: We Will Help Egypt Overcome Its Difficulties

Kuwait's Petroleum Minister Ali al-Omayr told Reuters that the agreements the country signed to provide Egypt with crude oil and petroleum products come as part of its commitment to help Egypt through the difficult time. Kuwait recently signed contracts with Egypt to export 85,000 barrels of crude oil daily and 1.5 million tons of diesel and aircraft fuel annually to the country, reports Reuters.

New Refinery May Alleviate Fuel Crisis

A new oil refinery set to be the largest in Egypt is currently under construction. The capacity of the refinery is projected to be half of Egypt's current diesel imports, the head of the project told Reuters. The refinery of the Egyptian Refining Company (ERC) will be located 20 kilometers north of Cairo and will use fuel oil from an old refinery nearby as a feedstock to produce 2.3 million tons of diesel fuel annually. It is expected to reduce Egypt's dependence on crude oil and petroleum product imports, which consume the country's scarce reserves of foreign currency. "It's been a long and arduous battle but we're finally getting there," said Tom Thomason, Chief Executive of ERC. "Cairo is a very big market for diesel. … Our project will avoid importing and shipping costs as we're right here," he added. ERC hopes that the refinery will be onstream by early 2017. The refinery project was first proposed in 2006, but efforts to obtain financing stalled due to the financial crisis of 2008-09 and the Egyptian revolution of 2011. "The world kind of stopped for us at these points but we got over it and then finally reached financial close in June 2012," noted Thomason. ERC has secured funding through a $2.6 billion debt package and $1.1 billion in equity provided by EGPC, Qatar Petroleum International and Egyptian private equity firm Citadel Capital, among others.

Economic Committee Approves Petroleum Production in Alamein

Egypt's Prime Minister Ibrahim Mahlab approved the EGPC request to continue production in the Horus Developmental Block in Alamein, Western Desert. This happened during a meeting of the Ministerial Economic Committee where Mahlab as well as a number of other ministers were present, reports al-Masry al-Youm.

Egypt to Hike Gas Prices

The government issued a decree on April 20th that sharply raises gas price for homes and businesses from May. According to the decree, consumption below 25 cubic meters per month will cost EGP 0.4 ($0.06) per cubic meter, consumption between 25 and 50 cubic meters will cost EGP 1 and consumption above 50 cubic meters will cost EGP 1.5, reports Ahram Online. Since July 2012, monthly consumption below 30 cubic meters has cost EGP 0.1 per cubic meter and any consumption above that limit has been charged at EGP 0.5. The price hike does not apply to the electricity generation sector and bakeries, nor will gas get more expensive for the Egyptians that buy it as butane canisters, informs Reuters. The government is also considering raising electricity and gasoline prices. However, Gamal Bayyoumi, Adviser to the Minister of Planning and International Cooperation, told al-Masry al-Youm in the last days of April, "It's probable that the government's announcement of gradual lifting [of] energy subsidies will be postponed until after presidential elections, so that society would not be preoccupied during such an important event."

CHOICE Words

The transitional government committed a political mistake by breaking the June 30th alliance, as the youth of the revolution are now in prison while Mubarak's remnants are continuing their corruption.

Hamdeen Sabahi
Egypt's Presidential Candidate

It's better for Egypt to start some of these [subsidy reform] measures at least before the presidential election, just to pave the way for the coming president, to make his life easier.

Ashraf al-Araby
Egypt's Minister of Planning and International Cooperation

What I think Egypt should do is use continued Gulf support to create a breathing space, so that reform can be gradual, and you're not forced into abrupt reforms by running out of money.

Christopher Jarvis
IMF Mission Chief for Egypt

It is a tactic used by some countries in crisis, and it places a tax increase on high earners of 5% over a temporary period ranging from two to five years. In my estimation, this tax will continue for three years.

Hani Kadry Dimian
Egypt's Finance Minister

CARTOON

Egypt News

Town Gas Continues Eliminating LPG Depots in Governorates

Eng. Mohamed Hassanein Radwan, Chairman of Town Gas, which is affiliated to EGPC, said that the company continued implementing the petroleum sector's plan to connect gas lines to more homes while emptying the LPG depots in the governorates to reduce the burden of importing natural gas, reports al-Youm al-Sabi. Radwan said that natural gas was now available for 204,000 clients within the company's concession areas, which meant saving more than 4 million gas cylinders at an annual cost of EGP 300 million. He added that the transformation of 28 brick kilns saved 66,000 tons of fuel oil with an annual value of EGP 107 million.

EGPC: Petroleum Importing Activities Continue Regularly

Petroleum importing activities continue regularly, stated Amr Mostafa, Vice President of EGPC. According to him, a diesel shipment is currently being unloaded in the Suez harbor with amounts reaching 35,000 tons, reports al-Youm al-Sabi. Mostafa added that there is another shipment currently being unloaded in the Suez harbor with 45,000 tons of fuel oil and another with 35,000 tons of petrol. He also informed that two shipments of LPG have recently arrived at the Suez harbor with 12,000 tons of LPG to help stabilize the local market.

Egypt Considers Importing Fuel Oil and LPG from Kuwait

The Egyptian government, represented by the oil and gas sector, is currently studying a proposal by the Kuwaiti government to buy fuel oil and LPG with relaxed repayment plans in order to meet the domestic market demand and power electricity plants, reports al-Youm al-Sabi. An official of EGPC said that contracts had been renewed with the state-owned Kuwaiti Petroleum Corporation for the import of diesel and aircraft fuel, and that amounts have increased from 980,000 tons to 1.54 million tons. The official also informed that there would be a payment grace period of up to three months.

International Companies Express Interest in Bidding for Oil and Gas Exploration

The Vice President of EGAS Mahfouz al-Bouny said that a number of major international companies had expressed keen interest in the tender that was proposed in partnership with EGPC at the end of December 2013. The closing date will be May 19th, reports al-Youm al-Sabi. According to al-Bouny, the tender concerns eight areas: three on land and five in deep water with a depth reaching 1,000 meters. According to Al-Bouny, studies by EGPC and Shell had shown that the region has great potential for production.

GASCO: Repairs for the Gas Pipeline in Sinai

Repair operations for the Sinai gas pipeline that exploded in March continue, said a source from GASCO, the company that operates and manages the pipeline, to al-Youm al-Sabi. The source added that there had been no gas supplies via the pipeline to cement factories after the deliberate explosion, and fuel oil is being deployed as an alternative fuel for production. According to the source, the gas consumption of the cement factories in Sinai does not exceed 70 million cubic feet per day and there are no problems with supplying gas to households in the region, especially since the latest explosion did not target the main gas pipeline.

Government Completes 50% of Plan to Connect Gas to Homes

The companies responsible for connecting gas to homes in Egypt have completed 50% of the national plan to eliminate LPG depots from Egypt's governorates and reduce subsidies, said the President of Egypt Gas Eng. Faisal Aboul Ezz. He added that the company continues the rapid implementation of the plan and that natural gas is now available for 180,000 households out of the target of 300,000 households, leading to savings of $28 million in the state's general budget, reports al-Youm al-Sabi.

Natural Gas Flows to Jordan Return

Government sources confirmed that natural gas flows from Egypt to Jordan have returned after the latest explosions, but in limited amounts of up to 100 million cubic feet per day, reports al-Youm al-Sabi. However, according to Middle East Monitor, on April 23rd Jordan's Minister of Energy and Mineral Resoiurces Mohamed Hanid denied that Egypt had resumed its gas supplies. A source said that Egypt's government was studying the Jordanian offer to supply Egypt with LNG that Jordan plans to import.

Drilling News

Apache Drills New Well

Apache Corporation, a major US oil and gas producer, has recently completed drilling a new developmental oil-producing well in its concession area in the Western Desert.

W.KAL R-1X
The new developmental well was drilled to a depth of 13,700 feet utilizing the EDC-59 rig. Investments surrounding the project are estimated to be $3.637 million.

El Hamra Oil Drills New Well

El Hamra Oil, a joint venture between EGPC and IPR Group from Canada, has recently completed drilling a new developmental oil-producing well in its concession area in the Western Desert. The production rate of El Hamra Oil was 140,221 b/d as of March 2014.

NE ALAMEIN-9
The new developmental well was drilled to a depth of 6,100 feet utilizing the EFAD-111 rig. Investments surrounding the project are estimated to be $1.845 million.

OAPCO Drills New Well

OAPCO, a joint venture between EGPC and the Egyptian company Sahara Group, has recently completed drilling a new developmental oil-producing well in its concession area in the Western Desert. The production rate of OAPCO was 62,584 b/d as of March 2014.

WQ 34/12-20
The new developmental well was drilled to a depth of 7,350 feet utilizing the ECDC-2 rig. Investments surrounding the project are estimated to be $700,000.

BAPETCO Drills Two New Wells

BAPETCO, a joint venture between EGPC and Shell, has recently completed drilling two new developmental gas-producing wells in its concession area in the Western Desert. The production rate of BAPETCO was 852,649 b/d as of March 2014.

OBA D-AX (39)
The new developmental well was drilled to a depth of 13,435 feet utilizing the EDC-55 rig. Investments surrounding the project are estimated to be $4.613 million.

OBA D-AN (40)
The new developmental well was drilled to a depth of 13,472 feet utilizing the EDC-42 rig. Investments surrounding the project are estimated to be $6.329 million.

SUCO Drills New Well

SUCO, a joint venture between EGPC and the German company RWE, has recently completed drilling a new developmental oil-producing well in its concession area in the Gulf of Suez. The production rate of SUCO was 486,629 b/d as of March 2014.

RB-A8A ST-3
The new developmental well was drilled to a depth of 13,600 feet utilizing the ZOSER rig. Investments surrounding the project are estimated to be $18.978 million.

Khalda Drills New Well

Khalda, a joint venture between EGPC and Apache, has recently completed drilling a new developmental oil-producing well in its concession area in the Western Desert. The production rate of Khalda was 3,432,315 b/d as of March 2014.

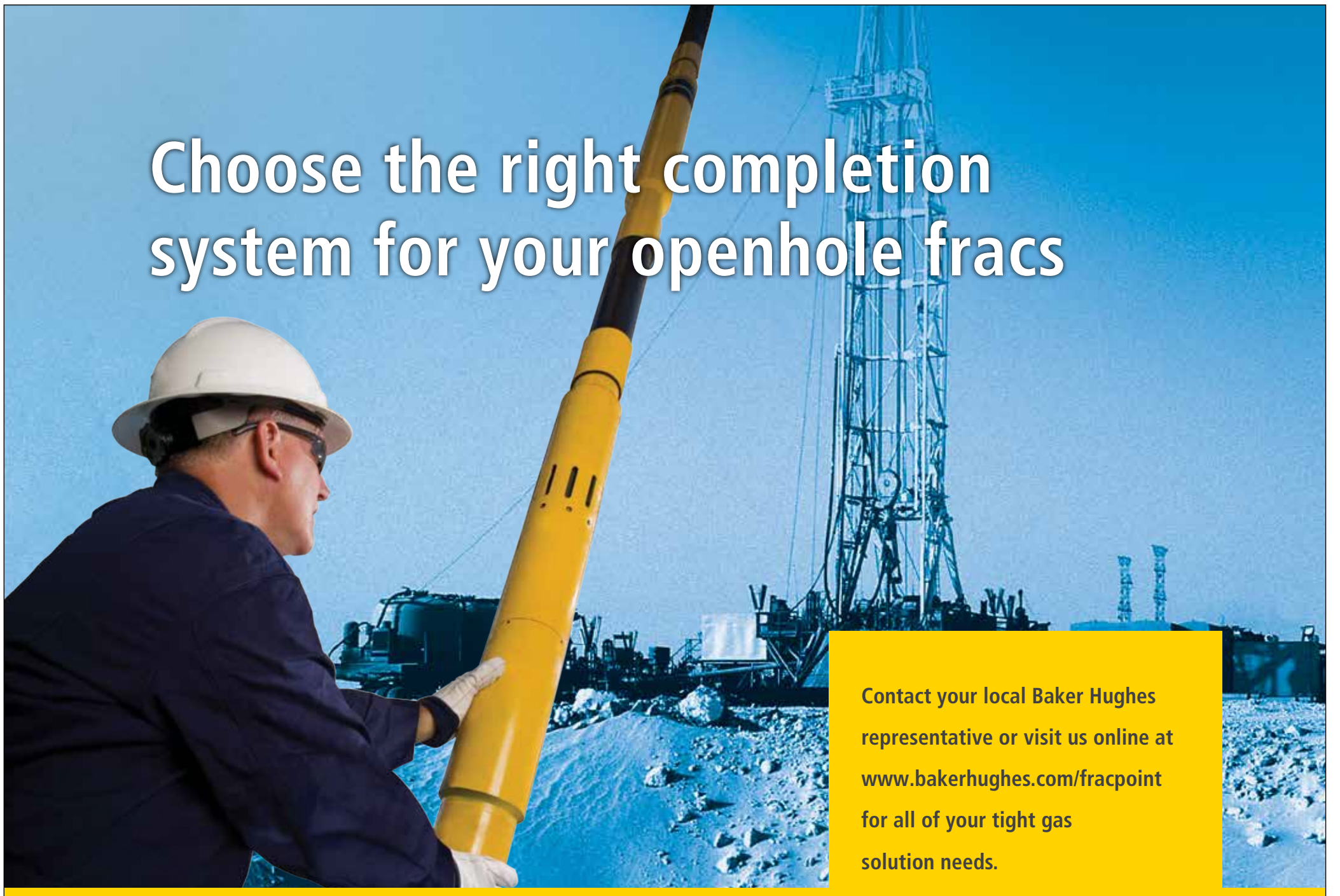
RENPET-24
The new developmental well was drilled to a depth of 7,205 feet utilizing the EDC-61 rig and the drilling took only 13 days. Investments surrounding the project are estimated to be $500,000.

Qarun Drills Two New Wells

Qarun, a joint venture between EGPC and Apache, has recently completed drilling two new developmental oil-producing wells in its concession area in the Western Desert. The production rate of Qarun was 1,302,800 b/d as of March 2014.

WON C-6
The new developmental well was drilled to a depth of 9,200 feet utilizing the EDC-17 rig. Investments surrounding the project are estimated to be $1.346 million.

HEBA-351
The new developmental well was drilled to a depth of 7,050 feet utilizing the EDC-63 rig. Investments surrounding the project are estimated to be $1 million.



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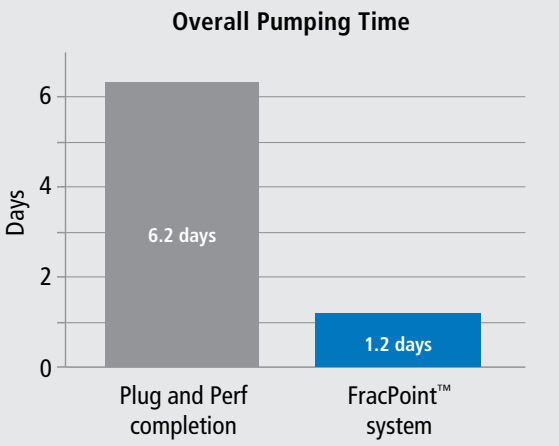

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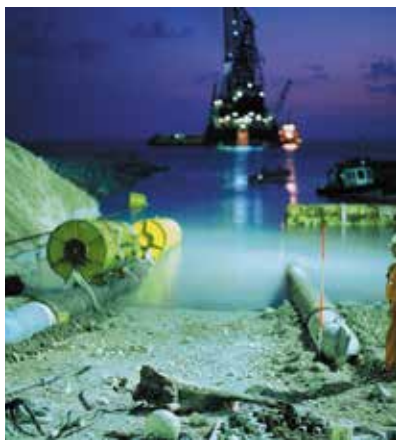
Libya's Gas Exports to Italy Continue Normally Despite Pipeline Closure



Libya's gas exports to Italy are flowing normally despite the closure of a condensates pipeline from the Wafa field due to the protests in March, announced Libyan National Oil Corporation (NOC). According to NOC, gas flows resume from the Wafa field to the Mellitah gas and oil complex, reports Reuters. Recently, the Libyan rebels occupying eastern oil ports agreed to reopen two terminals that have been shut for months. The Hariga terminal restarted exports mid-April, informs Nasdaq.

Woodside's Leviathan Agreement Delayed

The Australian oil giant Woodside Petroleum announced that it has delayed signing an agreement to acquire a $2.7 billion stake in Israel's Leviathan oil field. The company is currently in talks to finalize the agreement, reports Oil & Gas Financial Journal. Woodside has tentatively agreed to acquire a quarter of the project, which is owned by Noble Energy, Avner Oil Exploration, Delek Drilling and Ratio Oil Exploration. The agreement was supposed to be signed on March 27th. However, Woodside decided to delay it due to discussions related to the Israeli government's taxation and export regulations.

Lebanon Expects to Close Gas Licensing Round in Four Months

Lebanon expects to close its first licensing round for offshore gas exploration areas within about four months, after overcoming a legislative hurdle by the end of April, reports Zawya. Early estimates suggest the Mediterranean country may have natural gas deposits that could rank as the world's 15th largest. Lebanon has delayed the licensing auction for three times already due to a political stalemate as it has been unable to form a government between March 2013 and February 2014. The new Energy and Water Minister Arthur Nazarian said on April 7th that the government should be able to approve the decrees delineating the offshore blocks and setting up a model exploration and production agreement by the end of April. However, the current war in neighboring Syria and conflicts over maritime borders with Israel are considered high risks for potential investors, according to analysts and industry sources.

Libya to Introduce Smart Cards for Fuel

Libya plans to limit the costly subsidies on fuel because of fuel smuggling to Tunisia by introducing a "smart card" system like the one being implemented in neighboring Egypt, reports the Daily Star. If the system is implemented, citizens will be able to buy a set amount of subsidized fuel and will pay the market price for any extra fuel. With a nine-month shutdown of major oil fields and ports due to political unrest and local disputes reducing crude oil export revenues, the government is proposing a fuel card system to the parliament, said cabinet spokesman Ahmad Lamin on April 17th. The decision came about due to a sudden rise in gasoline and diesel consumption by 15% between 2012 and 2013 – a sharp hike compared to the usual 3-7% rise – which is not justified by the increase in the number of cars.

Russia Gives $1.39 Billion for Turkey's First Nuclear Plant

In the first quarter of this year, Russia gave $1.39 billion for Turkey´s first nuclear power plant project. Akkuyu NGS, a subsidiary of the Russia's state-run Rosatom, has started increasing its investments, although the construction of the plant in Akkuyu is expected to start only in 2016, if the project license is approved. The total project cost is estimated at $20 billion and the plant is expected to commence operations in 2020, reports Hurriyet Daily News. Rosatom signed an agreement to build and operate the four-reactor plant on Turkey's Mediterranean coast in 2011.

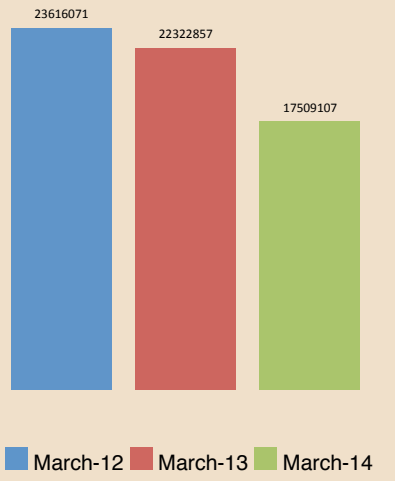
Leviathan Field Partners to Sell Gas to Cyprus

The partners developing Israel's Leviathan gas field said on April 17th that they were seeking to sell its production through a pipeline to Cyprus. The group has bid to supply Cyprus' state-run gas company DEFA between 0.7 to 0.95 billion cubic meters of gas annually for up to ten years, announced the Israeli conglomerate Delek Group, whose units Delek Drilling and Avner Oil hold key stakes in Leviathan. The group foresees building a pipeline from the field, which is located offshore between Israel and Cyprus, and providing DEFA with gas starting from 2016 or 2017, reports Bloomberg. According to Delek, Cyprus will make its decision regarding the bid by August 21st.

Mediterranean STATISTICS

Production (barrel)

Oil		
March-12	March-13	March-14
N/A	N/A	N/A
Equivalent Gas		
March-12	March-13	March-14
23616071	22322857	17509107
Condensate		
March-12	March-13	March-14
1290083	1184860	918697
Liquefied Gas		
March-12	March-13	March-14
459950	397401	271300



Mediterranean Rig Count April 2014

Total	Percentage of Total Rigs
6	5%

Spain Becomes Europe´s Biggest LNG Exporter

Spain became Europe´s biggest LNG exporter in March, even though it does not produce any LNG itself. Spanish LNG importers, including Iberdrola and Endesa, re-export LNG because due to the country´s debt crisis, the domestic demand is very low, reports Bloomberg. The long-terms contracts that the importers have contain so-called destination clauses, which means that cargoes cannot be diverted at sea. Accordingly, Spain dispatched seven loaded LNG tankers from its import terminals in March. Norway, who was Europe´s biggest LNG exporter before that, exported on average six cargoes per month over the past year. However, the Director of Natural Gas Research at the Oxford Institute for Energy Studies, Howard Rogers, said that LNG prices in Asia may fell to as low as $12 per million Btu by the end of 2015 due to increased export from Australia and the US, which may make re-exports unprofitable.

Turkey to Buy More Gas from Russia

Turkey has agreed to boost gas shipments from Russia via the Blue Stream Pipeline by about 18%. "We agreed with Russia on increasing capacity of the Blue Stream gas pipeline from 565 billion to 670 billion cubic feet per year," said Turkey´s Energy Minister Taner Yildiz on April 21st. The minister added that a new contract would be signed with Russia to buy gas at a "reasonable price," reports Daily Sabah. A few days earlier, Yildiz had said that Turkey would ask Russia for a discount on gas prices. As Turkey has very few energy resources of its own, it is heavily dependent on gas and oil imports from Russia. The Russia's state-controlled gas producer Gazprom considers Turkey its second-largest foreign customer.

Crude Futures Drop in End-of-Quarter Trading

Crude futures declined in end-of-quarter trading following news that Russia was in the process of withdrawing troops from the Ukrainian border. Front-month Brent recorded a 2.7% loss for the quarter, after recording gains in two consecutive quarters, reports Reuters. Rising supply from Iraq and increased exports from Iran compensated for disrupted production in Libya. OPEC member Libya is currently exporting a bit over 160,000 b/d of crude oil, about one tenth of its production before the civil war. Nigerian exports are set to drop to their lowest levels since 2009 due to a production outage for the Forcados grade. US crude posted a 3.2% gain for the quarter, up after a nearly 4% drop in the previous quarter. Iraq has started production at the large West Qurna-2 field, moving closer to its target of 4 million b/d this year, thus keeping oil prices in check.

BG Group CEO Chris Finlayson Resigns

BG Group announced on April 28th that its CEO Chris Finlayson would resign with immediate effect for personal reasons. Until a successor is found to Finlayson, who was appointed in December 2012, the non-executive Chariman Andrew Gould will fulfill the duties of CEO, writes the Wall Street Journal. BG also said that its 2014 production will be at the lower end of guidance of 590,000-630,000 boe/d due to continuing difficulties in Egypt. In the first quarter, BG's production in Egypt fell by 35% compared to the fourth quarter of 2013. "The deterioration in Egypt will similarly impact 2015 production," noted BG. The company added that it was reviewing its business plans and would not provide 2015 guidance until February 2015, when it posts its full-year results for this year.

Apache Plans to Sell Canadian Assets

The US oil and gas corporation Apache announced that it has come to an agreement to sell its oil and gas assets in Canada for $374 million. The assets are located in the Deep Basin area of the western Alberta and British Columbia regions of Canada. Apache is mainly selling dry-gas-producing properties comprising 622,600 gross acres in the Ojay, Noel and Wapiti area in Alberta and British Columbia. Last year, the fields Apache is relinquishing sold an average of 101 million cubic feet of natural gas and 1,500 barrels of liquid hydrocarbons per day. The transaction has been effective since January 1st and is expected to close on April 30th. Apache is going to utilize the proceeds of this transaction to buy back the company's common shares under its share repurchase program. In 2013, Apache also sold operations on the Gulf of Mexico Shelf and in Argentina, and relinquished one third of its Egypt operations.

Russia Increases Gas Price for Ukraine

Russia increased the price of natural gas exported to Ukraine and threatened to reclaim billions of dollars from previous discounts due to recent political turmoil in Ukraine. Russia's state-controlled natural gas producer Gazprom cancelled a discount effective since last December that had put the price of gas at $268.50 per thousand cubic meters, thus increasing the price to $385.50 per thousand cubic meters for the second quarter. The discount was part of a financial aid that the Russian President Vladimir Putin offered to Ukraine's recently ousted President Viktor Yanukovych after his decision to ditch a pact with the European Union in favor of closer ties with Moscow, reports Haaretz. The move fueled three months of protests, which led Yanukovych to flee to Russia in February.

Mozambique Set to be Major LNG Producer

After several major natural gas discoveries have been made in East Africa in recent years, Mozambique is poised to become a major producer in the near future, reports Zawya. The country's proposed LNG project is set to start in 2018-19. The project has the lowest upstream capital costs in the world, making it particularly attractive for investors. Total initial capital at an offshore, greenfield project in Mozambique would cost between $1,600 and $2,100 per ton annually, compared to $2,100 - $2,200 on the US Gulf Coast and $2,100 - $2,600 on the Canadian West Coast.

Africa's Refining Projects Struggle to Get off Ground

Africa's dependency on fuel imports is likely to grow as its refining projects struggle to get off the ground, Chris Bake, Director of Origination and Investments at Vitol, told Reuters. Dozens of new refining projects have been announced in Africa, but they are unlikely to be built unless they are either very large or with guaranteed crude supply in a landlocked location. "Micro refineries in waterborne locations are not a viable way to get a return on capital. You have to go big, and today big means a 300,000 to 500,000 b/d complex refinery and $5 billion to $15 billion of capital," noted Bake. He added that he expected one large refinery to be built in West Africa, but that it could take five to seven years. Vitol seeks to meet African demand in competition with companies such as Glencore and Trafigura and with large Asian refiners. Vitol estimates that Africa's fuel demand amounts to 3.71 million b/d in 2014, worth about $440 million a day, based on ICE gasoil futures prices. That is close to a 3% increase from the 2013 estimate. Bake said the most exciting market in Africa was gasoil and that demand for liquefied petroleum gas will also rise quickly across North Africa and Nigeria as consumers spend more. A small number of refining projects in landlocked locations could succeed, possibly in Uganda, Chad or South Sudan, Bake added. Vitol is leading a consortium to bid for a $2.5 billion refinery in Uganda. The winner is expected to be announced in July.

Japan Favors Coal over Renewables

The Japan's new energy strategy approved by the government on April 11th sets the key energy source goals over the long-term. The strategy gives coal an equal importance to nuclear power, whereas environmentalists had hoped that the Japan´s 2011 Fukushima nuclear disaster would push the country towards renewable energy, reports Hydrogen Fuel News. There are no specific renewable energy targets in the new strategy. Japan's Prime Minister Shionzo Abe supports coal power because it is cheaper compared to renewables, and in order to expand sales of the Japanese coal industry domestically as well as internationally.

Lukoil Starts Producing from Vast Iraq Oil Field

Russia's Lukoil began commercial production from the giant West Qurna-2 oil field in Iraq on March 29th. The production initially stands at 120,000 b/d, but is expected to reach 1.2 million b/d, reports Arab News. Iraq's Oil Minister Abdul Kareem Luaibi said that output from the field would enable the country to reach a production target of 4 million b/d by the end of this year. In February, Iraq's oil production averaged 3.5 million b/d. The recoverable oil reserves of West Qurna-2 are estimated at around 14 billion barrels. These will enable Lukoil, which has a 75% stake in the field, to more than double its overseas production.

Oil Engineers Kidnapped in Sudan

An unidentified armed group killed five government troops, injured several others, and kidnapped eight oil engineers at Kanar oilfield in Sudan on April 19th. Sources told Radio Dabanga that the kidnapped engineers include three foreigners: two Chinese and one Algerian, reports AllAfrica. The attack was carried out by armed men in three vehicles. They also abducted a vehicle mounted with a Duschka 50 cal machinegun. According to the spokesman of Sudanese Armed Forces, Col. Al Sawarmi Khalid Saad, the government is pursuing the kidnappers to save the engineers. An armed group Popular Front of Sudan claimed responsibility for the kidnapping, informs Radio Dabanga.

Iran Oil Exports Fall for First Time in Five Months

Iran's crude oil exports fell for the first time in five months in March, moving closer to the levels agreed upon in November's temporary nuclear deal that eased some sanctions on the country. According to the agreement, Iran's oil exports have to remain at an average 1 million b/d for the six months to July 20th. However, since the agreement was signed, Iraq's exports to Asia alone have been above that level. Despite the drop in March, total exports were still a bit over 1 million b/d in that month. In April, they are expected to drop to 953,000 b/d, according to ship loading data seen by Reuters. The exports have started to decline mainly because Japan did not take any cargoes in March and South Korea is not going to take any in April. The decline in exports will reduce pressure on Iran ahead of talks scheduled in May for reaching a final solution to the nuclear dispute.

Big Men: A Film About Discovering Oil in Ghana

A feature-length documentary film about the 2007 oil discovery in Ghana opened recently in the US cinemas. The film, with a runtime of 99 minutes, explores the positive and negative effects of the discovery. *Big Men* has received many positive reviews from film critics and is rated 100% fresh on the popular site Rotten Tomatoes. Directed and produced by documentary filmmaker Rachel Boynton, *Big Men* was released in a limited number of theaters in the US on March 14th and has made $39,600 at the box office. According to the official website of *Big Men*, "The film's central story follows a small group of American explorers at Dallas-based oil company Kosmos Energy. Between 2007 and 2011, with unprecedented, independent access, *Big Men's* two-person crew filmed inside the oil company as Kosmos and its partners discovered and developed the first commercial oil field in Ghana's history. Simultaneously the crew filmed in the swamps of Nigeria's Niger Delta, following the exploits of a militant gang to reveal another side of the economy of oil: people trying to profit in any way possible, because they've given up on waiting for the money to trickle down." The website mentions that the film has won two awards: the Grand Jury Prize at the International Environmental Film Festival (FIFE) in Paris and the International Green Film Award by the Cinema for Peace initiative.

Gulf News

MENA Oil and Gas Workers Receive Low Wages Compared to Other Regions

The salaries Middle Eastern oil and gas employees receive are among the lowest in the world, reports Zawya. This is true even among Organization of the Petroleum Exporting Countries (OPEC) member states such as Libya, where workers received an annual salary of $36,000 – the lowest among major producers. Bahrain is not an OPEC member, but produces around 140,000 b/d and pays its oil and gas workers an average of $34,000 per annum, according to a Hays Oil & Gas survey. Major producers and OPEC members Saudi Arabia, Kuwait and the UAE paid workers less than their counterparts in countries such as Brazil, Brunei and Colombia. Furthermore, there is a wide discrepancy in the wages of locals and foreigners in the Middle East. In some countries foreign workers receive twice as much as locals. For example, a foreign worker in Iraq could expect to net $114,500 per year, compared to his local colleague who would receive $49,100. In the UAE, a foreign oil and gas worker made on average $80,000 per year, compared to $65,100 for a local employee.

Kuwait National Petroleum Company Signs Contracts Worth $12 Billion

The Kuwait National Petroleum Company (KNPC) signed contracts worth $12 billion with three international consortia to upgrade two refineries and invited bids to build a new multi-billion-dollar refinery, reports AFP. Mohammed al-Mutairi, head of the state-owned KNPC, signed the contracts with three consortia, which were led by Britain's Petrofac, US Fluor and Japan's JGC Corporation. Most of the other companies in the consortia are South Korean. Al-Mutairi said the project is due to be completed in early 2018. The cost of the project, called the Clean Fuel Project, is more than $13 billion if smaller contracts are added, lower than the previous estimated cost of $16.4 billion, said the Project Manager Abdullah al-Ajmi. It will be Kuwait's first large-scale project in 25 years, involving the upgrading of two of the three existing refineries by installing 37 advanced processing units that will reduce sulphur and carbon pollutants. The current production capacity of the two refineries of Mina Al-Ahmadi and Mina Abdullah is around 730,000 b/d, while the capacity of Kuwait's third refinery at Shuaiba is 200,000 b/d.

Oman to Build an LPG Plant in Salalah

Oman Gas Company (OGC) on April 6th signed a memorandum of understanding with the Salalah Free Zone to construct a plant for extracting LNG from natural gas on its premises. Additionally, OGC signed a memorandum of understanding with the Port of Salah to build LPG and condensate storage and export facilities, reports Times of Oman. The project, which also involves expanding pipeline network in Salalah, will need 1,000 indirect employees during construction phase and 170 permanent workers once the LPG plant has become operational in 2018. "The memorandum of understanding to construct this vital project in the Salalah region comes from the strategic goal of exploiting the natural resources of the Sultanate to create projects which will add value and broaden the horizons for other industries that are located downstream of the LPG value chain," said Awadh Salim al-Shanfari, CEO of the Salalah Free Zone.

Pakistan to Negotiate LNG Deal with Qatar

According to Pakistani officials, representatives from the country's Ministry of Petroleum and Natural Resources will visit Qatar soon, to negotiate an LNG supply deal with it on a state-to-state basis. Additionally, the ministry plans to launch tenders for LNG imports through competitive bidding, reports the Peninsula. Pakistan and Qatar signed a memorandum of understanding for LNG imports already in February 2012, but no deal has been reached due to disagreements over gas price. On March 18th, the Pakistan's government announced that it had approved the construction of an LNG import terminal in Karachi. If the government fails to make arrangements for LNG imports by the time the terminal is completed, it has to pay high fines to Elengy Terminal Pakistan that will build the facility and has been awarded its 15-year services contract, informs Platts.

Kuwait to Award $4.3 Billion Heavy Oil Contract This Year

Kuwait plans to award a 1.2 billion dinar ($4.3 billion) contract this autumn for the first phase of a heavy oil production project at its northern Ratqa field. The first phase entails production of 60,000 b/d by 2017 or 2018, reports Reuters. By 2020, the production is expected to increase to 120,000 b/d, and Kuwait Oil Company (KOC) will evaluate whether to raise it further to 270,000 b/d. The deadline for bids for the engineering, procurement and construction contract is May 11th, although it may be extended if companies continue to have queries, said KOC´s Chief Executive Hashem Hashem on April 15th. The project will help Kuwait meet its goal to produce 4 million b/d by 2020. It currently produces around 3 million b/d, two thirds of which is exported.

Unconventional News

Japan's First Commercial Shale Oil Production Begins

Japan Petroleum Exploration (Japex) announced on April 7th that it had begun the country's first commercial production of shale oil in the Akita prefecture. Production from shale layers below the Ayukawa oil and gas field was about 220 b/d according to the company, reports Reuters. In May, Japex plans to begin drilling for shale oil in Akita's Fukumezawa oil field. The company has estimated that up to about 100 million barrels of shale oil — equivalent to around 8% of Japan's annual domestic oil consumption — lies under the Akita prefecture. Japan's total oil and gas production was about 77,000 boe/d in the fiscal year that ended in March 2013. 25,400 boe of it was produced by Japex.

Total Stops Shale Exploration in Poland

Total has not renewed its only shale gas exploration licence in Poland, which expired on March 31st, because the company thinks that despite the presence of gas, production would not be commercially viable. "Poland remains a promising country for shale gas, but the exploration process is in its infancy and the industry needs more data and time to understand the geology of Polish sedimentary basins," said a spokesman for Total. Three years ago, Poland's Prime Minister Donald Tusk announced that the country would aim to produce unconventional gas on commercial shale by 2014 in order to reduce its reliance on Russian energy supplies. However, a 2012 government report that cut Poland's estimated shale gas reserves by about 90%, a lack of legal framework and some poor initial drilling results have made also Marathon Oil, Talisman Energy and ExxonMobil quit exploration in Poland. Some other companies such as Chevron, ConocoPhillips, and 3Legs Resources still continue shale exploration in the country.

Sinopec to Boost China's Shale Gas Production This Year

The state-controlled China Petroleum & Chemical Corp (Sinopec) announced at the end of March that its Fuling field in the Chongqing province would produce 1.8 billion cubic meters of shale gas this year. This is nine times more than China's total shale gas output last year, writes the Wall Street Journal. Sinopec Chairman Fu Chengyu said the breakthroughs the company has made in research, technology, and equipment manufacturing will enable it to start large-scale commercial shale gas production earlier than expected. It was also recently reported that Total intends to start exploratory shale gas drilling with Sinopec this year in the Anhui province. Besides, other Chinese companies aim to enter commercial shale gas production. PetroChina plans to spend more than 10 billion yuan ($1.6 billion) on shale gas this year. China National Petroleum Corp (CNPC) announced on April 9th that it has signed a deal with Royal Dutch Shell to boost cooperation in several areas, including unconventional gas.

Total Allowed to Explore Russia's Shale Oil

Total has obtained the rights to explore three hard-to-recover oil blocks in Russia's West Siberia, according to the website of the region's governor. The US Energy Information Agency estimates Russia's shale oil reserves at 75 billion barrels, the largest in the world. Companies like ExxonMobil, Statoil and Royal Dutch Shell have also secured rights to develop the country's shale oil. Russia hopes that this resource will help the country keep its oil production above 10 million b/d, reports Bloomberg. According to Interfax, Total received the rights for the Vostochno-Kovensky, Tashinsky, and Lyaminsky-3 blocks in the Khanty-Manssiisk district. The company has also signed a memorandum to develop Russian shale oil in cooperation with the country´s second largest oil producer Lukoil.

Chevron's Romania Shale Exploration Held Back by Protests

Since October 2013, the inhabitants of Romania's Pungesti village have been protesting against Chevron's plans to explore shale gas there. The company's attempts to establish the first exploration well were suspended twice at the end of 2013 due to demonstrations, reports the Sydney Morning Herald. The protests are mainly caused by the fear that the shale drilling technique hydraulic fracturing will harm the environment. "This is an exploration well," stressed Chevron's Country Manager in Romania, Tom Holst. "Hydraulic fracturing will not be used." However, many locals believe that if gas will be found, then it is only a matter of time until fracking techniques will be used. On April 6th, thousands of Romanians demonstrated in dozens of cities, calling for a ban on fracking as they believe that there are plans to use this technique across the country, informs Examiner.com. Yet, Chevron does not intend to abandon its shale exploration in Romania. "We expect that within the next two to three weeks, the drilling operation will commence here in Pungesti," said Holst around the middle of April.

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GDF Suez to Sell US LNG to Taiwan

GDF Suez on March 28th agreed to sell 800,000 tonnes of LNG annually to Taiwan's state-run energy company CPC over 20 years starting from 2018. The gas will come from the planned Cameron LNG terminal in the US, where GDF Suez owns 4 million tonnes of export capacity per year, reports Reuters. The company has also signed deals to export US LNG to companies in countries such as Japan, China, and Chile. Other partners with export rights at Cameron, Japan's Mitsubishi and Mitsui, have targeted buyers such as Total, Spanish Repsol and Japanese utilities. Mitsubishi is also to sell a considerable part the plant's production to its own trading arm in Singapore. The Cameron LNG export project has obtained conditional approvals from the US Department of Energy. According to GDF Suez, it is likely to get the final approval this year.

Russia Eyes Gas Pipeline across North Korea

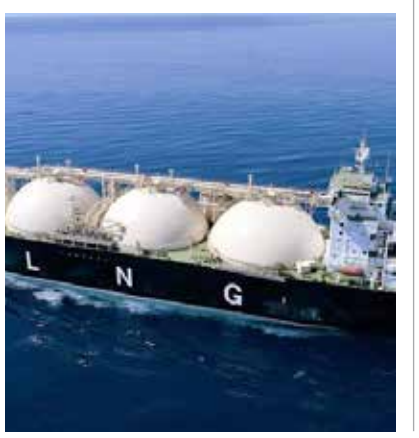
The Russian parliament on April 18th ratified a 2012 agreement to write off $10 billion of North Korea's Soviet-era debt, this move is expected to facilitate building a gas pipeline to South Korea. The rest of the debt, $1.09 billion, should be paid over the next 20 years, with equal installments being made in every six months, reports Reuters. The money could be used to fund mutual projects in North Korea, including a proposed gas pipeline and a railway across North Korea to South Korea, Russia's Deputy Finance Minister Sergei Storchak told media. Gazprom has long planned to build a gas pipeline via North Korea to South Korea that would transport 10 billion cubic meters per year.

Canada-Japan LNG Export Project Approved

Canadian regulators on April 16th approved a 320 cubic feet per day, 25-year LNG export license for the Triton LNG project planned by AltaGas and Idemitsu Kosan. The exports will be from a floating LNG facility whose site has not yet been chosen, reports Reuters. The regulators have approved a number of similar projects that foresee exporting gas as LNG from Western Canada's shale fields to Asian markets, among them a facility planned by Chevron and Apache. However, none of the projects has yet attained final approval from the companies that have proposed them.

Angola LNG Sells First Condensate Cargo

Angola LNG announced on April 8th that it has sold its first condensate cargo from the LNG export plant in Soyo. The cargo was sold to state-owned Sonangol. "The loading and sale of the first condensate cargo marks a further landmark for Angola LNG. We have now produced and sold all of our different types of product, LNG, LPG, domestic butane, and now condensate," said Angola LNG Marketing CEO Artur Pereira. The plant shipped its first LNG cargo in June 2013 to Brazil's Petrobras and its first butane cargo in March 2014 to Sonangol, reports Platts. At full production the plant can supply 5.2 million metric tons of LNG per year, as well as butane, LPG and condensates products. The owners of Angola LNG are Chevron (36.4%), Sonangol (22.8%), BP (13.6%), Eni (13.6%) and Total (13.6%).



Shell to Expand Russian LNG Plant Despite Sanctions

Royal Dutch Shell is committed to expansion in Russia, the company's Chief Executive Ben van Beurden told Russian President Vladimir Putin at their meeting on April 18th, despite the fact that the EU and US have imposed sanctions on the country due to its annexation of Ukraine's Crimea region. "We are very keen to grow our position in the Russian Federation. We look forward with anticipation and confidence on a very long-term future here in Russia," said van Beurden according to Reuters. Shell plans to expand the country´s only LNG plant Sakhalin-2 together with its Russian partner Gazprom. Other shareholders of the plant, which currently produces 10 million tonnes of LNG per year, are Japan's Mitsui and Mitsubishi.

E.ON and Bilfinger Leave the Desertec Group

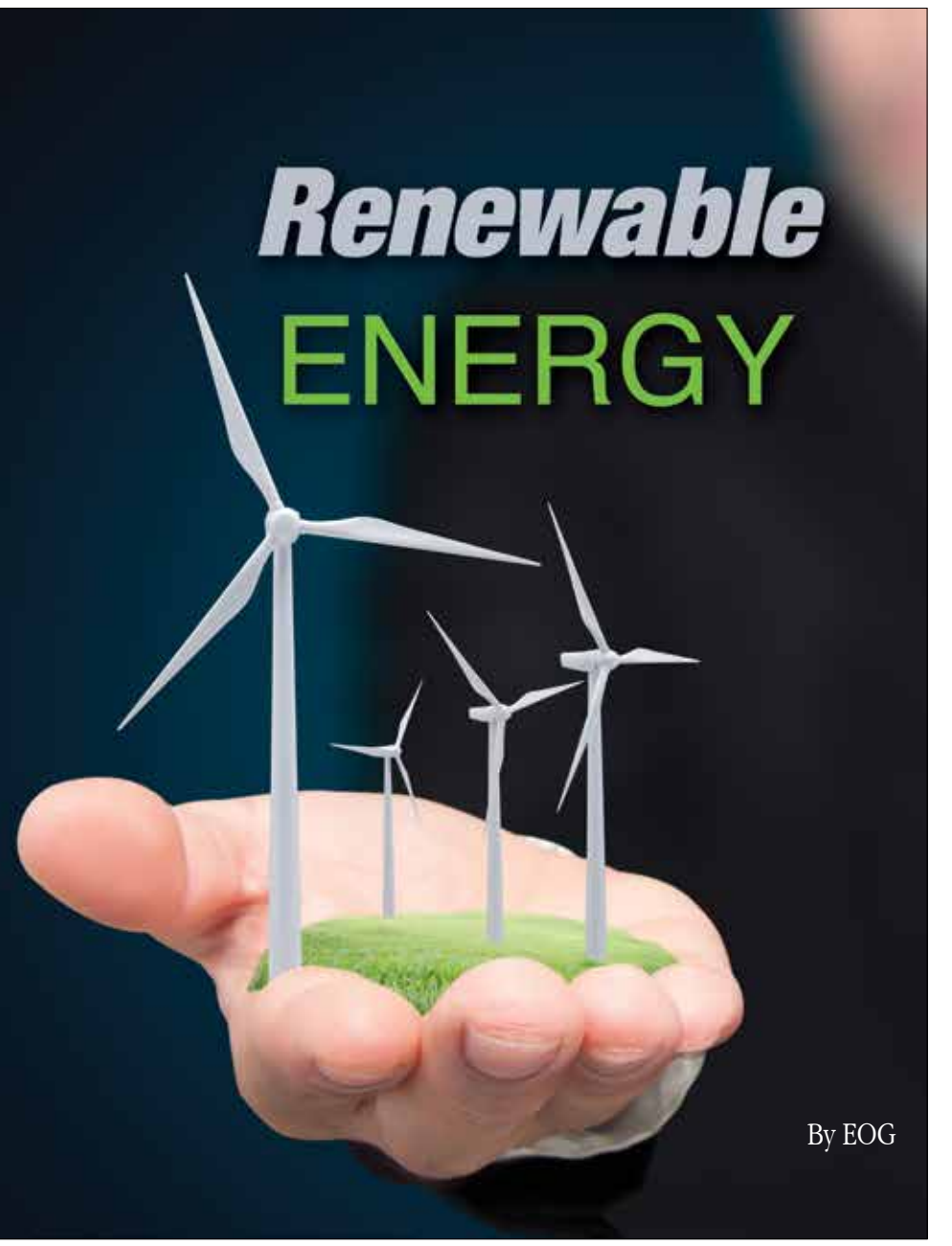
E.ON and Bilfinger announced in April that they would leave the Desertec Industrial Initiative, a German industrial group that intends to import solar and wind power from deserts of North Africa and the Middle East. The group that was established in 2009 with the aim of supplying up to 15% of Europe's power by 2050 has experienced a number of setbacks in recent years. In 2012, Siemens and Bosch left the group after having made investments in their own solar power projects, which proved unsuccessful as the sector was hit by global overcapacity and price drops. Last year the Desertec Foundation, a supporting non-profit initiative, also quit the group due to disagreements over strategy, management style, and communication. However, some companies such as Deutche Bank and Munich RE, are still part of the initiative.

EU Curbs Renewable Energy Subsidies

The European Commission on April 9th issued new state-aid rules that limit the opportunities of EU countries to subsidize renewable power generation. According to the commission, the production costs of renewables have fallen considerably in the past few years and the generous subsidies "caused serious market distortions and increasing costs to consumers", reports Belfast Telegraph. The new rules foresee renewable subsidies decreasing gradually, although there are some exemptions from the curbs, namely very energy intensive industries and the owners of existing small-scale renewable installations. Sixty-eight energy-intensive industries, including steel, plastics, and chemicals, will be exempted in order to keep them internationally competitive, informs European Voice.

US Researchers Produce Fuel from Seawater

Researchers at the US Naval Research Laboratory proved recently that engines can be powered by a fuel produced from seawater. This is possible thanks to a catalytic converter that extracts carbon dioxide and hydrogen from water and converts the gases into liquid hydrocarbons at a 92% efficiency rate, reports Discover Magazine. The resulting fuel can be used in conventional ship engines. The feasibility of such technology was demonstrated by a test on April 2nd whereby the researchers flew a model airplane using the seawater fuel. "This is the first time technology of this nature has been demonstrated with the potential for transition, from the laboratory, to full-scale commercial implementation," said Navy research chemist Heather Willauer. According to the Navy, the seawater fuel could be commercially viable within a decade and cost about $3-6 per gallon.



By EOG

The Future of Egypt's Brownfield Development Convention: An Overview of the Workshop

At this month's convention, "The Future of Egypt's Brownfield Development," Egypt Oil & Gas will host a workshop dedicated to the latest advancements in technology and current case studies related to brownfield development in Egypt.

By Lily Leach

Session 1: Introduction to Brownfields: From Logistics to Economics

Most of Egypt's existing oil wells are considered brownfields, which are defined as mature oil fields in a state of declining production, or reaching the end of their productive lives, and typically over 30 years old. Session 1 of the workshop will include a presentation from EGPC and Transglobe, "Definitions of Brownfields, Egypt Statistics and Work Flows," and an overview of brownfield development and challenges by Gaffney Cline.

A case study presented in Session 1 by Sherif Shawky, Mohammed el-Khayat, and Bronislav Vago of Suez Oil Company, "Maximizing the recovery of a major brownfield," examines the successful mitigation of production decline at the Zeit Bay field, which began its natural downturn in 1988. The complex geological structure, heterogeneous horizons, strong aquifer, and an expanding gas cap have presented challenges in modeling the reservoir as well as limited drilling options.

The case study discusses "the ultimate need to maximize oil production prior to gas cap blowdown," which Sherif Shawky explains as a gas injection process "during the oil production stage to maintain the reservoir pressure as long as possible and in turn maximize oil recovery." This gas injection can originate from other fields, or in the case of Zeit Bay, as re-injection from the associated gas of the same field. At some point, oil production through this process ceases to be economically feasible, and the oil field transitions to mainly a gas field. "The later gas production scheme is called the 'Gas-cap Blow-down' stage. Sometimes ceasing gas injection earlier, or starting gas production may negatively affect oil rate," informs Shawky.

New production data from newer formations was gathered using Pressure Transient Analysis (PTA), and has ultimately improved reservoir characterization at Zeit Bay, adds Shawky. Other wells are scheduled to have similar successes during the coming financial year, the paper said.

Rigless operations at Zeit Bay have proven to be cost-effective and have increased the economic value of the field, resulting in significant drops in cost per barrel. "Rigless operation cost is usually higher than wireline operation," explains Shawky, yet "cost-per-barrel is usually lower in case of rigless operations." As such, it is more economical to proceed with a rigless operation if the cheapest wireline operation is not accessible.

Also presented in Session 1 is a case history of Khalda Petroleum Company's Western Desert Khalda 2 concession, which has been in production since the early 1970s and undergoing successful rejuvenation, having nearly doubled oil production since 2010.

In a paper presented by Kuwait Energy Egypt, production decline and development of the mature fields of Kareem, Ayun, Shukheir Northwest, Ahmed, and West Ahmed is discussed, in addition to the positive outcome of water flooding in the Umm el-Yusr Field, and new resources having been identified through seismic stratigraphic studies.

Mahamed Ismael of Enap Sipetrol presents a field study of the Shahd-SE Field in the Western Desert, to illustrate the challenges presented by uncertain geological and engineering data for proper reservoir characterization.

Session 2: Integrated Reservoir Engineering and Water Flooding

One of the main topics discussed in Session 2 of the workshop is 3D reservoir modeling, which "attempts to incorporate all geological, petrophysical and reservoir engineering data inside a static structural framework," informs Richard Vaughan, Head of Onshore Nile Delta at RWE Dea. "Rock types or sedimentary facies can be distributed in 3D space, based on well correlations and a conceptual depositional model, or directly input from seismic inversion property modeling," Vaughan told Egypt Oil & Gas, who coauthored a case study of the Ras Fanar Field with Mohamad Ali of the Production and Reservoir Department at RWE Dea. These models have helped identify uncertainties or "heterogeneity" in the reservoir, which helps target un-drained "sweet-spots."

On how RWE Dea has implemented 3D reservoir modeling, Vaughan noted that "The presence of thick salt and anhydrite deposits above the main producing reservoirs within Gulf of Suez absorb a significant amount of seismic energy. This usually limits the ability of geoscientists to derive reservoir properties directly from the seismic." The Ras Fanar field is unique in that "the overburden is relatively thin, so that the evaluation seismic-derived reservoir parameters is more conducive," he said.

Dr. Darius Shahsavari, P.E. of IPR Group of Companies, outlined three new enhanced oil recovery (EOR) methods in his paper, "Integration of Modern EOR Techniques for Application in Brownfields," and discusses the evolving definition of EOR. These techniques are:

- Reservoir characterization via adaptive neural network analysis
- Hybridized surrogate reservoir metamodeling
- Smart well technology

"It will be shown that all three of these methods help to reduce uncertainties usually associated with conducting EOR operations at profitable levels," Shahsavari wrote.

Another significant topic of the workshop is water flooding in brownfields. As Eng. Hussein Mohamed Abou Elleil of Qarun Petroleum Company noted, "it is a traditional phenomena in the oil sector that the associated water increases with time." However, as their paper discusses, the Qarun fields experienced an accelerated increase in associated water that has proven to be a challenge to dispose of, and an environmental risk. Water disposal wells have been utilized to deal with excess water safely, as well as minimize costs. Their case study provides a complete comparison between various water disposal approaches, weighing operational and economic criteria.

A paper by Saber Mustafa and Ahmed Abd Hadi of the Suez Oil Company and Aly Gadallah of RWE Dea presents another case where 3D geomodeling of complex structures has proven to be an effective approach to reservoir management, in the Ras Budran field. In regards to field development and reservoir management, building coherent models of heavily tectonized areas—while a significant technological challenge—has had a substantial effect on increasing production and lowering operational costs, the paper said. Ras Budran, west of the Sinai coast of the Gulf of Suez, is representative of a field with a complex geological and geophysical structure. 3D geomodeling techniques have proven instrumental in understanding and characterizing formations, which has led to success in development and exploration of the field.

Saber Mustafa told Egypt Oil & Gas, "Building a 3D geological model of a complex structure requires a consistent interpretation which is matching with the well data." Some characterization techniques that have been implemented at Ras Budran include:

- Well correlation, used to detect well tops and creating reservoir zonations
- Dipmeter data and a vertical seismic profile (VSP), which is used in structural interpretation as methods for fault analysis, and also as a dip guide for the horizon interpretation
- Miocene thickness maps, for detecting the major boundary faults and proving that these faults have been rejuvenated during the syn-rift phase of the Gulf of Suez
- Pressure and production data, used to detect the sealing faults, which are not penetrated by wells
- Surface structure maps for structure calibration

"Geo-seismic interpretation, as a result, has unlocked new areas drilling, and has added a new reserve to the field," Mustafa added.

In addition to the above technologies, presentations in Session 2 will discuss "Improving Sweep efficiency in the Gulf of Suez by Deep Conformance Control using a Thermally Activated Particle System" by the Gulf of Suez Petroleum Company, and "Formation micro Imager Log Facies Analysis & Depositional Environment Interpretation" presented by Enap Sipetrol.

Session 3 and 4: Improved Oil Recovery

TransGlobe is "looking towards tertiary EOR solutions to extract further value from the fields," following a 350% production growth and 280% reserves growth in the West Gharib Concession. This increase in growth comes as a result of applying integrated subsurface modeling, as illustrated in their presentation "Deployment of Proven Technologies for Value Creation in Brownfield."

In the Belayim field in the Eastern side of the Gulf of Suez, a combination of infill drilling (the process of adding new wells in an existing field within the original well) and excessive water injection has led to an increase in recovery, said Eng. Samir Sisistriss and Eng. Mustafa in their paper for the Belayim Petroleum Company. "In the past decade more than a hundred of deviated wells and tens of horizontal wells have been drilled in order to compensate for the effectiveness of water injection, where sweep efficiencies and recovery factors using conventional flood patterns are unsatisfactory. The interest in combining the water injection and drilling of infill wells has kept growing, extending the life of this mature field, and maintaining its production plateau, and achieving high recovery rate," the paper said.

Hydraulic fracturing has increased the production rate of the Bah-I well in the Falak field of the Meleiha concession from 20 b/d to 400 b/d, according to Agiba Petroleum's presentation. "The field was considered as a marginal field, producing from only one well with a low oil rate. After using hydraulic fracturing technique to develop this field, oil production rate increased to 3,000 b/d. Currently the field contains 11 wells as oil producer and four wells as injectors." This technique has increased Agiba's reserves by 288%.

Another method discussed in this session is the gas life method, "one of the most common methods of increasing production in oil fields," according to a paper by Adham O. Hamshary, Petroleum Engineer at BP. This method consists of continuous injection of lift gas into the tubing, which "reduces bottom-hole pressure and allows more oil to flow through the well." Gas lift has produced positive results in the Shoav-Ali, a major field in southern Suez.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AUC Researchers in Pursuit to Boost Oil Recovery Rates with Nanoparticles

Egyptian researchers at the American University in Cairo (AUC) are conducting pioneering nanotechnology research that may boost oil recovery rates to unprecedented heights.

By Laura Raus

Although nanotechnology has been applied in the downstream petroleum industry for decades already, it was only in the 2000s that the upstream sector really began to take interest. Since then, research on upstream nanotechnology applications has boomed. In Egypt, this kind of research is conducted at the AUC by Dr. Adel Salem, Assistant Professor of Petroleum and Energy Engineering, and Abdelrahman Ibrahim El-Diasty, Research Assistant at AUC, and a senior student at Suez University.

Up to 90% Recovery Rates in the Laboratory

More specifically, the two researchers try to increase oil recovery rates with the help of nanoparticles. The dimensions of such particles range only from about 1 to 100 nanometers (10^{-9}m–10^{-7}m), so they can be very effective in pushing oil out of tiny rock pores, in the scale of microns, that even cannot be seen by a naked eye.

In their experiments financed by AUC, El-Diasty and Dr. Salem used nanofluids for flooding oil out of rock samples obtained from the Bahariya formation. "Nanofluid is basically water carrying suspended nanoparticles," explained El-Diasty. In the laboratory, they achieved recovery rates as high as 90%, whereas simple water flooding resulted in only 36% recovery.

However, Dr. Salem said that even though AUC's petroleum laboratory is one of the best in the Middle East, it is not capable of simulating the high pressures and temperatures that exist in real reservoirs. "In the field scale, the recovery rates may lower to 50-60%," he noted. But even this would be considerably higher than recovery rates achieved by conventional methods, so the next big goal of the two researchers is to move from the laboratory to the field and conduct a pilot project at some small reservoir.

Many Nano-Applications to Boost Recovery

Researchers at several international companies—Shell and Baker Hughes for example—and in countries such as Norway, the US, China, and Saudi Arabia have similar pursuits. However, particular nano-applications being developed for improving oil recovery vary greatly. For example, while some researchers are developing nanofluids that can push more oil out of rocks, others are experimenting with nano-scale sensors that change their molecular makeup depending on the conditions they encounter in a reservoir, and yet others are devising stronger and less corrosive drilling equipment coatings by taking advantage of the fact that nanomaterials are much denser on an atomic level than typical metals. Dr. Salem also pointed out that research is being conducted on improving steam flooding by nanotechnology since nanoparticles can carry heat very effectively, thanks to their larger surface-area-to-volume ratio compared to bigger particles.

Most of such research has yielded promising results, said El-Diasty. Yet there are hardly any commercial nano-applications for the upstream petroleum industry, predominantly because nanoparticles and nanomaterials are expensive.

High Cost of Nanoparticles an Obstacle

"Nanoparticles are mostly produced for medical applications, which need them in almost 100% purity and in small quantities. That is why they are expensive," explained El-Diasty. "At the start of our research about three years ago, only nanoparticles meant for medicine were available to us and they cost about thousand dollars per one kilogram."

Later, chemical engineers at AUC and the Egypt's Central Metallurgical Research & Development Institute provided nanoparticles for the experiments. El-Diasty and Dr. Salem also tried to produce nanoparticles mechanically by using a method very cheap compared to chemical ones—a simple ball mill. The particles yielded in this way were larger and less pure, and accordingly achieved lower recovery rates compared to chemically produced nanoparticles, but still clearly outperformed simple water flooding.

"The petroleum industry needs bigger amounts of nanoparticles, but with less purity compared to medicine," said El-Diasty. Luckily, at least China has started nanoparticle production that meets such needs. "China produces cheaper nanoparticles than any other country, so that one kilogram can cost just $30," informed El-Diasty. "They were ready to sell these to me in barrels!"

More Experiments Underway at AUC

It is possible to produce nanoparticles from almost any material, but El-Diasty and Dr. Salem have used silica nanoparticles in their experiments, which involved recovery from the Bahariya sandstone formation. "We injected sand [nanofluid] into sand [formation]. If it is the same material, then the fluid will not react with the formation and cause damage," pointed out Dr. Salem, adding that silica nanoparticles are also relatively cheap.

Now the two researchers are conducting more experiments with other materials as well as different nanoparticle sizes and reservoir samples to achieve even better results. "One of the challenges is to prepare a nanofluid with good stability under the harsh pressure and temperature conditions of reservoirs, so that particles would not agglomerate into bigger pieces," noted El-Diasty. Besides, the researchers try to create fluids that still work effectively when the concentration of nanoparticles is lower, since this would reduce the cost of nano-EOR. As of now, nanoparticles should make up about 0.1-3% of the weight of fluid in order to achieve high recovery rates.

El-Diasty and Dr. Salem believe that nano-EOR can become commercial in the near future. "This technology has developed so fast. Thanks to cheap nanoparticles from China, it will maybe soon be cheaper than conventional EOR methods," said El-Diasty. "It will be a big step in EOR very soon."

Lack of Cooperation and Bureaucracy

Since the effectiveness of nanoparticles in EOR (enhanced oil recovery) depends greatly on the properties of formation, which varie from region to region, it would not be possible to transfer the nano-EOR technologies developed abroad directly to Egypt. Hence, the research of El-Diasty and Dr. Salem is vital for the future application of nano-EOR in Egypt.

Unfortunately the two researchers are facing more hurdles than many of their peers abroad. Whereas in Norway, for example, academic research centers and companies have teamed up to develop nanoparticles for EOR and the state will allocate $2.27 million for this cause in the period 2014-17 according to the Daily Fusion. In Egypt, the government lacks financial resources for supporting pioneering research and IOCs prefer to test innovative applications abroad, in more developed countries. A similar mindset prevails in Egypt's national energy companies. "If they for example need some more complex analysis done, they rather assign it to abroad than to any university in Egypt," said El-Diasty.

"We want to help Egypt and we are ready to cooperate with anyone," he stressed. The governmental Egyptian Petroleum Research Institute did recently establish a Nanotechnology Center, but it is focusing on downstream applications. El-Diasty and Dr. Salem hope that perhaps they will be able to partner with some international oilfield service company that is active in Egypt, but their collaboration with joint ventures to obtain rock samples for experiments has been far from smooth. "Getting those samples is very complicated," said El-Diasty. "There is a lot of bureaucracy. It can take more than a year to get reservoir samples from a company. Hence sometimes we just take samples from the surface outcrops, but they should have the same properties as samples obtained from reservoirs."

EOR Success Story in Oman's Oil Sector

In a way it is not surprising that the government and the companies operating in Egypt show little interest in cooperating regarding nano-EOR research, as even the use of mainstream EOR technologies has been sluggish in the country. According to Dr. Salem, only some thermal methods and water flooding are used in Egypt when it comes to EOR.

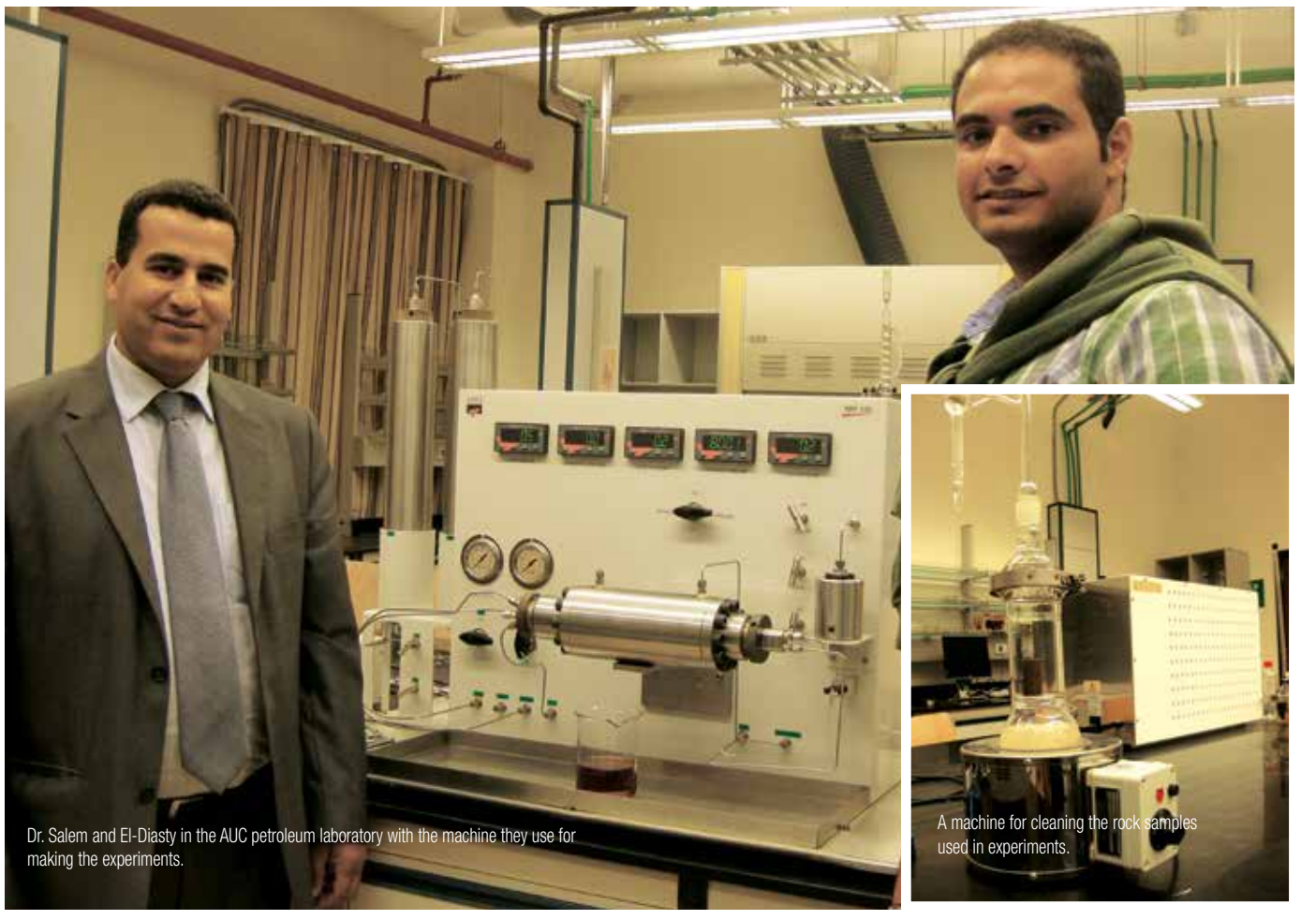
This is so despite the fact that there are many EOR technologies being applied and tested all around the world—CO2 flooding, polymer flooding, plasma-pulse, microbial injection, just to name a few. In some countries EOR technologies have yielded remarkable success in boosting oil production rates. One of such countries is Oman, which started actively applying EOR technologies a few years ago. EOR was the main factor alongside some new discoveries that in 2008 helped reverse the decline of Oman's oil production, which had started eight years before, informs the US Energy Information Agency.

EOR methods used in Oman include polymer injection, miscible gas injection, steam injection, and solar thermal EOR. Solar thermal EOR—whereby the sun's heat is used for generating steam needed for oil recovery—is especially predicted to have a big future in the Middle East, reports ArabianOilandGas.com. In 2012, Shell and its partners invested over $25 million in this technology in Oman. The government-controlled Petroleum Development Oman (PDO), which accounts for 70% of the country's oil production, expects to save up to 80% on gas usage thanks to solar thermal EOR and will continue to invest also in other EOR methods. "By 2020, about 22% … of our production will be from EOR," said Dr. Syham Bentouati, Head of New Technology Implementation at PDO, according to al-Bawaba.

Egypt's Huge EOR Potential Still Locked

EOR also has huge potential in Egypt since the country possesses a number of brownfields, which still contain vast amounts of oil. On average, only about 35% of this oil has been recovered by conventional methods. Thus, supporting research on new EOR methods as well as investing in the utilization of EOR technologies that are already commercial can yield big benefits for Egypt.

As of now, Egypt's government and companies seem to lack the finances and the will to support the pioneering nano-EOR research that has emerged in the country, and as a result El-Diasty and Dr. Salem are looking at following their successful laboratory experiments with a pilot project abroad. There is no lack of interest in their research there. The two researchers have presented their experiments in several international science publications and events, and have been proposed to conduct the pilot project on a field in Qatar.



Dr. Salem and El-Diasty in the AUC petroleum laboratory with the machine they use for making the experiments.

A machine for cleaning the rock samples used in experiments.

Interview with **Mr. Thomas M. Maher,** General Manager of Apache Egypt

By EOG

Tell us a bit about your experience in the petroleum sector.
I am geologist by training. I graduated with a master's degree in geology in 1981 and a master's in business administration in 2001. I have worked with Apache for 28 years, mostly as Exploration Manager at our US Central Region office. In 2002, I was asked to move to Egypt since it was a period of increased activity following our acquisition of Repsol's Egypt holdings. I started as Geological Manager and in 2005 became Exploration Manager. In January 2010 I left Egypt to lead Apache's Australian business as Country Manager. It was quite a learning experience and I enjoyed it very much. But then I was asked if I would be interested in returning to Egypt. I have always enjoyed working here, and my wife loves Cairo. I am happy to be back.

Egypt has been a top performing region for Apache. Production grew to the point where it represented 26% of the company, even though we had ten regions. Besides, we needed to raise capital and wanted to lower our debt that had accumulated as a result of the acquisitions we made a few years before. Apache's current focus for growth is more on our properties in North America where we have significant unconventional potential. In 2009, just 32% of our production came from Apache's five onshore North American regions, now it is close to 56%.

This is why we sold a third of our Egyptian business to Sinopec. However, Egypt is still a big piece of the company, representing 16% of the company's total production.

There have been other sales too…
Yes, the Egyptian sale was just a part of an overall plan to re-balance our portfolio. In terms of divestments, we started with the Gulf of Mexico, where we sold our entire shallow water region, retaining the deep rights. In March of this year, we finalized the sale of the entire Argentina region. In April it was announced that we have sold some dry gas properties in our Canada Region.

Does the Egyptian sale mean that Apache is going to slow down its operations here?
No, in fact it's just the opposite because we would have been capital constrained had we not found a partner like Sinopec, who is bullish on Egypt. Last year, when we had 100% of the business, our capital expenditures were $1.2 billion in Egypt. Now that Sinopec is a partner, we lowered our net capital expenditures to $900 million, but the overall Apache-Sinopec business plans on investing $1.35 billion in capital projects.

We still see a lot of opportunities on our leasehold position in Egypt that we want to go after. Concessions have clocks ticking to expire, so we cannot just sit back and wait.

Please tell more about Apache's activities in Egypt.
We have two joint venture companies here, Qarun and Khalda. Qarun produces currently about 43,000 barrels of oil per day with no natural gas. Khalda on the other hand produces about 150,000 barrels of oil and condensate per day and 900 million cubic feet of gas. Our total gross production peaked in 2012 at 363,000 boe/d (barrels of oil equivalent per day). Last year we dropped to 352,000 boe/d, but we hope to have a modest increase in 2014 and reach 354,000 boe/d, 57% of it being oil.

Our biggest discovery in Egypt by far is the Qasr Field made in 2003, which contains recoverable resources of almost 3 trillion cubic feet of gas and 90 million barrels of condensates. Another achievement was our 2X Project. We accomplished a joint Apache-EGPC goal to double production between 2005 and 2010, it grew from 163,000 boe/d to 326,000 boe/d in that period. I think this was a time when our relations with the government started getting stronger. Not that relations were weak before, but working together during the 2X Project really highlighted a win-win partnership.

One more achievement I am proud of is what we have done with the three development leases that Apache purchased in 2010 as a part of a $7 billion acquisition with BP, which marked the exit of BP and Gupco from the Western Desert. Production on these properties was mostly discovered in early 70s and the highest oil production rate ever recorded was in July 1973 when the Abu Gharadig Field reached peak production of 37,478 bpd (barrels per day). In March this year we broke that record and produced 37,618 bpd. On a boe basis, our production reached a record 60,861 boe/d in March, which is 209% higher compared to the time we took over operations. The team at Khalda has done an amazing job with these properties. It's thanks to exploration success, more development, plus water flooding of old fields and other operational enhancements. We have also improved operations at the Abu Gharadig gas plant and re-started operations at the Dahshour LPG Plant that has been idle for three years. The LPG plant started up in late February and is now producing over 3,000 barrels of LPG's per day. That LPG is enough to fill over 20,000 cooking gas cylinders every day that the country so desperately needs.

We have an integrated technical presentation planned for the Brownfield Convention that will explain a lot of this in more detail.

Has Apache reached their peak in production?
It will take more capital investment, finding another field like Qasr, a little bit of luck, and a lot of hard work to increase production from where we are today. We are up for the challenge and focus every day, on trying to increase our production.

It will require additional new field discoveries but we are off to a strong start with a couple of nice discoveries in the first quarter; more details about them will be released to the public in May.

We are the third largest natural gas producer in Egypt, and the largest oil producer with a fairly comfortable margin. On a boe basis, Eni is slightly ahead of us as the leading producer of oil and gas in Egypt, but I hope that before I leave this assignment, Apache becomes the top boe producer in Egypt.

The minister signed an Apache-record 20 development leases in both 2012 and 2013. That level of activity – 40 approved development leases in just a two-year period – is quite extraordinary, I believe.

Is one of the reasons why this was accomplished the way the Egyptians are doing business after the revolution?
I haven't thought of it along those lines… I think you have two very competent professional leaders now with Tarek el-Molla at EGPC and Sherif Ismail as the Minister of Petroleum. They are very passionate about their jobs and dedicated to the country. They are anxious to get things pushed through and production on to help the nation.

We really need their collaboration to get it done and they have worked very well with us on this. In the beginning of last year when I came back to Egypt, I noticed it had taken too long for some of those development leases. When these things happen, we get together. We do quarterly meetings now with EGPC. We talk about the challenges and what EGPC as a business partner can do to help us. One of the meetings focused on what actions would be required to approve development leases more quickly. And they did.

Did you have any doubts about the future of Egypt's oil business when the January 25th Revolution started?
I wasn't here at that time; I had my own issues in Australia. But Apache has been here for 20 years, and we have always felt the government recognized and appreciated the value of the oil and gas industry. We have had excellent relations with them over that time. I personally wasn't fearful and I don't think our executives in Houston were either. We hadn't heard of any intention to nationalize or expropriate any concessions, and we didn't feel it was imminent. We are still of that mindset. It's obvious that the government is trying to encourage foreign investment and not reduce it by taking properties away.

What about Apache's future capital spending in Egypt?
We have been the largest US investor in the country for about ten years. Our three-year plan is to continue with the current level of investment in Egypt.

How does Apache see its future when it comes to unconventional production in Egypt?
We still see a lot of potential in the Western Desert, including unconventional opportunities, but 95% of our activity pursues vertical, conventional targets.

In the Western Desert there are a few world-class fields but most are fairly small, especially by Middle East standards. Our business model is that we have developed a network of facilities along our acreage and hence can economically drill for these smaller targets, from 1 million to 10 million barrel fields. One-hundred million barrel fields are extremely difficult to come by here even in conventional sense, but we still see many smaller traps in our 3D seismic. We are well positioned to aggregate and economically produce these smaller discoveries, which might not be commercial for a newcomer who doesn't have the infrastructure we have.

What do you think the government needs to do in order to attract more investments in the Western Desert?
Certainly a higher gas price is going to help because it's hard to make economics, even with shallow gas discoveries, at

$2.65 per thousand cubic feet. And I know that this issue is on the minister's radar screen.

While I still think there is good liquid potential in Egypt, there's certainly natural gas potential too, maybe even more so, but people aren't really looking for gas at that price. We are because we have gas plants here and we want to keep them full. We are not putting in a lot of capital, but we are doing enough to ensure that the plants are at capacity, and we understand well that the country needs as much gas as it can get. In fact we would like to find even more gas and build more infrastructure, but to be able to do that, the government has to come up with a higher price because putting in more gas trains is very capital intensive.

What is Apache's position regarding the government's debts to IOCs?
This is a problem that surfaced before the revolution. I think we started noticing it in mid-2000s. It got progressively worse up to the point that in 2008-09, we were really concerned about it. We worked very hard with the government to come up with win-win strategies, to keep the level of receivables manageable and to allow us to continue investing. The level of receivables owed to us is pretty high, but considering the amount we produce and the revenue we generate, it is manageable.

The companies that are more levered towards gas production seem to be hurt the most. We are fortunate to have in our Egyptian commodity mix 55% of oil and 45% of gas on a boe basis. Natural gas is pretty depressed in most markets, so we are trying to move our commodity mix more towards oil, condensates and natural gas liquids.

Are you going to look into any offshore opportunities?
Probably not outside the one block we picked up in the Gulf of Suez and certainly not deepwater gas. The offshore gas business is very tough currently, and as of now, our plate is just full with our onshore operations and the Gulf of Suez block.

Can you tell more about this new block?
It's called North West Abu Zeniema. We signed it with the minister in December last year. We have a couple of good-looking shallow oil prospects there. We think we might be able to access them from onshore rather than setting up a platform. However, we are still bringing in data from the EGPC data center, so we don't have the final exploration work program yet. We do have a two-well commitment, which we will meet.

Do you see a big potential in this block?
We have hopes of getting some tens of millions of barrels. I don't think it will be anything really huge, but you never know...

Will we see Apache investing more in onshore blocks?
I suspect so. There's a bid round we are evaluating right now.

We lost 3 million acres in January as we had seven concessions expiring all at about the same time. We were successful in extending three of them; they should be through the cabinet by now and ready for the president's signature. In the oth-

er four concessions we could never reach agreement with EGPC, who valued them more than we were willing to pay, so we relinquished them, which amounted to 3 million acres.

We have contracted 50 rigs in Egypt, including 27 drilling rigs and 23 workover rigs. To keep those rigs busy, we need more acreage and to shoot more 3D seismic. Our business model has been quite transparent: we would like to aggregate as much acreage as we can, to cover it with 3D seismic and just drill as fast as we can.

So we are very interested in bid rounds. However, we found that the terms of the last bid round were very tough. We were surprised that some companies would extend such terms. We have always been financially astute and we are not going to bid just for the sake of winning a block if it doesn't give an acceptable rate of return.

Do you see potential for unconventional oil and gas in Egypt?

What is going on now in North America is just unprecedented. Currently we are the most active driller in the US. In Oklahoma, nearly all of Apache's rigs are drilling horizontal wells. In the Permian Region, half of the rigs are drilling horizontal wells. I don't see that happening in Egypt because geology and basins are different here.

But this is not to say that Egypt doesn't have unconventional potential. Last year one of our goals from the corporate office was to transfer that technology from North America and apply it here. So we had a goal to drill seven horizontal wells before the end of the year and we actually spudded eight. Some of them have been very good successes while some have not worked out and tested only water.

Horizontal, multi-stage fractured wells can produce quite a bit more than vertical wells. Unfortunately I don't know if it's going to be economical because we had problems operationally. But everyone in North America goes through similar issues; it takes a while to get up the learning curve to be successful. We are not applying a large proportion of our budget, but we are looking at drilling probably another eight to ten horizontal wells in 2014.

Shale gas is a bit different resource. Khalda is drilling a vertical well now in cooperation with Halliburton and the Ministry of Petroleum. We will run several different logs to get as much data as we can to help us understand if this particular shale is as good as forecasted by the EIA (US Energy Information Agency) study.

How did the EIA get that information?

That's a desktop exercise. Consultants that did work for the EIA went through literature and looked at basic things like what is the mineralogy and total organic content of the shale. So on paper it looks like a good candidate, and they did some volumetrics and estimated a resource potential of 101 trillion cubic feet. But someone actually has to look at real rocks and say if this is for real; that's what we are doing now.

And to confirm that estimate it's probably going to take more than just this one well. This is a vertical well. It will eventually take a horizontal well and doing multi-stage frac, but you don't want to start spending that kind of capital until you have done all the technical due diligence. Unlike conventional plays, you need to consider several different parameters for these shale plays to work technically; then the fiscal regime, concession terms and commodity price must be considered to assess whether the project is economic.

Do you think Egypt will see investments in unconventional in the next 2-3 years?

Yes, probably. We are actually doing it now. Unconventionals is a broad term. I think that what we are doing in the Abu Roash G and the Upper Bahariya is unconventional. Other people may argue with that because we do get production from vertical wells, even though they may not be commercial. So I look at those zones as unconventionals and we are going to invest in those types of plays with newer technology; they are less expensive than the shale plays we are talking about. The shale plays are going to be deep, expensive and probably gas and we are not going to pursue those opportunities for $2.65 per thousand cubic feet.

What difficulties do you see that that the whole sector is facing and what is your message for investors to succeed in Egypt?

Two things come to my mind. First, the diversity of commodity. You don't want to be a 100% natural gas player and maybe even not a 100% oil player because historically oil prices have varied a lot. And you also have to have diversified portfolio in terms of what basins you are in. It may be okay to be only in one province like we are in the Western Desert, but we operate in six different basins within that province.

Second, understanding concession agreements is critical in this business. You have to spend a fair amount of time to really understand the agreements and work through some scenarios on how cost recovery, profit splits and excess cost recovery work. It seems to me that some new folks coming in want to establish their position here so badly that they don't realize the terms are not going to be economic.

EGPC does not appear to be concerned whether winning bid comes from Apache or a company they have never heard of. If a competing bid is slightly better than ours, they are going to get it. All things being equal, EGPC is strictly looking at what gives Egypt the best return on paper, which is a natural thing to do. However, some of those smaller companies never finish their work programs; they may lack the capacity to operate, lack the facilities to process any petroleum they discover or lack the capital to develop those discoveries. The best bids for Egypt are really from companies that execute their work programs and deliver production quickly; production is where the value is for Egypt.

Will the production sharing model work for Egypt also in the future or should we be looking at different types of agreements?

The production sharing contract model has served both Apache and the government well in the 20 years that we have been in Egypt. I think it puts both of us in the game; we constantly need to watch our business, our costs and margins. I like it, I guess because I am used to it.

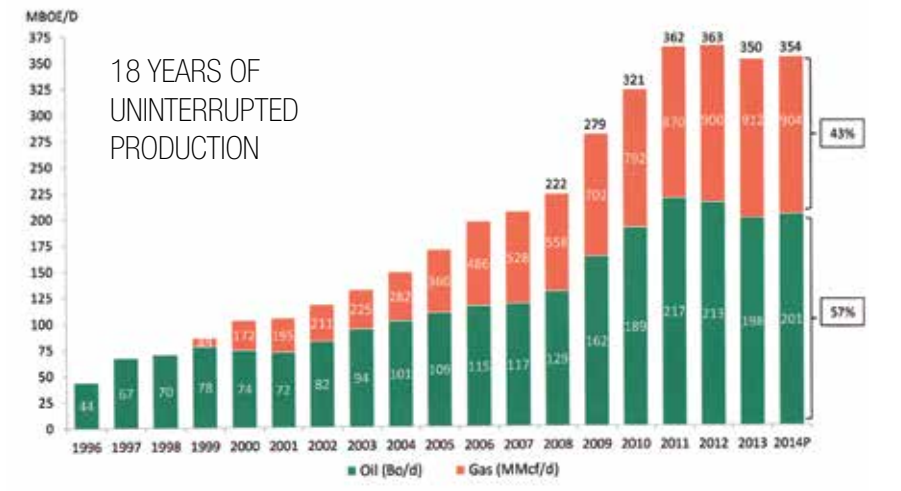
But I know that it is not going to work when it comes to unconventionals or even offshore. I think one size doesn't fit all in this case. You have capital intensive unconventional and deepwater plays alongside relatively inexpensive conventional onshore plays. Maybe Egypt needs to look at different models.

Would you like to add something?

Yes, I would like to mention our Corporate Social Responsibility initiatives. One of the things we are proud of is the 200 one-room girl schools we have built along the Nile Valley. We maintain those buildings, each accommodating about 35 girls, at our cost. And we are building more schools. I will be traveling to Matruh this month [in April] to help dedicate a sixth co-ed one room school we have built close to our operations. In December Apache

Egypt has been a top performing region for Apache. Production grew to the point where it represented 26% of the company, even though we had ten regions.

EGYPT GROSS PRODUCTION OVER TIME



Development Lease History

Egypt was nominated as a finalist for the US Secretary of State's Award for Corporate Excellence, the ACE Award. We were selected among 12 finalists from 42 nominations submitted by US ambassadors all around the world.

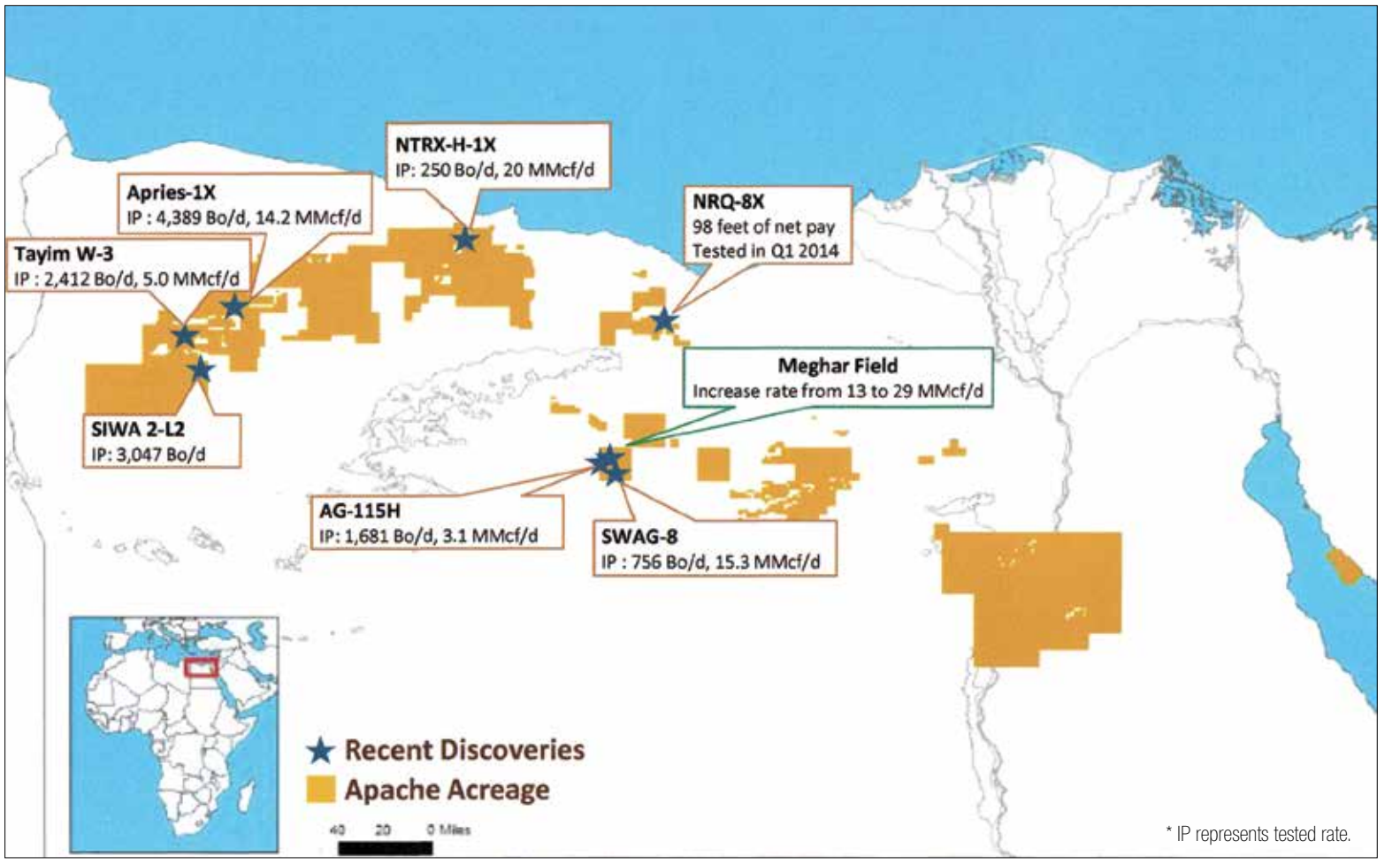
We are also one of the leading parties in the forthcoming awareness campaign called the Egyptian Initiative for Energy Conservation. I think energy conservation is fundamental. The country wastes energy like nothing I have ever seen. We went through something similar when I was growing up in the US. We had the Arab oil embargo, there were huge queues at gasoline stations and people had to turn their thermostats down. It was painful, but I think from that experience we learned how to conserve energy and these lessons are passed on to the future generations. I think Egypt is at that state now where there really needs to be concerted national effort to teach people how to conserve energy and show them the importance of it.

It's easy for the IOCs to say that the problem is easy to fix; just end subsidies and the government will be able to raise money and pay us. We know that is not going to happen in a vacuum; there are certain fundamentals that have to happen first and I think energy conservation is the most basic one. The minister of electricity is convinced that it would be possible to save 20% of electricity generated in Egypt just by basic conservation measures. Can you imagine how much of the state's budget that could save?

This initiative was BG's idea and Shell is leading the project. We have some staff in the committee with them and I'm currently trying to motivate other IOCs to contribute. We have raised about a million dollars to date and would like to raise well over that. It's hard to ask companies that are owed $1.5 billion to contribute to this campaign out of their corporate social responsibility budgets, but BG is doing it, Shell is doing it, we are doing it, and recently Dana Gas and GDF Suez have also come to the table.

RECENT WELL HIGHLIGHTS

CONTINUING TO CONFIRM VAST OPPORTUNITIES



Eng. Tarek El-Barkatawy

Chairman and Managing Director of Tanmia Petroleum Company

By Laura Raus

Tanmia aims to take over some of the fields that have development agreements with international oil companies (IOCs) expiring between 2010 to 2025. Was this the main rationale for establishing Tanmia in 2008?

Yes, these brownfields were the main objective in the mind of the former Minister [of Oil Sameh Fahmy] who decided to establish Tanmia and, in my opinion, this is the best decision he ever made, particularly at that time.

Back in 1973, the war between the Arab countries and Israel resulted in oil prices rising from $3 to $42 per barrel. Such a big jump in prices made petroleum in the Middle East attractive for other countries, so companies from abroad moved to this part of the world. During the 1980s, most exploration agreements were launched and several discoveries showed up in the next few years. As development agreements usually last for 20-30 years, most of them expire between 2010 and 2025.

Some had expired already by the early 2000s, and Egypt found that the only way was just to extend them, since at that time we didn't have enough operating arms that could take the fields over from IOCs.

Then in 2008 a decision was made to establish Tanmia, with the main objective to pick up fields after the expiry of their concession agreements and develop them if they can. If they can't — for example because it requires specific knowledge or a lot of finances — then at least EGPC will have a good negotiating platform with IOCs as it can tell them; 'okay, if you don't want to operate with those conditions, then we have a backup option.' That is why Tanmia has been established and why it is very important for Egypt.

Is Tanmia already operating any brownfields?

Unfortunately we have been left without getting any agreements to operate fields. I have heard that it was an "egg or chicken" problem: does Tanmia first need to get all the resources ready before it can operate a field, or can it get a field and then acquire the required resources. I think there was no one at that time to sort out this puzzle.

We are now trying hard to take over some of these fields that have expired from IOCs. Unfortunately some of the fields have been assigned to other national companies.

So there is no common vision in the public sector that Tanmia should take over those fields?

It's just a matter of "not yet". For example, the EGPC chairman, at my meeting with him, expressed very much support and definitely is pushing Tanmia to take over some of those brownfields. And following an email explaining the vision of Tanmia, the Minister of Petroleum Sherif Ismail called me and gave me very much moral support, saying that 'you are on the right track and we definitely need to have something done'.

To sort out the puzzle, I have signed a few memorandums of understanding with companies to study some fields together. I cannot disclose the names of the companies due to confidentiality agreements, but we are currently studying nine fields with them. Once we have support from EGPC and the ministry and we get the first field, then definitely we can pull through any resources and know-how that is required for developing it.

These memorandums of understanding are with international companies?

Mostly with international companies that are well known for developing brownfields. Some of them have just announced big successes in Asia for similar fields and we would like to build on these successes.

Their role will be to provide most of the suite of services and know-how. Tanmia will be the contract-holder and will offer some expertise of the area itself, the local knowledge. We are forming a kind of integrated services provision, but we don't intend to get very involved in day-to-day operations unless it is absolutely necessary.

These companies will invest, and will get their investments covered and a percentage of the revenue that we generate, which is linked to the production rate. But neither Tanmia nor subcontractors have the right to the oil itself — we are keeping all the oil for EGPC. All we talk about is a service agreement, providing services for money.

There have been lots of meetings, data rooms, proposals and draft contracts, but nothing other than the memorandums of understanding have been signed yet.

Where are the fields that are being studied located?

We have three fields in the Sinai, two at the Gulf of Suez and four in the Western Desert. Some of these fields are very old. Some on the other hand are not really brownfields since they can still produce naturally, but we see that with some unconventional intervention it would be possible to achieve much higher production.

There are also some opportunity fields that are extensions to existing producing fields. Based on some seismic work and exploration logging, the structure that contains oil and/or gas seems to extend outside the concession agreement acreages. We are offering to EGPC that perhaps we can be awarded those open areas to develop them and in the meantime have a kind of unitization with the IOCs that have the original concessions.

When do you think Tanmia will get its first field to operate?

I have done several proposals and I keep studying... The decision makers would be best placed to answer this question.

In the future, could it be feasible that Tanmia focuses on brownfields and EGPC, GANOPE and EGAS focus only on newer fields?

The role of EGPC, GANOPE and EGAS actually needs to be that of a regulator and maybe an owner, but they are not supposed to operate at all. That is why other entities, joint ventures, are created, which are taking care of operations and have some representatives from EGPC and some representatives from IOCs. EGPC will continue to regulate and own fields, but they utilize us as an operating arm focusing on brownfields instead of having joint ventures with IOCs as operators.

We look at Tanmia as a freehand operating arm to EGPC since we have been established under the investment law number 159. This is a kind of liberated law that allows a lot of freedom for taking decisions and enables us to get things done more easily and quickly than it generally occurs in the public sector.

What kind of recovery techniques could be successfully used for Egypt's brownfields?

The techniques depend on the geology, age, past performance and behavior of the field. So the first step is to study those factors, which gives us an idea about which techniques we can use as primary and then secondary and then tertiary methods.

But you can start from a very simple operation by re-perforating the existing well that is producing. The perforation that is passing oil though the well-bore may even be blocked, so re-perforating is a very simple action that can increase production.

Then you can do more sophisticated operations such as hydraulic and/or acid fracturing to allow more artificial permeability and increase passages for oil and gas into the well-bore. There are lots of new technologies for increasing recovery, including pumping polymers downhole and a method called steam assisted gravity drainage (SAGD), just to give a few examples. A big SAGD project has been done in Oman and we have very good access into how it has been done. SAGD means that you assist the mobility of the fluid that is immobile or quite attached to the formation using steam. You may drill two horizontal wells, pump steam into

> In 2008 a decision was made to establish Tanmia, with the main objective to pick up fields after the expiry of their concession agreements and develop them if they can.

one of them and leave it to soak, which will help oil fall down by gravity into another bore that is underneath and then you can produce or pump out.

We are also going to share a lot of knowledge from the Faculty of Petroleum Engineering at Cairo University. It's not so that we will only be relying on the know-how of the subcontractor, but we also have a memorandum of understanding with the faculty to perform some studies and build some laboratories. We believe that we are well suited to take over the responsibility for developing the brownfields and apply relevant technologies to make it a success.

How big is the potential of brownfields in Egypt?

Egypt in my opinion doesn't even have the option of ignoring brownfields or failing to develop them. We don't have the luxury of big energy resources, which would give us the privilege of leaving those brownfields for the future generations to develop. We need to do it now so that the next generation can live.

Could Egypt, with the help of brownfields development, reverse the trend of falling oil production like, for example, Oman did?

At this question if am kind of obliged to talk about energy strategy as a whole. Yes, brownfields will have a certain role. But let us take into consideration that energy is like a ball – you cannot have a hole on one side and say it's fine, we can still play with it, because the hole will affect all sides of the ball.

The problem in Egypt is not in production, but in consumption. Rationalization of energy consumption is an instrumental factor. Here the price that people pay for electricity and fuel plays a big role because it really doesn't hurt them a lot to waste it if they don't pay for its [full] cost.

Secondly, we need to increase the efficiency of power plants, which in some cases requires rehabilitation of existing plants plus it requires a decision to stop building any new power plants that rely on gas.

The whole strategy is a bit strange. It has been formed so that about 90% of power plants in Egypt are run by gas and fuel oil. Egypt's oil and gas reserves are not more then 5-10% of what countries like Qatar, Iran or Russia have. Nevertheless, we still rely on gas as if we were one of the big reserve countries. While for example in China 70% of electricity is generated by coal, in Germany 40%; France gets more than 70% of its power form nuclear.

No more than 40% of primary energy generation – for vehicles, houses, industries and power generation – should rely on oil and gas, but in Egypt 97% of primary energy relies on oil and gas. We are producing much more than many other countries that don't reveal big shortages in energy supply, but they do have an energy mix strategy that allows them to utilize their production in much more profitable ways than we do.

In Egypt we could build more petrochemical factories that add value to gas and enable us to get more foreign currency by exporting their final or semi-finished products. There is no comparison between using gas as a raw material and burning gas just to lighten up some houses and coffee shops.

This requires a full strategy, a lot of cooperation and some patience because there is no such energy mix strategy that would put an end to the shortages and can be implemented though a short-term plan. However, the thousand-mile road starts with a first step in the right direction and it would help Egypt generate foreign currency that can be directed to overdue payments to IOCs, which would encourage investments. Brownfields as well unconventionals development is tough, costly and risky, it requires high investments and new technologies. And an investor always has the one million dollar question in mind: why would we go for it if we are not sure whether we can get our money back, and whether we can sell products with unregulated prices and hence earn reward from the risk that we have taken?

There are lots of reasons why Egypt will prevail to be a target for investment; just all those un-rounded corners need to be sorted out.

Tell a bit about Tanmia's oilfield services business. How is it different from that of Petrojet?

Petrojet focuses mainly on downstream and Tanmia mostly on upstream. There is some history I am not responsible for, so I'll talk about the present and future. Tanmia as a whole works on three axes.

Firstly — field development; namely brownfields, greenfields that can achieve higher production by some unconventional interventions, and newly discovered fields that have not been developed yet like our Sea Bird field.

The second axis is field services. My main aim currently is to make sure that even our services are directed toward the first axes, the development of fields. We are concentrating on services like early production facilities; well testing; multiphase metering; power generation for producing fields; geological, geophysical and engineering studies; and workover. We currently have one drilling rig that SinoTharwa uses based on a revenue sharing agreement. We also plan to have some workover rigs very soon, and we end up with a suite of field development services that we aim to concentrate on.

In addition there will be some specific services, which form the third axes. These include project management, namely for importing gas. We have been awarded a contract by EGAS for some engineering work at Ain Sukhna port where an LNG import facility is being planned. We have just finished HAZOP and HAZID hazard studies there, and we are also working with EGAS to offer a project management contract and act as an operating arm on their behalf. Besides, we are currently studying some services provision related to flared gas. Egypt has plenty of locations that burn wet gas, our aim is to extract as much liquid form it as possible – such as condensates, LPG and LNG – and direct the remaining dry gas for generating electricity for the fields. We plan to conduct the first trial shortly. We are also providing commissioning to production facilities and conducting studies. Lastly, we have contracts with several companies for providing manpower, expats as well as locals.

You have formed alliances with companies from many countries – the US, Japan, Italy, China, Malaysia etc. Is Tanmia a mediator between them and companies who need services in Egypt that Tanmia cannot provide itself?

We don't want to be a mediator. Our aim is to provide a one-stop-shop solution. For example, if a company here in Egypt requires services X, Y and Z, then we can combine X from Tanmia, Y from one company and Z from other company to provide an integrated solution. But not so that we bring a company, let it work and we get our percentage. This is not our aim at all. It was in the past, but we don't plan it to be so in the future.

How difficult it is for Tanmia to compete with international oilfield service companies?

There is no doubt that international oilfield service companies have many more strengths since they have worked in multi-disciplinary environments and in hundreds of locations all around the world. They can have better pricing and faster services. Tanmia is a young company, we try to walk before we run, and we really don't need to compete with those international companies. We are just filling in the gaps left from them, in cases when they find it more attractive to have their equipment and personnel utilized somewhere else.

We are not aiming to create any threat to international service companies. On the contrary, we have agreements with some of them to merge our efforts in several locations. For example, we have worked in 26 locations in early production facilities and just four of them were only Tanmia, whereas in 22 locations we collaborated with international service companies. And our main role is to develop fields — we don't want to be just a service company.

> You can start from a very simple operation by re-perforating the existing well that is producing.

Tanmia plans several investments – acquiring workover rigs, building its own early production facilities services fleet, developing fields. Where do you hope to get finances for that?

We earned good profits last year thanks to the field services we have provided and Tanmia's shareholders agreed to retain this profit to be invested in the near future. Besides, some banks have agreed in principle to provide us financing, although these agreements have not been finalized yet. And the shareholders are set to grant us more capital. These are the three main sources of financing.

Having said that, we also have agreements with some companies for certain projects, mainly in field development; that they provide a big chunk of investment in the beginning and their costs will be recovered once we start generating revenues.

Tanmia does not see activity in the petroleum sector slowing down due to political instability?

Actually operations in the petroleum sector have not been adversely affected by the unrest that has occurred since the revolution of 2011. Yes, the sector has been affected by the whole situation in Egypt, for example the shortage of foreign currency, but the volume of business is nearly the same. Having said that, some companies have reduced their footprint and we have filled this gap.

We have purchased some equipment that we were previously renting form subcontractors and have hired some people who used to work at our locations as third party employees. Such people are mostly skilled mid-career Egyptians that have come back to Egypt after working overseas and we have been able to offer them good remuneration packages. Having such people and equipment directly instead of getting them via contractors of course increases the margins we generate. These are some of the actions we have taken lately that have affected our profit dramatically.

You became the Chairman of Tanmia in September 2013. Are you implementing a new strategy of just continuing what your predecessors had started?

No doubt that there is a new strategy I'm putting in place, but I cannot ignore the great efforts started by the previous chairman. He has done wonderful job to U-turn the company from big losses to nearly breaking even.

I outlined kind of a roadmap to build CV for the company based on the three axes that all relate to field development. If I had been here in the past, then for example I wouldn't have bought a drilling rig. I would have bought a workover rig because this is much more relevant to field development. And I had really concentrated on lining up with some companies that are good at brownfields and kept presenting it to EGPC, GANOPE and EGAS. If this step had been taken five years ago, we would have been in a much stronger position by now. In my opinion Tanmia needs to align itself with the strategy it has been established for and direct its investments not only in whatever can generate profit, but to generate profit and build our CV as well.

Is it difficult for Tanmia to find qualified workers in Egypt?

Yes, that is one of the big challenges. No doubt that differences in remuneration attract most skilled personnel from Egypt to work abroad, and there are some difficulties when dealing with Egyptians that have returned from overseas. They are very skilled and have been dealt with as expats in other countries. When you bring them back, there are certain regulations and salary structure that doesn't meet their liking. He might have for example ten years of very strong work experience from abroad and when he comes back, he needs to be equalized with a guy that theoretically also has ten years of experience, but the truth of matter it is one month of experience multiplied by 120. He has just done the same thing for ten years while the other one has gained new experience every day. This is one of the issues that I am sure many other companies in Egypt are facing too.

You have worked in several high-level positions, including many years as Vice President of Weatherford. How does your current position compare with the previous ones?

The beauty about this position is that I'm feeling a kind of national sense, that I'm laying one of the corner stones for Egypt´s development. It just gives me pride and happiness that is different from just achieving for myself. In the past, I was building up a certain organization and my own reputation, but now I am also building a country.

Are you hopeful about the future of this country and its development?

I always have hope, and I am still really hopeful that maybe after June or so things will differ in Egypt.

Tanmia's Financial Results (EGP)

	2013	2012
Income	178,995,333	114,281,825
Operating expenses	(144,461,197)	(90,988,491)
Gross profit	34,534,136	23,293,334
Administrative expenses	(24,358,952)	(21,759,937)
Net profit (loss) before taxes	11,135,105	2,282,524
Net Profit (loss) after taxes	9,459,636	(168,946)
Shareholders' equity	92,105,551	82,645,915
Number of employees	212	N/A

Source: Tanmia Petroleum Company Annual Report 2013

Interview with **BRUNO LESCOEUR**

Edison International S.p.A to celebrate its 130 years anniversary.

By Sherif Elhelwa

Edison's CEO **Mr. Bruno Lescoeur** sheds light on the company's history, motivations and its vision in Egypt during the company's event to celebrate 130 years of existence. The anniversary was attended by key figures from the Egyptian authorities and international energy companies as the attendees gathered to celebrate Edison's 130th birthday.

"Egypt is very important for us, as we have almost the same size activity [here] as in Italy."

Can you brief us a little bit about your career?

I have been the Administratore Delegato (CEO) of Edison since 2011 and I spent my entire career to-date with Electricité de France (EDF), a leading energy player. EDF has been a shareholder in Edison for the past 12 years and acquired the majority of Edison's shares in 2012. Edison was created 130 years ago and we are celebrating this anniversary. Edison is Europe's oldest electricity company and it has developed during the last century but Edison has had an interest in gas for very long time; the first gas well was drilled in Italy by Edison back in 1952. You know, since then, the evolution of the energy market has been quite important in Europe. Edison activities are chiefly in three main areas. Firstly, Edison generates and sells electricity in Italy. Secondly, Edison imports gas to Italy. Edison is the second largest importer of gas for Italy and imports almost one-fifth of gas consumed by Italy. Italy is a rather important gas market for Europe; the second biggest gas market in Europe after Germany. And thirdly, Edison is an exploration and production company with activities in Italy, especially offshore, as well as in Egypt, and now we are developing a third region in Norway. As far as Egypt is concerned, Edison has been in Egypt for almost 20 years. After an intense exploration phase, we made important discoveries of gas in the late 90's but for various reasons, Edison sold part of its interest in Egypt in 2003-2004, then Edison decided to grow back in Egypt and invested quite a lot of money in the joint venture with EGPC back in 2008. Since then we have of course developed the production and we have almost doubled the level of production that we had at the beginning of our joint-venture in Abu Qir. To achieve this, we have continuously invested; mainly in Abu Qir but also in existing and newly acquired concessions.

Where are your potential operations in Egypt?

We have activities in the Nile delta onshore and offshore and we consider the East Mediterranean as a new focus area. Of course we keep looking at new opportunities in these areas as well as the Western Desert.

So how do you compare your experience in Egypt to other countries you have operations in?

Egypt is very important for us, as we have almost the same size activity [here] as in Italy, but of course Egypt has much more potential as Italy's resources are less important. Now, how does it compare? During the last few years, the situation has been complicated but we are quite happy that we have found a good dialogue with EGPC to continue to operate, develop and maintain the level of production; especially for gas because we understand it is extremely important for the country. We have had intense discussions. For example, when — according to the contract we have — was the time to amend the price of gas. We have also found very satisfactory solutions every time we had a difficulty and, like some other investors in Egypt, we share the difficulties of getting enough hard currency to make possible for us to continue to invest and to maintain our activities. But really the experience over the last five years has been that, with a lot of work, it is always possible to find solutions, step by step, and this is exactly why I am here to celebrate the 130th anniversary of Edison in Cairo to really tell that we are a long-term company. We know that this kind of business is a long-term type

of business. We are here for the long term; we want to stay here, we want to work hard in order to continue to stay here, and I am particularly happy with this kind of robust and interesting cooperative relationship we have with our partners, especially EGPC, EGAS and some other Egyptian companies in this sector.

How much are you producing in Egypt?

We are producing in the range of 300 mmscf/d and 6,000 b/d.

Can you tell me about the difficulties Egypt is facing that prevent it from producing enough natural gas and caused Egypt to become a net importer?

Well, there was the period of the revolution and the financial difficulties faced by EGPC and EGAS which led to a slowdown in investments from most companies. To replace reserves and increase or even maintain production, companies need to explore and make new discoveries and that requires large investments, so it's a kind of chain and I believe that in the past 3-4 years the companies have slowed down the level of exploration in the country.

So it's a matter of investing money and time to do it?

Exactly. And in order to do that, as investors, you have to have reasonable returns and this is the reason why I was mentioning price-level equations; we need to have a reasonable price for gas. We know that for some countries it's difficult to have a reasonable level of price for the end user but you need also to have a reasonable confidence in the overall environment of investment. But at Edison we have continued to invest and, although it was not always easy, we have increased our production level, at least for Abu Qir.

Is the government willing to apply international prices to the local gas prices?

You know, the upcoming exploration and development activities in Egypt are getting into much deeper waters offshore and these require much larger investment and thus will require higher prices than the currently offered. It is our understanding that this message is understood by the Egyptian authorities and we have been witnessing an easing up on this matter.

During the last three years the government, or EGPC, hasn't been paying its international partners their money on time. How is this affecting you as a company? And how is this affecting your investments in Egypt?

This is definitely a difficulty. We have made an agreement that is called a Deferral agreement, which was agreed two years ago now, and it has worked up to date. Of course there have been some late payments but basically we were able to accommodate that. It requires a lot of effort from both parties and we have found some innovative solutions to overcome those difficulties. For example, we have been able to receive some oil cargos instead of receiving cash and we are exploring some other innovative ways to try to accommodate the contract EGPC has and their obligations to us.

What is Edison's biggest achievement in Egypt?

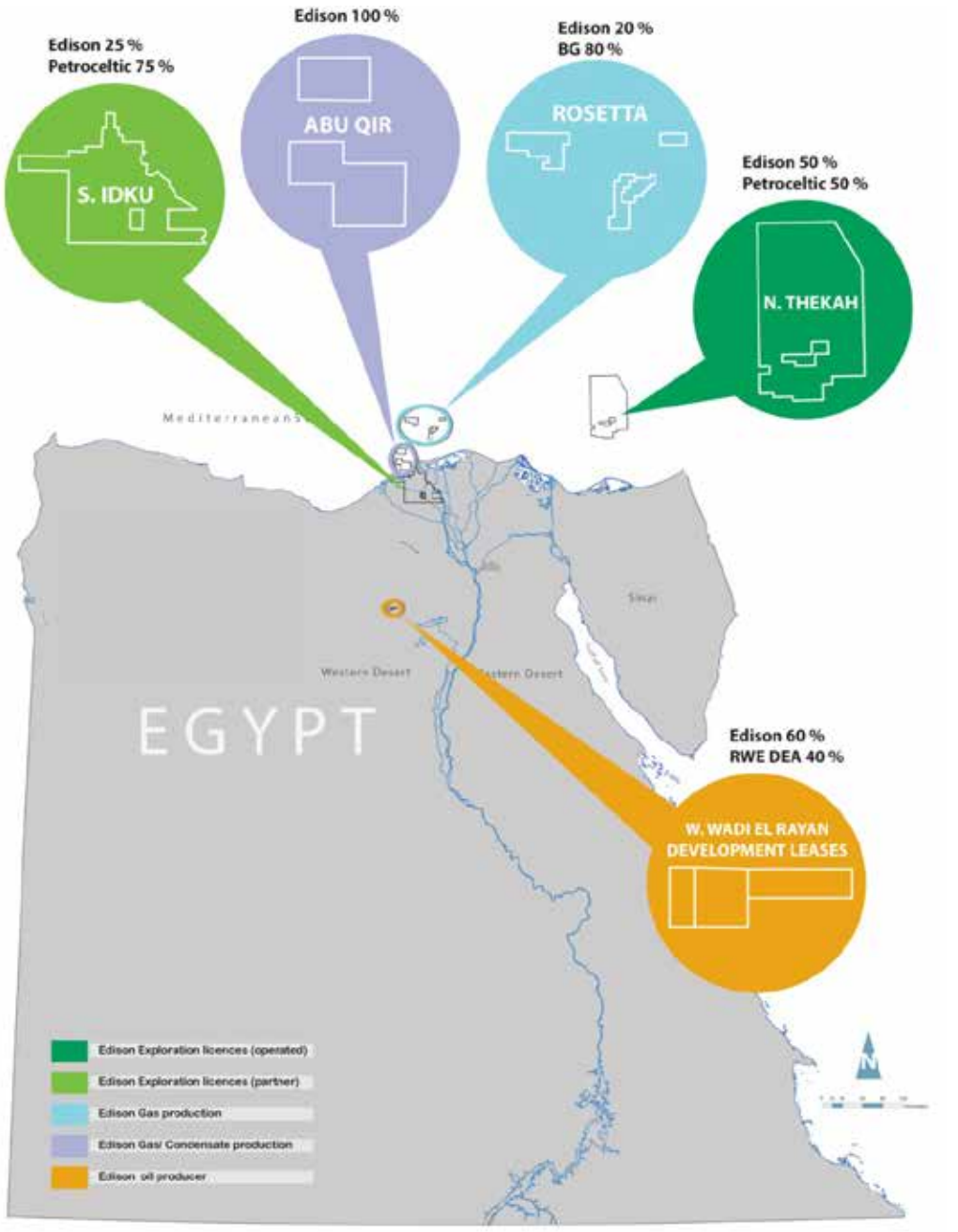
It's our work in Abu Qir as the production there was running for 30 years and with our investments, and our technical expertise, we brought back to life a very mature field doubling the production, so it's a very good achievement.

What are Edison's expectations in Egypt?

I really believe that Egypt has large potential of economic development but it's probably not viable that Egypt will become an exporter of gas anytime soon. Egypt will need to either import more gas to fuel the demand or more importantly avoid restricting the rate of growth necessary to develop Egypt. I know that the electricity situation is quite difficult and the lack of electricity has been a problem for the development of the entire economy. It is important to continue to develop the exploration and production sector to meet domestic demand and support the growth of the Egyptian economy.

Do you think there is an international will to invest more money in Egypt now?

I am here to demonstrate that we consider Egypt an interesting country to invest in and I hope we will be followed by others.



Using the Right Honey to Attract Sweet

Local Talent

By Robert Mogielnicki and William Scott-Jackson of Oxford Strategic Consulting, a British/ GCC consultancy with an enviable track record in helping to build human capital across the GCC and in Europe.
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Forget millions—the billion-dollar question in the oil and gas industry over the next decade is: How to find the right local talent? With the Big Crew Change due to alter the structure of the industry, oil and gas companies must source qualified new talent who can create and implement new approaches needed to increase oil production in an increasingly complex and competitive industry. Ideally, this new talent will be local. Yet countries from across the MENA region—from the GCC to Egypt and even as far as Nigeria—are finding it increasingly difficult to recruit the top local talent. Rather than focusing on longer-term solutions, many companies are hiking salaries to unsustainable levels and poaching employees from competitors. Yet some voices in the industry are advocating for smarter, more cooperative approaches to attract, recruit, and retain local talent. The challenges are well known, and now the strategic solutions must be embraced.

How Does Egypt Fit into This Picture?

The Egyptian General Petroleum Corporation (EGPC) manages much of the upstream oil activities such as infrastructure, licensing, and production, as well as owning and operating most of the refining capacity in the country. Nevertheless, international oil companies (IOCs) do play a significant role in Egypt's upstream sector. The main IOCs in Egypt are BP, Eni, BG, and Apache. The first three companies are primarily involved in offshore whereas Apache is involved onshore in the Western Desert. It is important to note that there are also several SMEs involved in oil exploration and production.

In the natural gas sector, the Egyptian Natural Gas Holding Company (EGAS) controls the development, production, and marketing of natural gas. The key companies in Egypt's upstream natural gas sector are the same as those in the oil sector, with the addition of Shell. BG is responsible for approximately 40% of Egypt's natural gas production, and BP hopes to increase output through discoveries in the Mediterranean Sea and Gulf of Suez.

EGPC, EGAS, and the IOCs operating in Egypt must focus on attracting the right talent over the next decade, and there are many reasons why local talent is preferable to expatriates. First and foremost, nationals usually possess a better understanding of their region than their expatriate counterparts. As a result, local talent often comes with the connections and wherewithal to get things done quickly and efficiently. This is especially true for private companies that must deal with slow, complicated government bureaucracies. Second, recruiting local talent is more sustainable and usually more cost effective in places like Egypt—although this is not always the case as best evidenced by industry examples in GCC countries. Finally, recruiting nationals is an excellent way for IOCs to demonstrate their interest in helping MENA countries achieve their country strategies by creating employment and private sector growth.

Big Crew Change as HR Opportunity

Recruiting top local talent is especially important given the impending challenges posed by the Big Crew Change, which has the potential to stall oil and gas exploration and production growth in Egypt. The Big Crew change is the term given to the shift in the demographic profile of employees in the oil and gas sector due to the exodus of a significant number of seasoned and skilled petrochemical professionals and the resultant reliance on younger and relatively inexperienced engineers. Experienced technical staff members, numbering 20,000, are predicted to retire and leave the sector over the next 10 years. Significant recruitment cutbacks in the 1980s resulted in a missing generation of geoscientists and petroleum engineers. Now, oil and gas majors and service companies are striving to fill this gap by hiring young talent, an issue often exacerbated by a limited supply of experienced local staff as well as nationalization considerations.

The good news is that many oil and gas majors and service companies are now thinking differently about how they hire, develop, and retain local talent. They're paying closer attention to their employer brand, the employee "contract" in its broadest sense and how they create the infrastructure to manage a demographic increasingly skewed towards younger workforce. A central challenge is recruiting enough of the right talent for future succession, but then once in, how to manage this massive influx of young and relatively inexperienced talent so they are ready to take on a senior engineering role in five to 10 years?

Across the MENA region, career interest in the oil and gas industry is often low, and many companies are competing for the few qualified candidates who would consider working in the needed roles. In the UAE, for example, our research demonstrated that only 4% of Emirati students were "very interested" in the oil and gas industry.

To look at it from another angle, our research revealed that if you take 100 Emirati students, only 14 would graduate with relevant degrees in engineering. Of those 14 engineering students, 10 will want to work for the government, and only four will want to work for the private sector. From those four, only one would consider working outside of an office. Therefore, all of the private sector companies in the UAE are currently competing to recruit one eligible Emirati candidate out of a pool of 100 students. It is a hard job to say the least.

Perception Problems and Potential Solutions

Scarcity of talent pool issues can be resolved by the following three approaches: increase the pool, increase your section of the pool, and fish in a different pool. First, the oil and gas industry can cooperate to increase the overall talent pool by changing the perception of the oil and gas industry. Moreover, this cooperation must be between various IOCs as well as between the private and public sectors. This is entirely feasible in Egypt as EGPC already holds shares in operations through joint ventures with private companies.

How can the perception of the industry be changed for the better? Our studies show that students, especially in GCC countries, tend to think of the oil and gas industry as "dirty" and "gross". While the perception is generally negative, the negative opinions about the industry are not based on an active, informed dislike but rather an absence of knowledge. This research demonstrates that IOCs can do more to transform negative, uninformed opinions into positive, informed perceptions about the various careers in the industry.

At the same time, IOCs should cooperate with the public sector to create a larger presence in academic institutions. Companies should establish math and science tutoring centers that help develop and hone the hard science skills needed for engineering roles. Companies should also offer more internships and graduate schemes to increase the pool of eligible candidates by the time they enter the job market. In countries like Egypt where foreign companies in the gas sector must dedicate a great deal of their production to the domestic market anyways, these companies should be looking at more ways to contribute to their respective countries. On the one hand, investing in human resources will create a more sustainable local talent pool. On the other hand, demonstrating a clear in-country value will be advantageous while seeking joint ventures with the government.

Second, companies can increase their share of the pool by attracting the right local talent. In order to accomplish this, companies must understand the motivations of young, potential candidates. Based on our research, companies in the oil and gas industry tend to do a poor job of identifying the professional motivations of youth in MENA countries. In the UAE, most employers believed that Emirati youth were motivated primarily by money. When we asked Emirati youth what motivates them, the top two responses were to "help the country" and to "contribute to society".

Of course, youth motivations vary from country to country, and motivating factors in the UAE are likely different from those in countries like Egypt. For this reason, it is all the more important that oil and gas majors and service companies clearly understand what motivates young, potential employees in their respective countries. One uniform approach will not be successful across the MENA region. Rather, the companies armed with country specific information and a differentiated approach will be in a better position to not only attract the top local talent but also know how to bring them on board.

Third, companies can fish in a different pool by marketing to specific prospective talent. One way to accomplish this involves finding ways to employ under-utilized labor pools, such as female talent. The process is quite simple for employers: pick a niche, identify its specific needs, work out how to meet those needs and build an employer brand. Etihad Airways did precisely that with a call centre in al-Ain, UAE, staffed completely by non-graduate females. By allowing women to work near their home, with flexible hours and in an all-female environment, Etihad Airways not only enjoyed tremendous success finding Emirati nationals to staff the call centre, but they landed top awards at the Middle East Insights Awards. It is easy to see how this approach could be replicated in certain areas of the oil and gas industry, such as logistics and communications.

Attracting local talent in the oil and gas industry, especially considering the impending Big Crew Change, is certainly a challenge but by no means an insurmountable task. In a general sense, IOCs must cooperate more with the public sector to increase the overall talent pool. On a more specific level, individual companies must do more to better align their industry perception and individual brands with the motivations of potential employees. Yet in order to accomplish this in a country like Egypt, both private and public sector companies must be armed with nuanced information about what really motivates younger segments of the population. This research has yet to be conducted in Egypt, but we have seen similar research enjoy tremendous success in other parts of the MENA region.

On the Politics of **Power Cuts**

At the beginning of *The Square* — the Oscar-nominated Egyptian documentary which has rapidly become the go-to reference point for people outside the country wanting to understand Egypt's last three years — there is a power cut. Young Egyptians sit joking around a table in the dark. "The lights went out," one says. "Why?"

Tom Rollins is a freelance journalist based in Cairo.
He tweets at @TomWRollins

Egypt's energy crisis has not gone away. From Hosni Mubarak to the Supreme Council of the Armed Forces (SCAF), to Mohamed Morsi and the present-day transition, the country has repeatedly been dogged by fuel shortages and ongoing problems with imports-exports, on top of a fluctuating plague of power cuts, which threaten much more than just business operations.

Ministers have recently made conflicting statements about looming electricity price hikes and when they will happen – perhaps a reflection of nerviness that more energy problems could start to affect the popularity of Abdel Fattah el-Sisi, who is widely expected to win the presidency before summer.

Planning and International Cooperation Minister Ashraf al-Araby said mid-April there was "no time to waste" in starting to make reforms, and that electricity price raises needed to be introduced "very soon," i.e. before presidential elections scheduled for May 26th-27th.

"We don't have time to waste. ... It's better for Egypt to start some of these measures at least before the presidential election, just to pave the way for the coming president, to make his life easier," he told Reuters on the sidelines of International Monetary Fund (IMF) and World Bank meetings in Washington DC.

One week later, Prime Minister Ibrahim Mehleb said energy subsidy reforms would take place in July. Mehleb has often appeared more cautious in the face of economic problems – including a post-January wave of workers' protests that was widely reported to have contributed to the downfall of the administration of his predecessor, Hazem el-Beblawy.

Ministers have also been keen to stress that cuts and hikes will function on a progressive scale, which means, according to Araby, that the top 20% of society will be footing the bill for energy subsidy reforms. Mehleb similarly added that electricity and butane gas prices would not go up for "middle and low [income] segments of society," Daily News Egypt reported.

International energy expert Ibrahim Zahran recently told Xinhua news agency the country's problematic relationship with fuel and resources pre-dates the revolution.

"Power outages in Egypt started in 2008 when the country had to use diesel for power stations as alternative for natural gas, causing maintenance issues that cost about EGP 10 billion," Zahran said.

While some suggest the economic fallout of the revolution has not helped (which might well be true), mismanagement and knee-jerk policymaking in the face of tough economic prospects are a recurrent theme. For example, shortages in natural gas were also compounded by a series of costly deals with Israel, Jordan, and Spain — in which Egypt's natural resources were sold off at below-market prices — which, according to a recent Egyptian Initiative for Personal Rights (EIPR) report, cost the country a further $10 billion. Egypt has been unable to properly run power stations, which forces the government to make difficult decisions about how it distributes power throughout the national grid.

The energy crisis has had various implications on Egyptian industry and business, forcing factories to close and debilitating operations at various stages of the industrial process.

"Manufacturers have been hit hard, losing productivity and revenue as energy shortages leave many factories standing idle for hours on a daily basis, prompting fears about what will happen in the summer, when demand for energy is traditionally at its highest," Mada Masr's Isabel Esterman reported in March. Factories across Egypt have been forced to shut down operations, sometimes for up to six hours a day, because of a lack of fuel and energy.

The situation is set to get worse. During the summer months, when Egypt's hot temperatures drive up energy consumption, the rate of power cuts is expected to increase significantly. Air conditioning in mosques has been pre-emptively cut ahead of the hotter months, until May 15th according to the Ministry of Religious Endowments; while the recently unified Trade, Investment and Investment Ministry has banned manufacturing and importing air conditioners that can be set below 20 degrees Celsius.

Aside from day-to-day industrial and economic realities, there has also been much discussion about how power cuts could affect the political consensus that flooded the streets on June 30th and July 26th, when Sisi called for a "mandate" to "confront violence and terrorism." Could the energy crisis — paradoxically — become a fuel for dissent? How long will it take to spill into the streets once again, this time against a regime that has routinely promised Egyptians a better quality of life? Judging from the present mood, maybe never.

During Sisi's speech announcing his long-awaited presidential bid in late March, he said Egypt's economy was "weak" and that its reliance on "donations and assistance" was "not acceptable, either." There was an oblique reference to the post-January wave of industrial unrest that purportedly brought down Beblawy's cabinet (demonstrating the need therefore, according to the field marshal, to restart "the wheel of production"). Sisi is widely expected to beat his only opponent, Hamdeen Sabbahi, yet seems concerned by threats to the economic stability and wellbeing of Egypt.

Recent polls suggest Sisi will indeed win the elections, but that his support base may not be assured as once thought – with around 40% of Baseera poll participants (2,034 people in total) saying they will vote for the former field marshall at the end of March, compared to 50% just two weeks before. Meanwhile, workers in Mahalla, historically a driving force for dissent in pre-revolution Egypt, said they would hold off on major strikes until after the elections. In some corners of the Egyptian society at least, there is a kind of wait-and-see approach to Sisi's presidency – a far cry from Sisi's seemingly unanimous (non-Brotherhood), hyper-nationalist support base which international and Egyptian media has presented in the past.

But after that, will Sisi's regime be sustainable, if intermittently given refreshers by Gulf States looking to lobby regional influence and instill a beneficial recovery in Egypt's ailing economy? Will it be able to balance the economic demands of ordinary Egyptians with those of its business community?

Egypt now, of course, is not Egypt pre-January 25th — a lot has happened. The population is tired of upheaval and wants a better quality of life, economic stability, and some semblance of progress away from the last three years. The activists who helped make January 25th a reality — April 6, the Revolutionary Socialists and co. — are on the back-foot, with leaders and grass-roots members in jail and a state frequently impatient towards any displays of public dissent. But that crackdown, and a seemingly renewed campaign against last year's protest law, present hope for activists in the future. There is plenty of received wisdom in Egyptian politics these days, but little is really certain until it has happened.

The problem with the unexpected inconvenience of a power cut is that it carries another uncertainty — its own heavy symbolism: darkness, inaction, strife. Nobody marches, protests, or occupies Tahrir Square over a power cut, but when that power cut is accompanied by — for example — widespread police brutality, a government failing to deliver on its founding promises and a population struggling to make ends meet, things can look different rather quickly. Recent Egyptian history has made that point, but will it repeat itself?

Back to *The Square*. "The lights went out," one says. "Why?" Then the conversation continues.

"This is normal…Everything is like this, it's not just the electricity. Electricity is the least of our problems…"

And who, these young Egyptians say, was responsible for it all last time? "The regime."

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KHALDA'S KALABSHA GAS COMPRESSION FACILITIES PROJECT

Progress Report as of September 2013

Project Name: Kalabsha Gas Compression Facilities Project
Owner: Khalda Petroleum Company (KPC)
Contractor: Enppi and Petrojet
Start: November 2012
Completion: December 2014
Project Budget: $15,000,000
Expenditure: $310,000
KPC Project Manager: Eng. Mohamed Kotb

Project Objectives
To install gas compressor facilities in order to recover associated gases from the existing West Kalabsha gas facility and the existing Kalabsha oil facility.

Project Description
Recovering associated gases instead of flaring them by installing four gas compressors (5 mmscfd each) and their utilities in the centralized oil production area, to compress the gases to Khepri gas processing facility. The design capacity is 20 mmscfd.

Project Status
Planned progress: 37%, actual progress: 33%.

- Engineering with Enppi is ongoing with a planned completion date of October 30th 2013
- Procurement phase is ongoing
- Start site in preparation phase

KHALDA'S KALABSHA GAS EARLY PRODUCTION FACILITIES UPGRADE PROJECT

Progress Report as of September 2013

Project name: West Kalabsha Gas Early Production Facilities
Owner: Khalda Petroleum Company (KPC)
Contractor: Petrojet
Start: September 2012
Completion: November 2013
Project Budget: $3,000,000
Expenditure: $1,415,869
KPC Project Manager: Eng. Mohamed Kotb

Project Objectives
To bottleneck the existing gas facilities and upgrade them with an additional train, control systems, flare system, fire detection and fire fighting systems, and integration system. To increase the capacity of the Kalabsha facility by 10 mmscfd and 4,000 b/d.

Project Description
The current operating conditions of the existing equipment at the West Kalabsha gas facilities revealed that a quick remedial action needs to be taken to rectify the smoky flare issue, in addition to installing extra equipment to eliminate the existing EPF facilities restriction, in order to allow the production to increase by +/-4000 b/d and +/-10 mmscfd. The project contains the following:

- Additional train (first stage separator, heater, and second stage separator)
- Flare KOD and new flare system
- Upgrading existing control system from pneumatic to electronic
- Reallocating existing heater
- Replacing existing hummer union connections
- Adding fire and gas detection system

Project Status
Planned progress: 93%, actual progress: 91%.

- Site piping erection ongoing
- Site installations (civil, E&I) ongoing
- Piping drying completed
- Instrumentations installation ongoing
- Control panel termination completed
- Cold loop check completed

WHEN VERSATILITY COUNTS...

MV FUGRO NAVIGATOR

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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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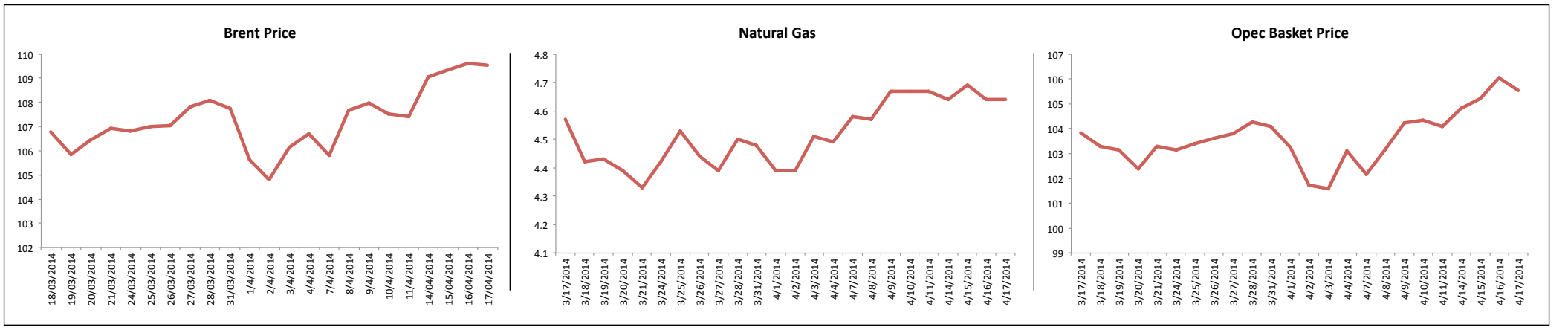
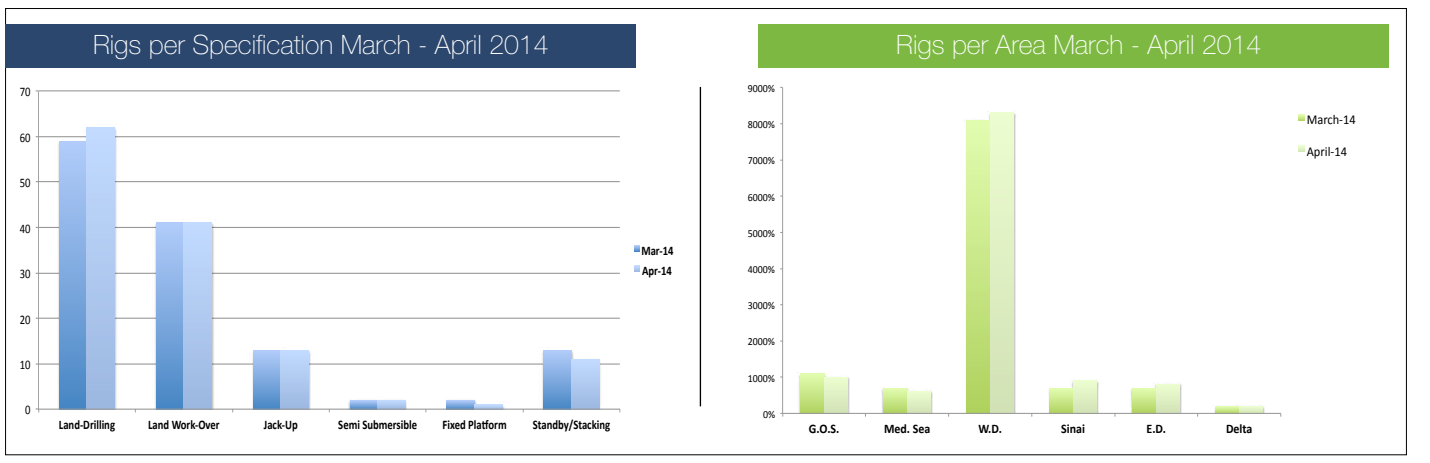
Egypt Statistics

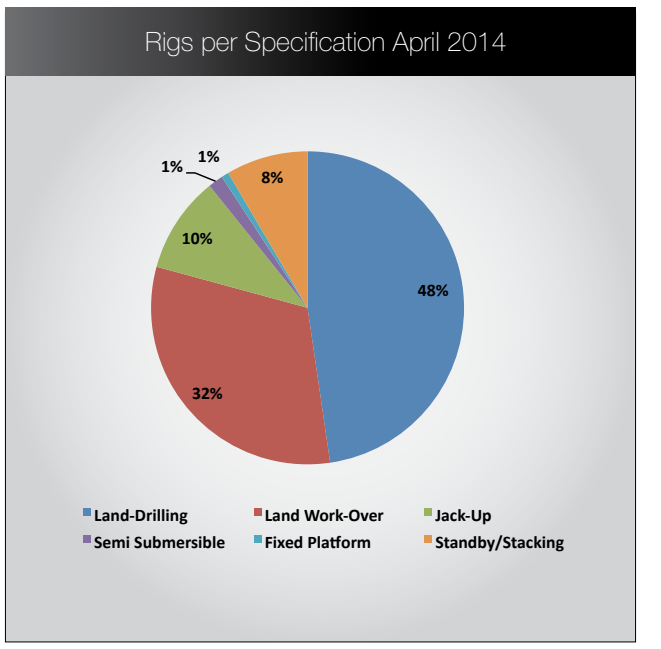
Egypt Rig Count per Area – April 2014

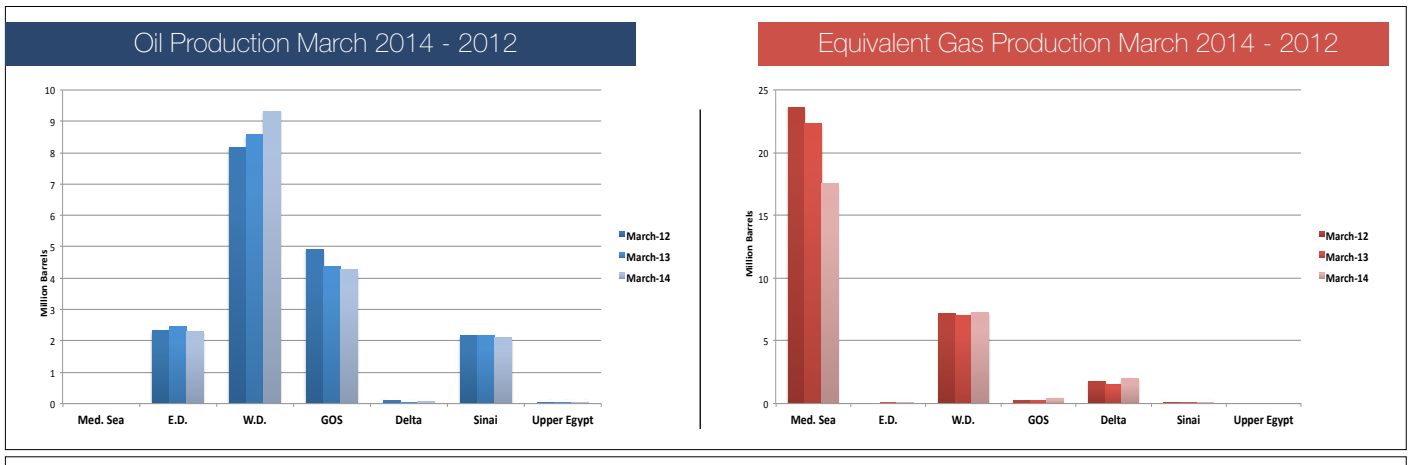
Area	Total	Percentage of Total Rigs
Gulf of Suez	10	8 %
Mediterranean Sea	6	5 %
Western Desert	83	70 %
Sinai	9	8 %
Eastern Desert	8	7 %
Delta	2	2 %
Total	118	100%

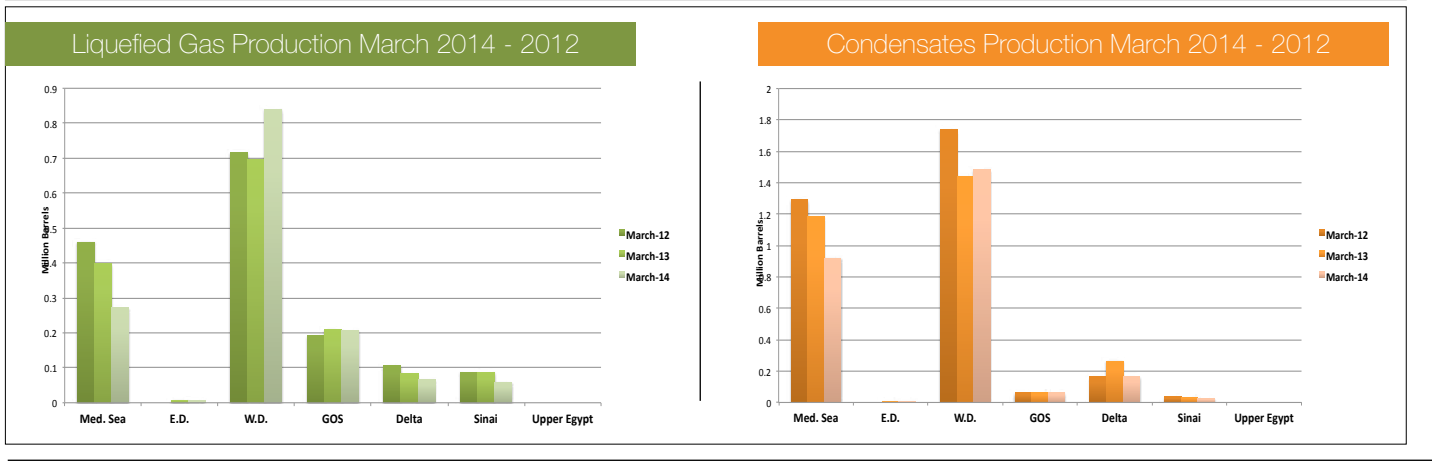
	Oil			Equivalent Gas			Condensate			Liquefied Gas		
	Barrel			Barrel			Barrel			Barrel		
	March-12	March-13	March-14	March-12	March-13	March-14	March-12	March-13	March-14	March-12	March-13	March-14
Med. Sea				23616071	22322857	17509107	1290083	1184860	918697	459950	397401	271300
E.D.	2326843	2443578	2287477		31607	51607		2687	2727		7731	5356
W.D.	8175842	8568041	9315242	7158214	7057321	7254821	1741365	1439860	1481351	714955	694987	839765
GOS	4925021	4358255	4271681	224643	273214	371429	63287	63396	62031	191251	208939	207293
Delta	102683	20699	65638	1789286	1556071	1964821	163667	263575	165827	106558	83135	65216
Sinai	2162497	2163757	2108303	1250	3393	8571	35641	34218	26534	86493	85660	58503
Upper Egypt	15290	13681	10586									
Total	17708176	17568011	18058927	32789464	31244463	27160356	3294043	2988596	2657167	1559207	1477853	1447433

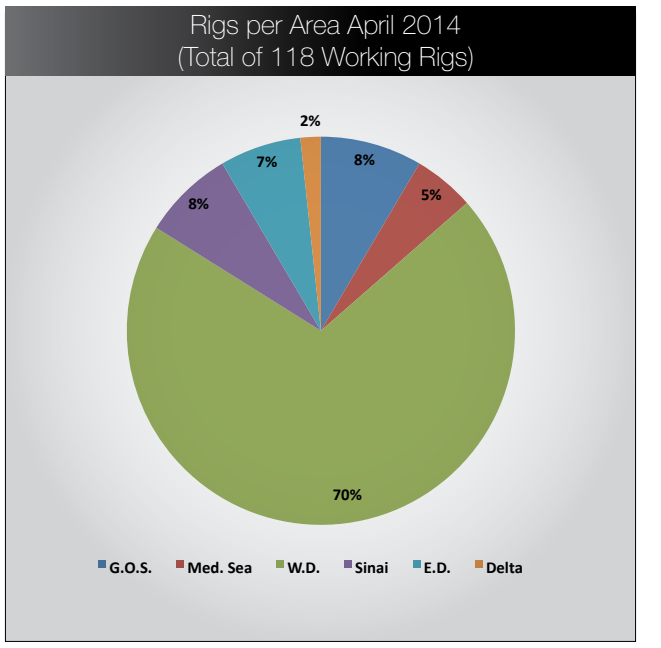












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